Psychosocial Predictors of Sexual Risk Behaviour among HIV Infected and Affected Adolescents Living in HIV Affected Homes of Uganda

By

Stephen Kisembe KIIRYA

(UP-14459559)

A thesis in fulfilment of the requirements for

the degree of

Doctor of Philosophy (Psychology) in the

Department of Psychology,

Faculty of Humanities

University of Pretoria

February 15, 2025

Supervisor:

Professor Maretha Visser

© University of Pretoria

ABSTRACT

Despite the growing research into adolescent health, there is little empirical evidence about the extent and relationships among the psychosocial and sexual experiences of the adolescents who live in homes continuously exposed to HIV infection and its effects in Uganda. To expound theory in this area and provide empirical evidence for proper policy development, this study assessed the extent, associations and pathways of these experiences in this group of adolescents.

A structured questionnaire was used to collect data from 289 HIV-infected, 756 HIV-uninfected and 392 HIV-unaware adolescents who reside in 691 HIV-affected homes that were randomly selected from HIV-burdened parishes in the Lira, Rukungiri and Kayunga districts. The questionnaire and data were verified for precision, stability and reliability using factor analysis. Adolescent's scores on the observed variables were computed and compared using univariate and variance tests, Kruskal-Wallis's equality-of-population rank test, and Cohen's strength-of-effect test. The psychosocial factors influencing sexual risk behaviour were examined using general linear model tests while the strengths, directions and pathways by which they influenced their sexual risk behaviour were assessed using structural equation modelling path tests.

Whereas the three groups experienced noteworthy levels of the observed psychosocial and sexual factors, the adolescents living with HIV were most prone to the risk factors notably, low post-primary education attainment, double orphanhood, home instability, working as home/bar tenders, and living with many sick people and with caregivers who were relatives, or HIV-negative, or alcohol users. They also showed significantly higher rates of receiving HIV/psychosocial care, negative peer influence, poverty, personal threats, interpersonal problems, psychosocial distress, sexual risk behaviour, and low ability to cope with adversities using constructive methods such as self-control and seeking social support than the other adolescent groups. This implies that despite being more enrolled in school and HIV care programmes, this group could be experiencing poorer family care and more psychosocial problems which result in sexual risk behaviour than their siblings in the same household.

The main factors that increased sexual risk behaviour in the adolescents who participated in this study included susceptibility to negative sociocultural norms especially among the younger girls of the Baganda and Lango tribes, single parenting, sexuality discussions from caregivers, negative effects of receiving HIV/psychosocial care, negative peer influence, personal threats, interpersonal problems, psychosocial distress, and coping by deflecting problems. Besides these sociodemographic circumstances, personal HIV status, involvement in work that provides unreliable income such as farming, and living in one home or with caregivers who are HIV-positive or negative, moderated the relationships between the other psychosocial factors and sexual risk behaviour by increasing risks. These risk factors may have prevented the development of protective skills like assertiveness, facilitated negative social relationships that evoked sexual curiosity and carelessness, raised optimism regarding the achievement of sexual life goals, created a conviction that the problems being faced were minor and lowered their risk perception, which could have resulted in sexual risk behaviour.

The results also showed that the sexual risk behaviour in this group of adolescents could to some extent be avoided by school attendance, religious conviction, experiencing orphanhood for a shorter time and parenting from two caregivers, sharing a home with only a few people and receiving constructive social support and socialisation, and experiencing poverty, HIV stigma, inattention, depression and aggression. Besides these sociodemographic protective factors, death of the mother, caregivers' unemployment and adherence to sociocultural norms that promote sexual sanctity, moderated the relationships between the psychosocial factors and sexual risk behaviour of these adolescents by reducing risks. These

© University of Pretoria

factors could have led some adolescents to receiving protection and life skills from their caregivers or school or community, recalling their bad memories and experiencing feelings of despair especially soon after a parental death, which could have improved their risk perception, morals and discipline, and helped them to refrain from sexual risk behaviour.

The sociodemographic factors and community stressors, mainly interacted with coping methods via psychosocial distress to predict sexual risk behaviour in these adolescents. Community stressors mainly reduced their ability to positively cope with adversities and this not only amplified psychosocial distresses which then increased vulnerability to risky sexual behaviour especially in the HIV infected and unaware adolescents, but also reduced the effects of other negative circumstances in the Lira area, which then reduced their sexual risk behaviour. In all groups, deflection was the most prominent coping method and specifically exacerbated distresses, which then increased sexual risk behaviour among them.

The findings highlight the centrality of personal and family factors, psychosocial distress and coping in predicting sexual risk behaviour among these adolescents. They also support and enrich the existing theories by clarifying the directions and pathways in which these factors interact to predict sexual risk behaviour. Interventions by the families, schools and communities are needed to prevent and mitigate the personal, familial, societal, psychological, coping and sexual risks identified in this study, especially among adolescents living with HIV who live in HIV-affected homes.

Key words: Psychosocial predictors, sexual risk behaviour, adolescents, HIV-infected, HIV-affected, HIV-affected homes, Uganda.

SDGs to which the study relate: SDG3 on good health and well-being, SDG5 on gender equality, and SDG10 on reduced inequalities.

© University of Pretoria

DECLARATION

I, **Stephen Kisembe KIIRYA**, number **u14459559**, do here by declare that:

Psychosocial Predictors of Sexual Risk Behaviour among HIV Infected and Affected Adolescents Living in HIV Affected Homes of Uganda

Is my own work, that the sources used have been indicated and acknowledged, and that it has not been submitted for the award of a degree in any other university or for publication.

Signed:

Date: **February 15, 2025**

© University of Pretoria

DEDICATION

I dedicate this doctoral piece of work to the children, adolescents and caregivers directly and indirectly affected by HIV and war in Uganda, Palestine and elsewhere in the world; to my late parents (Ethan Wanzala and Irene Nankwanga Kiirya) and siblings (Joy Nansogo, Erin Biribawa, Aggrey Kisembe, and Moses Kalafa) whom never lived long enough to witness my works; and to my family and colleagues who stood by me in its pursuit.

Stephen Kisembe KIIRYA

February, 2025

© University of Pretoria

INSTITUTIONAL REVIEW BOARD APPROVALS

The scientific and ethical aspects of this study were reviewed and approved by the Department of Psychology Research Committee of University of Pretoria on 16th October 2017, the Faculty of Humanities Research Ethics Committee of University of Pretoria on 22nd March 2018 under Reference Number 04562195 (GW20171115HS), the National AIDS Research Committee (NARC) of Uganda on 26th October 2018 under Reference Number ARC208, and the Uganda National Council for Science and Technology (UNCST) on 12th February 2019 under reference SS270ES.

© University of Pretoria

ACKNOWLEDGEMENT

This doctoral thesis would not have been possible without the scientific, ethical and moral support from individuals in various institutions. I am extremely grateful for their different supports to this research.

Let me thank Professors Angelina Wilson and Anna Meyer-Weitz for examining this thesis and for providing ideas that enriched its quality. Special thanks goes to the current and previous academic supervisors (Professor Maretha Visser and Dr. Malose Makhubela), the current and former heads of the Department of Psychology (Professors Tharina Guse and David Maree), and the statistician (Dr. Andries Masenge) in the Department of Statistics of the Faculty of Natural and Agricultural Sciences for their invaluable guidance during the conceptualisation of the proposal and the analysis and interpretation of data for this thesis, without which, it would not have been possible to amply disentangle, navigate and complete this intricate doctoral research.

I am also grateful to: (1) the University of Pretoria's Department of Psychology Research Committee and Faculty of Humanities Research Ethics Committee, and the National AIDS Research Committee of the Uganda National Council of Science and Technology for the scientific and ethical inputs to the research proposals and instruments; and (2) the professionals in psychosocial research at Makerere University especially Professor John C. Munene, and colleagues at the University of Pretoria with whom we discussed ideas that helped to enhance the scientific depth this doctoral work.

I cannot forget to thank the coordinators and staff of AIDS service and support organisations in Uganda particularly the Uganda AIDS Commission, National Forum of Networks for Persons Living with HIV in Uganda, and the District Networks of People Living with HIV in Lira and Kayunga and Rukungiri for giving the relevant information and personnel that enabled identification and registration of HIV-affected sites for this research.

I am particularly indebted to the research assistants namely Mr. Fred Omara (Rest in Peace), Mr. Calvin Ogwang, Mr. Tony Ocen, Mr. Moses Olet, Ms. Jane Apio, Ms. Gillian Awati, Ms. Lucy L. Ayoo, Ms. Mercy V. Adongo in Lira district; Mr. Godfrey Tugume, Mr Julius Kwehangana, Ms. Racheal Akakisiima, Ms. Catherine Akampurira in Rukungiri district; and Ms. Hamida Namatovu, Mr. Muzamiru Kaibo, Mr. Muhammad Nyanzi, Mr. Aslam Mawejje, and Mr. Abdullah Salim in Kayunga district for working tirelessly to collect data for this research.

Sincere appreciation goes to all caregivers and adolescents who participated for volunteering information and to Mr. Grace Kibuka for harmonising, computerising, cleaning, labelling, linking and testing it which helped to produce a credible dataset that gave a good basis for this study.

Finally, I am grateful to my family for standing by my side during this academic endeavour, and to all persons not mentioned but whose service was indispensable in completing this doctoral work.

This doctoral research was self-financed, and benefited from the University of Pretoria postgraduate bursary scheme for masters and doctoral students for which I am extremely thankful.

© University of Pretoria

TABLE OF CONTENTS

ABSTRACT i
DECLARATION iii
DEDICATION iv
INSTITUTIONAL REVIEW BOARD APPROVALS v
ACKNOWLEDGEMENT vi
TABLE OF CONTENTS vii
LIST OF TABLES AND FIGURES xii
LIST OF ACRONYMS xiv
CHAPTER ONE: INTRODUCTION 1
1.1 Overview of the Adolescent HIV Situation 1
1.2 Justification of the Study 2
1.3 Statement of the Research Problem 3
1.4 Key Research Questions 4
1.5 Aim and Specific Objectives of the Study 4
1.6 Operational Definition of Study Terms 5
1.7 Overview of the Research Process 6
1.8 Overview of the Chapters in the Thesis 7
1.9 Conclusion 7
CHAPTER TWO: LITERATURE REVIEW 8
2.1 Psychosocial and Sexual Risk Levels in Adolescents Living with and Affected by HIV 8
2.1.1 Adolescence 8
2.1.2 Socio-demographic attributes 8
2.1.3 Peer influence levels 10
2.1.4 Community stressors' levels 11
2.1.5 Psychosocial distress levels 13
2.1.6 Coping methods 17
2.1.7 Sexual risk behaviour 19
2.2 Psychosocial Correlates of Sexual Risk Behaviour in Adolescents Living with and Affected by HIV 22
2.2.1 Relations between socio-demographic factors and psychosocial distresses 22
2.2.2 Relations between socio-demographic factors and sexual risk behaviour 23
2.2.3 Relations between socioeconomic status, community stressors and psychosocial distresses 25
2.2.4 Relations between socioeconomic status and sexual risk behaviours 25
2.2.5 Relations between peer influence and psychosocial distresses 27
2.2.6 Relations between peer influence and sexual risk behaviour 28
2.2.7 Relations between community stressors and psychosocial distresses 29
2.2.8 Relations between community stressors and sexual risk behaviour 30

© University of Pretoria

2.2.9 Relations between psychosocial distresses and sexual risk behaviour 31
2.2.10 Relations between coping with stressors, psychosocial distresses and sexual risk behaviour 31
2.3 Theoretical Point of Departure 33
2.4 Conceptual Framework for this Study 36
CHAPTER THREE: METHODOLOGY 39
3.1 Research Design 39
3.2 Research Location 39
3.3 Research Participants, Sample Sizes and Calculations 39
3.3.1 Actual sample sizes for caregivers and adolescents 40
3.3.2 Justification of the adolescents' sample size 40
3.3.3 Calculation of the adolescents' sample size 40
3.3.4 Distribution of the computed adolescents' sample size 41
3.4 Sampling Strategy 42
3.4.1 Selection of the research locations 42
3.4.2 Selection of HIV-affected homes from HIV-burdened localities 43
3.4.3 Selection of adolescents living with and affected by HIV from HIV-affected homes 44
3.5 Data Collection Instruments 44
3.5.1 Description of the data collection instruments 44
3.5.2 Source and verification process for items in the data collection instruments 45
3.5.3 Psychometric characteristics of the adopted and final scales 45
3.6 Data Collection Procedure 55
3.6.1 Notification of authorities and mapping HIV-burdened localities and homes in districts 55
3.6.2 Recruitment, training and management of the research team 55
3.6.3 Fieldwork process 56
3.6.4 Management of fieldwork risks 57
3.7 Data Analysis Strategy 57
3.7.1 Overview of the analyses 57
3.7.2 Specific analyses performed 58
3.8 Data Management and Quality Assurance 61
3.9 Scientific and Ethical Guarantees of the Study 61
CHAPTER FOUR: VERIFICATION OF SCALES AND DATA FOR STRUCTURAL EQUATION MODELLING 63
4.1 Peer Influence and Socioeconomic Status Scale 63
4.1.1 EFA on the 12 items in the scale 63
4.1.2 CFA on the 12 items in the scale 66
4.1.3 Conclusion 67
4.2 Community Stressors Scale 67
4.2.1 EFA on 33 items in the community stressors scale 68

© University of Pretoria

4.2.2 CFA on 33 items in the community stressors scale ... 73
4.2.3 Conclusion ... 76
4.3 Psychosocial Distresses Scale ... 76
4.3.1 EFA on 74 items in the distresses scale ... 77
4.3.2 CFA on 74 items in the distresses scale ... 79
4.3.3 Conclusion ... 82
4.4 Coping Methods Scale ... 82
4.4.1 EFA on 42 items in the coping scale ... 83
4.4.2 CFA on 42 items in the coping scale ... 86
4.4.3 EFA on 37 items in the coping scale ... 88
4.4.4 CFA on 36 items in the coping scale ... 90
4.4.5 CFA on 29 items and three factors in the coping scale ... 91
4.4.6 CFA on 29 items and four factors in the coping scale ... 92
4.4.7 Conclusion ... 94
4.5 Sexual Risk Behaviour Scale ... 94
4.5.1 EFA on 14 items in the sexual risk behaviour scale ... 95
4.5.2 EFA on nine items in the sexual risk behaviour scale ... 98
4.5.3 CFA on 14 items in the sexual risk behaviour scale ... 100
4.5.4 Conclusion ... 102
4.6 Summary of the EFA and CFA Results ... 103
4.6.1 Loadings of the final items to factors of each scale in this study ... 103
4.6.2 Goodness of fit of the measurement scales in this study ... 110
4.6.3 Psychometric properties of the final scales in this study ... 110
4.7 Conclusion ... 113
CHAPTER FIVE: PRESENTATION OF RESEARCH RESULTS ... 114
5.1 Socio-demographic description of the adolescent sample ... 114
5.2 Psychosocial and Sexual Risk Rates among Adolescents Living with and Affected by HIV ... 115
5.2.1 Personal circumstances ... 115
5.2.2 Familial and environmental circumstances ... 119
5.2.3 Peer influence and economic status ... 124
5.2.4 Community stressors ... 127
5.2.5 Psychosocial distresses ... 127
5.2.6 Coping methods ... 127
5.2.7 Sexual risk behaviour ... 128
5.2.8 Summary of the psychosocial and sexual risk levels ... 128
5.3 Psychosocial Predictors and Mediators of Sexual Risk Behaviour of Adolescents ... 129
5.3.1 Predictors of sexual risk behaviour, without controlling effects of other exogenous variables ... 129

© University of Pretoria

5.3.2 Coping-mediated psychosocial predictors of sexual risk behaviour 136
5.3.3 Other mediators in relationships between psychosocial factors and sexual risk behaviour 150
5.4 Demographic Moderators of Links among other Exogenous Variables and Sexual Risk 165
5.4.1 Moderators of coping-mediated links among peer-socioeconomic influences and sexual risk 166
5.4.2 Moderators of coping-mediated links among community stressors and sexual risk 168
5.4.3 Moderators of coping-mediated links among psychosocial distresses and sexual risk 170
5.4.4 Moderators of coping-mediated links among other exogenous variables and sex risk 173
5.4.5 Summary of moderators of coping-mediated links among other variables and sexual risk 174
5.5 Pathways for Predictors of Sexual Risk Behaviour among Adolescents 176
5.5.1 Pathways for predictors of sexual risk behaviour among all 1,437 adolescents in the sample 181
5.5.2 Pathways for predictors of sexual risk behaviour among 289 adolescents living with HIV 185
5.5.3 Pathways for predictors of sexual risk behaviour among 756 HIV-uninfected adolescents 189
5.5.4 Pathways for predictors of sexual risk behaviour among 392 HIV-unaware adolescents 193
5.5.5 Summary of the pathways for psychosocial predictors of sexual risk behaviour 197
CHAPTER SIX: DISCUSSION OF RESULTS 199
6.1 Psychosocial and Sexual Risk Levels among Adolescents Living with and Affected by HIV 199
Sociodemographic circumstances 199
Community stressors 202
Psychosocial distress 202
Coping 203
Sexual risk behaviour 204
6.2 Coping-Mediated Psychosocial Predictors of Sexual Risk Behaviour among Adolescents 204
6.3 Other Mediators in Relations between Exogenous Variables and Sexual Risk Behaviour 208
6.4 Demographic Moderators of Links among Other Exogenous Variables and Sexual Risk 212
6.5 Pathways for Psychosocial Predictors of Sexual Risk Behaviour among Adolescents 214
6.5.1 Path model for the whole adolescent sample 214
6.5.2 Path models for HIV infected, uninfected and unaware adolescents 218
6.6 Summary of discussion of the results 219
CHAPTER SEVEN: CONCLUSION, VALUE, LIMITATIONS, STRENGTHS AND IMPLICATIONS OT THE STUDY 221
7.1 Conclusion 221
7.2 Value of the Study 222
7.3 Limitations of the Study 223
7.4 Strengths of the Study 224
7.5 Recommendations for Intervention and Further Research 225
7.6 Dissemination and Benefits of Research Findings 226
REFERENCES 227
APPENDIX 1: DATA COLLECTION INSTRUMENTS 255

© University of Pretoria

1.1 Informed Consent Form for Parents and Guardians 255
1.2 Informed Consent Form for Adults (18 Years or Older) 257
1.3 Assent Form for Minors (Below 18 Years) 259
1.4 Household Status Form 261
1.5 Questionnaire on Adolescents' Demographics, Stressors, Distresses, Coping and Sexual Risks 262
APPENDIX 2: DATA OF THE FACTOR ANALYSES ON ITEMS IN THE SCALES USED IN THIS STUDY 268
2.1 Part A: EFA and CFA on Items in the Peer Influence and Socioeconomic Status Scale 268
2.1.1 Part A: EFA results on items in the peer influence and socioeconomic status scale 268
2.1.2 Part A: CFA results of on items in the peer influence and socioeconomic status scale 271
2.2 Part B: EFA and CFA on Items in the Community Stressors Scale 275
2.2.1 Part B: EFA results on items in the community stressors scale 275
2.2.2 Part B: CFA results on items in the community stressors scale 282
2.3 PART C: EFA and CFA on Items in the Psychosocial Distresses Scale 300
2.3.1 Part C: EFA results on items in the psychosocial distresses scale 300
2.3.2 PART C: CFA results on items in the psychosocial distress scale 309
2.4 Part D: EFA and CFA on Items in the Coping Methods Scale 321
2.4.1 Part D: EFA results on items in the coping methods scale 321
2.4.2 Part D: CFA results of on items in the coping methods scale 335
2.5 Part E: EFA and CFA Results on Items in the Sexual Risk Behaviour Scale 354
2.5.1 Part E: EFA results on items in the sexual risk behaviour scale 354
2.5.2 Part E: CFA results on items in the sexual risk behaviour scale 363
APPENDIX 3: GLM TEST RESULTS AND VARIABLES SELECTED FROM EACH MODEL FOR PATH ANALYSIS 369
APPENDIX 4: DATA OF PATHWAYS FOR PREDICTORS OF SEXUAL RISK BEHAVIOUR AMONG ADOLESCENTS 385
4.1 SEM Path Results for Predictors of Sexual Risks among all 1,437 Adolescents 385
4.2 SEM Path Results of the Predictors for Sexual Risks among HIV-infected Adolescents 388
4.3 SEM Path Results for Predictors of Sexual Risks among HIV-uninfected Adolescents 391
4.4 SEM Path Results for Predictors of Sexual Risks among HIV-unaware Adolescents 394

© University of Pretoria

LIST OF TABLES AND FIGURES

Research Theoretical Models and Sampling Frame

Figure 1: The social-personal model for HIV risk behaviour 34

Figure 2: The conceptual framework of this study 37

Table 1. Quasi-sampling frame for the adolescent sample of this study 40

Figure 3: Map of Uganda Showing the HIV Sub-Regions, Districts and Sub-Counties Selected for this Study 42

Results of the Factor Analyses on the Scales and Sample Data for this Study

Table 2. Covariances of the EFA polychoric correlation matrix for items in the peer influence and socioeconomic status scale 63

Table 3. CFA inter-factor and factor-to-construct correlations of the peer influence and socioeconomic status scale 66

Table 4. EFA correlation matrix of 33 items in the community stressors scale before and after the smoothing procedure 68

Table 5. CFA inter-factor and factor-to-construct correlations of the 28-items in the community stressors scale 75

Table 6. CFA inter-factor and factor-to-construct correlations of 74 items and 14 factors in the psychosocial distresses scale 80

Table 7. Standardised covariances of the EFA polychoric correlation matrix for 42 items in the coping methods scale 83

Table 8. CFA inter-factor and factor-to-construct correlations of the final coping methods scale 93

Table 9. Standardised covariance of the EFA polychoric correlation matrix for 14 items in the sexual risk behaviour scale 94

Table 10. CFA inter-factor and factor-to-construct correlations of the 12-item sexual risk behaviour scale 101

Table 11. Summary of the CFA item loadings on the observed variables or factors for each construct in this study 103

Table 12. CFA goodness of fit statistics for the five psychometric measurement models of the study 109

Table 13. Psychometric properties of the adopted and final scales for this study 110

Extent of Psychosocial and Sexual Risks among Adolescents

Table 14. Personal attributes of the adolescents, segregated by HIV status 116

Table 15. Familial and environmental attributes of the adolescents, segregated by HIV status 120

Table 16. Adolescents' mean levels of peer influence, socioeconomic status, stressors, distresses, coping and sexual risks 124

Psychosocial Predictors of Sexual Risk Behaviour among Adolescents

Table 17. Effects of socio-demographic attributes on sexual risk behaviour of all 1,437adolescents in the sample 129

Table 18. Effects of peer influence and socioeconomic status on sexual risk behaviour of all 1,437 adolescents in the sample 131

Table 19. Effects of community stressors and sexual risk behaviour of all 1,437 adolescents in the sample 131

Table 20. Effects of psychosocial distresses on sexual risk behaviour of all 1,437 adolescents in the sample 132

Table 21. Effects of coping methods on sexual risk behaviour of all 1,437 adolescents in the sample 133

Coping-mediated Psychosocial Predictors of Sexual Risk Behaviour among Adolescents

Table 23. Effects of coping in the relations between socio-demographics and sexual risk behaviour of all 1,437 adolescents 137

Table 24. Effects of coping in the relations among peer influence, socioeconomic status and sexual risks of all 1,437 adolescents 138

Table 25. Effects of coping in the relations between community stressors and sexual risk behaviour of all 1,437 adolescents 140

Table 26. Effects of coping in the relations between psychosocial distresses and sexual risk behaviour of all 1,437 adolescents 141

Table 27. Effects of coping in the relations among peer influence, socioeconomic status, stressors, distress, and sexual risks 143

Table 28. Effects of coping in links among demographics, peer influence, socioeconomic status, stressors, distress, sexual risks 145

© University of Pretoria

Other Mediators in Relationships between Psychosocial Factors and Sexual Risk Behaviour among Adolescents

Table 30. Effects of peer influence and socioeconomic status in links among socio-demographics and sexual risks of adolescents 151
Table 31. Effects of community stressors in links among socio-demographics and sexual risk behaviour of all 1,437 adolescents 153
Table 32. Effects of psychosocial distresses in links among socio-demographics and sexual risks of all 1,437 adolescents 155
Table 33. Effects of peer influence and socioeconomic status in the relations between community stressors and sexual risks 158
Table 34. Effects of peer influence and economic status in the relationships between psychosocial distresses and sexual risks 159
Table 35. Effects of psychosocial distress in the relations between community stressors and sexual risks of 1,437 adolescents 161

Socio-Demographic Moderators of Relationships between Other Psychosocial Variables and Sexual Risk Behaviour

Table 37. Effects of demographic factors in coping-mediated links among peer influence, socioeconomic status and sexual risk 165
Table 38. Effects of demographic factors in the coping-mediated relations between community stressors and sexual risks 167
Table 39. Effects of demographic factors in the coping-mediated relations between psychosocial distresses and sexual risks 170

Strengths, Directions and Pathways of the Psychosocial Predictors of Sexual Risk Behaviour in Adolescents

Table 42. Standardised coefficients of the SEM paths for predictors of sexual risk behaviour of each adolescent group 177
Figure 4: Pathways for psychosocial predictors of sexual risk behaviour among all 1,437 adolescents in the sample 183
Figure 5: Pathways for psychosocial predictors of sexual risk behaviour among 289 HIV-infected adolescents 187
Figure 6: Pathways for psychosocial predictors of sexual risk behaviour among 756 HIV-uninfected adolescents 191
Figure 7: Pathways for psychosocial predictors of sexual risk behaviour among 392 HIV-unaware adolescents 195

APPENDIX 3

Results of GLM Tests on Various Theorised Models and the Variables Chosen from each Model for Path Analysis

Table 22. Correlations between variables of each exogenous construct in the model and sexual risk behaviour of adolescents 368
Table 29. Coefficients of coping-mediated relations among variables in various mixes of exogenous constructs and sexual risks 372
Table 36. Coefficients of links among variables in other pairs of exogenous constructs and sexual risks minus control for coping 376
Table 40. Coefficients for effects of socio-demographic factors on coping-mediated relations between PISS, CS, PD and sexual risks 380
Table 41. Summary of variables in the structural model which were selected for path analysis 380

APPENDIX 4

SEM Data of the Pathways and Variances for Psychosocial Predictors of Sexual Risk Behaviour in Adolescents

Table 43. Standardised SEM data of pathways for psychosocial predictors of sexual risk behaviour among all 1,437 adolescents 384
Table 44. Standardised SEM path data of variances for psychosocial predictors of sexual risks among all 1,437 adolescents 386
Table 45. Standardised SEM data of pathways for psychosocial predictors of sexual risks among 289 HIV-infected adolescents 387
Table 46. Standardised SEM path data of variances for psychosocial predictors of sexual risks among HIV-infected adolescents 389
Table 47. Standardised SEM data of pathways for psychosocial predictors of sexual risks among 756 HIV-uninfected adolescents 390
Table 48. Standardised SEM path data of variances for psychosocial predictors of sexual risks among HIV uninfected adolescents 392
Table 49. Standardised SEM data of pathways for psychosocial predictors of sexual risk among 392 HIV-unaware adolescents 393
Table 50. Standardised SEM path data of variances for psychosocial predictors of sexual risks among HIV-unaware adolescents 395

© University of Pretoria

LIST OF ACRONYMS

ACS:	Adolescent Coping Scale
ACSBI-S:	Adolescent Clinical Sexual Behaviour Inventory
AGYW:	Adolescent Girls and Young Women
AIDS:	Acquired immunodeficiency syndrome
ALHIV:	Adolescents Living with HIV
AMOS:	Analysis of Moment Structures
ANOVA:	Analysis of Variance
ART:	Anti-Retroviral Treatment or Therapy
BSSS:	Berlin Social Support Scale
CBCL:	Child Behaviour Checklist
CCSS:	Combined Community Stressors Scale
CDI:	Children's Depression Inventory
CFA:	Confirmatory Factor Analysis
CFI:	Comparative Fit Index
CI:	Confidence Interval
CM:	Coping Methods
CMES-SRB:	Conceptual Model for Examining Stressors related to Sexual Risk Behaviour
CS:	Community Stressors
DWLS:	Diagonally Weighted Least Squares
EAP:	Expected a Posteriori
EFA:	Exploratory Factor Analysis
GLM:	General Linear Model
H:	Hypothesis
HIV:	Human immunodeficiency virus
HSS:	HIV Stigma Scale
ICPC:	International classification of primary care
IRB:	Institutional Review Board
KMO:	Kaiser-Meyer-Olkin
LQAS:	Lot Quality Assurance Sampling
LLC:	Limited Liability Company
MAXFACTA:	Organisation for Young People Living with HIV in Kenya
MOH:	Ministry of Health

© University of Pretoria

MOH-ACP:	Ministry of Health AIDS Control Programme
MOH-ACP:	Ministry of Health AIDS Control Programme
MOH-STD/ACP:	Ministry of Health Sexually Transmitted Diseases/AIDS Control Programme
MSA:	Measure of Sampling Adequacy
NA:	Not Available
NAFOPHANU:	National Forum of Networks for Persons Living with HIV/AIDS in Uganda
NARC:	National AIDS Research Committee
NCSS:	National Council for Social Studies
ORION:	Overall Reliability of fully-Informative prior Oblique N-EAP scores
OVC:	Orphans and other Vulnerable Children
PA:	Optimal Implementation of Parallel Analysis
PCDI:	Percentage of Covariance Destroyed in Each Variable
PD:	Psychosocial Distresses
PISS:	Peer Influence and Socioeconomic Status
PLHIV:	People Living with HIV/AIDS
PPS:	Peer Pressure Scale
RIP:	Rest in Peace
RMSEA:	Root Mean Square Error of Approximation
SAS:	Statistical Analysis System
SCS:	Self-Control Scale
SCT-HB:	Social Cognitive Theory of Health Behaviour
SD:	Socio-Demographic
SD:	Standard Deviation
SEM:	Structural Equation Modelling
SEM-D:	Socio-Ecological Model of Child Development
SH:	Sub-Hypothesis
SPM-HRB:	Social-Personal Model for HIV Risk Behaviour
SPSS:	Statistical Package of Social Sciences
SRMR:	Standardised Root Mean Square Residual
STAI-C:	State Trait Anxiety Index
STD:	Sexually Transmitted Diseases
TLI:	Tucker-Lewis Index
TSCT:	Transactional Stress and Coping Theory

© University of Pretoria

UAC:	Uganda AIDS Commission
UBOS:	Uganda Bureau of Statistics
UDHS:	Uganda Demographic and Health Survey
UGX:	Uganda Shillings
ULS:	Un-weighted Least Squares
UNAIDS:	Joint United Nations AIDS Programme
UNCST:	Uganda National Council for Science and Technology
UNICEF:	United Nations Children Fund
UPHIA:	Uganda Population-Based HIV Impact Assessment
USA:	United States of America
USD:	United States Dollars
UYP:	Uganda Young Positives
WHO:	World Health Organisation
WICC:	International Classification Committee
WONCA:	World Health Organization's/World Organization of Family Doctors'
YSR:	Youth Self Report

© University of Pretoria

CHAPTER ONE: INTRODUCTION

This chapter provides an overview of the adolescent HIV situation, justification and statement of the research problem, key research questions, aims and objectives, operational definitions of the key terms, and the research process of this study.

1.1 Overview of the Adolescent HIV Situation

The number of people living with HIV/AIDS (PLHIV) in the world is rising mainly due to the incessant new infections and decrease in deaths associated with better access to antiretroviral treatment (ART) and HIV care (Mofenson & Cotton, 2013; UNAIDS, 2022b; World Bank, 2023). By the end of 2021, the number of PLHIV were estimated around 38.4 million worldwide of whom 20.6 million (54%) lived in Eastern and Southern Africa (UNAIDS, 2022a, 2022b). In Uganda, the annual new HIV infections rose from 100,000 in 2000 to 162,294 in 2012 (UAC, 2015). Thereafter, new infections decreased to 83,500 in 2015 and 43,000 in 2018 (UAC, 2018; UNAIDS, 2018). Then again it rose to 53,000 in 2019 and 54,000 in 2021. The majority of the new infections resulted from sexual transmission and especially adolescent girls and young women (AGYW) constituting many of these cases (UAC, 2020, 2022; UNAIDS, 2022b; UPHIA, 2022). This led to a rise in the estimated number of PLHIV from approximately 850,000 in 2000 to 1.5 million in 2015 and 1.4 million in 2021 (UAC, 2022; UNAIDS, 2022b).

Although adults constituted most of these cases, the proportion of children living with HIV who were in ages 0 to 14 years grew from 5% of the 850,000 AIDS cases in 2000 (MOH-STD/ACP, 2010) to 6.3% of 1.4 million cases in 2020 (UAC, 2022; UNAIDS, 2022b). The rise in children living with HIV can be ascribed to longer survival linked to better paediatric HIV care (MOH-ACP, 2014a, 2014b; UNAIDS, 2016, 2022b; UAC, 2022) and the continued vertical HIV transmissions after breastfeeding which is about 7% (UNAIDS, 2022b; UNICEF, 2022). This pattern of infections in turn contributed to a rise in the rate of HIV among adolescents aged 15 to 19 years from 1.5% in 2004 (MOH & ORC Macro, 2006) to 2.5% in 2010 (MOH & ICF, 2011), 3% in 2016 (UNICEF, 2017) and close to 2% in 2021 (UPHIA, 2022).

The decrease in adolescents living with HIV is ascribed to the protracted implementation of HIV prevention interventions especially for AGYW and increased access to HIV care which resulted in lower HIV infections and transmissions (Mwine et al., 2022). Meanwhile, the incessant adult AIDS deaths led to an accumulated rise in AIDS orphans from 223,811 to 1 million between 1990 and 2014 (UAC, 2015; UNICEF 2015) and afterwards fell to 790,000 in 2021, probably due to the longer lifespan of surviving parents, also linked to better access to ART and HIV care (UNAIDS, 2022b; World Bank, 2023).

© University of Pretoria

Due to continued new HIV infections in the adolescent population, adulthood deaths and the longer survival of children living with HIV, the number of adolescents living with and affected by HIV is rising globally (UNAIDS, 2016, 2018, 2022b). This has led to increased research into the extent of psychosocial and sexual risks and the factors that contribute to the new HIV-infections among adolescents (Louthrenoo et al., 2018; Lowenthal et al., 2014; Mellins & Malee, 2013). The findings of this research indicate that these adolescents experience recurring illnesses, deteriorating health, ongoing burden of caring for their sick parents, and the psychosocial challenges which emerge in the home after the death of parents such as poor care, dropping out of school, stigma and discrimination and lifetime traumatic disorders (Better Care Network, 2024).

1.2 Justification of the Study

An in-depth examination of existing literature about the psychosocial and sexual health of the adolescents living with and affected by HIV, which is discussed in chapter two, shows that most of the studies were conducted in the developed countries such as United States of America (Mellins & Malee, 2013; Pellowski et al., 2013) and developing countries such as South Africa (Kalichman, 2023; Toska et al., 2022). The findings of these studies are mixed as some showed higher risk rates for adolescents living with HIV, than those affected by HIV (Bomba et al., 2010; Chernoff et al., 2009; Elkington et al., 2011a; Mellins et al., 2012), some showed similar rates for both groups (Gadow et al., 2012a; Mutumba et al., 2016), and others showed lower risk rates for adolescents living with HIV than those affected (Malee et al., 2011a, 2011b; Mellins, 2011) and when compared with risk rates for adolescents in general (UNCEF, 2017). These studies mainly assessed the extent of psychological and sexual risks and the demographic causal factors (Mellins & Malee, 2013) in a section or mixture or overlaps of children, adolescents and youths in health care settings (Gadow et al., 2012b; Kalungwana et al., 2022; Malee et al., 2011a, 2011b; Mutumba et al., 2016; Toska et al., 2022; Visser et al., 2018) and provided little insight into the extent of, and the relationships between psychosocial and sexual risks for adolescents living with and affected by HIV who live in HIV-affected homes.

Research conducted in Uganda indicate that much attention was given to either adolescents aged from 12 to 19 years who were living with HIV and were attending HIV care (Ashaba et al., 2019; Bakeera-Kitaka et al., 2019; Birungi et al., 2008; Kihumuro et al., 2021; Kimera et al., 2020; MacCarthy et al., 2018; Musisi & Kinyanda, 2009; Mutumba, 2014; Mutumba et al., 2015; Sunday et al., 2019) and to orphans and or non-orphans aged between 11 and 15 years of age who were exposed to HIV (Atwine et al., 2005) or whose HIV status was not specified (Musisi et al., 2007). This research did not include adolescents living with and affected by HIV who lived in HIV-affected homes, but were not receiving HIV/psychosocial care, even though they constituted a major part of the adolescents who were exposed to HIV (MOH-ACP, 2014a, 2014b; UAC, 2020; UNAIDS, 2015, 2022a, 2022b; WHO, 2014) and could have been exposed to different psychosocial and sexual experiences (Lowenthal et al.,

© University of Pretoria

2014). Hence, little empirical evidence exists regarding the extent of, and links between the psychosocial and sexual risks in this adolescent population.

Previous studies of different forms of psychosocial distress experienced by adolescents living with, and affected by HIV assessed mainly symptoms of clinical relevance, such as depression, anxiety, hyperactivity (restlessness and impulsiveness and inattentiveness), bipolar disorder (extreme mood swings), anhedonia (inability to feel pleasure), somatisation, suicide ideation and aggression (Ashaba et al., 2019; Atwine et al., 2005; Musisi & Kinyanda, 2009; Mutumba, 2014). These studies did not examine the other prevailing forms of emotional and social transgression problems and how they are related to the various sociodemographic attributes, community stressors and coping methods in this adolescent population.

Furthermore, nearly all research about sexual behaviour of adolescents living with (Bakeera-Kitaka et al., 2019; Birungi et al., 2008, Musisi & Kinyanda, 2009; Sunday et al., 2019; UYP, 2014) and affected by HIV (Atwine et al., 2005), or those whose HIV-status was not specified (UBOS & ICF, 2018; UNICEF, 2017; UPHIA, 2022; Whitton et al., 2022), assessed the extent of, and relationships among a few usual demographic attributes and distinctly risky sexual practices. This research provided little insight into the relationships between the various psychosocial circumstances (including coping strategies) and sexual risk behaviour of adolescents living with and affected by HIV who live in HIV-affected homes.

Lastly, nearly all relevant research conducted in Uganda examined independent relationships between sociodemographic attributes, psychological distresses and healthcare outcomes for either adolescents in general (UNICEF, 2017) or those living with HIV who were attending HIV care (Bakeera-Kitaka et al., 2019; Mutumba, 2014). These studies did not examine the interactive relationships between the psychosocial and sexual experiences of the adolescents living with and affected by HIV who live in HIV-affected homes. Currently, there is no empirical evidence on the pathways, strengths and directions by which the different psychosocial factors interact to influence sexual risk behaviour in this group of adolescents. Researching these knowledge gaps would help to identify and address the important personal, familial, societal, mental, sexual and coping risks experienced by adolescents who live in homes that are affected by HIV.

1.3 Statement of the Research Problem

Despite the growing research into adolescent health (Louthrenoo et al., 2018; Lowenthal et al., 2014; Mellins & Malee, 2013; UNICEF, 2017), there is little empirical evidence about the psychosocial and sexual experiences of the adolescents who live in homes that are affected by HIV/AIDS in Uganda (MOH-ACP, 2014a; UNAIDS, 2015, 2016, 2018, 2022a, 2022b; UNICEF, 2022).

© University of Pretoria

Nearly all research about sexual behaviour of adolescents living with HIV (Bakeera-Kitaka et al., 2019; Birungi et al., 2008, Musisi & Kinyanda, 2009; Sunday et al., 2019; UYP, 2014) and affected by HIV (Atwine et al., 2005), or those whose HIV-status was not specified (UBOS & ICF, 2018; UNICEF, 2017; UPHIA, 2022; Whitton et al., 2022), assessed the extent of, and independent relationships among only a few usual demographic attributes and distinctly risky sexual practices.

This research provides little insight into the interactive relationships among the various psychosocial circumstances and sexual risks of adolescents living with and affected by HIV who live in HIV-affected homes, and the directions and pathways by which the psychosocial factors influence their sexual risk behaviour.

1.4 Key Research Questions

The statement of the research problem begets five questions which will be examined, namely: 1) What is the extent of psychosocial and sexual risks in the adolescents living with and affected by HIV who live in HIV-affected homes of Uganda? 2) How do these groups compare on the observed variables? 3) What are the psychosocial circumstances that predict or influence the sexual risk behaviour of the adolescents who live in HIV-affected homes? 4) What socio-demographic attributes moderate the relationships between other observed psychosocial circumstances and sexual risk behaviour of these adolescents? 5) In what strengths, directions and pathways do the observed psychosocial variables interrelate to influence sexual risk behaviour of the three adolescent groups who live in HIV-affected homes?

1.5 Aim and Specific Objectives of the Study

This study aimed to explore the psychosocial situations and predictors of sexual risk behaviour among adolescents living with and affected by HIV who live in HIV-affected homes in Uganda to expound theory in this area and provide evidence to inform development of suitable policy interventions.

The specific objectives were to:

1) Assess and compare the extent of socio-demographic attributes, community stressors, psychosocial distresses, coping, and sexual risk behaviour in the adolescents living with and affected by HIV who live in HIV-affected homes that are located in three HIV-burdened districts of Uganda.
2) Examine the coping-mediated psychosocial factors that predict or influence sexual risk behaviour of the adolescents who live in HIV-affected homes.

© University of Pretoria

3) Evaluate the socio-demographic attributes that moderate the coping-mediated associations between peer influence, socioeconomic status, community stressors, psychosocial distresses and sexual risk behaviour of the adolescents who live in HIV-affected homes.

4) Establish the strengths, directions and pathways by which the observed psychosocial factors influence sexual risk behaviour of the adolescents living with and affected by HIV who live in HIV-affected homes.

1.6 Operational Definition of Study Terms

Psychosocial situations or factors include socio-demographic attributes, community stressors, psychosocial distresses, and coping strategies which were defined as follows:

Sociodemographic attributes are personal, familial and environmental factors such as age, gender, religion, ethnicity, level of education, occupation, HIV status, parental death, number and health status of home residents, home stability, number and type of caregiver lived with, HIV status of the usual caregiver, parent to child HIV/sexuality talks, access to HIV/psychosocial care, schooling status, peer influence and socioeconomic status (Cluver et al., 2007, 2013).

Peer influence occurs when people do things because others have urged to do so or can be a feeling of being urged by others to do certain things (Brown et al., 1986; Santor et al., 2000).

Socioeconomic status is the individual's living standard based on type of house slept in, land ownership, meals afforded each day and belongings possessed such as clothing, beddings, soap, furniture and a radio, telephone, television, and bicycle (Wani, 2019).

Community stressors are adversities in life that create distress, for example HIV-related stigma (Sengupta et al., 2010, 2011; Visser et al., 2008), poverty reflected by absence of basic needs, personal threats and interpersonal problems (Avalos et al., 2010; Kalichman et al., 2005, 2006; WONCA, 2015).

Psychosocial distresses are the maladaptive emotional or internalising experiences such as anger, inattentiveness, anxiety, depression, loneliness, sleep unrest, psychosis, somatisation, suicide ideation, and behavioural or externalising experiences such as disobedience, disruptiveness, destructiveness, aggressiveness and delinquency (Achenbach & Rescorla, 2001; Cohen et al., 2007; WONCA, 2015).

Coping methods are social personal ways of dealing with stressful events and their effects, for example self-control (Mirowsky & Ross, 2017), seeking social support (Schwarzer & Schulz, 2013), socialising by linking with peers or participating in social events like prayer meetings (Pearlin, 1989), and deflecting issues by working hard, exercising, talking, keeping to self, blaming, ignoring, avoiding, denying, joking, lying and assuming the worst may have occurred (Compas et al., 2001, 2012; Frydenberg & Lewis, 1993; WHO, 2014).

© University of Pretoria

Sexual risk behaviours include (1) risky sexual situations such as dating, tolerating sexual advances, having sexually active peers, showing or staring or peeping at sexy parts; and (2) risky sexual acts such as engaging in sex forcefully (Igulot, 2022) or for material and financial gain or with many and older partners or without protection (Friedrich et al., 2004).

Adolescents living with HIV are people in the age range 10 to 19 years who acquired the virus that causes AIDS. This adolescent group may have acquired HIV from their mother during birth, through their own risky behaviour or in other ways (UNAIDS, 2013).

Adolescents affected by HIV are people in the age range 10 to 19 years who are not living with HIV or are unaware of their HIV status and are living in a home with someone who has AIDS or where someone has died of AIDS-related illnesses.

HIV-affected homes are households that have someone who has AIDS or where someone has died of AIDS (WHO, 2014).

1.7 Overview of the Research Process

In this cross-sectional study, a positivist research paradigm and a structured questionnaire that consisted of scales for assessing psychosocial and sexual experiences, were utilised to collect data from adolescents living with and affected by HIV who live in HIV-affected homes which were registered in the HIV-burdened villages across three districts of Uganda. These adolescents were purposively selected from each randomly selected HIV-affected home basing on being present in the home at the time of data collection and ability to read and write or listen and respond to questions in English or local languages. Data was collected by district-based research assistants who were trained in the research processes before they were deployed in each selected HIV-affected home to administer the questionnaire to all adolescents who were available and allowed to participate.

The factor structures of the scales in the questionnaire and fitness of the data for structural equation modelling (SEM) were examined using factor analysis, whereas the internal consistency reliability of the scales was examined using Cronbach's reliability test. The levels of observed psychosocial and sexual risks in the adolescents living with and affected by HIV were computed and compared using univariate, variance and Kruskal-Wallis's equality-of-population rank tests. The strength-of-effect of HIV status on the sexual risk behaviour of adolescents was examined using Cohen's *d* test. The psychosocial predictors of sexual risk behaviour in the entire sample of adolescents were analysed using general linear model (GLM) tests, whereas the strengths, directions and pathways by which the observed psychosocial variables influenced the sexual risk behaviour of each adolescent group were examined using SEM path tests.

© University of Pretoria

1.8 Overview of the Chapters in the Thesis

Chapter one has described the motivation, questions, aims, terms and process of this research. Chapter two discusses the relevant literature and theoretical underpinning of the research. Chapter three explains the paradigm, design, participants and sample computations, sampling strategy, data collection methods and instruments, data analysis and management strategies, and ethics and data quality assurance techniques that were utilised in this research. Chapter four explicates the process and outcomes of verifying the precision and reliability of the revised scales in assessing the theorised factors and the adequacy of the sample data for structural equation modelling in this research. Chapter five presents the hypotheses and findings of the statistical tests for each hypothesis. Chapter six discusses the findings of each objective. Chapter seven provides the conclusion, value, limitations, strengths and implications of the research.

1.9 Conclusion

This chapter has briefly introduced the motivation, aims, terms, processes and overview of this research. The next chapter discusses the literature related to the psychosocial and sexual health of the adolescents living with and affected by HIV, and the theoretical basis of this research.

© University of Pretoria

CHAPTER TWO: LITERATURE REVIEW

This chapter provides a brief review of relevant literature on the extent of psychosocial and sexual risks and on the relationships between them amongst adolescents living with and affected by HIV. The chapter also explains the theoretical point of departure and conceptual framework for this study.

2.1 Psychosocial and Sexual Risk Levels in Adolescents Living with and Affected by HIV

This section begins with defining adolescence and then reviews the accessible relevant studies for differences in types and levels of socio-demographic factors, community stressors, psychosocial distresses, coping and sexual risk behaviours among adolescents living with and affected by HIV to highlight gaps in knowledge that are worthwhile investigating in this study.

2.1.1 Adolescence

Adolescence is a human developmental stage when a person transitions from childhood (age range 0 to 9 years) to young adulthood during the age range 10 to 19 years (WHO, 2016, 2023). During this period, young people undergo changes in their physiological, biological, cognitive, emotional and social attributes such as growth in bodily size, identity, curiosity and the desires for autonomy, intimacy, affection, and adventure (WHO, 2023). In the process, they become aware of their sexuality and begin experimenting with activities which elevate their vulnerability to sexually transmitted infections and unplanned pregnancies such as dating, using intoxicating substances, initiating sex early without protection, and having sexual intercourse with many and or older sexual partners without protection (Kotchick et al., 2001).

2.1.2 Socio-demographic attributes

In this section, we review relevant studies for differences and levels in socio-demographic characteristics of adolescents living with and affected by HIV to highlight the gaps in knowledge about their background characteristics, so that they can be examined in this study. A review of four relevant studies conducted in Uganda and South Africa (Cluver et al., 2013; Mutumba, 2014; Toska et al., 2022; UNICEF, 2017) showed that these studies involved sections and or overlaps of adolescents in terms of age, HIV status and care. A study of psychological distress and adherence to ART among 464 adolescents living with HIV focused on those who were aged 12 to 19 years and attending HIV care at a clinical research centre in Uganda. In this study, 53% were female, 51% were aged 12 to 15 years, 49% were aged 16 to 19 years, and 70% were attending school, while 5% had no education, 38% had primary education, 50% had secondary education, and 7% had tertiary education.

© University of Pretoria

Religiously, 37% were Catholic, 26% were Anglican, 17% were Muslim, 13% were SDA/orthodox, and 7% were Pentecostal. Regarding parental survival, 33% had both parents alive, 26% had only a mother alive, 20% had only a father alive, and 22% had lost both parents. Concerning the type of caregiver, 58% lived with biological parents, 18% with the aunt or uncle, 12% with grandparents, and 13% with foster parents (Mutumba, 2014).

A study of secondary HIV transmission risks among 979 young people focused on those aged 10 to 21 years who were enrolled for antiretroviral care in Eastern Cape Province of South Africa. In this study, 16% were double orphaned, 51% reported good caregiving, 41% cited good caregiver monitoring, 27% had good communication with the caregiver, 23% cited household food insecurity, and 22% reported school absenteeism for more than a week (Toska et al., 2022). A community-based survey of the psychological, educational and sexual risks among 5,998 AIDS-affected adolescents focused on orphans of unspecified HIV status who were aged 11 to17 years. These orphans were randomly selected from six HIV-burdened health sub-districts across three provinces in South Africa. In this study, 56% were female, 2% had not been to school, 18% could not afford school fees, 14% were orphaned, 26% had caregivers who had an AIDS-related illness, 23% had poor housing, 20% had food shortage in the home, 10% reported frequent hunger, and 35% said the head of the household had a job. In addition, these adolescents on average lived in one home over time and with one sick adult at home (Cluver et al., 2013).

However, a study of health risk behaviours among 4,715 adolescents focused on those aged 10 to 19 years with unspecified HIV status, who were randomly selected from all the regions of Uganda. In this study, 54% were female, 53.4% were aged 10 to 14 years and 46.6% were aged 18 to 19 years, 39% were Catholic, 32% Anglican, 13% Muslim, 15% Pentecostal/Adventist/Orthodox, and 1% Atheist. Additionally, 82% were attending school, 48% ever repeated a class, 83% had both parents alive while 11.4% had only the mother alive, 3% had only the father alive, and 2.4% had lost both parents. This study also found that 40% of the adolescents engaged in casual work in the past 12 months, 65% lived with both parents, 17% lived with a single parent, 11% lived with guardians, 2% lived alone, 6% lived with friends or siblings, 83% shared a bedroom with siblings, 5% shared a bedroom with parents, 13% shared bedroom with other relatives, and 63% had a sick person at home in past 39 days, 22% lived in house built with wooded plunks and grass thatched roof (UNICEF, 2017).

This brief review shows that the main socio-demographic factors focused on in these studies were age, sex, religion, education level, school enrolment, parental survival, home setting, type of caregivers and housing, parental communication and supervision, access to food and HIV care, and the quality of HIV care received. Other socio-demographic factors such as ethnicity, the age and span of orphanhood, number of sick persons in the home, and caregivers' HIV status, alcohol use and stability were not examined yet they could affect sexual risks of adolescents. This review highlights gaps in understanding the extent and effects of these factors on the psychosocial and sexual health of adolescents living with and affected by HIV who live in HIV-affected homes.

© University of Pretoria

2.1.3 Peer influence levels

In this section, studies into the extent of peer influence among adolescents living with and affected by HIV are reviewed to find gaps in knowledge so that they are examined. For this study, peer influence is separated from socio-demographic factors and community stressors because studies show that it is one of the crucial factors affecting adolescents' psychosocial and sexual health and school performance (Adimora et al., 2018; Alex-Hart, 2015; Amoateng et al., 2014; Awotidebe, et al., 2014; Envuladu et al., 2017; Kato & Omona, 2021; Kihumuro et al., 2021; Kimera et al., 2020; Ngidi, et al., 2016; Peci, 2017; Sneed et al., 2015).

Parental and peer norms are vital to the behavioural development of adolescents in that they influence their capacity to acquire social values, to develop social identify and controls, and to relate with others. The manner and impact of these influences change as the child grows (Peçi, 2017). As children evolve from childhood to adolescence, they develop a feeling of relating with peers more than their parents or other family members and thus face a dilemma of choosing whose advice to adopt when resolving emerging psychosocial and sexual challenges (Mahmood & Shujja, 2013; Santor et al., 2000). Peers influence the socialisation processes and identity of peers by allowing exploration of personal interests and uncertainties (Steinberg & Silverberg, 1987), which can contribute to delinquency, dating attitudes and sexual risk behaviour (Keenan et al., 1995).

Negative peer influence is common in situations where parents and or family members do not provide consistent and effective socialisation and discipline to children. Negative peer influence can result in limited development of social and academic skills, emergence of antisocial attitudes, rejection by other peers, and high interactions with children of similar anti-social behaviours (Hartup, 2005; Putallaz & Dunn, 1990) which create more opportunities for acquiring, practicing and sharpening antisocial behaviour (Snyder et al., 1986).

Based on reviews, there is paucity of research into peer influence in relation to sexual risk behaviour of the adolescents living with and affected by HIV in Uganda. However, recent studies on these topics among adolescents of unknown HIV status attending and not attending school showed that those who had high positive peer influence were significantly less likely to engage in disruptive and risky sexual behaviours, while those who exhibited intense negative peer influence were more likely to engage in disruptive and risky sexual behaviours (Adimora et al., 2018; Envuladu et al., 2017; Kato & Omona, 2021; Ngidi et al., 2016; Sneed et al., 2015).

Other research showed that negative peer influence and sexual risk behaviours are rife among the adolescents who were living with HIV and uninfected but exposed to HIV/AIDS (Bauermeister et al., 2009; DiClemente et al., 2008) and those who were not aware of their HIV status (Adimora et al., 2018; Alex-Hart, 2015; Amoateng et al., 2014; Awotidebe et al., 2014; Envuladu et al., 2017; Kato & Omona, 2021; Ngidi et al., 2016; Peci, 2017; Sneed et al., 2015). These experiences were ascribed to the inadequate and ineffective child socialisation practices in families and schools (Mahmood & Shujja, 2013; Santor et al., 2000), the desire to please

© University of Pretoria

or be like or gain acceptance from friends (Alex-Hart, 2015; Kato & Omona, 2021; Ngidi et al., 2016), and the wish to show maturity to peers (Envuladu et al., 2017).

A study of sexual behaviour and perceived peer norms among youth who were HIV infected and uninfected but exposed to HIV, found that the young people who reported that many of their peers believed that sexually active boys or girls are “cool” or “popular”, were more likely to report sexual behaviour. This reporting was more among the youth who were HIV uninfected and exposed than those who were living with HIV. Further analysis showed that friends’ sexual activity was associated with sexual intercourse among these groups (Bauermeister et al., 2009). Another study of psychosocial predictors of HIV-risk sexual behaviours also showed that adolescents who are influenced by peers were more prone to HIV risk (DiClemente et al., 2008).

Similarly, a study of mid to high school adolescents of unknown HIV status aged 11 to 21 years in North Western Province of South Africa found that those with strong ties to peers were significantly more likely to have sexual intercourse recently or with multiple partners than their counterparts with weaker ties to peers (Amoateng et al., 2014). Several qualitative studies into the psychosocial factors affecting school attendance and or adherence to ART among young people living with HIV who were aged 10 to 24 years and attending various care centres in Uganda also showed that negative peer influence is rife in this population and it positively and negatively affected their schooling engagements (Kihumuro et al., 2021; Kimera et al., 2020) and adherence to ART (Kihumuro et al., 2021; MacCarthy et al., 2018).

However, these studies focused either on segments of adolescents living with HIV or mixtures of adolescents and youth who were attending HIV care. They do not therefore provide sufficient evidence about the extent of peer influence among the adolescents living with and affected by HIV who live in homes affected by AIDS. This study sought to address this gap in research.

2.1.4 Community stressors’ levels

In this section, research into the kinds and levels of community stressors among adolescents living with and affected by HIV are reviewed, to understand the gaps in knowledge so that they can be examined in this study. Research into the psychosocial and sexual risks among adolescents living with and affected by HIV show that many of them experience poverty reflected by absence of basic needs (such as food, water, shelter, education and health care) and personal threats (such as recurrent sicknesses, inability to work, worry of own or a dear ones’ ill health and likely death, injury, personal or parental unemployment, substance use, and uncertainty of the future). They also experience interpersonal problems (such as instability of caregivers and homes, domestic and neighbourhood feuds or neglect or contempt or violence or assaults, poor relationships with peers at school, negative peer influence, or unplanned pregnancies), and HIV-related stigma (Ashaba et al., 2019; Avalos et al., 2010; Cluver et al., 2007; Elliott-DeSorbo et al., 2009; Fielden et al., 2006; Kalichman et al.,

© University of Pretoria

2006; Kihumuro et al., 2021; Kimera et al., 2020; Musisi et al., 2007; Mutumba, 2014; Mutumba et al., 2016; NAFOPHANU, 2013, 2017, 2019; Nestadt et al., 2013; Petersen et al., 2010; Ramaiya et al., 2016; Toska et al., 2022; Ward et al., 2008).

Studies conducted among adolescents who were living with HIV and not living with but exposed to HIV across the USA found that both groups reported high levels of poverty, worries about personal and caregivers' ill-health, family conflicts and breakups, neighbourhood insecurity, and HIV-related stigma (Kang et al., 2011; Mellins & Malee, 2013; Mutumba et al., 2016). A study involving 55 adolescents living with HIV aged from 8 to 17 years in various medical research facilities found that 44% had school-related problems (Elliott-DeSorbo et al., 2009).

A more recent study of 979 young people aged 10 to 21 years enrolled for ART in Eastern Cape Province in South Africa found that they encountered high levels of poverty (80%) especially household food insecurity (23%), personal threats especially substance use (9%), interpersonal problems especially inequitable power relations (20%), unplanned child bearing (7%), parenting problems (7%) and internalized stigma (75%). In addition, 40% of the 139 participants in this study who were at high risk of secondary HIV transmission (i.e. had risky sex and viraemia[1] in the past year) reported food deficiency (Toska et al., 2022). This means that food insecurity could have contributed to the risk of secondary HIV transmission among adolescents living with HIV.

Similarly, a study among 464 adolescents living with HIV aged 12 to 19 years attending HIV care at a clinical research centre in Uganda found that this group had high levels of socioeconomic hardships such as unemployment and lack of money for food, care and housing (72%), personal threats such as assaults or death of dear ones or breakup of intimacy (18%) and ongoing worries linked to hunger or ill-health or receiving regular medications or poor performance at school (39%). Neighbourhood insecurity such as the poor nature and safety of the residence (17%), interpersonal problems such as family conflicts or pregnancy risks or relational concerns with family members and service providers (34%), and HIV stigma (36%) was reported (Mutumba, 2014).

In addition, a study into HIV-related stigma among 401 HIV youths and adults living with HIV who were aged from 18 years, attending ART and mainly living in townships of six districts in central Uganda found that they encountered considerable levels of internalised stigma. They especially experienced difficulty disclosing their HIV status (53%) and reported feelings of guilt (32%) or shame (26%) or worthlessness (22%) about having HIV. This group of people living with HIV also experienced considerable levels of enacted stigma especially discriminatory remarks from family members (19%), verbal (20%) and physical (10%) harassment from society, partner discrimination (3%), job denial (7%) or alterations (5%) or job loss (10%), refusal of entry into another country (7%), and exclusion from family chores (3%) or social activities (3%) or places of worship (2%) (NAFOPHANU, 2017). A recent national survey into HIV-related stigma among 1,398 PLHIV who were residing in

[1] This means detectable viral load or experiencing no treatment episodes.

© University of Pretoria

21 districts sampled from nine sub-regions of Uganda, showed increased levels of nearly all these indices in this population, except experience of derogatory remarks from family members, alterations in work and exclusion from places of worship (NAFOPHANU, 2019). Other studies into health risk experiences among 270 to 275 teens and adults living with HIV who were aged 15 to 30 years and attending HIV care in selected district sites found that 19% of those in Uganda (UYP, 2014) and 29% of those in Kenya (MAXFACTA, 2014) used intoxicating substances such as alcohol, marijuana, and cocaine in the past year.

Recent qualitative studies into the reasons for adherence to HIV medication among young people aged 10 to 24 years who were living with HIV and enrolled in various accredited clinics in central and western Uganda found that they experienced considerable internalized and enacted stigma or discrimination, as well as non-disclosure of their HIV and care status to significant others. They also experienced poverty reflected by absence of basic needs such as food insecurity due to loss of parents and personal threats due to stressors such as perceived aggression and worries related to incessant illnesses or medications or imminent death or unaffordable school fees. They also encountered relationship problems at home and school as well as frequent change of guardians due to limited care and support (Ashaba et al., 2019; Kihumuro et al., 2020; Kimera et al., 2020; MacCarthy et al., 2018; Mutumba et al., 2015).

However, these studies mainly focused on overlaps of adolescents with youth living with HIV who were attending HIV care. They do not thus provide sufficient understanding on the extent of stressors in the different groups of adolescents who live in HIV-affected homes. This research also sought to address this gap.

2.1.5 Psychosocial distress levels

In this section, research into the types and levels of psychosocial distresses (psychological or internalising and social transgression or externalising stress signs) among adolescents living with and affected by HIV are reviewed, to highlight the gaps in knowledge so that they can be examined in this study. Research shows that the adolescents living with and exposed to HIV face wide ranging psychosocial distresses such as anhedonia or inability to feel pleasure, depressive-anxiety, isolation, suicide ideation, sleep problems, seizures, somatic symptoms, aggression, disruption and delinquency (Asikhia & Mohangi, 2015; Atwine et al., 2005; Cluver et al., 2007; Elkington et al., 2011a; Gadow et al., 2012a, 2012b; Louthrenoo et al., 2013; Mellins et al., 2011; Mukolo & Wallston, 2012; Musisi & Kinyanda, 2009; Mutumba, 2014; Mutumba et al., 2016; Toska et al., 2022; Visser et al., 2018). However, the prevalence and pattern of the psychosocial distresses in these groups of adolescents are mixed across settings.

Research focusing on 73 children aged 8 to 17 years selected from a paediatric HIV research clinic in the USA found that the participants who were living with HIV (38), not living with but exposed to HIV (11) and those not living with HIV or aware of their status but unexposed to HIV (24) had similar levels of psychological

© University of Pretoria

distresses on the Behaviour Assessment System for Children (BASC)-2 (Foster et al., 2012). Similarly, another study conducted among 196 infected and 129 exposed but not infected adolescents aged 9 to 16 years who were selected from four New York City hospitals found that both groups had similar levels of depression on the children's depression inventory (CDI) and anxiety on the state trait anxiety index (STAI-C) (Kang et al., 2011; Mellins et al., 2009). This implies that these groups are affected similarly.

Furthermore, a study of 80 children and adolescents from ages three to 17 years attending cancer and HIV care in Maryland USA showed that more adolescents living with than those exposed to HIV experienced anxiety (32% vs. 26%) and depression (45% vs. 30%) respectively though they had comparable levels of suicidal ideation (13% vs. 15%) and psychiatric hospitalisations (8% vs. 5%) (Battles & Weiner, 2002).

However, another study of 196 HIV infected, 229 HIV exposed and 110 HIV uninfected adolescents aged 9 to 16 years in the USA found that although the three groups were within normal range for internalizing and externalising behaviour on the child behaviour checklist (CBCL), the adolescents living with HIV were two times more likely to be clinically depressed than adolescents who were exposed to or not living with HIV (Elkington et al., 2011a). The adolescents living with HIV were more likely to have attention deficit and hyperactivity (12%) and defiance (5%) disorders than the HIV exposed-uninfected and other adolescent groups (Gadow et al., 2012a, 2012b).

Another study into psychological distresses among a balanced sample of 54 children living with and not living with HIV who were aged 5 to 18 years in Italy found that children living with HIV had higher levels of withdrawal, anxiety, attention deficit, thought problems, social problems and delinquent behaviour on the CBCL than those not living with HIV (Bomba et al., 2010). Also, a study involving 284 HIV infected, 155 HIV exposed but not infected and 164 HIV uninfected children aged 1 to 12 years in Thailand and Cambodia found that the children living with HIV-had high levels of externalizing problems and were more likely to meet borderline clinical cut-off scores on the CBCL compared to the children who were affected and not affected by HIV (Puthanakit et al., 2013). This implies that the children who were affected and unaffected but not living with HIV face lower risk.

Similarly, a study involving 54 HIV-infected and 113 HIV-uninfected children aged 6 to 12 years in South Africa found that the children who were living with HIV faced higher somatic and affective problems and physiological anxiety, less attention deficit and hyperactivity disorders, and lower self-esteem than the children who were not living with HIV (Visser et al., 2018). Another study among 58 HIV-infected and 62 demographically-matched HIV-uninfected children aged 6 to 12 years in Zambia also found that whereas the children who were living with HIV had significantly higher executive functioning, life skills, coping skills, domestic care, and maladaptive internalizing and externalizing behaviours such as aggressiveness and defiance – they on the other hand exhibited insignificantly lower adaptive and community functioning, interpersonal relationships, play or

© University of Pretoria

leisure, and insignificantly higher socialization than the children who were not living with HIV-(Kalungwana et al., 2022).

Research among adolescents living with HIV further shows that they experience mixed levels of internalizing and externalizing problems. Whereas a study of 55 adolescents living with HIV aged 8 to 17 years at medical research facilities in the USA found that this population experienced depression and anxiety levels which are within normal limits (Elliott-DeSorbo et al., 2009), a study of 1,134 children and adolescents living with HIV aged 3 to 17 years in the USA found that 22% of them faced somatisation, 20% had impulsivity, 19% had hyperactivity, 22% had learning problems, and 14% had conduct problems (Malee et al., 2011b).

Another study of 197 young people aged 13 to 24 years attending care at 22 sites across the USA found that 25% had mood disorders, 15% had disruptive disorder, and 9% had substance abuse disorder (Kapetanovic et al., 2011). In addition, a study of 692 children living with HIV- aged 8 to 17 years at a city clinic in Botswana and South Africa found that 17.3% attained the cut-off level of emotional and behavioural problems (Lowenthal et al., 2012), while a more recent study of 979 young people aged 10 to 21 years enrolled for ART in Eastern Cape Province in South Africa found that 4% experienced suicidal tendencies (Toska et al., 2022).

However, studies in Uganda have showed higher and varying levels of these psychological distress symptoms among this population. A study of 464 adolescents living with HIV-aged from 12 to 19 years who were getting HIV care at a clinical research centre in Kampala district, found that they had high levels of anxiety, isolation, sleep problems, somatisation, anhedonia, and suicide ideation (Mutumba, 2014). Similarly, Musisi and Kinyanda (2009) in a study of 82 adolescents living with HIV aged from 10 to 18 years who were receiving HIV care from a centre in Wakiso district found that 51% had psychological distresses such as anxiety (46%), depression (41%), somatization (18%), attempted suicide (17%), seizures or attacks (8.4%), progressive encephalopathy associated with HIV (4.8%), and mania or obsession (1.2%). Recent qualitative studies on determinants of adherence to ART among young people living with HIV aged from 10 to 24 years who enrolled for ART in various clinics in central and western Uganda also found that they faced frustration due to daily medications (MacCarthy et al., 2018), thought problems, self-devaluation (Kimera et al., 2020), depression, and aggressiveness (Ashaba et al., 2019; Mutumba et al., 2015).

Furthermore, studies focusing on adolescents who were exposed and unexposed to HIV showed uneven prevalence of psychosocial distresses in these groups. A study of 425 AIDS orphans, 241 orphans whose parents died due to non-AIDS causes, 81 orphans whose parents died due to unknown causes, and 278 non-orphans aged 10 to 19 years chosen from Cape Town townships in South Africa found that the AIDS orphaned adolescents were more likely to report symptoms of depression, anxiety, peer relationship problems, post-traumatic stress, suicide ideation, delinquency and conduct problems than those orphaned by other causes and non-orphaned. They also showed higher levels of internalizing problems and delinquency and lower levels of conduct problems

© University of Pretoria

(Cluver et al., 2007). Similarly, Cluver et al. (2012) in another study of 1,021 AIDS orphans, other orphans and non-orphans aged 10 to 19 years in poor South African urban settlements found higher levels of depression, anxiety and post-traumatic stress disorder in AIDS orphans than in other orphans and non-orphans.

These results concur with those of another study carried out among 5,998 AIDS orphans and non-orphans aged 10 to 17 years across three provinces of South Africa which found that more AIDS orphans than non-orphans faced depression (1.7% versus 1.3%), anxiety (4.4% versus 3.5%), post-traumatic stress (15.5% versus 11.2%), and suicidal tendencies (8.1% versus 4.6%) (Cluver et al., 2013). The results also concur with a study of 110 AIDS orphaned and 123 non-orphaned children aged 11 to 15 years sampled across a rural sub-county in Bushenyi district of south-western Uganda which found that AIDS orphans had significantly higher levels of anxiety, depression and anger than non-orphans (Atwine et al., 2005). In another study involving 210 orphaned and 210 non-orphaned school children of unknown HIV status in Rakai district of Uganda, it was found that orphaned children had higher levels of emotional and behavioural problems such as unfair perception of life, past suicidal wishes, and poor social functioning than non-orphaned children (Musisi et al., 2007).

However, some research among adolescents who were living with and exposed to HIV but not living with HIV, showed contrasting results. A study of 238 perinatally HIV-infected and 111 HIV-exposed-uninfected adolescents aged 10 to 16 years in USA found that more adolescents who were exposed to but not living with HIV (33%) than those living with HIV (26%) had clinically significant behavioural and emotional problems which included hyperactivity, anxiety, depression, attention deficit, a typicality and withdrawal, social stress, aggression, sense of inadequacy, and low self-esteem and self-reliance (Mellins et al., 2011).

Another study of 319 perinatally HIV-infected and 174 HIV-exposed but uninfected adolescents and 82 other HIV-uninfected adolescents in affected families who were aged 6 to 17 years and selected from various research sites in the USA, found that more HIV-exposed-uninfected and other HIV-uninfected adolescents than those who were living with HIV had depression, somatization and conduct problems (Gadow et al., 2012a, 2012b). Similarly, a study of 295 HIV-infected and 121 HIV-exposed but uninfected mostly African-American adolescents aged 7 to 16 years in the USA found that more HIV-exposed-uninfected adolescents (38%) than the adolescents living with HIV (25%) had mental health problems (Malee et al., 2011a).

This review shows that the level of psychosocial distresses among adolescents living with and affected by HIV who were involved in the different studies was in some instances high or low or comparable. The mixed outcomes of existing studies indicate that there is inconclusive knowledge about the extent of psychosocial distresses among the adolescents living with and exposed to HIV, hence the need for further research in this area (Mellins & Malee, 2013). This is one of the issues that will be addressed in this research.

© University of Pretoria

2.1.6 Coping methods

In this section, studies into differences in the types and levels of coping with adversities among the adolescents living with and affected by HIV, are reviewed to understand the knowledge gaps so that they can be examined in this study.

Although coping is an intricate construct to conceptualise and examine (Lerner & Benson, 2003) due to lack of explicit theories which underpin its functioning (Compas et al., 2012), a body of related research shows that adolescents cope in various ways when they are faced with psychosocial adversities. The strategies used depend on the type or extent or complexity of the adversity and their developmental stage, sex, personality, ability, socialisation and existing psychosocial resources (Snethen et al., 2004; Spirito et al., 1995).

Skinner and Zimmer-Gembeck (2007) observed that coping begins during childhood and evolves with developmental stage and socialization processes. Three marked transition stages of coping strategies in adolescence were identified, namely, the late childhood to early adolescence stage which is from 10 – 12 years of age, the early adolescence to mid-adolescence stage which is from above 12 to 16 years of age, and the mid-adolescence to late adolescence stage which is from above 16 to 22 years of age.

Younger adolescents in the age range 10 to 12 years usually manage adversity using physical and emotional techniques such as direct action or venting or dodging or openly seeking assistance from caregivers and other family members. The middle-aged adolescents in the age range 12 to 16 years tend to manage hardships using behavioural and cognitive techniques such as distraction or dodging or assisted problem-solving from significant family members. The older adolescents in the age range 16 to 22 years) often cope with hardships using a mix of cognitive and behavioural strategies such as reasoning and regulating emotions independently by ignoring or keeping quiet or solving problems personally or seeking help from significant peers and adults of their choice (Skinner & Zimmer-Gembeck, 2007; Snethen et al., 2004).

Skinner and Zimmer-Gembeck (2007) further observed that parental and gender socialization processes including exposure to role models are instrumental in moulding constructive and unconstructive coping techniques to adversities among children and adolescents because they are the immediate social structures through which norms and behaviours are created, instilled and sustained. These observations concur with Vliem (2009)'s findings that younger adolescents use more varied coping strategies than older adolescents. They also concur with several earlier studies which found that whereas females usually react emotionally to adversities related to chronic illness or death of a dear one by recurrent sobbing and depression and seeking social support from friends, the males often react to similar stressors physically by either keeping quiet or drinking excessively or responding to problems directly (Aneshenshel, 1988; Bull & Drotar, 1991).

Within the context of the HIV and AIDS epidemic, few studies have examined the role of coping in psychosocial and sexual experiences among adolescents living with and or exposed to HIV infections. These

© University of Pretoria

studies show that adolescents with chronic illnesses such as AIDS utilise active tactics (such as confrontation or seeking social support) and passive tactics (such as withdrawal or depressive reactions) of coping with various stressors and psychological distresses (Meijer et al., 2002; Murphy et al., 2000). The adolescents also experienced a significantly lower family communication, affective involvement, behavioural control and participation in household chores than other adolescents without chronic illnesses (Louthrenoo et al., 2018).

Another study involving 464 adolescents aged 12 to 19 years who were living with HIV and attending HIV care at a clinical research centre in Kampala district found considerable levels of coping with stressful situations ($\bar{x}$ = 1.69, *SD* = .26) in this population. The specific types and extent of coping strategies they adopted included: seeking social support ($\bar{x}$ = 2.64, *SD* = .71), attending religious services either once and more times in a week (17.4%) or once to two times in a month (56%), and spirituality or believing in divine intervention ($\bar{x}$ = 1.63, *SD* = .28). They also showed considerable levels of satisfaction with social support (50%) and optimism about attaining education or wealth or marriage or procreation or treatment ($\bar{x}$ = 1.33, *SD* = .38) (Mutumba, 2014).

Similarly, qualitative studies among adolescents and youths aged 10 to 24 years who were living with HIV and attending various ART clinics in central and western Uganda, found that they engaged various strategies of coping with stressors related to HIV treatment. The commonly used strategies were adherence to medication, concealment or limited disclosure of HIV status, optimism about the treatment, seeking social support, rationalization, comparison with others, spirituality (regular prayers), religiosity (belief in divine intervention), problem avoidance and distraction (Mutumba et al., 2015). Others coped through disclosure of HIV status to significant others, seeking counselling or spiritual or socioeconomic support from family members and religious leaders (Ashaba et al., 2019; Kimera et al., 2020). They joined supportive groups in the school or community, generating dreams and ambitions, being hopeful of the future (Kimera et al., 2020). Kihumuro et al. (2021) found that some young people coped by lying to others about their HIV status, disguising their medicines, hiding from peers to take medications, not taking medication as prescribed, avoiding drug refills, and absconding from class or school to conceal their status from peers and others. Coping by avoidance and distraction was higher in male adolescents while no coping was higher in younger adolescents (Mutumba et al., 2015).

A further search of related literature did not find studies which explored coping with psychosexual risks either among adolescents living with HIV who do not access HIV care or among those who were HIV uninfected and unaware of their HIV status but live in homes that are affected by the HIV/AIDS epidemic. Hence, the extent of coping and its role in the psychosocial and sexual health of these adolescent groups is still unclear. This is one of the issues that will be addressed in this research.

© University of Pretoria

2.1.7 Sexual risk behaviour

In this section, we review some relevant studies for the types and levels of sexual risk behaviours among the adolescents living with and affected by HIV to highlight the knowledge gaps so that they are examined in this study. Dating and sexual activity are central to what it means to be human. Thus, adolescents, regardless of HIV serological status desire to date or have intimate friends (Bakeera-Kitaka et al., 2019) and to engage in sexual relationships (Fair & Albright, 2012; Leonard et al., 2010). This means that they may quicken sexual onset (Carter et al., 2013) and predispose them to the risk of HIV transmission (Avalos et al., 2010; Birungi et al., 2008; Cluver et al., 2013; Elkington et al., 2011b, 2012; Kalichman et al., 2006; Mellins et al., 2011; Musisi & Kinyanda, 2009; Toska et al., 2022; UNICEF, 2017).

Several studies among adolescents and youths living with HIV (Avalos et al., 2010; Bakeera-Kitaka et al., 2008, 2019; Birungi et al., 2008; Elkington et al., 2012; Musisi & Kinyanda, 2009; Oparerio et al., 2011; Sunday et al., 2018; Toska et al., 2022), children orphaned or affected by AIDS(Cluver et al., 2013) and adolescents as a whole (Magadi & Uchudi, 2015; UNICEF, 2017; Visser, 2017) show high levels of sexual risk behaviour such as lifetime sex, onset of sex prior 15 years of age, sexual intercourse without consent or condom use or disclosure of the HIV status, and sexual relations with many or older partners and in exchange for gifts.

A study in the USA that sampled 349 adolescents aged 10 to 16 years who were perinatally infected and exposed to HIV but were uninfected, showed that 17% of the adolescents who perinatally acquired HIV and 15% of those who were perinatally exposed had started sexual activity. Of these, 65% of the adolescents who were perinatally infected with HIV and 50% of those who were perinatally exposed to HIV had unprotected sexual intercourse (Mellins et al., 2011). Other studies in the USA found that the adolescents living with HIV were more likely to initiate sex at an earlier age (Bauermeister et al., 2012; Elkington et al., 2012) and have transactional and unprotected sex (Mellins et al., 2011; Sturdevant et al., 2001), than the adolescents not living with HIV. Other researchers again found that adolescents exposed to but not living with HIV were more likely to initiate sex at an earlier age (Leonard et al., 2010) and have many sexual partners and unprotected sex (Bauermeister et al., 2012; Koenig et al., 2011; Wilson & Donenberg, 2004) compared to the adolescents who were living with HIV.

Another study of 5,998 children exposed to HIV aged 10 to 17 years who were selected from three provinces of South Africa found that more AIDS orphans than non-orphans reported sexual onset prior 16 years of age (6.5% versus 5.7%), at least three sexual partners in the past year (4.4% versus 3.4%), at least half of the sexual acts without a condom in past year (8.5% versus 6.0%), transactional sex (2.7% versus 1.4%), and sexual partners who were at least five years older (2.3% versus 1.8%) (Cluver et al., 2013).

In a more recent study among 979 young people aged 10 to 21 years who enrolled for ART in the Eastern Cape Province in South Africa, Toska et al. (2022) found that 13.2% reported that they initiated sex at an early

© University of Pretoria

age, 14% had sex with many partners, 9% reported unprotected sex, 8% had sex for gifts, and 6% had sex with older partners. These sexual risk behaviours were reported five times more among those at high risk of secondary HIV transmission i.e. those who reported past-year risky sex and viraemia which means a detectable viral load of >1,500 copies/ml and or episodes of non-adherence to HIV medication in the past week. The prevalence of secondary transmission risks increased from 6.7% at baseline to 11.2% at follow-up driven by increases in these risky sexual behaviours.

Similarly, Birungi et al. (2008) in a study of the sexual and reproductive needs which was conducted among 732 perinatally HIV-infected adolescents aged 15 to 19 years who were recruited from selected AIDS care centres in Masaka and Kampala and Wakiso and Jinja districts of Uganda found that 42% were in dating relationships and 33% had sex in the lifetime. Of these, 10% reported sex onset prior to 10 years of age, 74% reported first sex in the age range 11 to 16 years, 27% reported non-consensual first sex, and 70% reported unprotected sex. On the other hand, 44% of those not sexually active reported that they desired to have sex and 41% of these felt there is no reason for someone living with HIV not to have sexual intercourse.

Another study among 82 adolescents living with HIV-aged 10 to 18 years who were attending HIV care at a centre in Wakiso district of Uganda found that 7% of them had lifetime sex and 5% experienced coercive sex. Of those who had sex in a lifetime, 83% started sex prior 16 years of age, 100% had unprotected sex, 67% had sex with more than one sexual partner, 83% reported rape (all of whom being girls), and 17% had genital ulcers or discharge (Musisi & Kinyanda, 2009). A recent study of 580 adolescents living with HIV aged 13 to 17 years who were sampled in Kampala and Kisumu found that 22% of the girls and 20% of the boys had sex in a lifetime (Bakeera-Kitaka et al., 2019).

Sunday et al. (2019) in a study of 346 mostly rural-based adolescents living with HIV who were aged 10 to 19 years and attending HIV clinics from March to May 2017 in Mbarara also found that 10% had early sex, unprotected sex, sexual intercourse with one or more sexual partners, and sexual intercourse under influence of alcohol or drugs in the past 12 months. The adolescents who were female (15.1%), aged 18 to 19 years (50%) and not on treatment (33.3%) had higher levels of these risky sexual behaviours altogether. Similarly, two studies involving 270 to 275 youth living with HIV who were aged 12 to 30 years and attending HIV care in Uganda and Kenya found that they had considerable but varying levels of sexual intercourse in the last six months (73% versus 68%), unprotected sex in the last intercourse (32% versus 22%), forced sex (4.4% versus 6.3%), and injecting drug use before sexual intercourse (29% versus 73%) (MAXFACTA, 2014; UYP, 2014).

However, a study of health risk behaviours among 4,715 adolescents of unspecified HIV status aged 10 to 19 years and randomly selected across all regions of Uganda showed that 22% had sex, 8% had sex prior to 16 years of age, 44% had multiple sexual partners, and 57% had unprotected sexual intercourse at the last encounter (UNICEF, 2017). Another study of HIV-related practices among 11,864 primary and post-primary

© University of Pretoria

school learners of unspecified HIV status aged 8 to 19 years and selected from 15 districts across all regions of Uganda found that 21.3% had lifetime sex and 48% of these had sex in last 12 months while 55% had unprotected sexual intercourse at the last sexual encounter (Kiirya et al., 2016). A study of sexual risk behaviour of 5,305 school-going adolescents of unspecified HIV status aged 10 to 18 years selected from high-risk communities in South Africa found that 49.4% of boys and 30.5% of girls reported lifetime sex while 44% of the sexually active adolescents reported inconsistent condom use (Visser, 2017).

Similarly, Puffer et al. (2011) in a study of 325 school learners of unspecified HIV status aged 10 to 18 years selected from Muhuru division in Nyanza province of Kenya found that 34% of them had sexual contact and 40% of these had sex with multiple partners while 69% had unprotected sex at the most recent sexual encounter. This study showed comparable levels of sexual activity (34% versus 33%) and unprotected sex (69% versus 70%) relative to a study of adolescents living with HIV in Uganda (Birungi et al., 2008), and lower levels of multiple sexual partners (40% versus 67%) relative to another study of adolescents living with HIV in Uganda (Musisi & Kinyanda, 2009). These three studies showed much higher levels of sexual risks compared to a study involving 2,618 patients of unspecified HIV status aged 18 to 30 years at community health centres across Cape Town in South Africa, which found that 15% had various partners in the last year, 2% had sexual partners who offered gifts for sex, and 13% did not use a condom in a last sexual contact (Avalos et al., 2010).

Lastly, a multilevel logistic analysis on pooled data of the 2003 to 2008 demographic and health surveys for 19 sub-Saharan Africa countries showed that adolescent boys and girls (of unspecified HIV status) aged 15 to 17 years who live in homes with at least one HIV-positive adult (HIV-exposed) had 25% higher odds of initiating sexual activity, compared to their counterparts of similar characteristics who live in households without any HIV-positive adult (Magadi & Uchudi, 2015). This means that adolescents who live in homes that are not affected by HIV/AIDS are lesser susceptible to sexual risks, compared to their counterparts who live in HIV-affected homes.

These reviews have shown mixed results regarding the extent of sexual risk behaviour among the adolescents living with and affected by HIV and other adolescents. Whereas some studies in the USA showed that adolescents living with and exposed to but not living with HIV, were more likely to delay sex onset than other adolescents in a general population (Bauermeister et al., 2009; Elkington et al., 2009; Mellins et al., 2011), nearly all studies in Uganda and South Africa except one by Sunday et al. (2019) found that the adolescents who live with HIV had higher levels of lifetime sex, sexual intercourse before 16 years of age, multiple sexual partners, and unprotected sex (Birungi et al., 2008; Musisi & Kinyanda, 2009; UYP, 2014), compared with the other adolescents of unspecified HIV status in the general population (UNICEF, 2017) and those attending primary and post-primary school (Kiirya et al., 2016). Hence, there is still a lack of clarity of the adolescents with the least and highest rates of sexual risks to enable better programming. This is one of the issues that will be addressed in this study.

© University of Pretoria

2.2 Psychosocial Correlates of Sexual Risk Behaviour in Adolescents Living with and Affected by HIV

In this section research about relationships between psychosocial circumstances (socio-demographic factors, community stressors, psychosocial distresses, coping methods) and sexual risks of adolescents living with and affected by HIV is reviewed to highlight knowledge gaps which could be investigated in this study.

The reviewed body research indicated that some socio-demographic factors interact with community stressors to spawn psychosocial distresses and sexual risk behaviour among these adolescent groups (Avalos et al., 2010; Cluver et al., 2007, 2013; Dewe, O'Drisicoll, & Cooper, 2012; Elkington et al., 2011a; Elkington et al., 2011b, 2012; Kalichman et al., 2006; Latkin et al., 2005, 2013; Mellins et al., 2011; Mukolo & Wallston, 2012; Mutumba, 2014; Mutumba et al., 2016; Nestadt et al., 2013).

2.2.1 Relations between socio-demographic factors and psychosocial distresses

Available evidence shows that some socio-demographic factors consistently associate with the occurrence of psychosocial distresses among adolescents who were living with and affected by HIV. Research involving adolescents living with HIV found that being younger, female (Gadow et al., 2012a, 2012b), out of school, not partaking in games at school, caregivers' HIV positivity, HIV infection at younger age (Musisi & Kinyanda, 2009), and Pentecostalism (Mutumba, 2014) positively related with psychological distresses like depressive-anxiety. These psychological distresses also positively related with being older, living with a biological mother as opposed to other caregivers, having a detectable viral load (Mellins et al., 2011), mental health problems in caregivers, poor parent-child communication (Elkington et al., 2011a), loss of a parent (Battles & Weiner, 2002), and HIV disclosure (Elliott-DeSorbo et al., 2009).

In addition, research involving adolescents who were HIV affected or exposed or orphaned or had unspecified HIV status found that: Being female was positively linked with depression and anxiety (Cluver et al., 2007; Gadow et al., 2012). Being male was positively related with delinquency and other conduct problems (Cluver et al., 2007). Being older was positively linked with internalizing distresses (depression, anxiety, affection problems and post-traumatic stress disorders) and externalizing distresses (delinquency, conduct and peer relationship problems). Staying with few people at home was positively linked with peer relationship problems, and migration was positively linked with delinquency (Cluver et al., 2007). Being AIDS orphaned was positively related with depression and anxiety and post-traumatic stress, older age interacted with orphan-hood to raise psychological distress (Cluver et al., 2012), and parental AIDS-illnesses were indirectly positively related with psychological distress (Cluver et al., 2013).

© University of Pretoria

However, some research involving adolescents living with HIV showed no link between psychological distresses and various observed socio-demographic factors like age, sex, education level, enrolment in school, orphan-hood or parental death, wealth status of the home, and type of caregiver (Mellins et al., 2011; Mutumba, 2014; Mutumba et al., 2016). Other variables that show no link is some studies were developmental stage, birth order, ethnicity, religion, academic grades, type of housemates, knowledge of caregivers' HIV status, substance abuse, counselling attendance, sexual activity, suicide attempt, HIV clinical stage (Musisi & Kinyanda, 2009), and staying with HIV-positive caregivers (Elkington et al., 2011a). Similarly, some research involving AIDS-orphaned adolescents did not find a link between psychosocial distresses (notably depression, anxiety, peer problems, posttraumatic stress, delinquency, and other conduct problems) and maternal or double AIDS orphan-hood (Cluver et al., 2007). They did not also find a direct link between psychological distress and parental AIDS illnesses and AIDS orphan-hood (Cluver et al., 2013).

2.2.2 Relations between socio-demographic factors and sexual risk behaviour

Available evidence shows that some socio-demographic factors inconsistently affect the sexual risk behaviour of the adolescents who are living with and or exposed to HIV infection. Some research involving these adolescent groups found that sexual risk behaviour was positively related with some socio-demographic factors like being older, female (Mellins et al., 2011; Sunday et al., 2019; Toska et al., 2022), with a biological mother as the primary caregiver, with a detectable viral load (Mellins et al., 2011), with less than five people in the home, and with receiving information about family planning (Sunday et al., 2019).

Sexual risk behaviour was also positively linked with lack of monitoring from caregivers and significant others (Borawski et al., 2003; McBride, Paikoff, & Holmbeck, 2003), and partaking in risky societal norms like circumcision rituals (Bearinger et al., 2007). Other studies among adolescents living with and or exposed to HIV also found that sexual risk behaviour was positively linked with being AIDS orphaned, with HIV-positive caregivers, pressurised by peers (Cluver et al., 2013; Elkington et al., 2012; Oparerio et al., 2011), in relationships with inequitable power, food insecure, a substance user (Toska et al., 2022), employed, with a jobless caregivers (Kalichman et al., 2005, 2006), with low self-worth and knowledge on contraception (Bakeera-Kitaka et al., 2008; Birungi et al., 2008), unaware of own HIV status, inaccessible to HIV treatment, out of school, with poor health-seeking behaviour especially for girls, and popular with the opposite sex especially for boys (Bakeera-Kitaka et al., 2019). However, being with a relative or non-relative as the primary caregiver was not positively linked with sexual risk behaviour of these groups of adolescents (Mellins et al., 2011).

In addition, some research show that the socio-demographic factors underlying sexual risk behaviour of the adolescents living with or exposed to HIV and those with unspecified HIV status were closely similar. In a study of mid to high school adolescents of unspecified HIV status aged 11 to 21 years in North Western Province

© University of Pretoria

of South Africa, Amoateng et al. (2014) found that being male, in a higher school grade, with strong religiosity, with a girlfriend, with caregivers who rarely communicate about health issues, a high alcohol or substance user were positively related with sexual risk behaviours like lifetime sex, recent sexual activity and involvement with multiple sexual partners. In a secondary analysis of demographic health survey data (2011-2015) for adolescents aged 14 to 19 years in Rwanda and Zimbabwe and Cameroon, Tende (2020) found that being younger, male and least educated were associated with higher levels of sexual risk behaviour.

In another study of 325 school-going adolescents of unspecified HIV status aged 10 to 18 years in Nyanza province of Kenya, Puffer et al. (2011) also found that older age, male gender, high-risk sex beliefs, and high perception of risk positively correlated with sexual risk behaviours like sexual activity, many sexual partners in past year and unprotected sex at the last sexual encounter. When the sample was divided by low and high-risk levels, younger age, male gender and lower sex-related self-efficacy significantly correlated with high-risk sexual behaviour in this population.

In a study of sexual risk behaviour of 5,305 school-going adolescents of unspecified HIV status aged 10 to 18 years selected from high-risk communities in South Africa, Visser (2017) found that sexual risk behaviour in this population associated with perceived community gender norms, negative relationships with caregivers, and being an older male who perceives social norms as encouraging sexual activity or who uses alcohol or who has a negative attitude towards abstinence.

Similarly, in a study among adolescents aged 10 to 19 years of unspecified HIV status sampled across Uganda, UNICEF (2017) found that: being older, a school-going male, out-of-school regardless of sex, double orphaned, previously married, younger and from a rural setting, and resident in the eastern region were linked with reporting sexual activity. Being male, in a rural setting, an out of school female, urban male, and resident in the eastern and western regions were related with reporting sexual intercourse prior 16 years. Being a younger female and in or out of school were linked with reporting sexual intercourse in exchange for gifts. Being male, out school, and younger but resident in a rural area were linked with reporting sexual intercourse with multiple partners. Being a younger female and older male were marginally linked with reporting sexual intercourse with older partners. Being younger and male were marginally linked with reporting unprotected sex at the last encounter. Another research involving girls of unspecified HIV status aged 15 to 24 years and without a marriage history in Indonesia showed that older age, low education, alcohol use, smoking, having a boyfriend and exposure to media were significantly associated with early sexual initiation (Delavera & Eryando, 2021).

This review show that there are inconsistencies in knowledge about the effects of some socio-demographic factors (especially age, sex, education level and caregivers' HIV status) on the occurrence of psychosocial distresses and sexual risks among adolescents living with and affected by HIV. These contradictions

© University of Pretoria

in knowledge about the underlying socio-demographic factors of psychosexual risks are some of the issues that will be addressed in this study.

2.2.3 Relations between socioeconomic status, community stressors and psychosocial distresses

A review of relevant evidence shows that exposure to community stressors and psychosocial distresses is connected with the socioeconomic standing of adolescents, regardless of their HIV status. Research on the factors that impact the health status of homeless and unstably housed adult women (median age of 44 years) who live with HIV in the USA found that socioeconomic adversities such as food insecurity (which a proxy measure of socioeconomic status) and periods of homelessness (which is one of the items used to assess community stressors) were linked with mental health problems like withdrawal (Riley et al., 2007). Similarly, Ashaba et al. (2019) in a qualitative study involving adolescents aged 13 to 17 years who live with HIV in rural Uganda, found that these adolescents were highly impoverished due to loss of parents and this contributed to depression and non-adherence to HIV medications. Additionally, MacCarthy et al. (2018) found that poverty reflected by absence of basic needs like food were high in youths living with HIV who are aged 14 to 24 years and attending an HIV care centre in Kampala Uganda and this elevated their socioeconomic dependence and non-adherence to HIV therapy as they progressed to adulthood.

2.2.4 Relations between socioeconomic status and sexual risk behaviours

The review of relevant evidence also shows that the occurrence of sexual risks is linked with the socioeconomic status of adolescents, regardless of their HIV status. Research about the factors underlying health disparities in the USA HIV epidemic found that insufficient socioeconomic resources among those most affected by HIV/AIDS were linked to the practice of risky health behaviours such as substance use and early and unprotect sexual intercourse (Pellowski et al., 2013). Another research about the determinants for early sex onset among girls of unspecified HIV status aged 15 to 24 years and without a marriage history in Indonesia found that low socioeconomic status was linked with early sexual onset (Delavera & Eryando, 2021). Similarly, earlier and recent studies on these topics in Eastern and Southern Africa countries showed that adolescents in poverty situations were significantly more likely to report HIV-risk behaviours like early sex onset, multiple and age-disparate sex partnerships, and low condom use (Eaton et al., 2003; Hallman, 2004; Harrison et al., 2015; Jennings et al., 2017; Kalichman, 2023; Mabaso et al., 2018; Machel, 2001; Tende, 2020; Toska et al., 2022).

A recent research involving 979 young people aged 10 to 21 years who were living with HIV and initiated on antiretroviral treatment in the Eastern Cape Province of South Africa, found that food insecurity (which is one of the proxy measures for community stressors and low socioeconomic status) was rife in this group and it significantly related with secondary HIV transmission risks, which included the occurrence of risky sexual acts

© University of Pretoria

(notably unprotected, multi-partner, transactional, or trans-generation sex) and viraemia (notably reporting of a detectable viral load or non-adherence to ART in the past week) in the past year (Toska et al., 2022).

Similarly, Mabaso et al. (2018) a secondary analysis of the 2012 South Africa population-based national household survey dataset for determinants of HIV infection among young girls and women aged 15 to 24 years found that living in socioeconomically deprived households was significantly associated with increased risk of HIV infection among adolescent girls. In another study of 39,052 young people and adults aged 15 to 49 years in the 2011 to 2015 demographic and health survey data for Rwanda and Zimbabwe and Cameroon, Tende (2020) also found that the odds of reporting risky sexual behaviour were lower in the richest compared to poorest ones.

Furthermore, in a qualitative research based on scarcity theory of economic context and HIV vulnerability in adolescents and young adults (of unknown HIV status) living in urban slums in Kenya, Jennings et al. (2017) found that many of them considered their sexual decisions rationally based on traditional and behavioural economics perspectives like having sex or taking more risks when resources were available, when the associated costs are affordable, when protected from the adverse consequences of HIV vulnerability, to get the best out of the wealth invested, to compensate for the lost opportunities of say having missed partaking in sex during scarcity, and for socioeconomic gains regardless of the HIV infection risks. This research concluded that socioeconomic status contributed to the sexual risk behaviours of vulnerable adolescents and the directions of the influence between these variables depended on the prevailing social and economic circumstances.

Similarly, Eaton et al. (2003) in research of factors responsible for unsafe sexual behaviour among adolescents and young adults of unspecified HIV status aged 14 to 35 years in South Africa found that proximal and distal contexts like the pervasive effect of poverty and social norms that perpetuate female's subordination in sexual relationships interact to inspire HIV risk behaviour. Hallman (2004) in research involving young people of unspecified HIV status aged 14 to 24 years in KwaZulu-Natal province in South Africa also found that relative socioeconomic adversity significantly raises the likelihood of a variety of unsafe sexual experiences and actions.

Likewise, in a research involving 182 schoolgirls of unspecified HIV status aged 14 to 20 years attending secondary school in Maputo Mozambique, Machel (2001) found that more girls of the middle-class economic background (defined based on affordability of a private school with a high tuition fees structure) than those of the working-class or peasantry economic background (defined based on affording a public school with low tuition fees structure) expressed fewer sexual partners and more consistent condom use, assertiveness and willingness to challenge gender norms which gave them a higher advantage in sexual negotiation. Girls of the peasantry economic background compared to those of the middle-class economic background were tolerant of gender power disparities and dependency on partners for material needs which weakened their ability to bargain for safer sexual sex and increased their vulnerability to HIV infection.

© University of Pretoria

However, a recent randomized controlled study of the impact of the economic strengthening and prevention education programs on prevalence of STIs/HIV risks and saving behaviours among vulnerable adolescents (of unspecified HIV status) aged 14 to 17 years in Gauteng Province South Africa showed that involvement in both programmes neither significantly increased nor decreased the occurrence of STI/HIV risks (Burke et al., 2020). This implies that improving the socioeconomic wellbeing and preventive knowledge of vulnerable adolescents may not necessarily beget decreased sexual risk behaviours.

The reviewed body of research show that low socioeconomic standing is linked with sexual risk behaviour of adolescents. However, this conclusion is mainly based on studies that involved adolescents who were living with HIV and on HIV treatment or adolescents with unspecified HIV status or adolescents mixed with individuals outside the age bracket of 10 to 19 years. Hence, there is a lack of clarity regarding the relationships between socioeconomic status and sexual risk behaviour among adolescents living with and affected by HIV who live in home that are affected by AIDS. This gap in knowledge highlights one of the issues to be addressed in this study.

2.2.5 Relations between peer influence and psychosocial distresses

There is paucity of specific evidence on the relationships between peer influence and psychosocial distresses among adolescents living with and affected by HIV. However, evidence from research that involved adolescents with unspecified HIV status shows that there is a significant association between peer influence and internalising and externalising distresses among adolescents regardless of HIV status. In a study involving a community sample of fourth and seventh grade boys of unspecified HIV status, followed over six data waves in the USA, Keenan et al. (1995) found a significant concurrent and predictive relationship between exposure to deviant peers and boys' engagement in disruptive and delinquent behaviour, and insignificant moderating effects of attention-deficit hyperactivity disorder and parenting practices on peer influence. Vitaro et al. (2000) also found a significant link between exposure to best friend's deviancy and later delinquent behaviours in boys. The boys' disruptiveness profiles during childhood, attachment to parents, and attitude toward delinquency significantly moderated the relationships.

Furthermore, in research involving 868 seventh to ninth grade school boys and girls followed over six occasions, Müller et al. (2017) found that classmates' delinquency significantly predicted personal delinquent behaviour over time and the influence was stronger in the males and those with a higher impulsivity, risk tolerance, social dominance, cool appearance, unstructured spare time activities, and lower parental supervision. In contrast, classmates' delinquency did not significantly moderate the effects on the delinquent behaviour for the young or older adolescents and those with self-worth and social acceptance. Only the male gender remained significant in the model that consisted of all significant moderators, indicating that boys were

© University of Pretoria

more susceptible to the influence of their classmates' delinquency. Mrug and Windle (2009), in another research involving school boys and girls of unspecified HIV status also found that peer deviancy predicted externalizing problems but only when it combined with higher levels of antisocial behaviour and negative parenting. Other factors such as school connectedness and gender and ethnicity did not moderate the link between peer deviancy and externalising problems in these adolescents.

2.2.6 Relations between peer influence and sexual risk behaviour

Similarly, there is paucity of specific evidence on the relationships between peer influence and sexual risk behaviours among adolescents living with and affected by HIV. However, evidence from studies that involved adolescents with unspecified HIV status show that negative peer influence is associated with sexual risk regardless of HIV status. Adimora et al. (2018) and Sneed et al. (2015) found that negative peer group influence is significantly associated with involvement in disruptive and risky sexual behaviours such as early sexual debut and other health risk behaviours, while positive peer group influence is significantly associated with adoption of protective or safe health behaviours. They also show that peer influence occurs in phases, beginning with observing, visualising, rationalising, and eventually accepting and imitating their friend's attitudes and norms and intentions followed by involvement in and or avoidance of their behaviours.

Additionally, in a secondary analysis of data for the never-married girls of unspecified HIV status aged 15 to 24 years in Indonesia, Delavera and Eryando (2021) found that negative peer influence was significantly associated with early sexual initiation. Similarly, a cross-sectional study of 1,275 adolescents of unspecified HIV status in Ghana showed that associating with peers who are antisocial and those with norms that favour sex increased the odds of transition to first sex, having more friends increased the odds of acquiring many new sexual partners among younger respondents, and perceived peer norms favouring sex increased the odds of acquiring multiple partners among males (Bingenheimer et al., 2015).

Other research involving young people of unspecified HIV status aged 11 to 21 years attending secondary schools in Nigeria (Alex-Hart et al., 2015; Chigbu et al., 2021) and South Africa (Amoateng et al., 2014; Awotidebe et al., 2014; Selikow et al., 2009) also showed that negative peer influence was not only directly positively related with risky sexual behaviours (such as having sex before 15 years of age or with multiple sexual partners or without use of a condom) especially among boys (Alex-Hart et al., 2015; Amoateng et al., 2014; Awotidebe et al., 2014; Chigbu et al., 2021), but also undermined adoption of healthy social norms including safer sexual practices like abstinence and faithfulness (Selikow et al., 2009). The main reason for this was because their friends had done so and they wished to be like them.

Similarly, research involving out-of-school vulnerable adolescents of unspecified HIV status aged 10 to 19 years in Kamuli Municipality and Kampala City, found that risky sexual behaviours were positively associated

© University of Pretoria

peer and parental perceptions on sexual activity and directly influenced by the desire to please or be like or attain acceptance from their friends (Kato & Omona, 2021; Whitton et al., 2022). Additionally, MacCarthy et al. (2018), in a qualitative study of the psychosocial factors of adherence to HIV treatment among young people aged 14 to 24 years who were living with HIV and attending an HIV care centre in Kampala Uganda found that positive peer influence enhanced adherence to treatment, while negative peer influence negated consistent use of HIV medications by rationalising "drug holidays". However, in a study involving students attending tertiary institutions aged 18 to 24 years and with unspecified HIV status in Gauteng South Africa, Mpofu (2012) found that peer influence did not have a significant effect on HIV risk sexual behaviours. This implies that the impact of peer influence on sexual risk behaviour may diminish with age.

The reviewed body of research show that negative peer influence is linked with psychosocial distresses and sexual risk behaviours among adolescents living with HIV and having unspecified HIV status. However, this conclusion is mainly based on evidence from studies that involved adolescents who were living with HIV and on ART or with unspecified HIV status or mixed with some individuals outside the adolescents' age bracket of 10 to 19 years. Hence, there is a lack of clarity regarding the relationships between peer influence and sexual risk behaviour among only adolescents and those who are not HIV infected and aware of their HIV status. This knowledge gap is one of the issues to be addressed in this study.

2.2.7 Relations between community stressors and psychosocial distresses

A search for relevant literature revealed a paucity of research about relationships between stressful events and psychosocial distresses among adolescents living with and affected by HIV in Uganda. However, a review of evidence in the accessed relevant studies showed that virtually all observed community stressors were consistently positively associated with psychological distresses among adolescents, regardless of HIV status.

More specifically, poverty reflected by absence of basic needs (i.e. persistent food insecurity and dire housing), personal threats (i.e. worries about own or parental or other family members' AIDS illness and death, lack of a job, living with jobless caregivers, having peers with a drug problem, caregiver and home instability, theft of personal property, having problems with authority and experiencing domestic and neighbourhood and community chaos or quarrels or insults or assaults or injuries), interpersonal problems (i.e. relational discomforts and breakups with caregivers or family members or sexual partners, caregivers' alcohol consumption and unplanned pregnancy experiences), and perceived stigma were positively linked with psychological distresses (Avalos et al., 2010; Bauermeister et al., 2012; Bradshaw et al., 2004; Cluver et al., 2012, 2013; Fielden et al., 2006; Kalichman et al., 2005, 2006; Kang et al., 2011; Latkin et al., 2005, 2013; Mellins et al., 2012; Mutumba et al., 2016; Operario et al., 2011; Pienaar & Visser, 2012; Wong et al., 2008).

© University of Pretoria

Additionally, Elliott-DeSorbo et al. (2009), in a study of 55 adolescents aged 8 to 17 years who were living with HIV and receiving care at medical research facilities in the USA, found that school-related stressors were linked with depression and anxiety. Similarly, a study of 464 adolescents aged 12 to 19 years who acquired HIV at birth from their mothers and were receiving HIV care at a clinical research centre in Kampala Uganda found that negative events in life such as parental illness and death, ongoing worries about ill-health and regular medications and family conflicts, social stigma, poverty-related hardships such as lack of money for food and care, as well as relationship concerns positively associated with psychological distress (Mutumba, 2014). Similarly, a qualitative study of psychosocial challenges among adolescents aged 13 to 17 years who were living with HIV in rural Uganda found that perceived aggression and imminent death created enacted and internalised stigma, which led to depression and non-adherence to HIV medications in this group (Ashaba et al., 2019).

Further internet search did not find studies which examined associations between community stressors and psychosocial distresses among diverse adolescents living in homes affected by HIV in Uganda. This gap in knowledge highlights one of the issues to be addressed in this study.

2.2.8 Relations between community stressors and sexual risk behaviour

A search for relevant literature revealed limited research on relationships between community stressors and sexual risk behaviours among adolescents living with and affected by HIV in Uganda. Most of the accessed and reviewed studies on these topics were conducted in developing countries such as South Africa and developed countries such as USA. This research found that sexual risk behaviours like early, unprotected, multi-partner, transactional and trans-generational sex were significantly linked with poverty reflected by absence of basic needs like lack of food and proper housing (Delavera & Eryando, 2021; Eaton et al., 2003; Hallman, 2004; Harrison et al., 2015; Jennings et al., 2017; Kalichman, 2023; Kalichman et al., 2005; Mabaso et al., 2018; Machel, 2001; Pellowski et al., 2013; Tende, 2020; Toska et al., 2022), personal threats like community violence (Wong et al., 2008), grave injury, theft of personal property, legal problems (Avalos et al., 2010; Kalichman et al., 2005, 2006), excessive alcohol and drug use (Avalos et al., 2010; Kalichman et al., 2005, 2006; Mpofu et al., 2006; Palen et al., 2006; Simbayi et al., 2009; Toska et al., 2022), interpersonal problems due to unfair power relations with parents or other family members or peers or sexual partners, and HIV-related stigma (Toska et al., 2022).

This review shows that there is limited understanding of relationships between community stressors, psychosocial distresses and sexual risk behaviour especially among adolescents living with and affected by HIV who live in HIV-affected homes. This knowledge gap is one of the issues that will be addressed in this study.

© University of Pretoria

2.2.9 Relations between psychosocial distresses and sexual risk behaviour

The reviewed literature suggests that sexual risk behaviour is connected with exposure of psychosocial distresses in adolescents, regardless of their HIV status. The findings of these studies indicate that internalising (depression, anxiety, anhedonia, isolation, somatisation, impulsivity) and externalising or conduct problems (aggression and delinquency) are linked with high sexual risk behaviour among adolescents affected (Brown et al., 2010; Cluver et al., 2013; Houck et al., 2014; Latkin et al., 2005; Meinck et al., 2015; Mellins et al., 2011; Nduna et al., 2010) and living with HIV (Bakeera-Kitaka et al., 2008; Elkington et al., 2011a, 2012; Kalichman et al., 2006; Mellins et al., 2011, 2012; Musisi & Kinyanda, 2009; Shanaube, et al., 2022).

Similarly, in a study involving 193 adolescents living with HIV and 127 adolescents exposed to HIV but not infected who were aged 9 to 16 years and selected from four New York City hospitals in the USA, Mellins et al. (2009) found that the observed mental health problems were linked with sexual risk behaviour. Murphy et al. (2001), in a study involving 323 adolescents living with HIV who were attending clinical care in the USA, also found that high anxiety was linked with recent sexual activity and high depression was linked with unprotected sex at last intercourse.

Additionally, Puffer et al. (2011), in a study of 325 school adolescents of unknown HIV status aged 10 to 18 years in Nyanza province of Kenya showed that high emotional and conduct problems were associated with sexual risk behaviours especially having sexual intercourse, multiple sexual partners and unprotected sex. Martin-Storey and Benner (2019) found that externalising behaviours were linked with discrimination and sexual risk behaviour of 939 adolescents with unspecified HIV status in Canada.

As can be seen from this review, nearly all studies did not involve adolescents that were unaware of their HIV status and or cover their entire age bracket. Thus, there is lack of clarity on the associations between the occurrence of psychological distresses and sexual risk behaviour in this adolescent group. This highlights one of the gaps in knowledge to be addressed in this study.

2.2.10 Relations between coping with stressors, psychosocial distresses and sexual risk behaviour

Coping wields impact on the psychosocial and sexual functioning of adolescents in stressful situations (Compas et al., 2001, 2012; Lazarus & Folkman, 1991; Skinner & Zimmer-Gembeck, 2007; Snethen et al., 2004). A review of studies on the relationships between coping strategies and psychosocial distresses showed that constructive adult support was associated with increased relational self-esteem and this in turn positively associated with the psychological well-being of children affected by HIV (Du et al., 2015). Constructive peer support was associated with lower levels of withdrawal and depressive-anxiety and aggression and delinquency and social problems in adolescents living with HIV (Battles & Weiner, 2002). Active coping strategies such as confronting and adapting with the sources of stress and seeking psychosocial support were associated with

© University of Pretoria

positive psychological adjustment in adolescents living with HIV (Compas et al., 2012; Meijer et al., 2002). Spirituality or belief in divine intervention and satisfaction with social support were negatively associated with psychological stress in adolescents living with HIV (Mutumba, 2014; Petersen et al., 2010).

Evidence from other studies showed that experiencing a trusting relationship, orientation about the future and perceived social support from caregivers not only negatively associated with traumatic events (such as helplessness and threats of own or significant others' injury or death) and HIV-related stigma, but also mediated the effects of traumatic events and HIV-related stigma on depression. Likewise, a trusting relationship with caregivers positively related with perceived social support and future orientation, and was the most proximate protective factor for depression in children affected by HIV (Wang et al., 2012). A meta-analysis of results for 35 randomized controlled trials involving 3,000 cases showed that getting social support and engaging in constructive activities not only reduced anxiety, depression and fatigue but also enhanced the quality of life for adults living with HIV compared to those in control conditions (Scott-Sheldon, et al., 2008).

However, other studies showed that praying in private always was associated with increased psychological distress in adolescents living with HIV (Mutumba, 2014) and passive coping techniques such as withdrawal or glumness or avoidance or denial were associated with poor psychological adjustment (Compas et al., 2012; Murphy et al., 2000). Poor affect or emotion regulation was associated with mental risks in adolescents whose HIV status was not specified (Bell & McBridge, 2010; Dawson et al., 2008; Hessler & Katz, 2010).

Likewise, studies on the relationships between coping strategies and sexual risk behaviour among adolescents living with and affected by HIV showed that poor parent to adolescent communication (Elkington et al., 2011b), lack of social support (Nestadt et el., 2013; Vaz et al., 2010; Wood et al., 2006), and poor affect regulation (Dawson et al., 2008; Hessler & Katz, 2010; Houck et al., 2014) contributed to increased sexual risk behaviour especially early and unprotected sex. Additionally, Puffer et al. (2011) in a study in Nyanza province of Kenya involving 325 school-going adolescents aged 10 to 18 years whose HIV-status was not specified, found that whereas lower caregiver monitoring significantly associated with high-risk sexual behaviour in this population, higher caregiver social support and sex-related counselling significantly correlated with sexual risk behaviours such as sexual activity, multiple sexual partners and unprotected sex especially among males. This implies that excessive parental social support and provision of sexuality information may alternatively arouse sexual curiosity, experimentation and HIV risk outcomes especially in the boys.

Relations between coping and adherence to HIV treatment: Evidence from the reviewed studies also showed that positive coping strategies like optimism with treatment and social support improve adherence to HIV treatment behaviour, while negative coping strategies like lying or denial or absconding about attenuate adherence to treatment among adolescents living with HIV. Qualitative studies on coping with challenges related school attendance and adherence to HIV medication among young people aged 10 to 24 years who were living

© University of Pretoria

with HIV and attending care in various HIV clinics in central and western Uganda showed that coping by insistence on medication, concealment or limited disclosure of HIV status, optimism with treatment, obtaining social support, rationalization, comparison with others, religiousness, problem avoidance, and hobby facilitated adherence to HIV treatment (Mutumba et al., 2015).

In addition, disclosure of HIV status to significant others, seeking counselling or spiritual or socioeconomic support from family members and religious leaders also facilitated adherence to HIV treatment (Ashaba et al., 2019; Kimera et al., 2020). Lying to others, disguising medicines, and hiding from colleagues to take medication facilitated adherence to HIV treatment (Kihumuro et al., 2021). Being in a supportive group or home or school or community, accessing counselling from significant others, religiousness, setting dreams or goals, and being hopeful of the future contributed to the school attendance of adolescents living with HIV who were enrolled in HIV care (Kimera et al., 2020). However, coping by not taking medication as prescribed, avoiding drug refills, and absconding from class or school to conceal their status from peers and others, contributed to non-adherence to treatment (Kihumuro et al., 2021).

The review again shows that positive coping strategies (such as self-control or regulation, creating trusting relationships with caregivers or peers, confronting and adapting with the sources of stress, disclosing the problem and seeking social support, and spirituality or belief in divine intervention) tend to reduce community stressors (such as HIV-related stigma and personal threats related to own injury or dear ones' death), psychosocial distresses (such as anxiety or depression or loneliness somatisation, aggressiveness and delinquency), and sexual risk behaviour in adolescents and adults who live with HIV-. In contrast, use of negative coping strategies such as poor self-control or regulation, poor or excessive talks related to sexuality with caregivers or significant others, denial, withdrawal, glumness and praying in private always tended to increase psychosocial distresses and sexual risk acts especially in those living with HIV and with unspecified HIV status.

However, there is limited understanding on the relationships between coping strategies and these psychosocial and sexual risks especially among adolescents who were not living with HIV and those who were not aware of their HIV status. This knowledge gap is one of the issues to be addressed in this study.

2.3 Theoretical Point of Departure

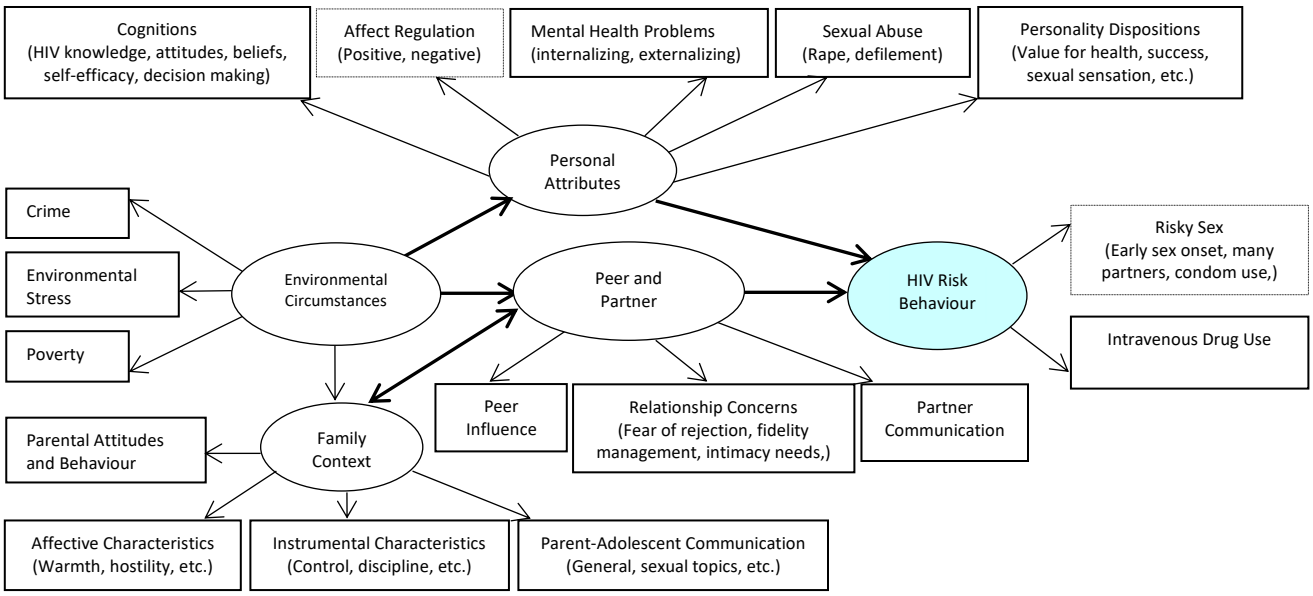
The Social-Personal Model for HIV Risk Behaviour (SPM-HRB) by Donenberg and Pao (2003), which is presented in Figure 1, and the Conceptual Model for Examining Stressors related to Sexual Risk Behaviour (CMES-SRB) by Avalos et al. (2010) and Kalichman et al. (2006), were relied on to conceptualise this study.

The SPM-HRB asserts that HIV risk behaviour in adolescents is a result of the interaction between their personal attributes, family context, environmental circumstances, and peer and partner relationships.

© University of Pretoria

Personal attributes include: 1) cognitions namely knowledge of the HIV causes and spread and prevention, attitudes to HIV vulnerability and prevention stimulus, beliefs towards behaviour intentions, decision-making about relationships or problems, and self-efficacy to negotiate or practice safer sex (Brown, Lourie, & Pao, 2000); 2) affect regulation or skills of weighing and managing emotions which states that adolescents with poor affect regulation may not be able to cognitively link a negative stimulus with their impulsive action or weigh pros and cons of risk, or chart protective behaviour and instead adopt short-term self-soothing actions over self-regulation (Cooper et al., 2003; Eisenberg et al., 2001; Tice et al., 2001); 3) existence of mental problems which states that teens with internalizing problems tend to have low self-worth and ability to negotiate safer sex, and a high chance of having sexually-active friends and unplanned pregnancy (Brown et al., 2000) while those with externalizing problems are prone to affective disorders, poor communication skills, deviant sexual norms of peers, and various sexual risk behaviours (Donenberg et al., 2001); 4) experience of sexual abuse which tends to lower a victim's assertiveness or resistance to risky norms and sexual behaviours of peers or partners (Brown et al., 2000); and 5) personality dispositions such as value for health, success and sexual sensation which asserts that adolescents with a high value for sexual feeling and low value for health and success are prone to sexual risk behaviour (Rosengard et al., 2004).

Figure 1: The Social-Personal Model for HIV Risk Behaviour



Family context include (1) parental affective level of warmth, support and hostility characteristics, which asserts that a more affectionate, supportive and slightly directive parental relationship with adolescents not only ensures cohesion but also limits sexual risk behaviour (Borawski et al., 2003; McBride et al., 2003); (2) parental instrumental level of monitoring and affect control characteristics, which asserts that more parental supervision and control of adolescent's movements and actions unlike little supervision and control are more helpful in

© University of Pretoria

reducing sexual risk especially among girls (Borawski et al., 2003; Donenberg et al., 2002); (3) quality of parent to adolescent communication which asserts that a parent to adolescent communication style which is calm, accurate, candid, directive, firm and trusty unlike a peer-to-peer communication style lessens sexual risk-taking behaviour (Borawski et al., 2003; Wilson & Donenberg, 2004); and (4) imitation of parental attitudes and behaviour, which asserts that if the parents tolerate a sexual risky behaviour, the adolescents would most likely adopt it but if they protest it the adolescents would not take up that behaviour (Meschke et al., 2002).

Environmental circumstances, which assert that susceptibility to absence of basic needs such as food and water, crimes such as theft and to stressful neighbourhoods, elevate psychological distress and risky sexual behaviours such as early sex and premarital child bearing (Ramirez-Valles et al., 2002; Santelli et al., 2000).

Peer and partner relationships include (1) intimacy or fidelity or rejection attributes, which asserts that adolescents who seek to win over or grow love and trust or exude loyalty or avoid rejection tend to start sex early or have unsafe sex as a way to resolve them; (2) peer influence or yielding to peer sexual norms, which asserts that adolescents who approve peer norms of abstinence and safe sex tend to either delay sex debut or have fewer partners or often use condoms (Santelli et al., 2004) while those who yield to negative peer influence tend to engage in risky sex (Coley et al., 2013; Donenberg et al., 2001); and (3) the nature of partner communication, which asserts that teenagers who assertively discuss safer sex with a partner tend to resist sexual demands and adopt protective measures, while those who do not are less likely (Crosby et al., 2003).

The CMES-SRB explicates that sexual risk behaviours are a result of the interplay among stressful life events related to poverty, personal threats and interpersonal problems. Poverty stressors include lack of basic needs like food or water or clothing, lack or loss of a home, living in poor housing, and living with unemployed caregivers. Personal threat stressors include experiencing serious injury, abuses in the home or neighbourhoods, extreme alcohol use, frequent litigation, problems with police or local authorities, joblessness or loss of a job, and theft of vital personal property. Interpersonal problems include experiencing personal ill health, illness of either the partner or children or siblings or parents or other family members, neglect by either the partners or children or siblings or parents or other family members, death of either the children or siblings or parents or relatives, problems with the partners or parents or children or relatives or friends or neighbours or co-workers as well as a personal or relative's unplanned pregnancy (Avalos et al., 2010; Kalichman et al., 2006).

These two models are rooted in the Socio-Ecological Model of Child Development (SEM-D) which was developed by Bronfenbrenner (1979, 1992, 1994), Social Cognitive Theory of Health Behaviour (SCT-HB) which was developed by Bandura (1994, 2004), and the Transactional Stress and Coping Theory (TSCT) which was developed by Lazarus and Folkman (1991).

The SEM-CD states that children's behaviour is influenced by the interaction between their micro or intrapersonal system (biological and psychological and familial characteristics), interpersonal system (values of

© University of Pretoria

the neighbourhood, school or workplace), organizational system (values of the social networks), macro or environmental system (values of society, religion or culture), and changes in public policy and life.

The SCT-HB states that health functioning depends on a person's; 1) *cognitive and affective and biological attributes* such as knowledge about health risks, 2) *social and self-regulative proficiency and self-efficacy resiliency* to translate informed concerns into effective preventive action such as access to opportunities for guided practice and corrective feedback in high-risk situations, and 3) *environmental influences* including the adoption of social norms and supports for the desired personal change. This theory is useful in understanding the interactions between social cognitive determinants of health behaviour and individual's sexual functioning. The theory has been underlying various studies to formulate theoretical frameworks for examining sexual risk behaviour of populations in different settings.

The TSCT states that stress and coping are reciprocal and reliant on a person's appraisal of the meaning of a stressor using self-image or beliefs or life events, and of the ability and existing resources to cope using personality or experiences or existing social structures. Here, if the stressor is perceived as a threat, the person goes on to assess the ability and resources to cope. If the person perceives to have the ability and resources to cope, the result is optimism. In case the person perceives otherwise, the result is distress and likely involvement in risky health activities. The SCT-HB and TSCT assume that people are largely able to sensibly control their thought process, emotions and health habits.

Studies based on the SEM-CD, SPM-HRB and CMES-SRB show that they are valid for exploring psychosocial predictors of sexual risk behaviours in adolescents (Bauermeister et al., 2012; Brown et al., 2010; Cluver et al., 2013; Coley et al., 2013; Du et al., 2015; Elkington et al., 2011b; Elkington et al., 2012; Kang et al., 2011; Hessler & Katz, 2010; Houck et al., 2014; Kapadia et al., 2012; Meinck et al., 2015; Mukolo & Wallston, 2012; Udell et al., 2011). These theories jointly support the conceptual framework for this study, which posits that psychosocial factors (socio-demographics, community stressors, psychosocial distresses and coping methods) interact to influence sexual risk behaviour of adolescents living with and affected by HIV who live in HIV-affected homes. This assertion is depicted in Figure 2 and clarified in the next paragraph.

2.4 Conceptual Framework for this Study

The conceptual framework for this study including the variables to be observed in each construct, was developed based on the SEM-CD, CMES-SRB, SPM-HRB, SCT-HB, TSCT and earlier research related to the psychosocial and sexual experiences of adolescents. This framework posits that sexual risk behaviour, which include involvement in risky sexual situations (such as exposing or staring at sexual organs, having intimate or

© University of Pretoria

sexually active friends of the opposite sex, allowing sexual advances) and sexual acts (such as engaging in sex with many or older partners, in exchange for gifts or money and without using a condom) are influenced by

(1) The sociodemographic situations, which include personal, familial and environmental attributes listed under each of these domains.

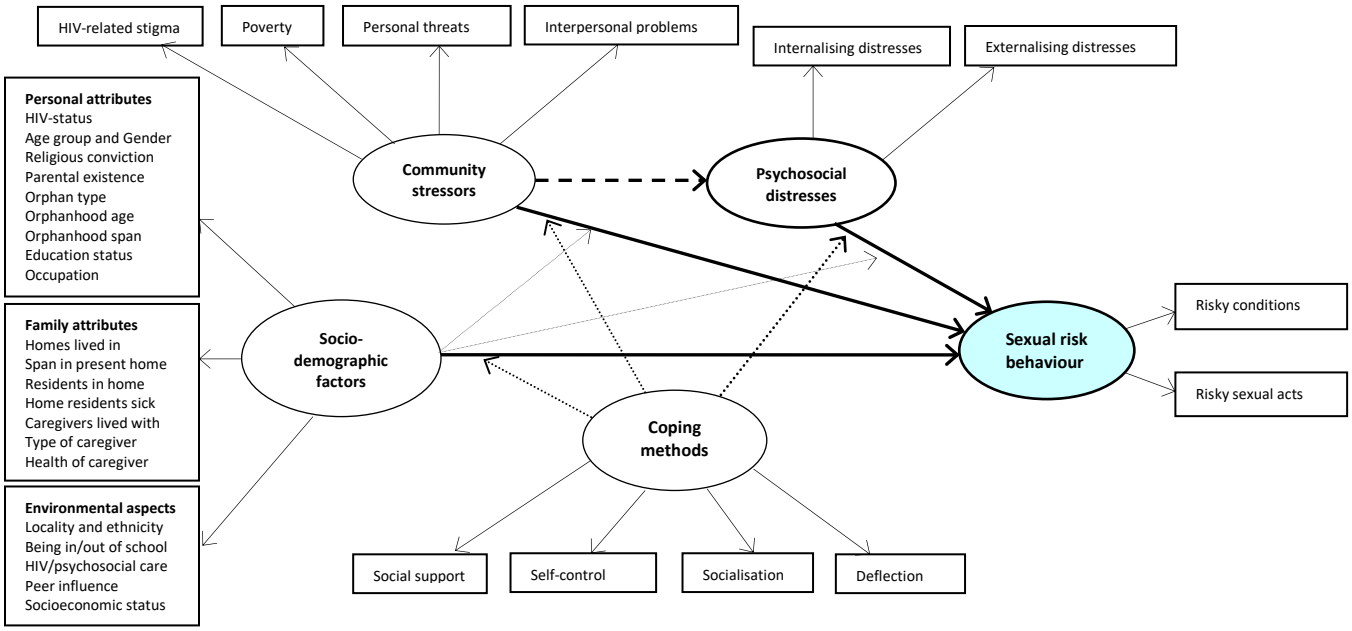
(2) The community stressors faced, which include poverty regarding basic needs, personal threats (such as worries about personal illness and negligence of family members), interpersonal problems (such as conflicts with family members) and HIV stigma (judgmental and social distancing attitudes).

(3) The psychosocial distresses faced, which include internalising and externalising problems such as anger, inattentiveness, anxiety, depression, loneliness, sleep unrest, psychosis, somatisation, suicide ideation) disobedience, disruptiveness, destructiveness, aggressiveness, and delinquency.

(4) The methods used to cope with the experiences, which include self-control, socialisation (like attending prayer meetings or social events), deflection (like blaming others or ignoring problems), and obtaining informational or emotional or social support from significant others.

It further posits that the socio-demographic factors moderate the relationships between the community stressors, psychosocial distresses and sexual risk behaviour while the psychosocial distresses mediate and or moderate the relationships between community stressors and sexual risk behaviour of the adolescents involved in this study. This structural model was relied on to delineate and test the hypotheses for this study.

Figure 2: The conceptual framework for this study



© University of Pretoria

In this chapter, research into the extent of and relationships between the psychosocial and sexual experiences of adolescents living with and affected by HIV have been reviewed. The relevant theories have also been discussed. The review has highlighted several gaps, which will be addressed in this study.

In the next chapter, the methods and ethical tenets used to address each research hypothesis and objective are explained.

© University of Pretoria

CHAPTER THREE: METHODOLOGY

This chapter explains the design, location, participants, sample calculation, sampling strategy, data collection methods and instruments and procedures and risk safeguards, data analysis and management strategies, and ethical guarantees of this study.

3.1 Research Design

This is a cross-sectional study, which used a positivist research paradigm[2] and a structured questionnaire to collect data on the socio-demographic attributes, peer influence, socioeconomic status, community stressors, psychosocial distresses, sexual risk behaviour, and coping methods from 289 adolescents living with HIV, 756 adolescents not living with HIV and 392 adolescents unaware of their HIV status who lived in 691 registered HIV-affected homes that were randomly selected from the HIV-burdened parishes in the Lira, Rukungiri and Kayunga districts of Uganda. This study design was adopted because it enables research into a wide range of issues among different groups of interest at the same time and provides credible and generalisable evidence in a short time.

3.2 Research Location

The research was conducted in three districts and HIV subregions of Uganda namely, Lira district located in the Lango-Acholi subregion, Rukungiri district located in the Ankole-Kigezi subregion, and Kayunga district located in the North-Buganda subregion. These areas were selected because they had a high adolescent HIV-burden and different ethnic groups which ensured sociocultural diversity of the research participants.

3.3 Research Participants, Sample Sizes and Calculations

The participants in this study were 1437 adolescents aged 10 to 19 years and their caregivers who resided in homes which are affected by HIV/AIDS. These adolescents merited research since although they constituted a considerable percentage of the adolescent population of Uganda (MOH-ACP, 2014a) and often faced the risk of HIV infection or re-infection (NAFOPHANU, 2013, 2017, 2019), their psychosocial and sexual health was not well understood (Lowenthal et al., 2014; Magadi & Uchudi, 2015; MOH-ACP, 2014a). The caregivers, as the gatekeepers of the affected homes, were included to provide supporting data about their

[2] This research paradigm emphasises use of precise quantifiable measures to obtain data and discover the knowable and generalisable realities without allowing values of researchers or participants to influence the results (Park, Konge & Artino, 2020).

© University of Pretoria

children's psychosocial conditions such as age, parental death, health, and care status.

3.3.1 Actual sample sizes for caregivers and adolescents

The sample size for caregivers was 691. This was obtained by selecting one caregiver from each registered HIV-affected household where caregivers approved of their adolescents participating in the study. The actual sample size of adolescents was 1437 out of the intended size of 1485. The intended sample size was obtained using the Cochran (1977) and Kish-Leslie's (1995) formulae for computing a suitable sample size for a cross-sectional study with a population of interest equal to or more than 100000, which is explained in the section for calculation of the adolescents' sample size.

3.3.2 Justification of the adolescents' sample size

The main variable used to obtain the intended sample size was the proportion of adolescents who had lifetime sex. This variable was chosen because it is (1) the flipside of abstinence from sex, which is the expected sexual behaviour during adolescence in Uganda (UNCEF, 2017); (2) derived from the general adolescent population (i.e. those who have and don't have sexual experience, and those who are living with HIV, not living with HIV or not aware of their HIV status), which is closer to the population of interest for this study; and (3) a key measure of sexual risk behaviour, which is the theorised endogenous variable for this study.

3.3.3 Calculation of the adolescents' sample size

In the absence of a precise number for the adolescents aged 10 to 19 years who live in HIV-affected homes in Uganda, we used estimates of adolescents who were living with HIV as the population interest. The national population projections for 2018 indicated that adolescents aged 10 to 19 years constituted 25.7% (10,029,500) of the estimated 39,059,000 people in Uganda (UBOS, 2018a, 2018b, 2020).

By the end of 2017, the estimated HIV prevalence in this age group was 3% (UNICEF, 2017). This means that there were approximately 300,876 adolescents living with HIV out of 10,029,500 adolescents in Uganda. Therefore, the Cochran (1977) and Kish Leslie's (1995) formulae for computing a suitable sample size for a cross-sectional study with a population of interest that is equal to or more than 100000 was used, which is:

$$n = \left(\frac{z^2 pq}{\varepsilon^2}\right) (deff) / r$$

where, *n* is the recommended sample size; *z is* the desired standard deviate at a 95% confidence level, which is 1.96; *e* is the desired level of precision or permissible margin of error, which is .03; *p is* the estimated proportion of adolescents aged 10 to 19 years who had lifetime sex, which is .215 (UNICEF, 2017); *q* is 1-*p* (1-.215), which is .785; *deff is* the maximum design effect due to multistage cluster sampling, which is 2; and *r* is the estimated

© University of Pretoria

response rate of .97 assuming a non-response rate of .03. After replacing the formula with these numbers, the computed sample size was:

$$n = \frac{1.96x1.96x0.215x0.785}{0.03x0.03} = (720.407x2.0)/0.97 \quad = 1485.$$

This sample size was considered adequate for proper analysis of each objective and the overall aim of the study, which is to explore the psychosocial predictors of sexual risk behaviour among adolescents living with, and affected by HIV who live in homes affected by HIV/AIDS.

3.3.4 Distribution of the computed adolescents' sample size

To ensure fair distribution of the computed sample size among the three research districts, the number 1485 was apportioned using the formulae $n_i = (N_i)\ (1{,}485)/\Sigma\ N_i$, where, n_i is the number of adolescents selected from the i^{th} district, and N_i is the estimated number of participants in that district.

After replacing this formula with the actual numbers, a quasi-sampling frame for adolescents in Table 1 was created basing on the estimated total population and number of adolescents in each research district (UBOS, 2018a, 2018b), the probable number of adolescents living with HIV in each district which is the same as the adolescent HIV rate for each HIV subregion where these districts are located (MOH, 2014b), and the district share of the estimated sample size basing on the estimated number of adolescents living with HIV in the three districts. The estimated sample size of 1485 adolescents and its allocations among the three districts were considered sufficient for analysis of data across diverse characteristics and were thus relied on to draw samples from HIV-affected homes.

However, the estimated district sample sizes were not attained due to some districts (especially Kayunga) registering only a small number of HIV-affected homes, and 48 participants experiencing discomfort and terminating the interviews before they were completed.

Table 1. Distribution of the estimated adolescent sample among the three research districts

		Population	Estimated adolescents aged 10 to 19 years				Sample distribution	
	District	Overall	Percentage	Number	HIV rate	No. HIV+	Share	Size
1.	Lira	453,500	25.7[a]	116,550[a]	0.034[b]	3,963[b]	38	564[c]
2.	Rukungiri	327,400	25.7[a]	84,14 2[a]	0.039[b]	3,282[b]	31	460[c]
3.	Kayunga	394,000	25.7[a]	101,258[a]	0.032[b]	3,240[b]	31	460[c]
	Total	1,174,900	25.7[a]	301,949[a]	0.035	10,568	100	1,485[d]

Notes: [a] The estimated percentage and number of adolescents in the research districts (UBOS, 2018a, 2018b). [b] The estimated adolescent HIV rate and number in the HIV sub-regions from which research-districts were selected (MOH, 2014b). [c] The planned district samples sizes. [d] The estimated sample size.

© University of Pretoria

3.4 Sampling Strategy

Mixtures of purposive and multistage cluster random sampling methods were utilised to select the HIV-burdened regions, districts, communities, homes, and adolescents that were involved in this study.

3.4.1 Selection of the research locations

Purposive multistage sampling techniques were used to select the research locations. Initially, the 10 HIV subregions in Uganda[3] were ranked based on adolescent HIV rate and the inclusion cut-off rate was set at 3% to increase possibility of obtaining the desired samples across the chosen districts.

Five subregions qualified, namely Ankole-Kigezi, South Buganda, North Buganda, Kampala, and Lango-Acholi. South Buganda was excluded as many HIV studies had been conducted there in the past (UAC, 2009, 2018), while Kampala was excluded for being a national HIV referral centre (MOH-ACP, 2014b; UAC, 2016, 2017) and inhabited mainly by people who lived in nearby districts and often changed settings (UBOS, 2016, 2018a).

Then, Lira, Kayunga and Rukungiri districts were purposely selected from the Lango-Acholi, North Buganda and Ankole-Kigezi subregions because they had adolescent HIV-rates of at least 3% (MOH-ACP, 2014b), community groups supporting people living with and affected by HIV (NAFOPHANU, 2017, 2019), and limited adolescent HIV research (UAC, 2009, 2017) and service centres (MOH-ACP, 2014b; UAC, 2017; UPHIA, 2017).

A purposive sampling method was again used to select every listed HIV-burdened locality from a list of sub-counties and parishes for each district. The selected HIV-burdened subregions, districts and parishes are showed in the map of Uganda presented in Figure 3.

[3] They are: **(1) Kampala district**, which is the national HIV service referral area; **(2) South Buganda** covering the Bukomansimbi, Gomba, Lwengo, Lyantonde, Kalangala, Kalungu, Masaka, Mpigi, Rakai, Ssembabule, and Wakiso districts; **(3) North Buganda** covering the Buikwe, Buvuma, Kakumiro, **Kayunga,** Kiboga, Kiryandongo, Kyankwanzi, Luwero, Mityana, Mubende, Mukono, Nakaseke, and Nakasongola districts; **(4) Busoga** covering the Bugiri, Buyende, Iganga, Jinja, Kaliro, Kamuli, Luuka, Mayuge, and Namutumba districts; **(5) Bukedi-Bugishu** covering the Budaka, Bududa, Bukwa, Bulambuli, Busia, Butaleja, Kapchorwa, Kibuku,Kween, Manafwa, Mbale, Pallisa, Sironko, and Tororo districts; **(6) Teso- Karamoja** covering the Abim, Amudat, Amuria, Bukedea, Kaabong, Kaberamaido, Katakwi, Kotido, Kumi, Moroto, Nakapiripirit, Napak, Ngora, Serere, and Soroti districts; **(7) Lango-Acholi** covering the Agago, Alebtong, Amolatar, Amuru, Apac, Dokolo, Gulu, Kitgum, Kole, Lamwo, **Lira,** Nwoya, Omoro, Otuke, Oyam, and Pader districts; **(8) Alur-Madi-Lubara** covering the Arua, Adjumani, Koboko, Moyo, Nebbi, Maracha, Yumbe, and Zombo districts; **(9) Bunyoro-Tooro-Bakonjo** covering the Buliisa, Bundibugyo, Hoima, Kabarole, Kamwenge, Kasese, Kibaale, Kiryandongo, Kyegegwa, Kyenjojo and Masindi districts; and **(10) Ankole-Kigezi** covering the Buhweju, Bushenyi, Ibanda, Isingiro, Kabale, Kanungu, Kiruhura, Kisoro, Mbarara, Mitooma, Ntungamo, Rubanda, Rubirizi, **Rukungiri,** and Sheema districts (MOH, 2017; MOH-ACP, 2014b).

© University of Pretoria

Figure 3: Map of Uganda Showing the HIV Sub-Regions, Districts and Sub-Counties Selected for this Study

3.4.2 Selection of HIV-affected homes from HIV-burdened localities

Afterwards, simple random sampling techniques were used to select HIV-affected homes. Every listed home in each selected HIV-burdened locality was assigned a unique serial number which was written on a

© University of Pretoria

separate piece of paper, folded, placed in a box and churned. Using a raffle technique, one folded paper was picked from the box at a time and opened, and its serial number was read out and ticked on the list until the required number of homes in each chosen locality was attained. Nearly all homes with caregivers who had allowed their adolescents to participate at the initial stage were selected, except those where caregivers or adolescents were absent or refused to participate at the time of data collection.

3.4.3 Selection of adolescents living with and affected by HIV from HIV-affected homes

Lastly, purposive sampling techniques were used to select the adolescents from each registered HIV-affected home. At this sampling stage, the research assistants and caregivers generated a list of children in each selected HIV-affected home and enrolled all the adolescents who were available and willing to participate and able to read and write, or able to listen and respond to questions in English or local languages.

3.5 Data Collection Instruments

Data was collected by administering paper-based household status forms (in appendix 1.4) to caregivers and structured questionnaires (in appendix 1.5) to participating adolescents in each of the selected HIV-affected home after obtaining a written informed consent from each of them.

3.5.1 Description of the data collection instruments

The caregivers' household status form consisted of 10 questions that were divided into two parts. The first part had eight questions that sought information from caregivers about the locality of the home and the names, ages, gender, parental survival, health and care status of the children who were available in the home. The second part had two questions that sought from caregivers, information about their own HIV status and whether they would allow their adolescents to participate in the study.

The adolescents' questionnaire consisted of 201 items that were divided into a sociodemographic and psychometric section. The sociodemographic section consisted of 25 structured items designed to assess the adolescent's personal and social attributes such as HIV status, age, gender, religion, ethnicity, occupation, school attendance, educational level, parental death, type and age of orphanhood, number of homes lived in, period of stay in the HIV-affected home, number of residents and sick people in the home, type and number of caregivers lived with, and access to HIV/psychosocial care.

The psychometric section consisted of 176 items that were divided into scales for gauging adolescents' levels of peer influence (Santor et al., 2000), socioeconomic status (Majumder, 2021; Wani, 2019), community stressors (Avalos et al., 2010; Kalichman et al., 2006), HIV-stigma (Visser et al., 2008), psychosocial distresses

© University of Pretoria

(Achenbach & Rescorla, 2001), risky sexual behaviour (Friedrich et al., 2004), coping with adversities by self-control (Tangney et al., 2004), social-support (Schwarzer & Schulz, 2013), socialisation and deflection (Frydenberg & Lewis, 1993).

3.5.2 Source and verification process for items in the data collection instruments

The items in the caregivers' household status form and adolescents' questionnaire were obtained from the survey instruments which were used by Cluver et al. (2007) and UBOS & ICF (2018) to assess the sociodemographic characteristics of the research participants. They were also obtained from the existing scales which were developed to assess the psychosocial and sexual experiences among adolescents. These data collection instruments, including the consent forms, were extensively reviewed during the project design and review stages and the tricky items and response formats for some of the scales were simplified to ease comprehension by the adolescents involved in this study. The revised research instruments were translated from English to a local language that is spoken widely in each research district (namely Leblango, Luganda and Runyankore-Rukiga) and pilot-tested among 50 adolescents who were selected from HIV-affected homes located in the three research districts (i.e., 21 from Lira, 15 from Rukungiri and 14 from Lira) to check their clarity and sociocultural, cognitive and emotional suitability. The vague items were rephrased.

Since the modifications in phrasing and response format of the adopted items may have affected the original measurement qualities of the scales, factor analyses were performed on the sample data for every scale in the questionnaire to verify the items' connectedness, usefulness and precision in assessing the respective constructs among adolescents. Factor analyses were also performed to verify the link between the items and proposed factors (subscales) of each scale, the goodness of fit of the proposed factors in the scale, and the reliability of items for each factor and scale in assessing the relevant concepts, as stipulated in the Bayesian estimation model (Choi et al., 2011; Tavakol & Dennick, 2011). This helped to identify and remove items that had very low inter-item and inter-factor loadings from each scale, and ultimately improve their precision, stability and reliability.

3.5.3 Psychometric characteristics of the adopted and final scales

As noted earlier, this study adopted, simplified, verified and utilised some of the items in the existing scales or questionnaires to assess peer influence, socioeconomic status, community stressors, psychosocial distress, coping methods and sexual risk behaviour of adolescents who live in HIV-affected homes. The psychometric characteristics for the adopted and final scales were as follows:

© University of Pretoria

3.5.3.1 Peer influence scale

This scale contained four (4) items that assessed autonomy of adolescents' views and experiences in breaking or complying with home or school or society rules and in engaging in some HIV risk behaviours such as dating or lifetime sex. Items were adopted from the Peer Pressure Scale (PPS) which was developed by Santor et al. (2000) to assess social functioning at school, sexual attitudes and substance use in adolescents of ages 11 to 13 years. The adopted items were: *My friends could push me into doing just about anything; I give in to peer pressure easily; when at school, if a group of people asked me to do something, it would be hard to say no; At times, I've broken rules because others have urged me to.* Each item in the PPS had a five (5)-point Likert scale with response options ranging from "strongly disagree" to "strongly agree" and a scoring scale ranging from zero to five. This scale had an internal consistency reliability of α=.84 (Santor et al., 2000) and it has been used in various studies to assess peer influence and sexual behaviour among adolescents in school settings (Peci, 2017).

To avoid hypothetical comprehension and responses, the adopted items were rephrased as follows: *Have you ever been influenced or pressed by friends to change views or beliefs on anything, do anything abnormal, engage in dating or sexual intercourse or substance use, and break any rule at home or school or in the community*? Additionally, the response and scoring format for these items was changed from a five-point Likert to a 2-point scale with a "no" and "yes" response option. With these changes, a negative or "no" response to the item was given a score of zero which indicates no peer influence, and a positive or "yes" response to the item was given a score of one which signifies presence of peer influence. Hence, the mean score on this scale was computed as a mean of four items. To obtain the mean, all scores for the checked response options are added and divided by four. The examination of these items for precision, stability and reliability using factor analyses on the sample data yielded adequate inter-item correlations and a high internal consistency reliability of α=.82. This implies that the four items in this scale dependably assessed peer pressure to breach home or school or society rules and engage in HIV risk behaviours among adolescents involved this study.

3.5.3.3 Socioeconomic status scale

This scale contained eight (8) items that assessed adolescents' socioeconomic status based on the type of house lived in, number of meals consumed daily, and possession of other household or personal things such as farmland, television, radio, beddings, clothing and soaps. The items were adopted from the Uganda Demographic and Health Survey questionnaire (UBOS & ICF, 2018) and Udai Pareekh's scale (Majumder, 2021; Wani, 2019). The adopted items were rephrased as statements and simplified to ease comprehension. Examples of the items in this scale were: *I live in a cemented house; I/we have land to farm on; I eat at least three meals in a day; I sleep on a mattress and in a blanket; I get soap to wash with each day; I change clothes each day; I have shoes or sandals to put on; and I/we have a radio or television at home.*

© University of Pretoria

Each item had a 2-point scale with response options of “yes or true” and “no or untrue”. A positive or “yes” response to any statement in this scale was given a score of one which signified high socioeconomic status, while a negative or “no” response to any statement was given a score of zero which signified poor socioeconomic status. This scale showed acceptable face validity during the proposal development and ethical review stages. The mean score was computed as a mean of eight items. To get the mean scores, all points for the checked response options were added up and divided by eight. The verification of the precision, stability and reliability of the items in this scale using factor analyses on the sample data yielded a high internal consistency reliability of α=.79. This implies that the eight items reliably assessed adolescents’ socioeconomic status based on type of shelter, number of meals had daily, and possession of land, television, radio, beddings, clothing and soaps.

3.5.3.4 Community stressors scale

This scale consists of subscales that assessed stressors related to HIV stigma, poverty reflected by absence of basic needs, personal threats, and interpersonal problems among adolescents involved in this study.

The HIV stigma subscale (HSS) contained 12 items that were developed by Visser et al. (2008) to assess HIV-related judgmental and social distancing attitudes in people living with HIV and community members who are 18 years or older. Some of items in this subscale were: *people living with HIV have themselves to blame or must have done something wrong to deserve it (judgmental); I feel afraid or uncomfortable to be around people with HIV*, *I would not like to be friends or sit next or live next door with someone with HIV, and I would not drink from a tap if a person with HIV had just drunk from it (social distancing).* The items have a reliability of α=.70 in a community sample and of α=.87 in the sample living with HIV (Visser et al., 2008). However, the phrasing of items this scale was slightly modified to match the sociocultural circumstances and comprehension abilities of adolescents in this study. Similarly, the phrasing and response and scoring format for each item was changed from a two-point to a three-point Likert scale with response options ranging from “disagree” to “agree” and scoring scale ranging from zero to two. With these revisions, a positive response to any item in this scale was given a score of two which signified high presence of HIV stigmatising attitudes, a neutral response to any item was given a medium score of one, which signified moderate presence of HIV stigmatising attitudes. A negative response to any statement was given a score of zero which signified absence of HIV stigmatising attitudes.

The verification of items in this subscale using factor analysis on the sample data showed that one item, which assessed judgmental attitudes based on *whether HIV infection is a punishment for bad acts,* did not yield varied responses from participants, and was removed. The 11 remaining items yielded a higher reliability of α=.94 than the 12-items in the adopted HSS of α=.87 (Visser et al., 2008). This implies that the 11 items were highly dependable for assessing personal HIV-related judgmental and social distancing attitudes among adolescents involved in this study. Hence, the mean score on the revised HIV stigma subscale was obtained by

© University of Pretoria

adding up scores for all checked response options and dividing the total score by 11 items.

The poverty of basic needs subscale contained six (6) items that assessed stressors related to poverty reflected by absence of basic needs among adolescents. The items were adopted from the Combined Community Stressors Scale (*CCSS)* which was developed by Avalos et al. (2010) and Kalichman et al. (2006), and the WHO's Second Edition of the International Classification of Primary Care (ICPC-2) which was developed by WONCA (2015). To enable proper administration and comprehension of the questions among adolescents of diverse educational levels, the adopted items in this subscale were rephrased without changing the original meaning and qualifiers which could have required respondents to skip some items, were removed. Examples of the modified items in this subscale were, have you encountered: *lack of food or water or lighting or proper housing at home?* Each modified item had a "no" and "yes" response format that is scored on a two-point scale. With these changes, a negative or "no" response to any item was given a score of zero which signifies absence of the stressors related to poverty reflected by absence of the basic needs, and a positive or "yes" response to any item was given a score of one which indicates otherwise. The mean score on this subscale was computed as a mean of six items. To get the mean, all scores for the checked response options were added up and divided by six. The verification of these items using factor analysis on the sample data yielded a reliability of α=.75. This implies that the six (6) items in this subscale adequately assessed poverty reflected by absence of basic needs among adolescents involved in this study.

The personal threats subscale contained eight (8) items that assessed experience of personal threats in adolescents. The items were also adopted from the CCSS (Avalos et al., 2010; Kalichman et al., 2006) and ICPC-2 (WONCA, 2015). To enable proper comprehension of the questions by adolescents of diverse educational levels, the adopted items in this subscale were also rephrased without changing the original meaning and all qualifiers were removed. Examples of the modified items in this subscale were: *have you encountered situations of personal or caregivers' unemployment or serious injury or loss of property or legal actions or clashes with law enforcers, and situations of sickness and death and desertion by the parents or siblings or partner or child or other family member*. Each item had a "no" and "yes" response format which is scored on a two-point scale. With this scale, a negative or "no" response to the item was given a score of zero which signifies absence of stressors related to personal threats, and a positive or "yes" response to any item was given a score of one which signifies otherwise. However, the verification of the eight items using factor analysis on the sample data showed that five items, which assessed personal threats based on *experience of serious injury or legal action or problems with law enforcers or no job* and or *loss of own property,* did not adequately correlate with other items, and were removed. The three remaining items, that assessed personal threats based on *experience of illness and death and neglect of the parents or siblings or significant others,* yielded adequate internal consistency reliability of α=.72. This implies that these items were adequately reliable in gauging personal threats among the

© University of Pretoria

adolescents involved in this study. Hence, the mean score on the revised subscale was computed as a mean of three items. To get the mean, all scores for the checked response options were added up and divided by three.

The interpersonal problems subscale contained eight (8) items that assessed relationship problems in the adolescents. The items were adopted from the CCSS (Avalos et al., 2010; Kalichman et al., 2006) and ICPC-2 (WONCA, 2015). The phrasing of these items was slightly changed to enable proper comprehension of and response to items by adolescents of diverse backgrounds. Examples of the modified items in this subscale were: *have you met relationship problems with your parents or caregivers or brothers or sisters or relatives or children or partner or friends or neighbours or workmates, and discomforts due to pregnancy of your own or a family member*? Each item had a "no" and "yes" response format that is scored on a two-point scale. A negative or "no" response to the item was given a score of zero which means no relationship challenges, and a positive or "yes" response to any item was given a score of one which indicates otherwise. The verification of the eight items in this subscale using factor analysis on the sample data yielded a reliability of α=.79. This implies that these items were adequately reliable in gauging relationship stressors among adolescents involved in this study. Hence, the mean score on this subscale was computed as a mean of eight items. To get the mean, all scores for the checked response options were added up and divided by eight items.

3.5.3.5 Psychosocial distress scale

This scale contained 74 items which assessed various emotional (internalising) and conduct (externalising) distress signs such as anger and delinquency. The items were adopted from the Child Behaviour Checklist self-report for adolescents of ages 11 to 18 years (CBCL/11-18) which was developed by Achenbach and Rescorla (2001). The CBCL/11-18 has a high mean test-retest reliability of α=.82, mean internal consistency reliability of α=.81 and range of α=.67 to .95 content validity in detecting children with emotional and behavioural problems (Achenbach & Rescorla, 2001), and sociocultural adaptability (Bordin et al., 2013). The items adopted from this scale were *eight for anger, seven for inattentiveness, nine for anxiety, five for depression, five for loneliness, four for sleep unrest, seven for psychosis, five for somatisation, four for suicidal ideation, three for disobedience, six for disruptiveness, two for destructiveness, three for aggressiveness, and six for delinquency*. Each item was phrased in a manner that connotes emotional distress or deviant behaviour, and was rated on a three (3)-point Likert scale that had response options ranging from "not true" to "often true".

To enhance comprehension of the questions by the adolescents involved in this study, the items were slightly modified and the response options were changed to "never", "at times" and "always". Examples of the items which were modified and used to assess anger were: *I am jealous/resentful of others, or I act without stopping to think.* With this format, a positive (always) response to an item was given a score of two which means high risk, a middle (at times) response to an item was given a medium score of one which means moderate risk,

© University of Pretoria

and a negative (never) response to an item was given a score of zero which means no risk. The mean score of any internalising and externalising problem sign was computed as a mean of the items used to assess a specific problem, while the mean score on the entire scale was computed as a mean of the items used to assess all distress signs in the construct. To get the mean scores on each distress sign and or all distress signs, the points for the checked response options were added up and divided by total items in the subscale (such as eight for anger) and the entire scale which is 74 for all distresses (Achenbach & Rescorla, 2001; Bordin et al., 2013).

The factor analysis on the adopted items using sample data yielded a reliability of α=.96 for the 74 items that were used to assess all psychosocial distresses, of α=.96 for the 54 items used to assess all internalising distresses, and of α=.92 for the 20 items used to assess all externalising distresses. It also yielded internal consistency reliabilities of the items that were used to assess each psychosocial distress signs, which ranged from α=.64 for *sleep unrest* to α=.88 for *delinquency.* This implies that the adopted items were fairly to highly dependable in assessing the observed psychosocial distress signs among adolescents involved in this study.

3.5.3.6 Coping methods scale

This scale consisted of subscales that assessed use of social support, self-control, socialisation, deflection, and membership to social clubs coping methods among adolescents involved in this study.

The social support subscale contained 12 items which assessed social support based on receipt of and satisfaction with informational and emotional support from someone. The items were adopted from a 14-item Berlin Social Support Scale (BSSS) that was developed by Schwarzer and Schulz (2013). Whereas this scale has a high internal consistency reliability of α=.83 and sociocultural adaptability (Schwarzer & Schulz, 2013), two items *(i.e. when I felt bad, this person expressed concern about my condition, or took care of many things for me)* were excluded because they appeared generic. Examples of the 12 items that were adopted from the BSSS included: *when I felt bad, this person was there and comforted me, made me feel important, assured me of support, encouraged me not to give up, took care of many things I could not manage on my own, left me alone, did not show much empathy, criticised me, or suggested activities that were distractive.* For each item, the respondent was asked to think of a person who is closest such as a parent or usual caregiver or partner or friend or sibling and show how they reacted when they were approached with a problem in the past week.

To ease comprehension, these items were rephrased without distorting the meaning. The scoring scale and response options were changed from a four (4) to three (3)-point Likert scale with response options ranging from “disagree” to “agree”. With the revised scoring scale, a positive response to a positive statement or a negative response to a negative statement was given a score of two which signified high social support seeking behaviour. A middle response to a positive or negative statement was given a score of one which signified a moderate social support seeking behaviour. A negative response to a positive statement or a positive response

© University of Pretoria

to a negative statement was given a score of zero which signified a low social support seeking behaviour.

The factor analysis on the 12 items using sample data showed that two items, which assessed social support based on *whether significant others showed kindness or criticism when they felt bad,* did not correlate adequately with other items, and were removed. The 10 items which were retained in the social support subscale yielded a reliability of α=.91. This implies that these items were highly dependable in gauging coping with adversities by social support among adolescents involved in this study. Hence, the mean score on the final social support subscale was computed as a mean of 10 items. To obtain the mean, all scores for the checked response options were added up and divided by 10.

The self-control subscale contained 10 items which assessed self-control based on personal adjustment, pathology, performance and inter-personal success. The items were adopted from the Self-Control Scale (SCS) that was developed by Tangney et al. (2004) and showed a high internal consistency reliability of α=.81 and sociocultural malleability (Tangney et al., 2004). To enable proper comprehension, the adopted items were rephrased as: *I have hard time breaking bad habits, I refuse things that are bad for me even if they are fun, I'm good at resisting temptation, people say that I have very strong self-discipline, sometimes I can't stop myself from doing something even if I know it is wrong, and I often act without thinking through all alternatives*. The scoring scale and response options were also changed from a five (5) to three (3) point Likert scale with response options ranging from "not like me" to "like me". On this scoring scale, a positive response to a positive statement or a negative response to negative statement was given a score of two (2) which signified being highly self-controlled, a middle response to a positive or negative statement was given a score of one which signified a moderate self-control, and a negative response to a positive statement or a positive response to a negative statement was given a score of zero which signified no self-control.

The factor analysis on the 10 adopted items showed that three of them, which assessed self-control based on *ability to refuse bad things even if they are fun and ability to resist temptation and ability to self-discipline,* did not adequately correlate with other items, and were thus excluded. The seven (7) items which were maintained in this subscale yielded a reliability of α=.79. This is comparable with the reliability of the 10 items in the adopted SCS which was developed by Tangney et al. (2004). This implies that the seven items were adequate and dependable for assessing coping with adversities using self-control in the current sample. Hence, the mean score on the final self-control subscale was computed as a mean of the seven items. To obtain the mean, all the scores for the checked response options were added up and divided by seven.

The socialisation subscale contained seven (7) items which assessed coping with adversities using strategies such as relaxing, exercising, telling someone the issue, interacting with peers, partaking in social events, praying, and keeping to self or staying alone. The items which were used to assess these strategies were adopted from the 79-item Adolescent Coping Scale (ACS), which was developed by Frydenberg and Lewis (1993)

© University of Pretoria

based on the transactional model for stress and coping (Lazarus & Folkman, 1984) to assess 18 coping strategies that are grouped into productive, unproductive and reference to others coping ways. The internal consistency reliability of the subscales for the three coping ways ranged from α = .62 to α = .75 at the design stage (Frydenberg & Lewis, 1993), which is considered moderate (Tavakol & Dennick, 2011). After modification and verification of the subscales for the three coping ways using factor analysis on data of adolescents attending high school and clinical care at a mental health centre in Montreal Canada, the reliability then ranged from α=.83 to α=.91 in a school sample and α=.85 to α=.90 in a clinical care sample (Labelle et al., 2015), which is considered strong (Tavakol & Dennick, 2011). Although, the ACS has been used to assess coping with stress among adolescents in various settings (Labelle et al., 2015), it is quite long (Sveinbjornsdottir & Thorsteinsson, 2008).

To enable proper comprehension by the adolescents in this study, the adopted items were slightly modified as follows: *In dealing with a serious problem which came my way, I spent time working hard or exercising or interacting with peers or partaking in social events or praying or discussing with someone or staying alone.* The response options for each item were changed from "do not do it" – "a great deal" to "never" – "always". The scoring scale was also changed from a five (5) to three (3)-point Likert scale. On this scoring scale, a negative response to a statement was given a score of zero which signified no coping with adversities using a stated socialisation strategy, a medium response was given a score of one which signified a moderate coping with adversities using a stated socialisation strategy, and a positive response was given a score of two which signified high coping with adversities using a stated socialisation strategy.

Factor analysis on the seven items using sample data showed that one item, which assessed coping by *discussing problems with someone,* did not correlate adequately with other items, and was thus removed. The six items which were retained in the socialisation subscale yielded a reliability of α=.68. This implies that they were adequate and dependable for gauging coping with adversities using socialisation strategies among adolescents in this study. Hence, the mean score on the final socialisation subscale was computed as a mean of six items. To get the mean, all the scores for the checked response options were added up and divided by six.

The deflection subscale contained seven (7) items which assessed coping with adversities using deflective strategies such as trying to solve the issue, working hard, thinking positively, blaming, ignoring, joking, and assuming the issue or outcome may have been worse. The items used to evaluate these strategies were also adopted from the 79-item Adolescent Coping Scale (ACS) developed by Frydenberg and Lewis (1993). To enable proper comprehension, the adopted items were also slightly modified as follows: *In dealing with a serious problem which came my way, I focused on solving the problem or what is positive to life, I blamed self or others, I assumed there is no problem or that the worst may have occurred, I told someone or made jokes of the situation, etc.* The response options for each item were changed from "do not do it" – "a great deal" to "never" – "always". The scoring scale was also changed from a five (5) to three (3) point Likert scale. On this scoring scale, a negative

© University of Pretoria

response to a statement was given a score of zero which signified low coping with adversities using a specified deflective strategy, a medium response was given a score of one which signified a moderate coping with adversities using a specified deflective strategy, and a positive response was given a score of two signifying high coping with adversities using a stated deflective strategy. Factor analysis on the seven items using the sample data revealed that one item, which assessed coping by *assuming that there is no problem* did not correlate adequately with other items, and was thus removed. The six items which were retained in the final deflection subscale yielded a reliability of α=.77. This implies that they were adequate and dependable for assessing coping with adversities using deflection strategies among adolescents in this study. Hence, the mean score on the final deflection subscale was computed as a mean of six items. To obtain the mean, all scores for the checked response options were added up and divided by six.

The club membership subscale contained six (6) items which were purposely developed to assess coping by participation in groups or clubs one identifies or associates with. The six items used in this scale were adopted from the social competence section of the CBCL/11 – 18 that was developed by Achenbach and Rescorla (2001). For proper comprehension, the adopted items were rewritten in a statement format as follows: *Please indicate whether you never or at times or always partake in religious, peer, clan, sports, community welfare, and health clubs*. The response format of each item was changed from "less active", "average", "more active" to "never", "at times", "always" and scored zero to two. With these changes, a negative or "never" response to a statement was given a score of zero, which signified no coping with adversities by linking with others in clubs. A medium or "at times" response was given a score of one, which signified a moderate coping with adversities by linking with others in clubs. A positive or "always" response was given a score of two, which signified high coping with adversities by linking with others in club. The mean score is computed as a mean of six (6) items. To obtain the mean, all the scores for the checked options were added up and divided by six (6). However, the factor analysis on this subscale using sample data showed that the six items had inadequate inter-item, item to factor and inter-factor correlations. This implies that they were inconsistent with *other items and factors in* the coping measurement structure and were thus excluded.

3.5.3.7 Sexual risk behaviour scale

This scale contained **14** items which assessed risky sexual conditions and acts among adolescents. The items were adapted from a 45-item Adolescent Clinical Sexual Behaviour Inventory (ACSBI-S) which was developed by Friedrich et al. (2004) to assess adolescents' appearance concerns *(such as spending time looking right)*, un-conforming actions *(such as not wanting to bathe)*, sexual interest *(such as peeping into windows to see others in the bathroom)*, divergent sexual interests (*like flirting with others),* and risk-taking and avoidance behaviours *(such as abstaining from sex and engaging in unprotected sex)*. Each item was rated on a three (3)-

© University of Pretoria

point Likert scale with response options ranging from “untrue” to “very true”. The ACSBI-S had a high total reliability of α=.84, a low reliability of α=.39 for gauging un-conforming concerns, adequate reliability of α=.65 for gauging appearance concerns, a quite high reliability of α=.76 for gauging sexual interest and of α=.79 for gauging risk-taking behaviour and avoidance, and a high reliability of α= .81 for gauging divergent sexual interest (Friedrich et al., 2004). This scale has been used in various studies to assess risky behaviour in adolescents referred for clinical evaluations related to sexual abuse (Wherry et al., 2009).

To ease comprehension of the questions during interviews, the 14 items which were adopted from this scale were rephrased as follows: *I peep at sex organs of others, I allow/would agree to sexual advances, I have been asked for sexual relationships, I have ever had unprotected sexual intercourse, I have been forced into sexual intercourse, I have engaged in sex with a person who looks older and or in exchange for gifts or money.* The response format for these items was changed from “untrue” – “very true” to “yes” and “no”. The scoring scale was also changed from a three (3) to a two (2)-point scale. With these revisions, a positive response to a risky sexual behaviour and a negative response to a safe sexual behaviour were given a score of one which signified a high risk, and a positive or “yes” response to a safe sexual behaviour and negative or “no” response to a risky sexual behaviour was given a score zero which signified no risk.

Factor analysis on the 14 items using sample data identified two items which assessed risky sexual conditions by *testing for HIV and disclosure of the HIV status to someone* that did not correlate adequately with other items, and were removed. The 12 items which were retained in the scale yielded a high total reliability of α=.89. The six items which were retained in the risky sexual conditions’ subscale yielded a reliability of α=.78, and the six items which were retained in the risky sexual acts’ subscale yielded a reliability of α=.83. This implies that the final scale and its subscales dependably assessed sexual risk behaviour among adolescents involved in this study. Hence, the mean score on the final sexual risk behaviour scale was computed as a mean of 12 items. To obtain the mean, all scores for the checked response options were added up and divided by 12.

3.5.3.8 Summary of the psychometric properties for the final scales

The scales which were produced after factor analysis on the sample data showed an internal consistency reliability that ranged from *α*=.77 for the peer and socioeconomic influence scale to *α*=.96 for the psychosocial distresses scale, while the subscales showed an internal consistency reliability that ranged from *α*=.64 for the sleep unrest subscale to *α*=.94 for the HIV-stigma subscale. This implies that the items which were retained in the final scales and subscales reliably assessed the observed psychosocial and sexual experiences of the adolescents who were involved in this study.

© University of Pretoria

The detailed explanation of the process and outcomes of the factor analyses for each scale are presented in chapter four, and psychometric properties of the scales which were adopted, verified and ultimately used for this study, are indicated in the Table 13.

3.6 Data Collection Procedure

To ensure an unfettered access to the research sites and a systematic data collection process, the authorities of the three districts were notified about the study and the HIV-burdened localities and affected homes that had adolescents in each of these districts, were mapped beforehand. In addition, data was collected during holidays from 16th December 2019 to 17th February 2020 by a research team which consisted of a principal investigator (doctoral candidate) and three fieldwork supervisors, 15 research assistants and six fieldwork guides who were recruited from the study districts. The steps followed to collect data for this study are explained next.

3.6.1 Notification of authorities and mapping HIV-burdened localities and homes in districts

Before commencement with data collection, each district chief administrative officer, resident commissioner and director of health services was briefed about the study and handed letters approving the research. Afterwards, the coordinator for each district network of PLHIV[4] was briefed about the study and handed copies of the registration forms for HIV-affected homes and parental consent forms. Then, the coordinator for each district network of PLHIV worked with the leaders for each community support group of PLHIV to register the HIV-affected homes that included the names and contact details of their caregivers and seek initial written consent from them regarding their willingness to allow their children participate in the study.

The written registers and signed consent forms were verified, collated and sent to the principal investigator for scrutiny, matching and typesetting. The typed registers, checked parental consent forms and identified queries were then sent to the coordinator for each district network of PLHIV to rectify and add to the registers any other HIV-affected home identified after the initial registration. The updated registers and consent forms were kept and reviewed again during the training for the district data collection teams.

3.6.2 Recruitment, training and management of the research team

Next, a fieldwork supervisor, five research assistants and two fieldwork guides were recruited from each research district based on their proficiency in adolescent research and fluency in English and local languages.

[4] These were involved because they work with social groups and workers that provide care and psychosocial support to people living with and affected by HIV. The social groups and workers consisted mainly of persons who had HIV or had lost somebody due to AIDS-defining illnesses such as oral candidiasis, karposis-sarcoma, tuberculosis, persistent weight loss, acute respiratory infections, jaundice and presence of abscesses. The members and workers of the social groups usually knew the HIV-affected homes in their areas and the ages, health status and cause of death of the parents of the children who lived in them (Kahn et al., 2000; Lopman et al., 2006; NAFOPHANU, 2013, 2017, 2019; UAC, 2006, 2017).

© University of Pretoria

They received three days' training in research ethics, sampling processes and methods for building rapport, obtaining consent and administering questionnaires to participants, and participated in verifying translations and pilot-testing instruments[5].

Once the training had been completed, each district research team convened to scrutinise and update the registers, identify the homes with caregivers who had earlier consented to participate in the study, prepare a fieldwork schedule, and notify leaders of support groups in the chosen localities about the fieldwork dates. Research assistants were also handed the research materials consisting of a research protocol, registers of HIV-burdened localities and homes, research clearance letters, consent forms, household status forms, questionnaires, notebooks, pencils, and envelopes.

3.6.3 Fieldwork process

On the fieldwork days, pairs of research assistants visited different localities where they met leaders of the support groups operating in the area and jointly updated the register by adding new HIV-affected homes and removing those with caregivers who changed their minds about participating. They also randomly chose homes to visit in each area, briefed caregivers about the study and again asked them whether they would allow their adolescents to participate. When caregivers consented to their adolescents' participation in writing, the research assistants thanked them, explained the selection process, and asked them to provide the names, ages and genders of the children in the home, their health status and the type of care they received[6]. Caregivers who refused were thanked for their courtesy and the research assistants moved on to the next chosen home.

Afterwards, each research assistant invited one chosen adolescent at a time to a private place, sat down facing them, gave them the assent form, and explained the purpose of the study, the processes that would be followed and issues such as privacy of information, discomfort, rights and benefits, before asking whether they would be willing to participate in the study or not (UNCST, 2014). Once they had indicated their decision on the assent form, those who refused were allowed to leave, while those who accepted were interviewed.

During the interviews, the research assistants established rapport with the participants, gave the guidelines for responding to the questionnaire, assured them of the confidentiality of their answers and informed that they could withdraw from the study at any time. The research assistants read out one item at a time in English or the appropriate local language, clarified any tricky items to enable proper comprehension and reduce guessing, wrote answers in the questionnaire using pencil, and paused or ended the interviews if the

[5] The training sessions were conducted in series from: 10th to 13th December 2019 at Patanna Events Management, Training and General Services Centre in Lira district; 18th to 20th December 2019 at Holiday Hotel in Rukungiri district; and 28th to 30th December 2019 at Lunar Guest House in Kayunga district. Each trained district research team comprised a fieldwork supervisor, five research assistants, and two fieldwork guides.

[6] Verbal autopsies with caregivers about issues related to AIDS in families used in some studies have been found to be reliable in ascertaining the children's HIV, care or orphanhood status (Birungi et al., 2008; Cluver et al., 2007, 2012, 2013; Kahn et al., 2000; Kiirya, 1999; Kiirya et al., 2016; Lopman et al., 2006; NAFOPHANU, 2017, 2019; UAC, 2005, 2006, 2009; UNICEF, 2017).

© University of Pretoria

adolescents showed any signs of anxiety. Lastly, each participant was thanked and given a beverage and bar of soap worth ten thousand Uganda shillings 10000, which is equal to US$ 2.8, as compensation for participating.

Afterwards, research supervisors and assistants collated the completed questionnaires, checked and rectified errors, verified each adolescent's background information against the data in the household status form, and affixed it to the matching set of the completed questionnaires.

Once the interviews had been completed, the two research assistants thanked the caregivers for allowing their children to participate in the study and proceeded to the next chosen home where they repeated the process until the required sample per chosen locality had been attained. This process enabled the participation of adolescents with varied demographic characteristics, minimised experiences of discomfort, and ensured data privacy, completeness and accuracy.

3.6.4 Management of fieldwork risks

Some items in the questionnaire, especially those which required recalling stressful experiences such as illness or death of a dear one, aroused discomforts for some adolescents. Across the three districts, 48 participants experienced some discomfort and the interviews were paused and eventually terminated.

To mitigate the occurrence and effects of these experiences, the research assistants:

i) Ensured that all fieldwork guides were social workers or counsellors of PLHIV groups in the study sites and this enabled prompt counselling of participants distressed during the study;

ii) Devoted ample time on explaining to participants and caregivers the potential risks of the study, and ensured that only participants who assented were interviewed and from a place where no other person could eavesdrop to interviews;

iii) Informed participants during the assenting and interview stages that some questions would intrude their privacy or evoke horrific memories, that they could freely speak out and skip any question that causes discomfort, and that their answers would not be disclosed to another person; and

iv) Allowed participants who wished to withdraw and referred those distressed during or after the interview to the caregivers or fieldwork guides who were co-opted for counselling help.

3.7 Data Analysis Strategy

This subsection explains the steps and statistical tests performed to process (enter, check, clean, label, link and verify) and analyse the sample data so that the objectives of the study are addressed adequately.

3.7.1 Overview of the analyses

This study generated two sample datasets, namely (1) the HIV-affected household and children's

© University of Pretoria

background data as reported by caregivers in the household status form; and (2) self-reported questionnaire data on the sociodemographic attributes, peer influence, socioeconomic status, community stressors, psychosocial distresses, coping and sexual risk behaviour of the adolescents who live in HIV-affected homes.

Initially, data in the household status form of each selected HIV-affected home was matched with the questionnaire data of all adolescents who were chosen in that home. The matched data was entered twice in the Epidata software and moved to the Statistical Package of Social Sciences (SPSS) Version 24 for checking, cleaning, labelling and performing analysis trials on the dataset to identify and rectify inconsistencies.

Second, considering that the data from the scales used for this study was scored on a two (2) to three (3)-point Likert scale (ordinal) and yet the SPSS Version 24 does not have the polychoric (tetrachoric) correlation matrix module and other suitable attributes for managing highly correlated items in the process of extracting factors, the cleaned sample data was exported to the R-plugin program, Version 11.05.0[7], and exploratory factor analysis was performed on the items that assessed the variables of each construct in the theorised model to verify the precision, stability and reliability of the theorised factor structures for subsequent analyses (Choi et al., 2011; Lorenzo-Seva & Ferrando, 2019, 2020).

Third, the verified sample data was moved to SPSS to assess the magnitude of the observed variables and their associations among the adolescents. Afterwards, the dataset was shifted to SAS Version 9.4 (SAS Institute Inc., 2023) to simultaneously assess the predictors of sexual risk behaviour in the theorised structural path model using SAS Proc GLM (Minitab LLC., 2023; NCSS Statistical Software, 2023), and to reassess the interrelationships of all statistically significant observed and latent variables in the theorised structural path model using SEM in line with the SAS Proc CALIS procedure.

The reassessment of interrelationships included identifying and removing the unimportant variables from the models and creating modified models that showed pathways of the factors predicting sexual risk behaviour among the adolescents who were living with HIV, not living with HIV and unaware of their HIV status (Byrne, 2016; Christ et al., 2014; Fan et al., 2016).

3.7.2 Specific analyses performed

To adequately answer all research objectives, sample data was analysed in six key phases using various tests. First, exploratory factor analysis (EFA) was performed on the data for the items that assessed peer influence, socioeconomic status, community stressors, psychosocial distress, coping methods, and risky sexual behaviour to verify their links with the proposed factor (Choi et al., 2011; Lorenzo-Seva & Ferrando, 2019, 2020). To achieve factor simplicity, the robust un-weighted least squares factor extraction method and Promin diagonal

[7] This program was used because it effectively calculates polychoric correlations for data that is scored on a two-to-three-point scale and smoothers highly correlated items to get a positive definite matrix (Lorenzo-Seva & Ferrando, 2020).

© University of Pretoria

rotation was performed to identify factors and inter-factor relations using: (1) the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy which compares values of correlations among variables with values of partial correlations to ascertain relations between two variables while removing effects of the remaining variables, and recommends a sampling adequacy cut-off of .6 since smaller values imply little usefulness of the variable to a factor structure; and (2) the Bartlett test of sphericity of the correlation matrix which compares the observed with the identity correlation matrix to find identical variables that can be merged with others and identifies items in the scales with adequate loadings of ≥ 0.4 to one factor (Lorenzo-Seva & Ferrando, 2019. 2020; Snedecor & Cochran, 1989). Unrelated and weak items with loading scores of less than .3 were removed from the proposed factor and the retained items were assessed for inter-item and inter-factor correlations to prove the factor structures (Byrne, 2005, 2010, 2016; Lorenzo-Seva & Ferrando, 2021). The EFA loadings of items to each proposed factor are showed in Table 11.

Second, the sample data was examined for multivariate normality and linearity by calculating the skewedness and kurtosis values for Likert scale responses and adjusting for multivariate outlying cases, as they are detrimental to mean and variance and covariance tests in structural equation modelling (Kline, 2016). Afterwards, the first and second order confirmatory factor analyses (CFA) were run on data for items in each factor to verify their goodness of fit with the theorised factor structure using multiple sensitive model fit indices (Byrne, 2005, 2016). The model fit indices used included; the chi-square (X^2) with its related degrees of freedom (*df*), the comparative fit index (*CFI*; Bentler, 1990) among the hypothesized and independence or null model of ≥ 0.93, the standardised root mean square residual (*SRMR*; Hu & Bentler, 1998) value of ≤ .05, and the root mean square error of approximation in the population (*RMSEA*; Steiger, 1990) of ≤ .05 together with its confidence interval (*CI*; MacCallum & Austin, 2000) of 90%. Results of the correlations between scores for each latent factor and their observed variables are showed in Tables 3, 5, 6, 8 and 10. Results of the goodness of fit tests on data for items in each final scale of this study are indicated in Table 12.

In addition, Cronbach alpha tests were run to assess the internal consistency reliability of the items retained in each observed and latent factor. The results of these tests are indicated in section 3.5.3 and Table 13, which summarise the psychometric properties of the adopted and final scales for this study.

Third, the verified sample data was exported to SPSS where univariate, variance and Kruskal-Wallis's equality-of-populations rank tests were performed to compute and compare the frequency, mean, standard deviation, median, range, kurtosis, skewedness and percentage scores of adolescents living with and affected by HIV on all observed sociodemographic attributes[8], community stressors[9], psychosocial distresses[10], coping

[8] Namely, age, gender, HIV status, religious conviction, parental survival, type and age and length of orphanhood, education level, occupation, number of lifetime homes, span in HIV-affected home, number of residents and sick persons in the home, number of lifetime caregivers, type of caregiver, HIV status of the caregiver, locality of the home, ethnicity, school attendance, receipt of HIV or psychosocial care, peer influence, and socioeconomic status.
[9] Namely, poverty reflected by absence of basic needs, personal threats, interpersonal problems, and HIV-related stigma.
[10] Namely, anger, inattentiveness, anxiety, depression, loneliness, sleep unrest, psychosis, somatisation, suicide ideation, disobedience, disruptiveness, destructiveness, aggressiveness, and delinquency.

© University of Pretoria

methods[11] and sexual risk behaviours[12]. Cohen's *d* test was also performed to establish the effect sizes of their HIV status on these variables (Cohen, 1990). These tests helped to determine the levels of these variables in the three groups, identify the variables on which these groups varied significantly, and to address the first objective of this study. The results of these tests are indicated in Tables 14 to 16.

Fourth, to control for the effects of coping methods and the categorical levels and covariates of the observed variables in each hypothesised model, SAS Proc general linear model (Minitab LLC., 2023) tests were performed on the verified sample data for different models to identify all the psychosocial variables that could possibly independently influence the sexual risk behaviour of the adolescents who lived in HIV-affected homes, and ultimately address objective two and three of this study. This analysis also helped to identify the psychosocial variables that were significantly or marginally associated with the sexual risk behaviour of the adolescents and were considered in the subsequent SEM path analyses. The results of the GLM tests are presented in Tables 17 to 40.

Fifth, the SEM path tests were performed to examine the interactions and pathways among the statistically important psychosocial factors and the sexual risk behaviour of the different adolescent groups who live in HIV-affected homes following the SAS Proc CALIS procedure (SAS Institute Inc., 2013). This procedure involved (1) entering in the path models all predictor and intervening variables which were statistically or marginally significant in the GLM tests; (2) identifying the variables which did not yield statistically significant pathways (associations and coefficients among predictors and interveners) and removing them from the structural model; and (3) analysing the retained significant models (Byrne, 2016) whilst controlling for gender and age to produce the final outcome models for the whole sample of adolescents and for the groups of adolescents who were living with HIV, not living with HIV and not aware of their HIV status. Some results of these tests are summarised in Table 42 and illustrated in Figures 4 to 7.

Lastly, the mean chi-square statistic obtained from bootstrapped sampling distributions and the associated Bollen-Stine statistic of greater than .001 available in SAS Proc GLM (SAS Institute Inc., 2013) which are both sensitive to sample size (Blunch, 2008; Bollen & Stine, 1992, 1993; Zhu, 1997), the *RMSEA* and *SRMR* values of ≤ .05, and the *CFI* and Tucker-Lewis Index (*TLI*; Tucker & Lewis, 1973) of ≥ .93 were used to examine the model fit**.** These tests showed the significant exogenous variables in the structural models, how they interact to predict sexual risk behaviour, the gaps in the conceptualised framework, and the critical factors of sexual risk behaviour among the study population to tackle. Some results of these tests are showed in Figures 4 to 7.

[11] Namely, self-control, socialisation, deflection and seeking informational and emotional support.
[12] Namely, risky sexual conditions and acts.

© University of Pretoria

3.8 Data Management and Quality Assurance

The quality of data for this study was assured by:

i) Recruiting fieldwork supervisors and research assistants with expertise in adolescent research and the local languages spoken in the study areas, training them in the research ethics and processes, and translating and pilot-testing the instruments before data collection;

ii) Deploying one fieldwork supervisor together with four research assistants in each district and collecting data from each selected HIV-affected home in pairs;

iii) Reading out one question at a time for participants who could not read or write, guiding those who could read and write how to indicate answers on the questionnaire, and limiting the number of questionnaires administered by each research assistant to five per day to discourage them from rushing interviews;

iv) Using verbal autopsies with caregivers and the accessible health care records at home to verify adolescents' background data;

v) Checking the data in the completed forms and questionnaire before moving to the next eligible home;

vi) Harmonizing data in the household status form with the adolescents' background data in the questionnaire on daily basis;

vii) Reviewing and coding the data in the forms and questionnaires personally, and recruiting an experienced data analyst to enter data twice in the Epidata software;

viii) Using the SPSS programme to clean, label, link, identify and correct inconsistencies in the dataset;

ix) Working together with a statistician in the University of Pretoria's Statistical Support Centre that has vast expertise in SEM to verify and analyse data using the appropriate statistical tests; and

x) Saving the verified dataset on a pass word protected computer in the Department of Psychology's archive (i.e., HSB 11-14) for at least 15 years, and storing the completed instruments in a safe place.

3.9 Scientific and Ethical Guarantees of the Study

To ensure that this study is in line with the international norms for research involving human subjects, the following ethical practices were safeguarded:

During the project development phase, the proposal and instruments for this research were reviewed and approved by the Research and Ethics Committees of the Faculty of Humanities of the University of Pretoria under reference number 04562195 (GW20171115HS), the Uganda National AIDS Research Committee under reference number ARC208, and Uganda National Council for Science and Technology under reference SS270ES.

© University of Pretoria

During the data collection phase, informed consent was sought from the adolescents' caregivers. The chosen adolescent was taken through the assenting process, and also asked if they agree to their data being used for further research. Only those who agreed were interviewed in a private place. Confidentiality was prioritised. No one was told the answers of the respondents and HIV status of another. Each participant was compensated for their time. Participants who wished to withdraw from the study were allowed without any penalty. Distressed participants were referred to the caregivers or fieldwork guides for counselling.

During the data analysis phase, all completed questionnaires were gathered and manually counted, checked and kept in a secure place by the principal investigator. Personal identifiers were removed from the questionnaires before handing them to a data analyst for entry into the computer. Entered data was cleaned, linked and saved on a password protected computer which is accessed by the principal investigator and two statisticians. This dataset was stored in the Department of Psychology's archive from where other researchers may access and reuse it with the consent of the principal investigator.

In this chapter, we have discussed the research design and how the cross-sectional data was collected from a large sample of adolescents in HIV-affected homes. In the next chapter, the verification of the scales and the sample data for this study is discussed.

© University of Pretoria

CHAPTER FOUR: VERIFICATION OF SCALES AND DATA FOR STRUCTURAL EQUATION MODELLING

This chapter presents the processes and results of the exploratory and confirmatory factor analyses performed on the sample data to establish the precision and stability and reliability of the scales in assessing the observed variables, and to prepare their datasets for additional analysis using SEM.

The polychoric correlations module was used in both factor analyses because the dataset is specified in numerals and scored on two to three-point Likert scales (Choi et al., 2011; Lorenzo-Seva & Ferrando, 2020, 2021). Results of the EFA and CFA for each scale are described henceforth.

4.1 Peer Influence and Socioeconomic Status Scale

This scale consisted of 12 items that were presumed to assess peer influence and socioeconomic status among adolescents. Each item was answered and scored on a two-point scale. Four of the items assessed peer influence based on influence to *change views on anything, to do anything contrary to the usual ways, to engage in dating or sex, and to break rules either at home or school or elsewhere.*

Eight of the items assessed socioeconomic status based on *possession of a house with cemented floor and walls, land to cultivate, at least three meals to eat in a day, a mattress and blanket to sleep on, soap to wash or bath with each day, different clothes to wear, shoes or sandals to put on, and a radio or television at home.*

4.1.1 EFA on the 12 items in the scale

The EFA was performed on the dataset of the 12 items to examine their sampling adequacy as well as their links with each other and with the two presumed factors in the peer influence and socioeconomic status scale as stipulated in the Bayesian estimation modal (Choi et al., 2011). The results of which are presented.

4.1.1.1 Inter-item correlations matrix of the scale

The inter-item correlations matrix in Table 2 shows that the correlation coefficients of items in the peer influence and socioeconomic status scale range from very low to high with the least coefficient being -.008 for the correlation between items used to assess *possession of land to farm (q262land)* and *peer influence to break any rule at home or school (q254breakrule)* and the highest being .85 for the correlation between items used to assess *peer influence to change views on anything (q251belief)* and *to do anything abnormal (q252not_norm).*

Coefficients are least where the items that assess socioeconomic status were correlated with those that assess peer influence, implying that the items of these variables are largely distinct.

© University of Pretoria

Table 2. Standardised variances of the EFA polychoric correlation matrix for items in the peer influence and socioeconomic status scale

Items	1	2	3	4	5	6	7	8	9	10	11	12
1 = q251belief	1.000											
2 = q252not_norm	**.850**	1.000										
3 = q253dating	.691	.694	1.000									
4 = q254breakrule	.756	.845	.715	1.000								
5 = q261cement_hse	.226	.151	.238	.195	1.000							
6 = q262land	-.144	.025	.033	**-.008**	.289	1.000						
7 = q263meals	.064	.131	.059	.132	.479	.404	1.000					
8 = q264mattress	.278	.248	.221	.282	.634	.338	.680	1.000				
9 = q265soap	-.166	-.212	.017	-.142	.354	.481	.467	.455	1.000			
10 = q266clothes	.016	.021	.154	.052	.373	.469	.574	.527	.756	1.000		
11 = q267shoes	.131	.129	.186	.208	.464	.389	.489	.648	.626	.760	1.000	
12 = q268radio_tv	.192	.265	.267	.310	.591	.322	.510	.593	.416	.546	.638	1.000

Notes: The items 1 to 4 assessed peer influence variable, while items 5 to 12 assessed socioeconomic status variable. The yellow shadings indicate the inter-item correlations with relatively low coefficients. Bold indicates the range of the inter-item correlation coefficients in the matrix.

4.1.1.2 Adequacy of the polychoric correlation matrix

The polychoric correlation matrix yielded: 1) a determinant of the matrix of .00013, meaning that the observed and identity correlation matrices are connected and that the items in this scale are varied; 2) Bartlett's test statistic on the probability of presence in the correlation matrix of significant correlations among some variables in the dataset of 12777.8 (df = 66; p < .001), implying that some of the items in the peer influence and socioeconomic scale are significantly related and thus amenable to factor analysis; and 3) a KMO test index for the correlation among the 12 items in the sample of .81, which is greater than .70. This implies that the 12 items in the dataset of this construct are amply related and good for factor analysis (Lorrenzo-Seva & Ferrando, 2021).

4.1.1.3 Normed measure of sampling adequacy indices for items in the scale

The matrix for normed item-measure of sampling adequacy (MSA) indices[13] yielded fair to good MSA indices with the least rounded value being .70 for the item that assesses *peer influence to do anything not normal to own ways (q252not_norm)* and the highest being .88 for the item that *assesses socioeconomic status based on possession a radio or television at home (q268radio_tv).* This implies that the 12 items in this scale do not share the same content and thus have adequate discriminating power and ability of measuring the same domain (Lorrenzo-Seva & Ferrando, 2021). The MSA indices of each item in this scale are shown in part A of appendix 2.

[13] This is one of the diagnostic index for common EFA which helps to flag and debug the most inappropriate items in the measurement structure before factor analysis. The term sampling adequacy derives from the fact that the items under study are viewed as a sample of a potential universe of items that could measure the presumed factor (Lorenzo-Seva & Ferrando, 2021).

© University of Pretoria

4.1.1.4 Proportions of variances explained by each item in the scale

The analysis of explained variances based on eigenvalues identified two items in this scale with portions of variances that are equal to or greater than 1.0. This included items that assess *peer influence to change views or beliefs on anything (q251belief)* and *peer influence to do anything abnormal to own ways (q252not_norm)*. These two items, which assess peer influence, explained .68 (68%) of the variance in peer and socioeconomic influence scores and the 10 items explained the remaining variance. This implies that the two items dominate this scale and explain most of the changes in the peer influence and socioeconomic status data.

4.1.1.5 Rotated loadings of items to the two factors of the scale

The rotated loading matrix revealed that the four items used to assess the peer influence factor load on the socioeconomic status factor quite highly to very highly with the least loading coefficient being .74 for the item that assesses *peer influence to engage in dating or sexual intercourse (q253dating)* and the highest coefficient being .94 for the item that assesses *peer influence reflected by doing anything not normal to own ways (q252not_norm).*

It also revealed that the seven items used to assess the socioeconomic status factor load quite fairly to very highly on the peer influence factor with the least loading coefficient being .55 for the item that assesses *possession of land for farming (q262land) and the highest coefficient being* .84 for the item that assesses ability to *put on different clothing each day (q266clothes).*

Additionally, one item that assesses *the nature of floor of the house lived in (q261cement_hse)* loads fairly (.59) to its own factor. These rotated loading coefficients imply that the 12 items in the peer influence and socioeconomic status scale fairly to adequately correlate and assess the two theorised factors.

4.1.1.6 Explained variances of the rotated factors and reliability of EAP scores on the scale

The matrix of explained variance of rotated factors and reliability of PHI-information oblique expected a posteriori (EAP) scores showed that the two factors in this scale have 1) explained variances that are acceptable with the least variance being 2.2 for the peer influence factor and the highest being 3.3 for the socioeconomic status factor; 2) ORION scores that are very high of .92 for the peer influence factor and .94 for socioeconomic status factor; and 3) factor determinacy indices or reliability criteria that are very high at .96 for peer influence and .97 for the socioeconomic status. This implies that the two factors contribute to changes in the dataset, have very high criterion reliability, and are thus suitable for assessing peer influence and socioeconomic status. See the Tables in part A of appendix 2 for full results of the EFA models performed on the dataset of this scale.

© University of Pretoria

4.1.2 CFA on the 12 items in the scale

A first- and second-order CFA was performed on the dataset of the 12 items in this scale to verify their validity and suitability in assessing peer influence and socioeconomic status among adolescents in this study.

4.1.2.1 Goodness of fit statistics of the data

The lavaan 0.6-7 of the first-order CFA ended normally after 63 iterations and satisfactory model fit indices were achieved with a CFI of .95, TLI of .93, RMSEA of .072, and SRMR of .06. Similarly, the lavaan 0.6-7 of the second-order CFA model ended normally after 56 iterations and yielded the same model fit indices as the first-order CFA but a good fit was not achieved because the information matrix did not fully invert i.e. generate standard error, *z*-score and probability values. This model fit statistics imply that the observed and expected correlation information matrix for this construct are slightly different (Blunch, 2008; Byrne, 2016), and therefore empirically and theoretically suitable for SEM.

4.1.2.2 Item-to-factor and alpha reliability correlations of the scale

The first-order CFA model yielded fair to high item-to-factor correlation coefficients for the peer influence factor with the least coefficient being .59 for the item that assesses *peer influence related to involvement in dating and sex (q253dating)* and the highest being .81 for the item that assesses *peer influence related to doing anything that is abnormal to own ways (q252not_norm),* and quite low to fair item-to-factor correlations for the socioeconomic status factor with the least coefficient being .37 for the item that assesses *possession of land for farming (q262land)* and the highest being .674 for the item that assesses *possession of beddings to sleep like mattress and blanket (q264mattress).*

The CFA also yielded satisfactory reliability coefficients for the four items in the peer influence subscale (.82), the eight items in the socioeconomic status subscale (.79), and the 12 items in the entire scale (.77). This item-to-factor and alpha reliability correlation statistics imply that the theorised items are suitable and reliable for assessing the intended factors and construct. See Table 11 for the summary of CFA loadings of each item on their respective factors in the peer influence and socioeconomic status scale.

4.1.2.3 Inter-factor and factor-to-construct correlations of the scale

The two CFA models also yielded fairly low but statistically significant inter-factor and factor-to-construct coefficients. As can be seen in Table 3 below, the correlation coefficient between the peer influence factor and the socioeconomic status factor is .17 which is quite low, while the correlation coefficients between the theorised peer influence factor and peer influence-socioeconomic status construct is .36 and the correlation between the socioeconomic status factor and same construct is .47, which is both quite fair. This implies that

© University of Pretoria

the two factors correlate with each other and with the entire peer influence-socioeconomic status construct, but not highly. Hence, data of the two CFA models was relied on in subsequent analyses of this study. See the Tables in part A of appendix 2 for results of all CFA models performed on the dataset for this scale.

Table 3. CFA inter-factor and factor-to-construct correlations of the peer influence and socioeconomic status scale

Observed variables	Latent construct Peer influence and socioeconomic status	Observed variable Peer influence
Peer influence	.360**	
Socioeconomic status	.467**	.168**

Notes:
Data in the second column was got from a partially inverted CFA second order model.
Data in the third column was got from a fully inverted CFA first-order model.
** Correlation coefficients are significant (p=.000) at .01 level of significance.

4.1.3 Conclusion

The EFA and CFA results show that 1) the 12 items used to assess the peer influence-socioeconomic construct fairly to highly correlate with each other and with the two factors they represent i.e. peer influence and socioeconomic status, 2) the two factors fairly correlate with each other and with the construct they intended to measure, and 3) the scales of the two factors are fairly to highly internally consistent and precise to assess the intended construct. This implies that data for peer influence and socioeconomic status is fit for SEM.

4.2 Community Stressors Scale

This scale consisted of 34 items that were presumed to assess four types of community stressors namely, poverty reflected by absence of basic needs, personal threats, interpersonal problems, and HIV-related stigma. The items were answered and scored on a two to three-point scale. Six (6) items assessed poverty reflected by absence of basic needs based on *lack of food, a home, water, lighting, good housing and work by the household head*. Eight (8) items assessed personal threats based on experience of *serious injury, legal action, problems with the law enforcers, lack of a job, theft of personal property as well as illness* and *death and neglect of either parents or siblings or significant others in life.* Eight (8) items assessed interpersonal problems based on experience of own sickness, a family members' or own pregnancy, as well as relationship problems with parents, siblings or own children, girlfriend or boyfriend, other friends, neighbours, and workmates.

In addition, 12 items assessed HIV-related stigma based on blame or judgmental attitudes *(like HIV infection is a punishment for bad acts, worry amid people with AIDS, and feelings that those with HIV should have done something wrong, should blame themselves and should be ashamed)*; and social distancing attitudes *(like fear sitting next to someone with AIDS signs, feeling less about people with HIV, discontent with living next door*

© University of Pretoria

to a person with HIV, dislike of friendships with HIV positive persons, dislike offering work to persons with HIV, and dislike eating food on the same plate with HIV positive people).

However, one item in the HIV stigma subscale that assesses social distancing attitude based on *whether HIV infection is a punishment for bad acts (st1punish)* did not yield varied responses from participants or contribute to the distribution of scores or correlate with other items, and was therefore removed from the sample dataset thereby retaining 33 items in the community stressors scale for verification.

4.2.1 EFA on 33 items in the community stressors scale

The EFA was run on the dataset of the 33 items to verify their sampling adequacy as well as their links with each other and with the four assumed factors in the community stressors scale, as stipulated in the Bayesian estimation modal (Choi et al., 2011). The full polychoric correlation information matrix is presented in Table 4 below. The lower triangle of this matrix shows the correlations of items in this scale before sweet smoothing[14], while the upper triangle shows the inter-item correlations after the smoothing process.

[14] This is a statistical procedure of estimating data by means of weighted averages of observations to give a clearer indication of the patterns or trends in the data (Lorenzo-Seva & Ferrando, 2021).

© University of Pretoria

Table 4. The EFA correlation matrix of 33 items in the community stressors scale before and after the smoothing procedure

Items	PCDi	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
1	3.7%	-- --	.598	.485	.484	.396	.570	.104	.336	.236	.240	.031	-.035	.016	-.041	.126	.218	.255	.181	.156	.182	.295	.184	-.190	-.142	-.151	-.147	-.138	-.131	-.107	-.014	-.024	-.049	-.103
2	6.4%	.598	-- --	.706	.533	.519	.635	.252	.624	.565	.498	.190	.044	.294	.165	.187	.477	.601	.478	.408	.445	.473	.427	-.099	**-.023**	.084	.024	.053	.027	.047	.221	.212	.246	.178
3	4.9%	.485	.706	-- --	.631	.500	.462	.120	.368	.397	.303	.028	.072	.158	.047	.179	.317	.443	.395	.276	.241	.345	.275	-.112	-.097	-.018	-.090	-.042	-.028	-.010	.131	.140	.139	.068
4	2.9%	.484	.533	.631	-- --	.650	.445	.260	.228	.202	.297	.050	.261	.216	.137	.061	.250	.236	.190	.073	.072	.246	.080	-.041	-.116	-.047	-.125	-.075	-.028	.069	.082	.057	.098	-.029
5	4.2%	.396	.519	.500	.650	-- --	.565	.372	.229	.200	.400	.217	.261	.162	.135	.050	.232	.147	.218	.156	.155	.283	.149	-.045	-.069	-.029	-.062	-.052	-.007	.113	.077	.073	.068	-.003
6	6.9%	.570	.635	.462	.445	.565	-- --	.168	.425	.446	.501	.176	.049	.133	-.052	.236	.246	.323	.285	.191	.235	.397	.316	-.100	-.047	.009	-.038	-.063	-.043	.022	.070	.079	.038	-.030
7	9.1%	.104	.252	.120	.260	.372	.168	-- --	.392	.351	.245	.455	.402	.393	.408	.157	.285	.347	.327	.427	.285	.182	.331	.232	.280	.279	.302	.330	.253	.252	.247	.244	.261	.196
8	9.9%	.336	.624	.368	.228	.229	.425	.392	-- --	.728	.502	.311	-.006	.265	.326	.298	.527	.681	.646	.530	.630	.508	.564	-.172	.122	.150	.151	.151	.082	.091	.151	.167	.201	.121
9	37.8%	.293	.702	.493	.250	.248	.553	.436	.904	-- --	.530	.315	.005	.181	.223	.293	.463	.583	.555	.480	.512	.433	.482	-.035	.223	.197	.175	.233	.150	.196	.195	.232	.240	.219
10	8.5%	.240	.498	.303	.297	.400	.501	.245	.502	.658	-- --	.175	.281	.272	.174	.380	.291	.438	.545	.400	.373	.453	.432	-.028	.051	.108	.038	.103	.097	.136	.048	.085	.051	.103
11	37.7%	.038	.236	.035	.062	.269	.219	.565	.386	.485	.218	-- --	.337	.240	.186	.216	.240	.328	.317	.355	.303	.103	.266	.206	.280	.239	.280	.260	.151	.110	.222	.225	.161	.159
12	6.9%	-.035	.044	.072	.261	.261	.049	.402	-.006	.006	.281	.418	-- --	.725	.472	.457	.238	.152	.158	.253	.169	.055	.086	.325	.326	.319	.257	.297	.289	.259	.230	.239	.150	.244
13	7.7%	.016	.294	.158	.216	.162	.133	.393	.265	.224	.272	.298	.725	-- --	.641	.503	.449	.439	.345	.432	.324	.206	.320	.217	.269	.269	.312	.302	.224	.254	.288	.264	.274	.311
14	37.0%	-.050	.204	.059	.170	.168	-.064	.506	.405	.344	.216	.287	.586	.796	-- --	.237	.471	.319	.372	.389	.315	.177	.269	.095	.173	.161	.192	.194	.118	.104	.069	.086	.090	.109
15	6.3%	.126	.187	.179	.061	.050	.236	.157	.298	.364	.380	.268	.457	.503	.295	-- --	.372	.400	.407	.421	.458	.367	.490	.087	.188	.213	.205	.207	.155	.079	.184	.181	.164	.159
16	8.4%	.218	.477	.317	.250	.232	.246	.285	.527	.575	.291	.297	.238	.449	.585	.372	-- --	.573	.655	.619	.614	.398	.452	-.051	.074	.074	.137	.119	.004	.044	.017	.032	.080	.025
17	7.2%	.255	.601	.443	.236	.147	.323	.347	.681	.723	.438	.407	.152	.439	.396	.400	.573	-- --	.791	.690	.703	.508	.591	-.017	.194	.184	.247	.285	.162	.178	.266	.256	.304	.240
18	8.2%	.181	.478	.395	.190	.218	.285	.327	.646	.690	.545	.394	.158	.345	.462	.407	.655	.791	-- --	.754	.772	.578	.650	-.143	.080	.092	.150	.184	.056	.113	.046	.017	.072	.053
19	7.3%	.156	.408	.276	.073	.156	.191	.427	.530	.596	.400	.441	.253	.432	.483	.421	.619	.690	.754	-- --	.780	.477	.580	.135	.258	.234	.289	.331	.247	.155	.184	.181	.133	.184
20	7.7%	.182	.445	.241	.072	.155	.235	.285	.630	.636	.373	.376	.169	.324	.391	.458	.614	.703	.772	.780	-- --	.520	.595	.023	.183	.167	.186	.231	.109	.101	.091	.105	.107	.079
21	37.4%	.366	.588	.429	.305	.351	.493	.225	.631	.667	.562	.159	.069	.255	.273	.456	.494	.631	.718	.593	.646	-- --	.477	-.110	.045	.163	.076	.073	.137	.164	.235	.219	.238	.143
22	7.9%	.184	.427	.275	.080	.149	.316	.331	.564	.598	.432	.330	.086	.320	.334	.490	.452	.591	.650	.580	.595	.592	-- --	.021	.145	.108	.115	.162	.042	.059	.154	.119	.145	.121
23	0.6%	-.190	-.099	-.112	-.041	-.045	-.100	.232	-.172	-.043	-.028	.256	.325	.217	.118	.087	-.051	-.017	-.143	.135	.023	-.136	.021	-- --	.837	.767	.830	.829	.806	.663	.715	.709	.689	.712
24	1.2%	-.142	-.023	-.097	-.116	-.069	-.047	.280	.122	.277	.051	.348	.326	.269	.214	.188	.074	.194	.080	.258	.183	.056	.145	.837	-- --	.855	.874	.853	.788	.705	.752	.747	.734	.753
25	1.2%	-.151	.084	-.018	-.047	-.029	.009	.279	.150	.245	.108	.297	.319	.269	.200	.213	.074	.184	.092	.234	.167	.202	.108	.767	.855	-- --	.850	.809	.808	.699	.771	.765	.748	.723
26	1.1%	-.147	.024	-.090	-.125	-.062	-.038	.302	.151	.217	.038	.347	.257	.312	.239	.205	.137	.247	.150	.289	.186	.094	.115	.830	.874	.850	-- --	.897	.814	.695	.768	.755	.782	.779
27	1.2%	-.138	.053	-.042	-.075	-.052	-.063	.330	.151	.289	.103	.323	.297	.302	.241	.207	.119	.285	.184	.331	.231	.090	.162	.829	.853	.809	.897	-- --	.849	.712	.798	.797	.789	.841
28	0.6%	-.131	.027	-.028	-.028	-.007	-.043	.253	.082	.187	.097	.188	.289	.224	.146	.155	.004	.162	.056	.247	.109	.170	.042	.806	.788	.808	.814	.849	-- --	.794	.826	.822	.794	.842
29	0.8%	-.107	.047	**-.010**	.069	.113	.022	.252	.091	.243	.136	.136	.259	.254	.130	.079	.044	.178	.113	.155	.101	.204	.059	.663	.705	.699	.695	.712	.794	-- --	.752	.719	.761	.766
30	1.1%	-.014	.221	.131	.082	.077	.070	.247	.151	.242	.048	.276	.230	.288	.086	.184	.017	.266	.046	.184	.091	.292	.154	.715	.752	.771	.768	.798	.826	.752	-- --	**.936**	.903	.865
31	1.2%	-.024	.212	.140	.057	.073	.079	.244	.167	.288	.085	.279	.239	.264	.107	.181	.032	.256	.017	.181	.105	.272	.119	.709	.747	.765	.755	.797	.822	.719	**.936**	-- --	.920	.864
32	1.1%	.049	.246	.139	.098	.068	.038	.261	.201	.298	.051	.200	.150	.274	.112	.164	.080	.304	.072	.133	.107	.295	.145	.689	.734	.748	.782	.789	.794	.761	.903	.920	-- --	.901
33	0.8%	-.103	.178	.068	-.029	-.003	-.030	.196	.121	.272	.103	.197	.244	.311	.136	.159	.025	.240	.053	.184	.079	.178	.121	.712	.753	.723	.779	.841	.842	.766	.865	.864	.901	-- --

Notes: The number of items with negative eigenvalues were two, and the largest negative eigenvalue identified was -.092.
The items smoothed during the process were 9, 11, 14, and 21. The number of smoothed elements in the correlation matrix were 122 out of 528.
The percentage of covariance destroyed was 7.8% which is good. PCDi = Percentage of covariance destroyed in each item. Lower triangle is the non-positive definite correlation matrix. The upper triangle is the smoothed correlation matrix. The items 1 to 6 assessed the poverty reflected by absence of basic needs variable, 7 to 14 assessed the personal threats variable, 15 to 22 assessed interpersonal problems variable, and 23 to 33 assessed HIV related stigma. Coefficients shaded yellow are less than .30, which indicate weak or low inter-item correlations. Bold indicate the range of the correlation co-efficient in the matrix.

© University of Pretoria

4.2.1.1 Inter-item correlations matrix of the scale before smoothing

The initial polychoric correlation information matrix presented in the lower triangle of Table 4 shows that the correlation coefficients of items in the unsmoothed community stressors scale ranged from low to very high with the least coefficient being -.01 for the correlation between items that assessed experience *of lack of water (cs3water)* and *feeling less with people HIV/AIDS (st8feelless)* and the highest coefficient being .94 for the correlation between items that assessed *attitudes towards living next door to those with signs of AIDS (st9nextdoor)* and *towards friendship with persons living with HIV (st10nofriend).* The coefficients are lowest where the items that assessed poverty reflected by absence of basic needs were correlated with those that assessed personal threats and HIV related stigma, where the items that assessed personal threats were correlated with each other and with those that assessed HIV-related stigma, and where the items that assessed interpersonal problems were correlated with the items that assessed HIV-related stigma.

In addition, this correlation matrix was not positive definite and specifically identified two (2) items that had negative eigenvalues with the largest being -.09 and two other items with low correlations which is a sign of inadequate observations or miscalculations in the data. Hence, sweet smoothing algorithm, as proposed by Lorenzo-Seva and Ferrando (2020), was performed to produce better estimates in the dataset of this scale. The specific items smoothed during the process include *experience of problems with police or law enforcers (cs9police), theft of property (cs11theftprop), and neglect by parents or siblings or significant others (cs14neglect)* under the personal threats variable, and *experience of own sicknesses (cs21sickness)* under the interpersonal problems variable. The number of smoothed elements in the correlation matrix was 122 out of 528, while the percentage of covariance destroyed was 7.8%, which does not have a real effect on the data.

4.2.1.2 Inter-item correlations matrix of the scale after smoothing

The inter-item correlations matrix presented in the upper triangle of Table 4 shows that the correlation coefficients of items in the smoothed community stressors scale ranged from very low to very high with the least coefficient being -.02 for the correlation between items used to assess experience *of lack of or removal from a home (cs2home)* and feeling that *those with HIV should blame themselves (st3blame)* and the highest coefficient being .94 for the correlation between items used to assess *attitudes towards living next door to those with signs of AIDS (st9nextdoor)* and *towards friendship with persons living with HIV (st10nofriend).*

In this matrix, the coefficients are least where the items used to assess poverty reflected by absence of basic needs were correlated with the items used to assess personal threats, interpersonal problems and HIV related stigma, where the items used to assess personal threats were correlated with each other and with those that assessed HIV stigma, and where the items used to assess interpersonal problems were correlated with the

© University of Pretoria

items used to assess HIV stigma. This implies some of the items which were used to assess these stressors are unnecessary and this is especially so for most of the items used to assess the personal threats variable.

4.2.1.3 Adequacy of the polychoric correlation matrix

The adequacy of the polychoric correlation matrix run after smoothing yielded a determinant of the matrix of less than .001, which implies that the observed and identity correlation matrices are connected and that the items in this scale are different. The smothered matrix also yielded a Bartlett's test statistic on the probability of presence in the correlation matrix of significant correlations among some variables in the dataset of 16396.3 (df = 528; p< .001), which means that at least some of the items in this scale are significantly correlated and are as such responsive to factor analysis. This matrix also yielded a KMO test index for the correlation among the 33 items in the sample of .0 which is less than .70, which implies that some items in the community stressors scale correlate inadequately and are thus inappropriate for factor analysis.

4.2.1.4 Normed measure of sampling adequacy indices for items in the scale

This polychoric matrix yielded high to very high normed MSA indices for the 33 items in this scale with the least MSA value being .88 for the item that assesses *neglect of parents or siblings or significant others (cs14neglect)* and the highest value being .98 for the item that assesses *lack of or removal from a home (st2scared)*. This implies that whereas some of the items in this scale weakly correlate, the 33 items do not share the same content as others and thus have high discriminating power and ability of measuring the same domain (Lorenzo-Seva & Ferrando, 2021). See part B of appendix 2 for MSA indices of each item in this scale.

4.2.1.5 Proportions of variances explained by each item in the scale

The analysis of explained variances based on eigenvalues also identified six items in this scale with proportions of variances that are equal to or greater than 1.0. They included items that assess experiences of *food shortage (cs1food)*, *lack of or removal from home (cs2home)*, *lack of water at home (cs3water), lack of lighting at home (cs4lighting)*, *lack of work of the home head (cs5work)*, and *bad or shack-like or leaky housing (cs6badhous)*. These six items, which solely assess poverty reflected by absence of basic needs, explained .76 (76%) of the total variance and the other 27 items in the scale explained the remaining variance. This implies that the six items used to assess poverty stressors dominate the changes in the dataset for community stressors.

4.2.1.6 Rotated loadings of each item to the four factors in the scale

Furthermore, the rotated loading information matrix shows that the items used to assess each factor load differently on the four factors in the community stressors scale. Firstly, the six items in the subscale for

© University of Pretoria

poverty reflected by absence of basic needs fairly to highly load on the personal threats factor with the least loading coefficient being .63 for the item that assesses experience of *problems of getting food (cs1food)* and the highest being .86 for the item that assesses experience of *lack of electricity or lighting at home (cs4lighting)*, which implies that the measures for poverty reflected by absence of basic needs adequately correlate with the personal threats factor.

Secondly, of the eight items in the personal threats subscale, four items slightly to very highly load on the factor for poverty reflected by absence of basic needs with the least loading coefficient being .37 for the item that assesses *experience of serious injury (cs7injury)* and the highest coefficient being .95 for the item that assesses *illness of parent or sibling or significant others (cs12illness)*. One item that assesses *experience of theft of property (cs11theftprop)* loads very poorly on each of the four factors in this scale with the least loading coefficient being .01 on the personal threats factor and the highest loading being .264 on the interpersonal problems factor. Three items slightly to quite highly load on the interpersonal problems factor with the least loading coefficient being .39 for the item that assesses *experience of problems of lack of a job (cs10lackjob)* and the highest being .77 for the item that assesses *experience of legal action (cs8legal).* The inadequate loadings of several items in the personal threats' subscale to the interpersonal problems and other factors in this scale imply that such items are merely noisy or have low discriminating power and do not therefore contribute substantially to the overall adequacy of the measurement structure (Lorenzo-Seva & Ferrando, 2021).

Thirdly, the eight items in the interpersonal subscale fairly to very highly load on itself with the least loading coefficient being .42 for the item that assesses *experience of own sicknesses (cs21sickness)* and the highest loading coefficient being .92 for the item that assesses *experience of relationship problems with girlfriends or boyfriends (cs17prob_relatnshp).* This implies that the items which were used to assess interpersonal problems mainly relate with each other.

Fourthly, the 11 items in the HIV stigma subscale highly to very highly load on itself only with the least loading coefficient being .81 for the item that assesses *feelings towards people with AIDS (st8feelless)* and the highest loading being .95 for the item that assesses attitudes towards *giving work to persons that have AIDS (st11nowork)* and *living close or next door with persons that have AIDS (st9nextdoor)*. This implies that the HIV stigma items relate with each other and their own factor better than with the other three factors in this scale.

In summary, results of this EFA show that whereas the 33 items retained in the community stressors scale have high normed MSA indices and or precision for assessing the same domain, some of the items especially in the personal threats subscale, poorly load to itself and to the other factors in the entire scale implying that such items are unhelpful and worthwhile omitting from the dataset of this construct. The full results of EFA performed on the 33 items are presented in part B of appendix 2.

© University of Pretoria

4.2.2 CFA on 33 items in the community stressors scale

First and second-order CFA were performed on the dataset of the 33 items retained in the community stressors scale to verify their validity and suitability in assessing the poverty reflected by absence of basic needs, personal threats, interpersonal problems, and HIV-related stigma among adolescents involved in this study.

4.2.2.1 Goodness of fit of the 33-item model

The lavaan 0.6-7 of the first-order CFA on the dataset for 33 items ended normally after 140 iterations and achieved satisfactory model fit indices. They included a CFI of .93, TLI of .93, RMSEA of .06, and SRMR of .07.

Likewise, the lavaan 0.6-7 of the second-order CFA ended normally after 137 iterations and achieved adequate model fit indices. They included a CFI of .92, TLI of .92, RMSEA of .07, and SRMR of .08.

This model fit statistics imply that the observed and expected correlation information matrix for this construct are slightly different, and empirically and theoretically suitable for SEM (Blunch, 2008; Byrne, 2016).

4.2.2.2 Item-to-factor and alpha reliability correlations of the 33-item scale

The first- and second-order CFA performed on the dataset for 33 items in this scale yielded:

(1) Quite moderate to slightly higher than moderate item-to-factor correlation coefficients for the poverty reflected by absence of basic needs factor with the least coefficient being .47 to .49 for the item that assesses *experience of lack of food (cs1food)* and the highest being .67 to .68 for the item that assesses *experience of lack of or removal from the home (cs2home)*.

(2) Low to moderate item-to-factor correlation coefficients for the personal threats factor with the least coefficient being .34 to .37 for the item that assesses *experience of legal risks (cs8legal)* and the highest being .56 to .58 for the items that assess *experience of death of parents or significant others (cs13Death)*.

(3) Moderate to quite high item-to-factor correlation coefficients for the interpersonal factor with the least coefficient being .55 for the item that assesses *experience of relationship problems due to own or other family members' pregnancy (cs22pregn)* and the highest being .69 to .71 for the item that assesses experience of *relationship problems with others in the community (cs18probm_comm)*.

(4) Quite high to high item-to-factor correlation coefficients for the HIV stigma factor with the least being .67 to .68 for the item that assesses *fear of being among people with AIDS signs (st2scared)* and the highest being .84 for the item that assesses *uneasiness among people with AIDS (st6uneasy)*.

(5) The CFA also yielded a quite high to very high reliability coefficients for items in the subscales for poverty reflected by absence of basic needs (.75), personal threats (.71), interpersonal problems (.79), and HIV-related stigma (.94).

© University of Pretoria

This item-to-factor and alpha reliability correlation statistics suggest that some measures, especially in the personal threats' subscale, do not adequately correlate and require removing to enhance the precision of the scales of this construct and the suitability of its dataset for further analysis.

4.2.2.3 Inter-factor and factor-to-construct correlations of the 33-item scale

The first-order CFA yielded low to moderate but statistically significant inter-factor correlations coefficients of .39 between poverty and personal threats, of .39 between poverty and interpersonal problems, of -0.01 between poverty and HIV stigma, of 0.63 between personal threats and interpersonal problems, of 0.31 between personal threats and HIV-related stigma, and of 0.12 among interpersonal problems and HIV-related stigma. This inter-factor correlation statistics imply that whereas the four subscales in the community stressors scale have adequate to very high internal consistency, they are diminutively correlated and their items require more scrutiny to improve the validity of the dataset for SEM.

In addition, the second-order CFA yielded very low to high factor-to-construct correlations coefficients. This was .23 between the HIV stigma factor and community stressors construct, .38 between the poverty reflected by absence of basic needs factor and this construct, .59 between the interpersonal problems factor and this construct, and 1.15 between the personal threats factor and this construct. It also yielded low to high variances of the four factors with the least variance being -.32 for the personal threats factor and the highest being .86 for poverty reflected by absence of basic needs factor. These results showed that some items, especially in the personal threats subscale, are unsuitable and deserve removing from the stressors' scale.

Therefore, the five (5) items in personal threats subscale that showed low loadings in the EFA were removed. These included items that assess *experience of serious injury (cs7injury), legal action (cs8legal), problems with police or law enforcers (cs9police), lack of a job (cs10lackjob)*, and *theft or loss of personal property (cs11theftprop)*. The remaining three items that assess *experience of illness of parents or siblings or significant others (cs12illness), death of parents or siblings or significant others (cs13Death),* and *neglect of parents or siblings or significant others (cs14neglect)* were considered for a supplementary CFA.

4.2.2.4 Goodness of fit of the 28-item model

The lavaan 0.6-10 of the supplementary first-order CFA performed on the 28 items retained in the community stressors scale ended normally after 123 iterations. There was improvement in the fit indices of this model compared with the 33-item first-order CFA model. This included the CFI from .93 to .96, TLI from .93 to .96, RMSEA from .06 to .05, and SRMR from .07 to .06. There was also improvement in the range of the item-to-factor correlation coefficients of this model compared with the 33-item CFA model, as follows: poverty of basic needs factor from [.49 - .68] to [.51 - .67], personal threats factor from [.34 - .58] to [.58 - .83], interpersonal problems factor from [.55 - .69] to [.45 - .66], and HIV stigma factor from [.68 - .84] to [.69 - .83].

© University of Pretoria

Similarly, the lavaan 0.6.15 of the supplementary second-order CFA ended normally after 122 iterations. There was improvement in the goodness fit indices for this model compared to the 33-item model, as follows: CFI from .92 to .95, TLI from .92 to .94, RMSEA from .07 to .06, and SRMR from .08 to .07.

The improvement in fit indices of the 28-item model compared to the fit indices of the 33-item model proves that the five items which were removed from the personal threats' subscale undermined the fitness of the initial community stressors scale by widening the differences between the observed and expected correlation information matrix for this construct.

4.2.2.5 Item-to-factor and alpha reliability correlations of the 28-item scale

In addition, the supplementary CFA models yielded improvements in the range of item-to-factor correlation coefficients from [.47 - .67] to [.48-.65] for the poverty reflected by absence of basic needs factor, [.37 - .56] to [.55 - .82] for the personal threats factor, [.55 - .47] to [.47 - .68] for the interpersonal problems factor, and [.67 - .83] to [.68 - .83] for the HIV stigma factor.

The supplementary CFAs also showed a high internal consistency reliability for the community stressors scale of.88, and improvements in the reliability of the personal threats' subscale from .71 (based on the initial eight items) to .72 (based on the retained three items). This implies that the retained items are correlated with the intended factors and suitable for assessing the four theorised community stressors among adolescents in this study. See Table 11 in subsection 4.6 for the summary of specific loadings of each retained item on the respective factors in the trimmed community stressors scale.

4.2.2.6 Inter-factor and factor-to-construct correlations of the 28-item scale

Furthermore, as can be seen in Table 5, the supplementary second-order CFA yielded very low to quite moderate statistically significant inter-factor correlation coefficients, with the least coefficient being .014 for the relationship between the poverty reflected by absence of basic needs factor and HIV stigma factor, and the highest being .42 for the relationship between the personal threats factor and interpersonal problems factor.

This CFA also yielded quite low to high statistically significant factor-to-construct correlation coefficients with the least coefficient being .23 for the relationship between HIV stigma factor and the community stressors construct and the highest coefficient being .72 for the relationship between the personal threats factor and the community stressors construct.

This proves that the three items retained in the personal threats' subscale are not only amply related with each other and with the other items used to assess other factors in the same scale, but also reliable for assessing the community stressors construct.

© University of Pretoria

Table 5. CFA inter-factor and factor-to-construct correlations of the 28 items in the community stressors scale

	Latent construct	Observed variables or factors		
Observed variables	Community stressors	Poverty	Personal threats	Interpersonal problems
Poverty	.362**	-	-	-
Personal threats	.715**	.183**	-	-
Interpersonal problems	.690**	.403**	.424**	-
HIV-related stigma	.228**	-.014*	.264**	.137**

Notes:
**Correlation is significant (p=.000) at .01 level of significance.
*Correlation is significant (p=.041) at .05 level of significance.
Data in this Table was obtained from the final fully inverted first and second order CFA models.

The high model fit indices, better and statistically significant item-to-factor and factor-to-construct correlations, and high alpha reliability coefficients in the final CFA models imply that the 28 items retained in the scale are precise, suitable and dependable for assessing the four community stressors among adolescents involved in this study. Hence, the dataset based on the 28 items and four factors verified in the final first-and second-order CFA models was adopted for subsequent analyses. (See tables presented in part B of appendix 2 for full results of the EFA and CFA models performed on the dataset for this scale).

4.2.3 Conclusion

The EFA and CFAs performed on the sample data of the community stressors construct show that five out of the eight items used to assess personal threats and one out of the 12 items used to assess HIV stigma poorly correlated with other items in the same scales and were thus omitted from the dataset. The removal of the six items from the initial community stressors' dataset helped to enhance the sampling adequacy, goodness of fit, inter-item, inter-factor, factor-construct, and internal reliability statistics of the scale.

The improvement of these statistics in the final CFA models imply that the 28 items in the final scale (i.e. the six items retained to assess poverty reflected by absence of basic needs, the three items retained to assess personal threats, the eight items retained to assess interpersonal problems, and the 11 items retained to assess HIV stigma), are valid and dependable for assessing the four types of community stressors among adolescents involved in this study. It also means that the retained dataset of this scale and its subscales is ideal for SEM.

4.3 Psychosocial Distresses Scale

This scale consisted of 74 items which were adopted from the CBCL/11-18 to assess 14 distinct types of psychosocial distresses. Fifty-four of these items assessed nine distinct internalising distresses (i.e. eight for

© University of Pretoria

anger, seven for attention deficit, nine for anxiety, five for depression, five for loneliness, four for sleep unrest, seven for psychosis or extreme thoughts, five for somatisation or bodily pains, and four for suicidal ideation or tendencies). The remaining 20 items assessed five distinct externalising distresses (i.e. three for disobedience, six for disruptiveness, two for destructiveness, three for aggressiveness, and six for delinquency). The items used to assess each of these distresses are specified in Table 11 presented in subsection section 4.6 of this chapter. Each item was answered on a three-point Likert scale. The adolescent's responses to these items varied which implied that each of them contributed to the distribution of scores on this scale.

4.3.1 EFA on 74 items in the distresses scale

The EFA was run on the dataset of the 74 items in this scale to examine their sampling adequacy and links with each other and the 14 assumed factors, as specified in the Bayesian modal (Choi et al., 2011). The results of which are presented. However, the inter-item correlations matrix yielded using the Lorenzo-Seva and Ferrando (2020, 2021) mathematical specification and smoothing algorithm is too large to fit here.

4.3.1.1 Adequacy of the polychoric correlation matrix

The initial polychoric correlation matrix was not fully definite. It yielded: 1) a determinant of the matrix of less than .001, which implies that the observed and identity correlation matrices are linked and that the items in this scale are different and suitable for factor analysis. 2) Bartlett's test statistic on the probability of presence in the correlation matrix of significant correlations among some variables in the dataset of 16239.0 (df = 2701; p<.001), which implies that some items in the psychosocial distresses scale are significantly correlated and responsive to factor analysis. 3) the KMO test index for the correlation among the 74 items in the sample of.000 which is less than .7, implying that some items in this scale correlate inadequately, are unresponsive to factor analysis, and thus require remedial action (Lorenzo-Seva & Ferrando, 2021).

Hence, the sweet smoothing algorithm advised by Lorenzo-Seva and Ferrando (2020) was performed on four items with negative eigenvalues and on five other items with relatively low loading values. The specific items smoothed during the process included those that assess the internalising factor namely *jealous of others (tep1jealous), fear of some situations or places (anx16afraid), experience of nightmares (sle35_nigtmare),* and *repeat of certain acts (sle45_repeat)*; and those that assess the externalising factor namely *disobedience to parents (dis51parent), participation in fights (agg62figts), smoking or chewing or sniffing cigarettes (del66smoke), use of drugs like marijuana (del67marijun),* and *theft or stealing from different places (del70steal).* The number of smoothed elements in the correlation matrix was 621 out of 2,701 while the percentage of covariance destroyed was 19% which is fair. The results obtained from smoothing of items in this construct are presented in part C of the appendix 2.

© University of Pretoria

4.3.1.2 Normed measure of sampling adequacy indices for items in the scale

The polychoric correlation matrices after the smoothing procedure yielded high or good normed item-MSA indices with the least MSA value being .87 for the item that assesses *fear of some situations or places (anx16afraid)* and the highest being .99 for the item that assesses *shamelessness about doing undesirable acts (tep5unashamed)* – implying that whereas some items in this scale correlate inadequately, none of the 74 items share the same content and thus have good discriminating strength and precision of assessing the same domain. The MSA indices of each item in this scale are shown in part C of appendix 2.

4.3.1.3 Proportions of variances explained by each item in the scale

The matrix for explained variances based on eigenvalues identified 10 items in this scale with proportions of variances that are equal to or greater than 1.0. They included items that assess *jealous of others (tep1jealous)*, *being teased or mocked a lot (tep2teased)*, *sudden change of feelings (tep3sudden)*, *temperament (tep4tempr)*, *shamelessness about doing undesirable acts (tep5unashamed)*, *guilt (tep6guilty)*, *embarrassment (tep7embarras)*, *actions without thinking (tep8think)*, *failure to finish activities started (att9fail_fin)*, and *difficulty in paying attention (att10attention)*. These items, which mainly assess anger and inattention, explained 64.58% of the variance in the psychosocial distresses scale with the items that assess anger explaining 61.65% of which. The remaining 64 items used to assess the other observed variables explained 35.42% of the variance in this scale. This implies that the items used to assess anger dominate this scale and are responsible for most of the changes in the scores or dataset for psychosocial distresses.

4.3.1.4 Rotated loadings of each item to the 14 factors in the scale

The rotated matrix on all items in the psychosocial distress scale firstly, showed that 43 items load to the internalising factor by more than or equal to .30 with their rounded loading values ranging from -.32 for the item that assesses *disobedience to home or school rules (dis52rules)* to .95 for the item that assesses *feeling of loneliness (lon31_lonely)* and only one of these items that assesses *disobedience to home or school rules (dis52rules)* belongs to the externalising factor. This implies that the items used to assess the internalising signs of distress largely correlate with each other and their intended factor.

Secondly, 35 items load to the externalising factor by more than or equal to .30 with their loadings ranging from -.30 for the item that assesses *loneliness (lon31_lonely)* to 1.02 for the item that assess *physical attack of people (agg64attack)*. Nineteen (19) of these items assess externalising distress factors and the remaining 16 items assess internalising distress factors. This implies that these items, especially those that assess externalising distress factors, feebly to very highly correlate with some items that assess other factors.

© University of Pretoria

Thirdly, six items that assess *shamelessness about doing undesirable acts (tep5unashamed), biting fingernails (anx20bitenail), feeling of loneliness (lon31_lonely), feeling of sounds others think aren't there (sle39i_sound), pinching of the skin/body (sle40_pin),* and *disobedience about home or school rules (dis52rules)* load on the two factors (cross-load) and only one of these items that assesses *loneliness (lon31_lonely)* loads most on the internalising factor while the five remaining items cross load most on the externalising factor. This implies that these items acceptably correlate with some variables in the internalising and externalising factors.

Fourthly, two items that assess *nightmares (sle35_nigtmare) and excessive talking* (*dis55talkmuch)* had rotated loadings of less than .30 and their loadings were blinded in the rotated loading matrix, implying that these items slightly correlate with some observed variables in the internalising and externalising factors.

The results of the explained variance of rotated factors and reliability of PHI-information EAP scores also showed that the two broad factors in this scale (i.e. the internalising and externalising factors) have explained variances that are acceptable with the least variance being 15.23 for the externalising factors and the highest being 18.69 for internalising factors. The rotated matrix also showed ORION scores that are very high with the least being .98 for the internalising factors and the highest being .98 for the externalising factors, and factor determinacy indices that are excellent with least being .99 for the internalising factor and the highest being .99 for the externalising factors. This implies that whereas some items load slightly to their respective broad factors and the entire scale, the two broad factors adequately contribute to the changes in the dataset, have very high criterion reliability, and are suitable for assessing the psychosocial distress construct. The full EFA results of this construct are presented in part C of appendix 2.

4.3.2 CFA on 74 items in the distresses scale

A first- and second-order CFA was performed on the dataset of the 74 items in this scale to verify their suitability and reliability in assessing the 14 observed psychosocial distresses among adolescents in this study.

4.3.2.1 Goodness of fit of the model

The lavaan 0.6 - 7 of the first-order CFA ended well after 329 iterations and achieved a good model fit. The rounded goodness of fit indices attained were a CFI of .98, TLI of .98, RMSEA of .03, and SRMSR of .05. Likewise, the lavaan 0.6 - 7 of the second-order CFA ended well after 80 iterations and achieved good model fit. The rounded goodness of fit indices obtained were a CFI of .96, TLI of .96, RMSEA of .04, and SRMSR of .07. This model fit statistics imply that the observed and expected correlation information matrix for this construct are slightly different and therefore empirically and theoretically suitable for SEM (Blunch, 2008; Byrne, 2016). See all EFA and CFA data for this scale in part C of appendix 2.

© University of Pretoria

4.3.2.2 Item-to-factor and alpha reliability correlations of the items in the scale

The first-and second-order CFA models further showed that the correlation coefficients for the items used to assess each of the 14 factors in this construct are medium to high with the least coefficient being .47 for the relationship between the item that assesses *frequency of sleeping day or night in comparison with other kids (sle37_sleepmore)* and the sleep unrest factor and the highest being .85 for the relationship between the item that assesses *lying to or cheating other people (del69cheat)* and delinquency factor. This implies that the items in this scale fairly to highly assess the intended factors and their data is suitable for SEM. See the data in Table 11 in subsection 4.6 for the summary of item-loadings on the 14 factors in the scale.

The first-order CFA yielded very high reliability coefficients for the 54 items in the subscale for internalising distresses (.96), the 20 items in the subscale for externalizing distresses (.92), and the 74 items in the psychosocial distress scale (.96). The CFA also yielded fair to high reliability coefficients for the subscales used to assess the internalising distresses with the least coefficient being .64 for the sleep unrest subscale and highest being .84 for the anxiety subscale, and adequate to high reliability for the subscales used to assess externalising distresses with the least coefficient being .73 for the aggressiveness subscale and the highest being .881 for the delinquency subscale.

The reliability coefficients for each of the 14 subscales in the psychosocial distress scale was .82 for anger, .81 for inattention, .84 for anxiety, .77 for depression, .75 for loneliness, .64 for sleep unrest, .83 for psychosis, .76 for somatisation, .78 for suicide ideation, .75 for disobedience, .81 for disruptiveness, .75 for destructiveness, .73 for aggression, and .88 for delinquency. These reliability coefficients are above the tolerable lower limit of .6 for Cronbach's alpha in exploratory research (Hair et al., 2010). This implies that the items in each of these subscales are adequately correlated and reliable for assessing the intended factors and construct.

4.3.2.3 Inter-factor and factor-to-construct correlations of the scale

The two CFA models showed that the 14 observed variables inter-correlated feebly to highly with the least covariance being .34 among the somatisation factor and disobedience factor and the highest being .88 among the loneliness factor and sleep unrest factor. Every inter-factor correlation was statistically significant.

© University of Pretoria

Table 6. CFA inter-factor and factor-to-construct correlations of the 74 items and 14 observed variables in the psychosocial distresses scale

	Construct	Observed variables												
Observed variables	PD	1	2	3	4	5	6	7	8	9	10	11	12	13
Internalizing signs														
1.Anger	.895**													
2. Inattentiveness	.892**	.774**												
3. Anxiety	.836**	.824**	.814**											
4. Depression	.845**	.773**	.768**	.783**										
5. Loneliness	.861**	.765**	.858**	.798**	.873**									
6. Sleep unrest	.947**	.757**	.879**	.851**	.841**	.882**								
7. Psychosis	.851**	.713**	.736**	.652**	.664**	.657**	.843**							
8. Somatisation	.761**	.653**	.652**	.722**	.740**	.710**	.754**	.618**						
9. Suicide ideation	.745**	.671**	.679**	.547**	.743**	.776**	.644**	.640**	.546**					
Externalizing signs														
10. Disobedience	.626**	.631**	.467**	.423**	.399**	.406**	.459**	.644**	.336**	.522**				
11. Disruptiveness	.779**	.699**	.654**	.590**	.529**	.547**	.712**	.750**	.558**	.523**	.735**			
12. Destructiveness	.686**	.581**	.596**	.506**	.420**	.497**	.615**	.687**	.438**	.479**	.600**	.782**		
13. Aggressiveness	.650**	.602**	.526**	.397**	.441**	.420**	.546**	.656**	.423**	.488**	.725**	.752**	.743**	
14. Delinquency	.685**	.602**	.559**	.456**	.489**	.448**	.651**	.758**	.502**	.498**	.700**	.780**	.758**	.823**

Notes:
Correlations coefficients were obtained from the final first and second-order CFA models.
**Correlation coefficient is significant (p=.000) at .01 level of significance.

© University of Pretoria

Furthermore, as can be seen in Table 6, the two CFAs yielded moderate to very high correlations between the 14 observed variables and the psychosocial distresses construct with the least coefficient being .63 for the correlation between the disobedience factor and the psychosocial distresses construct and the highest coefficient being .95 for the correlation between sleep unrest factor and the same construct. These results imply that the theorised items and observed variables in this scale are precise, cohesive, stable and dependable enough to assess the psychosocial distresses among the adolescents involved in this study and that the derived dataset is appropriate for SEM.

Hence, the dataset based on the 74 items and 14 factors verified in the first-and second-order CFA models was adopted for subsequent analyses without alterations. See Table 6 below for the inter-factor and factor-to-construct correlations of the psychosocial distresses scale derived from the final CFA models.

4.3.3 Conclusion

Results of the EFA on the sample data for the psychosocial distresses scale show that nine of the 74 theorised items (i.e. four that assess internalising signs of distress and five that assess externalising signs of distress) had either negative eigenvalues or low correlations and were thus sweet smothered. This statistical remedial procedure improved not only their links with other items in the pool but also their power of assessing the intended domain. This EFA also showed that the eight items used to assess anger explain most (61.65%) of the changes in the dataset for psychosocial distresses. The 42 out of the 54 items used to assess internalising signs of distress feebly to very highly correlate with their intended factor, and 16 of the 42 items feebly to fairly correlate with the externalising distresses factor. Nineteen out of the 20 items used to assess externalising signs of distresses acceptably to highly correlate with their intended factor while only one of these items feebly correlates with the internalising distresses factor. Twenty out of the 54 items used to assess internalising signs of distress feebly to highly correlate with the externalising signs of distresses factor.

These EFA results imply that the theorised items largely measure the intended factors and construct. The CFA results further show that the psychosocial distresses scale has acceptable goodness of fit indices as well as inter-item, item-to-factor, inter-factor, factor-to-construct, and alpha reliability correlation coefficients. This not only implies that the empirical model fits the theorised model and that the entire scale is reliable for assessing the 14 distresses among adolescents involved in this study, but also that its dataset is suitable for SEM.

4.4 Coping Methods Scale

This scale consisted of **42** items that were theorised to assess four distinct methods of coping with psychosocial problems among adolescents in this study. Six (6) items assessed membership to clubs for religion,

© University of Pretoria

peers, clans, sports, community welfare and health. Twelve (12) items assessed social support based on whether significant others *showed need or necessity, comfort, negligence, affection or love, assurance, encouragement, availability when needed, optimism, care, and guidance on distractive events*. Ten (10) items assessed self-control based on *susceptibility or resistance to disturbance, unsuitable communication, participation in bad deeds even if they are fun, excitement during work, actions that make one feel good and regret later, activities the others think are wrong,* and *actions without thinking through all alternatives.* Fourteen (14) of the items assessed other coping strategies like *relaxing, exercising, interacting with peers or significant others, partaking in social activities, praying to God, crying, staying aloof, accepting and attempting to solve the problems, working hard, focusing on positive aspects of life, blaming oneself or others, rationalising that the worst might have occurred, and joking about the situation.*

Each of these items had a Likert scale with three measurement points to which adolescents specified the appropriate answer. Responses to these items varied which implied that each theorised item contributed to the distribution of scores on this scale.

4.4.1 EFA on 42 items in the coping scale

The EFA was run on the data of the **42** items in this scale to examine links with each other and with the four assumed factors, as stipulated in the Bayesian modal (Choi et al., 2011). Results of which are presented.

4.4.1.1 Inter-item correlations matrix of the scale

The inter-item correlations matrix presented in Table 7 shows that the coefficients of items in this scale range from very low to high with the least being -.002 for the correlation between the items that assessed coping by *participating in exercises (ocs5exercise)* and *receiving love from persons who are usually close (soc6loved)* and the highest being .86 for the correlation between items that assessed coping by experiencing *comfort from persons who are close (soc2comfort)* and or a *feeling of being needed by persons who are close (soc1needed).*

The coefficients are least especially where the items that assessed coping by membership to clubs were correlated with those that assessed coping by seeking social support and adopting self-control and other coping strategies, where the items that assess coping by social support were correlated with those that assessed self-control and other coping strategies, and where items that assessed self-control were correlated with those that assessed other coping strategies. This implies that some items in this scale are unsuitable.

© University of Pretoria

Table 7. Standardised variances or covariances of the EFA polychoric correlation matrix for 42 items in the coping methods scale

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
1	1.00																																									
2	.410	1.00																																									
3	.478	.451	1.00																																								
4	.356	.470	.278	1.00																																							
5	.261	.290	.641	.435	1.00																																						
6	.478	.403	.551	.413	.587	1.00																																					
7	-.287	-.208	-.331	-.199	-.236	-.409	1.00																																			
8	-.374	-.233	-.231	-.233	-.193	-.488	**.863**	1.00																																		
9	-.410	-.209	-.396	-.266	-.353	-.388	.591	.490	1.00																																	
10	-.433	-.256	-.329	-.276	-.293	-.453	.665	.598	.845	1.00																																	
11	-.372	-.259	-.284	-.238	-.310	-.418	.567	.530	.760	.806	1.00																																
12	-.393	-.196	-.199	-.178	-.138	-.448	.740	.790	.461	.547	.437	1.00																															
13	-.399	-.216	-.263	-.103	-.163	-.313	.741	.646	.510	.610	.579	.694	1.00																														
14	-.369	-.228	-.191	-.247	-.147	-.507	.710	.789	.517	.601	.540	.764	.757	1.00																													
15	-.314	-.179	-.285	-.212	-.211	-.405	.713	.755	.500	.575	.514	.728	.719	.823	1.00																												
16	-.325	-.221	-.240	-.203	-.182	-.473	.688	.773	.486	.561	.497	.718	.612	.842	.801	1.00																											
17	-.236	-.093	-.137	-.090	-.140	-.356	.577	.660	.398	.445	.354	.625	.530	.698	.704	.780	1.00																										
18	-.273	-.110	-.183	-.085	-.085	-.331	.582	.667	.391	.450	.415	.630	.555	.707	.647	.731	.811	1.00																									
19	-.159	-.031	-.225	-.198	-.297	-.075	.187	.175	.230	.304	.333	.132	.262	.165	.261	.198	.253	.172	1.00																								
20	-.281	-.238	-.366	-.135	-.353	-.286	.349	.351	.407	.443	.422	.334	.363	.397	.388	.422	.435	.445	.589	1.00																							
21	-.112	-.129	-.404	-.118	-.435	-.216	.289	.262	.392	.383	.407	.188	.250	.242	.252	.266	.284	.250	.542	.654	1.00																						
22	-.421	-.020	-.026	-.039	-.027	-.133	.281	.307	.270	.310	.268	.363	.356	.303	.225	.327	.432	.467	.281	.393	.199	1.00																				
23	-.248	-.132	-.190	-.001	-.179	.025	.240	.163	.275	.219	.291	.240	.422	.137	.119	.120	.210	.264	.119	.314	.284	.652	1.00																			
24	-.019	.034	-.116	.120	-.201	.084	.131	.083	.201	.126	.159	.157	.219	.115	.106	.048	.003	.043	-.032	.101	.173	.234	.488	1.00																		
25	-.288	-.132	-.251	-.115	-.224	-.251	.460	.400	.355	.371	.418	.368	.482	.405	.414	.385	.378	.369	.475	.541	.517	.383	.319	.137	1.00																
26	-.313	-.215	-.293	-.183	-.276	-.278	.408	.352	.333	.382	.365	.338	.436	.384	.349	.334	.288	.268	.406	.542	.556	.274	.318	.230	.704	1.00															
27	-.275	-.217	-.223	-.171	-.247	-.298	.340	.334	.376	.404	.389	.340	.357	.386	.336	.342	.297	.292	.326	.457	.531	.233	.230	.192	.550	.653	1.00														
28	-.262	-.197	-.243	-.213	-.246	-.362	.361	.383	.401	.438	.407	.349	.354	.437	.350	.444	.380	.344	.398	.488	.541	.234	.161	.158	.519	.555	.739	1.00													
29	-.149	-.079	.088	-.100	.166	-.175	.339	.398	.218	.274	.187	.316	.259	.387	.272	.347	.130	.152	-.227	-.015	-.064	.118	.116	.129	-.016	.126	.029	.041	1.00												
30	-.143	-.031	.103	-.159	.097	-.074	.206	.229	.230	.217	.096	.219	.112	.240	.178	.223	.052	.086	-.079	-.012	-.021	.091	.101	.120	.085	.158	.127	.098	.728	1.00											
31	-.098	-.013	.056	-.106	-.004	-.112	.193	.202	.262	.193	.082	.233	.080	.226	.213	.243	.138	.135	-.072	.067	.016	.116	.067	.078	.052	.115	.078	.059	.650	.779	1.00										
32	.012	-.024	.116	-.038	.151	.105	.044	-.007	.070	.035	.072	.075	.052	.003	.028	.024	-.023	-.049	-.032	-.028	-.078	.074	.078	.090	.013	.010	-.028	-.056	.353	.405	.502	1.00									
33	-.033	.005	.071	-.001	.104	.084	-.078	-.031	.039	-.021	.018	**-.002**	-.071	-.069	.022	-.038	.048	.021	-.033	-.015	-.096	.054	-.015	-.068	-.090	-.074	-.064	-.043	.160	.293	.333	.528	1.00								
34	.199	.086	.109	.115	.131	.050	.032	.034	-.049	-.022	.022	.012	.033	.024	.049	.083	.162	.129	-.018	.040	.043	.071	.039	-.088	.020	-.080	-.138	-.066	.242	.148	.194	.306	.246	1.00							
35	-.057	.136	.184	-.029	.202	.022	.028	.105	-.025	-.020	-.025	.118	.043	.115	.110	.129	.181	.205	.097	.078	-.066	.297	.014	-.143	.011	-.034	-.141	-.056	.339	.368	.363	.328	.432	.486	1.00						
36	-.086	-.020	-.028	-.117	.073	.000	.238	.144	.116	.111	.052	.211	.147	.163	.111	.057	-.052	.047	-.131	.018	-.010	-.090	.069	.185	.068	.148	.092	.077	.448	.598	.480	.324	.313	.119	.302	1.00					
37	.211	.042	-.029	-.012	-.024	.038	.151	.118	.134	.068	.013	.078	.047	.074	.092	.066	-.037	-.056	-.091	-.018	.081	-.115	.084	.243	.021	.126	.057	.001	.515	.589	.543	.359	.135	.195	.147	.550	1.00				
38	-.119	-.049	.112	.013	.187	-.024	.013	.111	-.030	-.057	-.036	.111	.057	.075	.063	.028	-.027	.008	-.148	-.157	-.289	.064	-.011	.067	-.073	-.133	-.134	-.126	.336	.298	.229	.410	.322	.187	.280	.297	.313	1.00			
39	-.018	.114	.148	.139	.261	.130	-.088	-.068	-.160	-.154	-.172	-.037	-.032	-.089	-.023	-.073	-.035	-.084	-.122	-.130	-.276	.199	.042	.007	-.063	-.125	-.237	-.186	.328	.225	.248	.421	.329	.318	.397	.280	.245	.633	1.00			
40	.075	.107	.291	.066	.283	.197	.016	-.002	-.065	-.087	-.119	.042	.039	-.006	.001	.017	.106	.036	.052	-.090	-.241	.186	.041	.016	.070	.001	-.112	-.068	.243	.357	.371	.434	.407	.291	.446	.374	.302	.468	.588	1.00		
41	-.074	.095	.255	.038	.275	.137	.066	.058	-.086	-.095	-.051	.053	.076	-.006	.031	.030	.119	.111	.038	-.025	-.135	.279	.096	-.065	.061	.061	-.077	-.087	.285	.334	.284	.304	.336	.309	.516	.277	.225	.310	.459	.616	1.00	
42	-.118	.122	.154	.071	.229	.060	.086	.112	-.015	-.015	-.026	.093	.135	.064	.030	.056	.135	.166	.011	.015	-.051	.300	.100	-.059	.064	.064	-.090	-.124	.382	.406	.368	.361	.331	.385	.566	.312	.343	.372	.519	.551	.698	1.00

Notes: In this scale, item 1 = clu1religiousgp, 2 = clu2peergp, 3 = clu3clan, 4 = clu4sports, 5 = clu5community, 6 = clu6health, 7 = soc1needed, 8 = soc2comfort, 9 = soc3leftalone, 10 = soc4kindness, 11 = soc5blamed, 12 = soc6loved, 13 = soc7reliance, 14 = soc8nogivup, 15 = soc9available, 16 = soc10helped, 17 = soc11tookcare, 18 = soc12addeddistr, 19 = sc1hardstopping, 20 = sc2diverted, 21 = sc3isayunsuitab, 22 = sc4refuse, 23 = sc5resist, 24 = sc6discipl, 25 = sc7excitemnt, 26 = sc8regret, 27 = sc9notstop, 28 = sc10nothinking, 29 = ocs1knowing, 30 = ocs2workinghard, 31 = ocs3positiv, 32 = ocs4relaxing, 33 = ocs5exercise, 34 = ocs6tellprobl, 35 = ocs7peers, 36 = ocs8social, 37 = ocs9prayers, 38 = ocs10cried, 39 = ocs11blamed, 40 = ocs12worstoccr, 41 = ocs13noproble, and 42 = ocs14jokes.
Items 1 to 6 assessed coping by membership to social club's variable, items 7 to 18 assessed coping by seeking social support variable, 19 to 28 assessed coping by self-control, and 29 to 42 assessed coping using other coping methods.
The yellow shadings indicate the inter-item correlation coefficients that are relatively weak or low. The bold values indicate the range for the inter-item co-efficient in the coping scale.

© University of Pretoria

4.4.1.2 Adequacy of the polychoric correlation matrix

The polychoric correlation matrix yielded: A determinant of the matrix of less than .001, which implies that observed and identity correlation matrices are connected and that the items in the scale are different. A Bartlett's test statistic on the likelihood of existence in the correlation matrix of significant correlations among some variables in the dataset of 16361.8 (*df* = 861; *p*< .001), which means that some of the variables in the coping correlation matrix are significantly correlated and responsive to factor analysis (Lorenzo-Seva & Ferrando, 2021). And a KMO test index for the correlation among the 42 items in the sample of .73 which is greater than .7, which implies that the items in the dataset of this construct are fairly correlated and acceptable for factor analysis (Lorenzo-Seva & Ferrando, 2021).

4.4.1.3 Normed measure of sampling adequacy indices for the 42 items in the scale

The normed item-MSA indices matrix yielded quite low to very high MSA values with the least value being .39 for the items that assesses *self-discipline (sc6discipl)* and the highest being .94 for the item that assesses *feeling of love from significant others (soc6loved).* This implies that some items in the coping dataset either behave almost at random or share the same content with other items in the pool and thus lack discriminating power and precision of measuring the same domain (Lorenzo-Seva & Ferrando, 2021).

The normed item-MSA indices matrix exposed five (5) items with MSA values that are less than .5, which is Kaiser's proposed cut-off value for discarding items that do not conform to EFA (Lorenzo-Seva & Ferrando, 2021). These include items that assess *participation in a religious group (clu1religiousgp)* and *a clan club (clu3clan)* in the membership to club subscale, and *ability to refuse bad things even if they are fun (sc4refuse), resist temptation (sc5resist), and to self-discipline (sc6discipl)* in the self-control subscale. The MSA indices of each item in this scale are shown in part D of appendix 2.

4.4.1.4 Proportions of variances explained by each item in the scale

The matrix for explained variances based on eigenvalues further identified nine (9) items with portions of the total variance that are equal to or greater than 1.0. They included items that assess *participation in a religious group (clu1religiousgp), a peer's group (clu2peergp), a clan club (clu3clan), a sports club or team (clu4sports), a community welfare club (clu5communty) and or a health care club (clu6health),* as well as items that assess *whether significant others show they are needed (soc1needed), provide comfort (soc2comfort), and left them alone (soc3leftalone)*.

The nine items explained .729 (72.9%) of the total variance with the first six items that assess membership to social clubs explaining .641 (64.1%) of this variance, and the first three (3) items that assess emotional aspects of social support explaining .087 (8.7%) of this variance. The remaining 33 items that mainly

© University of Pretoria

assess informational aspects of social support, self-control and other coping strategies explained .271 (27.1%) of the total variance. These Eigen values imply that the items which assess membership to social clubs not only excessively dominate or influence variations in the dataset for coping methods, but also slightly connect with the other items in this measurement structure.

4.4.1.5 Rotated loadings of each item to the four factors of the 42-item coping scale

The rotated loading matrix exposed six items with loadings to each factor that are lower or slightly more than the absolute cut-off of .30. This included two items in the membership to clubs subscale, three items in the self-control subscale (listed in section 4.4.1.2) with MSA indices that are below .5 (which is the cut-off value for discarding items presumed to assess the same domain as the other items in the pool), and one item in the subscale for other coping strategies namely *talked with someone the personal problems (ocs6tellprobl)* which loaded on the membership to clubs factor up to .33 and on itself up to .36. The low rotated loadings of these six items implies that they are unsuitable in the coping measurement structure.

4.4.1.6 Explained variances of the rotated factors and reliability of EAP scores on the scale

The matrix of explained variance of rotated factors and reliability of PHI-information oblique EAP scores showed that the four factors in the coping scale have explained variances that are fairly acceptable with the least being 4.38% for the other coping strategies factor and the highest being 7.17% for the social support factor. This matrix also yielded ORION scores that ranged from .89 for other coping strategies factor to .96 for social support factor, and factor determinacy indices that are very high to excellent with the least being .94 for the other coping strategies and the highest being .98 for the social support factor. These results imply that the four factors contribute to changes in the data, have high criterion reliability and are generally helpful for assessing coping construct (Ferrando & Lorenzo-Seva, 2016).

However, the relatively low explained variances and criterion reliability coefficients of the membership to clubs' factor, self-control factor, and other coping strategies factor imply that some items used to assess these factors are weakly linked with each other, share the same content with other items, and inadequately assess and represent the coping methods construct (Hair et al., 2010).

4.4.2 CFA on 42 items in the coping scale

Furthermore, first-and second-order CFAs were performed on the dataset of the 42 items in this scale to verify their validity and suitability in assessing coping with adversities using social support, self-control, and other strategies among adolescents involved in this study.

© University of Pretoria

4.4.2.1 Goodness of fit of the 42-item measurement model

The lavaan 0.6-7 of the first-order CFA fully converged after 86 iterations and yielded inadequate model fit. The rounded goodness of fit indices was a CFI of .87, TLI of .86 and RMSEA of .07. This implies that the observed and expected correlation information matrix for this construct are considerably different and therefore inappropriate for SEM.

However, the lavaan 0.6-7 of second-order CFA on the same items did not converge after 6,400 iterations. This CFA specifically yielded matrices without goodness of fit, standard error, *z*-score, probability and correlations information for some variables, which implied that its estimates were most likely unreliable.

4.4.2.2 Item-to-factor and alpha reliability correlations of the 42-item scale

The first-order CFA yielded 1) low to adequate item-to-factor loadings with the least being .14 for the item that assesses *personal ability to self-discipline (sc6discipl)* in the self-control subscale and the highest being .77 for item that assesses whether *significant others often encouraged him/her not to give up (soc8nogivup)* in the social support subscale; and 2) fair to excellent reliability coefficients for each subscale with the least coefficient being .67 for the membership to social clubs subscale and the highest being .91 for the social support subscale. This item-to-factor and reliability correlations indicate that some measures, particularly in the subscales for self-control and membership to social clubs, feebly correlate with the other items in the same pool and are therefore inappropriate to the coping measurement structure.

4.4.2.3 Inter-factor and factor-to-construct correlations of the 42-item scale

The first-order CFA yielded inter-factor correlation coefficients that are strange especially between the membership to social clubs' factor and social support factor which is -.47, the membership to social clubs' factor and the self-control factor which is -.45, and the membership to club factor and the factor for other coping strategies which is .07. This implies that four theorised factors are not cohesive and do not therefore jointly measure the coping construct.

Similarly, the second-order CFA yielded factor-to-construct estimates for the social support factor that are greater than 1.0, which is strange. The estimates for the social support factor and the coping construct were 1819.78 and the estimated variance for the social support factor and coping construct was 188.34. This confirmed that some items, especially in the membership to social clubs' subscale, self-control subscale and social support subscales are either weak or independent or unstable or unreliable and as such unsuitable to the coping measurement structure. The sample data for this scale was thus scrutinised again to work out a better measurement model for the coping construct as explained in subsections 4.4.3 and 4.4.4.

© University of Pretoria

4.4.3 EFA on 37 items in the coping scale

Firstly, the five (5) items with MSA values that are less than .5 and with item loadings that are less than .30 were removed from the sample dataset for the coping methods construct and a second EFA model was performed on the 37 items with MSA values that are equal to or greater than .5 to examine their inter-item and inter-factor correlations and confirm the measurement structure. The five items which were removed included *participation in a religious group (clu1religiousgp)* and *a clan club (clu3clan)* under the membership to club subscale as well as *ability to refuse bad things even if they are fun (sc4refuse), to resist temptation (sc5resist), and to self-discipline (sc6discipl)* under the self-control subscale.

The 37 items which were retained included: Four (4) items that assessed membership to social clubs based on *participation in a peers' group (clu2peergp)*, a *sports club or team (clu4sports)*, a *community welfare club (clu5communty)* and *a health or care club (clu6health)*. Twelve (12) items that assessed social support based on extent to which *significant others showed or provided what is needed (soc1needed)*, *comfort (soc2comfort), negligence (soc3leftalone), kindness (soc4kindness), criticism or blame (soc5blamed), love (soc6loved), assurance of reliance (soc7reliance), encouragement for resilience (soc8nogivup), availability when required (soc9available), readiness or willingness to help (soc10helped), care (soc11tookcare),* and *advice on disruptive events (soc12addeddistr)*.

Seven (12) items in the self-control subscale that assessed ability to *stop bad acts* (sc1hardstopping), resist being *diverted (*sc2diverted), *say unsuitable words (sc3isayunsuitab), keep away from excitements (sc7excitemnt), engage in activities that feel good and regret later (sc8regret), stop participating in events even if they are wrong (sc9notstop),* and *to act without thinking through alternatives (sc10nothinking)*. Fourteen (14) items in the other coping strategies subscale that assessed coping with adversities by *knowing and solving issues (ocs1knowing), working hard (ocs2workinghard), focusing on what is positive in life (ocs3positiv), relaxing (ocs4relaxing), exercising (ocs5exercise), telling someone the problem (ocs6tellprobl), interacting with peers (ocs7peers), partaking in social activities (ocs8social), praying or worshiping (ocs9prayers), crying or keeping to self (ocs10cried), blaming others (ocs11blamed), assuming the worst may have occurred (ocs12worstoccr), assuming there is no problem (ocs13noproble), and joking about the situation (ocs14jokes).*

4.4.3.1 Adequacy of the polychoric correlation matrix

The adequacy of the polychoric correlation matrix yielded a determinant of the matrix of less than .001 which implies that the observed and identity matrices are connected and the 37 items in this scale are different; 2) a Bartlett's test statistic on the probability of presence in the correlation matrix of significant correlations among some variables in the dataset of 16381.0 (df = 666; p<.001) which implies that at least some of the items in the scale are significantly correlated (Lorenzo-Seva & Ferrando, 2021); and 3) a KMO test index for the

© University of Pretoria

correlation among the 37 items in the sample of .85 which is greater than .7 implying that the 37 items in the data set are highly correlated and good for factor analysis (Lorenzo-Seva & Ferrando, 2021).

4.4.3.2 Normed measure of sampling adequacy indices for the 37 items in the scale

The polychoric matrix yielded acceptable to very high rounded normed MSA indices for the 37 retained items with the least value being 0.64 for the item that assesses *participation in a sports club (clu4sports)* and the highest being .94 for the item that assesses *whether significant others usually made him/her feel loved (soc6loved)*. It also yielded an improved item-to-factor loading in the un-rotated and rotated matrix with each of the 37 items loading to at least one of the four factors by more than the minimum absolute cut-off value of .30, except for the item that assesses *participation in peers' groups* which loaded a lower value on the un-rotated correlation matrix. This implies that most of the retained items in this scale do not share the same content and thus have adequate discriminating ability and precision of measuring the same domain (Lorrenzo-Seva & Ferrando, 2021). MSA indices of the 37 items retained in this scale are shown in part D of appendix 2.

4.4.3.3 Proportions of variances explained by the 37 items retained in the scale

Additional analysis on the 37 items for the explained variances based on Eigen values identified seven (7) items with portions of the total variance that are greater than 1.0. They include items that assess participation *in peers' group* (*clu2peergp), sports club or team (clu4sports)*, *community welfare club (clu5communty)*, *health care club (clu6health)*, and whether the significant others *showed they are needed* (*soc1needed)*, *provided comfort* (*soc2comfort)* and *left them alone* (*soc3leftalone)*. These items explained .7001 (70.01%) of the total variance with the first four (4) items that assess membership to social clubs accounting for a portion of variance of .5895 (58.95%) and the first three (3) items that assess seeking emotional support explaining a variance of .1107 (11.07%) and other 30 items explaining the remaining variance. Like in the initial EFA, the seven items used to partly assess these two factors (membership to social clubs and social support) explained most of the changes in the dataset and excessively dominated the other items indicating that they are largely independent of the other items in this scale.

4.4.3.4 Explained variances of rotated factors and reliability of EAP scores on the 37-item scale

The matrix of explained variance of rotated factors and reliability of PHI-information oblique EAP scores on the 37 items retained in coping scale showed that the four factors have variances which are acceptable with the least being 3.6% for the social support factor and the highest being 7.3% for the membership to social clubs. This matrix also yielded ORION scores which are quite high to very high ranging from .88 for the social support

© University of Pretoria

factor to .97 for the membership in social clubs' factor, and factor determinacy indices which are high with the least being .94 for social support and the highest being .98 for membership in social clubs.

The removal of the five items that had inadequate MSA indices and item loadings from this EFA phase interchanged the extent of variability of the data (variances) and factor determinacy indices (criterion reliabilities) in the coping measurement structure mainly to the advantage of the membership to social clubs' factor and to the detriment of the social support factor. This implies that some items, especially in the membership to social clubs and social support subscales, are either unstable or independent to the theorised coping structure and thus require confirmation.

4.4.4 CFA on 36 items in the coping scale

Secondly, based on the results for the initial EFA, six (6) items (i.e. one item with a normed MSA value that is less than .5, four items with a loading to its own or another factor of less or equal to .41, and one item presumed to be a flipside of another item of the same subscale – hence redundant) were removed from the initial dataset that consisted of 42 items and another CFA was performed.

The removed items assessed: *Participation in a religious group (clu1religiousgp)*, which yielded a normed MSA value of .48 and loading of less than .30 to any of the four factors. *Whether significant others showed kindness* (*soc4kindness)*, which yielded a loading of 0.41 to the social support factor and a loading of -.41 to the other coping strategies factor. *Blame from significant others (soc5blamed)*, which yielded a loading of .32 on the social support factor and a loading of -.34 on the other coping strategies factor.

They also included items that assessed: *Ability for self-discipline (sc6discipl)* which had a normed MSA value of .39. A*bility to cope by sharing problems with someone (ocs6tellprobl)*, which had a loading of .33 to the membership to clubs' factor and a loading of .36 to the other coping strategies factor. And *ability to cope by assuming there is no problem (ocs13noproble)* which was assumed to be a flip side of the item that assessed *ability to cope by telling someone the problems (ocs6tellprobl)* and had a loading on the membership to clubs' factor of .54 and to the other coping strategies of .55.

4.4.4.1 Goodness of fit of the 36-item coping measurement model

The lavaan 0.6 - 7 of the first-order CFA performed on the 36 items retained in the coping scale ended normally after 97 iterations. However, it did not achieve a good fit and satisfactory measurement structure. This CFA yielded a CFI of .88, TLI of .88, RMSEA of .07, and SRMR of .07. Although these model fit statistics were slightly better than those yielded in the initial first-order CFA on 42 items, they are still inadequate.

© University of Pretoria

4.4.4.2 Item-to-factor and alpha reliability correlations of the 36-item scale

In addition, the loading power of the item that assessed self-control based on *ability to stop bad acts (sc1hardstoppng)* slightly improved from .38 to .39 in the initial and current first-order CFA models. However, the loading power of the item that assessed self-control based on *ability to resist temptation (sc5resist)* reduced from .31 in the initial first-order CFA model to .29 in the current CFA.

The loading power of the five items in the membership to social clubs scale also reduced from .42 to .34 for participation in *a peers' group (clu2peergp)*, from .43 to .36 for participation in a clan group (*clu3clan)*, from .40 to .34 for participation in sports club (*clu4sports)*, from .38 to .32 for participation in a community welfare club (*clu5communty)*, and from .66 to .59 for participation in a health club (*clu6health)*.

Similarly, the alpha reliability co-efficient of the membership to social clubs' subscale reduced from .67 in the initial first-order CFA model (which assessed reliability based on the six items in this subscale) to .42 in the current model (which assessed reliability based on five items retained in this subscale).

However, the reliability co-efficient of the self-control subscale improved slightly from .77 in the initial first-order CFA model (which assessed reliability based on the 10 items in the initial subscale) to .79 in the current one (which assessed reliability based on the nine items maintained in this subscale).

The diminutive changes in goodness of fit statistics and the loading and reliability power of the 36 items suggests that the aforesaid **five** items in the membership to clubs' subscale and **two** items in the self-control subscale (i.e. *sc1hardstoppng* & *sc5resist*) are marginally linked, share content with other retained items, are not good enough to assess the coping construct, and thus worth removing from the coping scale.

4.4.5 CFA on 29 items and three factors in the coping scale

Thirdly, the seven aforesaid items were removed and a third round of the first-order CFA was performed on the dataset of the 29 items retained in this scale. Ten of these items assessed coping by social support, seven (7) assessed coping by self-control, and 12 assessed coping using other strategies.

4.4.5.1 Goodness of fit of the 29-item coping measurement model

The lavaan 0.6-7 of the first-order CFA on data of the 29 items and three-factors in the coping scale ended normally after 69 iterations and an adequate model fit was achieved. The goodness of fit test yielded a rounded CFI of .91, TLI of .89, RMSEA of .07, SRMR of .07. This implies that the observed and expected correlation information matrix are slightly different and therefore empirically and theoretically appropriate for SEM (Blunch, 2008; Byrne, 2016).

However, the lavaan 0.6-10 of the second-order CFA on the same dataset did not end normally after 417 iterations. The matrices for this model did not yield some information (standard errors, z-scores and probability

© University of Pretoria

values) about the inter-item, item-to-factor and factor-to-construct correlations. Hence, the first-order CFA model was relied on for SEM. See EFA and CFA data for this scale in part D of appendix 2.

4.4.5.2 Item-to-factor and alpha reliability correlations of 29 items and three factors in the scale

The first-and second-order CFA showed that the correlations of items used to assess the three factors in this construct were below moderate to quite high with the least coefficient being .40 for the relationship between the item that assesses *ability to refuse bad things even if they are fun (sc4refuse)* and the self-control factor and the highest being .79 for the relationship between the item that assesses *help from others not to give up (soc8nogivup)* and the social support factor.

Additionally, the first-order CFA showed that the 29-item coping scale and its subscales have quite high to very high alpha reliability coefficients i.e. .86 for the entire coping scale comprising 29 items, 91 for the social support subscale comprising 10 items, .78 for the self-control subscale consisting of seven items, and .84 for the other coping strategies subscale comprising 12 items.

These inter-item and reliability coefficients imply that the retained items in the coping scale and subscales are not only highly correlated but also internally consistent and reliable for assessing the coping among the adolescents involved in this study.

4.4.5.3 Delineation of factors in the subscale for other coping strategies

Fourthly, to ensure that the factors in the subscale for other coping strategies are properly defined, the 12 items in this subscale were divided into two clusters. The first cluster had six items related to coping by socialisation like *spending some time on relaxing (ocs4relaxing), exercising (ocs5exercise), interacting with peers (ocs7peers), participating in social activities (ocs8social), praying to God (ocs9prayers), and crying or keeping to self (ocs10cried)*.

The second cluster had six items related to coping by deflection like *trying to solve the issues (ocs1knowing), working hard (ocs2workinghrd), focusing on what is positive to life (ocs3positiv), blaming self or others (ocs11blamed), assuming that the worst may have occurred (ocs12worstoccr), and joking about the situation (ocs14jokes).*

4.4.6 CFA on 29 items and four factors in the coping scale

A first- and second-order CFA was performed on the dataset of the 29 items retained in the coping scale to verify their suitability and reliability in assessing coping by seeking social support, self-control, socialisation, and deflection among adolescents involved in this study.

© University of Pretoria

4.4.6.1 Goodness of fit of the 29-item and four-factor coping model

The lavaan 0.6 - 10 of the first-order CFA on the dataset for the four-factor coping scale ended well after 74 iterations and achieved a good model fit. The goodness of fit test yielded a CFI of .91, TLI of .90, RMSEA of .07, and SRMR of .07. These indices imply that the observed and expected correlation information matrix for this construct are slightly different and thus empirically and theoretically suitable for SEM (Byrne, 2016).

Likewise, the lavaan 0.6 - 10 of the second-order CFA on the same four-factor dataset ended well after 84 iterations. However, the goodness of fit test yielded inadequate indices which included a CFI of .75, TLI of .73, RMSEA of .11, and SRMR of .11. These indices imply that the observed and expected correlation information matrices are quite different in this CFA model.

4.4.6.2 Item-to-factor and alpha reliability correlations of 29 items and four factors in the scale

The CFAs showed that the item-to-factor correlations of this scale are quite moderate to quite high with the least rounded coefficient being .41 for the relationship between the item that assesses *ability to refuse bad things even if they are fun (sc4refuse)* and the self-control factor and the highest being .80 for the relationship between the item that assesses *help from others not to give up (soc8nogivup)* and the social support factor.

In addition, the first-order CFA yielded quite high to very high reliability coefficients of .86 for the 29-item coping scale, .91 for the 10-item social support subscale, .78 for the seven-item self-control subscale, .68 for the six-item socialisation subscale, and of .77 for the six-item deflection subscale.

These inter-item and reliability coefficients imply that the items retained in the coping scale and subscales are amply correlated, consistent and reliable for assessing the four coping methods among adolescents involved in this study. See Table 11 in subsection 4.6 for the summary of item-loadings to the four factors of the final coping scale.

4.4.6.3 Inter-factor and factor-to-construct correlations of the 29-item coping scale

The two CFA models showed that the correlations among the four factors and between each of these factors and the coping construct were statistically significant, although they varied from very low to very high.

As can be seen in Table 8, the inter-factor correlations among the four factors were very low to very high with the least rounded coefficient being -.03 for the correlation between the socialisation and self-control factors and the highest coefficient being .98 for the correlation the socialisation and deflection factors.

Similarly, factor-to-construct correlation coefficients were quite low to very high with the least rounded coefficient being .24 for the correlation between the socialization factor and the coping methods construct and the highest coefficient being .81 for the correlation between the social support factor and coping methods

© University of Pretoria

construct. These results imply that the 29 items and four-factors in this scale are cogent and cohesive enough to assess coping among adolescents involved in this study.

The 29-item dataset was adopted for SEM. See part D of appendix 2 for the detailed EFA and CFA data on the final scale.

Table 8. CFA inter-factor and factor-to-construct correlations of the final coping methods scale

	Construct	Observed variables		
Observed variables	Coping methods	Socialisation	Deflection	Social support
Socialisation	.243**			
Deflection	.319**	.976**		
Social support	.807**	.110**	.206**	
Self-control	.598**	-.029*	.034**	.526**

Notes:
The correlation coefficients indicated in column two are from a second-order CFA model that was performed on the 29 items which were retained after disregarding items with normed MSA values of <.50 and with weak loadings or cross loadings of <.30.
The correlation coefficients in column three to five are from a first- order CFA model run on the same items.
** Correlation coefficient is significant (p=.000) at .01 level of significance.
* Correlation coefficient is significant (p=.033) at .05 level of significance.

4.4.7 Conclusion

Results of the final first- and second-order CFAs show that the 29 items retained in the coping scale have acceptable goodness of fit indices as well as inter-item, inter-factor, factor-to-construct, and alpha reliability correlation coefficients. This not only implies that the final coping scale and subscales are cogent and reliable for assessing the four coping methods among adolescents, but also that its dataset is suitable for SEM.

4.5 Sexual Risk Behaviour Scale

This scale consisted of 14 items which were assumed to assess sexual risk conditions and actions of the adolescents in this study. Eight (8) items assessed risky sexual conditions based on *testing for HIV status, disclosure of the HIV test results to someone, peeping at sex organs of others, showing off sexual organs, reactions to sexual advances, possession of friends who have sexual partners, possession of friends of opposite sex, and being asked for sexual relationship.* Six (6) items assessed risky sexual actions based on experience of *sexual intercourse, forced sexual intercourse*, *sex in exchange of gifts or money, sexual intercourse with a person who looks older, sexual intercourse with more than one person, and condom use during sexual intercourse.* Each of these items had two options to which a suitable answer was specified. The responses to these items varied implying that each theorised item contributed to the distribution of scores on this scale.

© University of Pretoria

4.5.1 EFA on 14 items in the sexual risk behaviour scale

The EFA was run on the dataset of the 14 items in this scale to examine the links with the two assumed factors, as specified in the Bayesian estimation modal (Choi et al., 2011). The results of which are presented.

4.5.1.1 Inter-item correlations matrix of the scale

The inter-item correlations matrix presented in Table 9 shows that the coefficients of items in this scale range from very low to very high with the least being .002 for the correlation between the items that assessed *testing for HIV status (sex1nottesthiv)* and *being asked for a sexual relationship (sex8askedsex)* and the highest being .94 for the correlation between items that assessed *peeping at the sexual organs of others (sex3peepsexorgns)* and *showing off sexual organs (sex4showsexorgns).*

The coefficients are least especially where the items that assessed HIV testing and HIV disclosure were correlated with those that assessed risky sexual actions and the other risky sexual conditions, which implies that these two items are distinct from the others and therefore unsuitable in this scale.

Table 9. Standardised variances or covariances of the EFA polychoric correlation matrix for 14 items in the sexual risk behaviour scale

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Sex1nottesthiv	1.00													
2. Sex2disclosure	.714	1.00												
3. Sex3peepsexorgns	.336	.351	1.00											
4. Sex4showsexorgns	.328	.279	**.940**	1.00										
5. Sex5sexadvanc	.204	.305	.832	.806	1.00									
6. Sex6friends	.083	.293	.630	.701	.852	1.00								
7. Sex7oppsex	.162	.246	.451	.509	.645	.800	1.00							
8. Sex8askedsex	**.002**	.215	.568	.648	.765	.769	.564	1.00						
9. Sex9hadsex	.069	.266	.692	.736	.864	.813	.623	.904	1.00					
10. Sex10forcedsex	.245	.354	.736	.754	.767	.709	.542	.739	.817	1.00				
11. Sex11gifts	.110	.218	.671	.713	.770	.797	.609	.808	.805	.861	1.00			
12. Sex12sexolder	.255	.303	.795	.820	.829	.757	.582	.787	.878	.877	.853	1.00		
13. Sex13sexmore1	.150	.266	.785	.774	.860	.815	.602	.802	.916	.836	.817	.912	1.00	
14. Sex14nocondom	.203	.246	.492	.536	.522	.474	.255	.383	.488	.553	.508	.586	.589	1.00

Notes: Items 1 to 7 assessed risky sexual conditions, and 8 to 14 assessed risky sexual actions.
Coefficients shaded yellow are less than .300, which indicate weak or low inter-item correlations.
Bold values indicate the range of correlation coefficients.

4.5.1.2 Adequacy of the polychoric correlation matrix

The adequacy of polychoric correlation matrix yielded: A determinant of the matrix of less than .001, which implied that the observed and identity correlation matrices are linked and the items in this scale are different. A Bartlett's test statistic on the likelihood of presence in the correlation matrix of significant

© University of Pretoria

correlations among some variables in the dataset of 16469.2 (*df* = 91; *p*<.001), which implied that at least some of the items in the sexual risk behaviour scale correlate significantly and are responsive to factor analysis. This matrix also yielded a KMO test index for the correlation among the 14 items in the sample of .55 that is less than .7, which implied that some items in the sexual risk behaviour dataset feebly relate and deserve remedial action.

Therefore, bootstrapping (which is a statistical procedure that resamples the dataset to create simulated samples by recalculating standard errors and confidence intervals of the KMO) and weighting (which is a statistical adjustment to the data to take account of or compensate for a distorting factor) were utilised on the respective items to enhance data suitability for factor analysis (Lorenzo-Seva & Ferrando, 2021).

4.5.1.3 Normed measure of sampling adequacy indices for the 14 items in this scale

The polychoric matrix also yielded low to high normed item-MSA indices with the least rounded value being .145 for the item that assesses *testing for own HIV status (sex1nottesthiv)* and the highest being .89 for the item that assesses *experience of forced sex (sex10forcedsex)*. This implies that some items in the theorised sexual risk behaviour scale either share the same content or have inadequate discrimination ability and thus do not measure the same domain as the other items in the pool (Lorrenzo-Seva & Ferrando, 2021).

The matrix for normed item-MSA indices identified six items with rounded values that are less than the recommended cut-off value of .5 for discarding items that do not conform to EFA. This included items that assess *testing for own HIV status (sex1nottesthiv)* with a value of .15*, disclosure of own HIV status to someone (sex2disclosure)* with MSA value of .19, *peeping at sex organs of others (sex3peepsexorgns)* with MSA value of .46, *showing off own sexual organs (sex4showsexorgns)* with MSA value of .48, *having friends who have sexual partners (sex6friends)* with MSA value of .49, and *condom use with anyone (sex14nocondom)* with MSA value of .43. See part E of appendix 2 for the MSA indices of items in this scale.

4.5.1.4 Proportions of variances explained by the 14 items in the scale

The analysis of explained variance based on eigenvalues also identified two items with proportions of variances that are equal to or greater than 1.0. They included the item that assesses *testing for HIV status (sex1nottesthiv)* with an eigenvalue of 9.106 and proportion of variance of .6504 (65.04%), and the item that assesses *disclosure of own HIV status to someone* (*sex2disclosure)* with an eigenvalue of 1.67 and proportion of variance of .1193 (11.93%). These two items, which solely assess the risky sexual conditions, explained .7697 (76.97%) of the variance in the sexual risk behaviour dataset while the other 12 items explained the remaining variance of .2303 (23.03%). This implies that these two items not only feebly correlate with other items in this scale but also excessively dominate and influence changes in the dataset for sexual risk behaviour.

© University of Pretoria

Besides this, the matrix for weights of robust rotation of each variable in the parallel analysis based on minimum rank factor analysis identified seven items with a robust weight value of less than .30. This included items that assess *testing for HIV status (sex1nottesthiv), disclosing own HIV status to someone (sex2disclosure), peeping at sex organs of others (sex3peepsexorgns), showing off sexual organs (sex4showsexorgns), possession of friends with sexual partners (sex6friends), experience of sexual intercourse (sex9hadsex), and condom use during sexual intercourse (sex14nocondom)*. The low robust weight value of these items implies that they are less important than the other items in defining sexual risk behaviour (Lorenzo-Seva & Ferrando, 2019).

4.5.1.5 Rotated loadings of the 14 items to the two factors of this scale

Moreover, the matrix of rotated loading to the two factors identified one item that assesses disclosure *of own HIV status to someone* (*sex2disclosure)* which had a loading value of less than .30 on the risky sexual actions factor, and 11 items that had loading values of less than .30 on the risky sexual conditions factor. They included items that assess *showing off my sexual organs (sex4showsexorgns), reaction to sexual advances (sex5sexadvanc), possession of friends with sexual partners (sex6friends), possession of friends of the opposite sex (sex7oppsex) as well as experience of requests for a sexual relationships (sex8askedsex), sexual intercourse (sex9hadsex), forced sexual intercourse (sex10forcedsex), gifts or monetary offers for sex (sex11gifts), sexual intercourse with a person who looks older (sex12sexolder), sexual intercourse with more than one person (sex13sexmore1),* and *condom use during sexual intercourse with anyone (sex14nocondom).*

This implies that whereas nearly all items in the sexual risk behaviour scale fairly to highly correlate with the risky sexual actions factor, only three of the 14 items namely those that assess experiences of *testing for own HIV status (sex1nottesthiv), disclosure of own HIV status to someone* (*sex2disclosure),* and *peeping at sex organs of others (sex3peepsexorgns),* marginally to highly correlated with the risky sexual conditions factor. This confirmed that these particular items primarily relate with and assess their intended factor.

4.5.1.6 Explained variances of the rotated factors and reliability of EAP scores on this scale

The matrix of explained variance of rotated factors and reliability of PHI-information oblique EAP scores showed that the two factors in this scale have explained variances that are acceptable with the least being 2.09 for the risky sexual conditions factor and the highest being 8.26 for the risky sexual actions factor. This matrix yielded rounded ORION scores that are very high for the risky sexual conditions factor (.99) and risky sex actions factor (.98), and factor determinacy indices that are very high for the risky sexual conditions factor (.99) the risky sexual actions factor (.99). This implies that the two factors contribute to changes in the data, have high criterion reliability, and are suitable for assessing sexual risk behaviour.

© University of Pretoria

However, as noted earlier in this subsection, the five items which mostly assess risky sexual conditions factor namely *testing for HIV status (*sex1nottesthiv*), disclosing own HIV status (sex2disclosure), peeping at sex organs of others (sex3peepsexorgns), showing off sexual organs (sex4showsexorgns)*, and *condom use during sexual intercourse (sex14nocondom)* yielded relatively weak correlations with other items in this scale, unsatisfactory normed MSA indices, and excessively high portions of explained variances in the sexual risk behaviour dataset. This implies that some of these items are inappropriate and deserve removing from the theorised scale to augment the precision and validity of the dataset for factor and other analyses in this study.

Hence, the five items which yielded normed MSA values of less than .5, portions of the total variance in the dataset that are excessive, and rotated robust weights of less than .30 in the initial EFA were removed from the measurement structure. The full initial EFA results on this construct are presented in part E of appendix 2.

4.5.2 EFA on nine items in the sexual risk behaviour scale

Another EFA was performed on the dataset of the nine (9) items retained in this scale to re-examine the inter-item and inter-factor correlations and confirm their factor structures.

4.5.2.1 Adequacy of the polychoric correlation matrix

In this EFA, the adequacy of the polychoric correlation matrix yielded 1) a determinant of the matrix of .000003 which implies that the observed and identity correlation matrices are connected and that the items in the nine-item scale are different; 2) Bartlett's test statistic on the probability of presence in the correlation matrix of significant correlations among some variables in the data set of 16488.4 (df = 36; p< .001), which implies that some items in this scale are significantly correlated and amenable to factor analysis; 3) a KMO test index for the correlation among the nine items in the sample of .89 which is greater than .7, implying that the items retained in the dataset are highly correlated and good for factor analysis; and 4) an improved bootstrap 95% CI of .711 – .919 compared to the bootstrap 95% CI in the earlier EFA of .258 – .795, which implies that the sampling of the sexual risk behaviour dataset is adequate for factor analysis once the five aforesaid items are removed from the dataset and the remaining nine items are bootstrapped.

4.5.2.2 Normed measure of sampling adequacy indices for the nine items in this scale

The matrix for normed item-MSA indices yielded high to very high indices with the least rounded value being .87 for the item that assess *possession of friends with sexual partners (sex6friends)* and *being asked for sexual relationships (sex8askedsex)* and the highest being .95 for the item that assesses *reaction to sexual advances (sex5sexadvanc)*. This implies that the nine items retained in this scale possess different content and

© University of Pretoria

better discriminating power and ability for measuring the same domain than the initial 14 items in this scale. See the MSA indices in part E of appendix 2 for the initial 14 items and the retained nine items of this scale.

4.5.2.3 Portions of variances explained by the nine items retained in this scale

The analysis of explained variance based on eigenvalues identified one item with a portion of variance that is equal to or greater than 1.0. This item, which assesses *reaction to sexual advances (sex5sexadvanc)* under the risky sexual conditions' variable, had an eigenvalue of 7.24 and explained .8048 (80.48%) of variance. The remaining eight (8) items explained .1952 (19.52%) of the variance. Three of which again under the risky sexual conditions' variable explained .1385 (13.85%) of this variance and the remaining five items under risky sexual actions explained the remaining variance of .0567 (5.67%). This variance data yet again imply that the items used to assess the risky sexual conditions variable excessively dominate and influence the dataset for the reduced sexual risk behaviour scale to the detriment of the items retained to assess the risky sexual actions variable – hence the need for more scrutiny of the items built-in the scale of this construct.

4.5.2.4 Rotated loadings of the nine items to the two factors in this scale

The matrix of rotated loadings to the two factors showed that seven of the nine items retained in the sexual risk behaviour scale fairly to highly load on the risky sexual conditions factor with the least loading coefficient being .60 for the item that assesses *reactions to sexual advances (sex5sexadvanc)* and the highest coefficient being 1.06 for the item that assesses *sexual intercourse with persons who look older (sex12sexolder)*. Three of the retained items marginally to highly load on the risky sexual actions factor with the least loading coefficient being .34 for the item that assesses *reactions to sexual advances (sex5sexadvanc)* and the highest coefficient being .96 for the item that assesses *having sexually active friends (sex6friends)*.

In addition, one item that assesses *reactions to sexual advances (sex5sexadvanc)* marginally to fairly loads on both factors with the least loading coefficient being .34 on the risky sexual actions factor and the highest loading coefficient being .60 on its own risky sexual conditions factor. Each of the six items retained under risky sexual actions load adequately to extremely highly on their own factor with the least loading coefficient being .77 for the item that assess *being asked for sexual relationships (sex8askedsex)* and the highest being 1.06 for the item that assesses *sexual intercourse with persons who look older (sex12sexolder)*.

These rotated loading results imply that some of the items retained in this scale to assess risky sexual conditions and actions are inadequately related and thus deserve further review to enhance their validity in measuring the sexual risk behaviour construct.

© University of Pretoria

4.5.2.5 Explained variances of the rotated factors and reliability of EAP scores on the scale

The matrix of explained variance of rotated factors and reliability of PHI-information oblique EAP scores showed that the two factors have explained variances that are acceptable with the least variance being 1.98 for risky sexual actions factor and the highest being 5.54 for the risky sexual conditions factor. This matrix also yielded ORION scores that are very high with the highest being 1.00 for the risky sexual actions factor and the least being .98 for the risky sexual conditions factor, factor determinacy indices that are very high with the highest being 1.00 for risky sexual actions and the least being .99 for risky sexual conditions, and a high inter-factors correlation of .83, which implied that the two factors have high criterion reliability.

Results of this EFA phase showed that whereas the (9) nine items retained in the sexual risk behaviour scale significantly correlate, adequately measure the same domain, and possess high criterion reliability and inter-factor correlations, the items used to assess the risky sexual conditions factor excessively dominate and influence the dataset of the reduced scale to the detriment of the items retained to assess the risky sexual actions factor. This highlighted the need to perform CFAs on the datasets for various constellations of theorised items to identify a better measurement structure of this construct.

4.5.3 CFA on 14 items in the sexual risk behaviour scale

Therefore, a first-order CFA was performed on the same 14-item dataset examined in the initial EFA to verify the validity and suitability of the sexual risk behaviour measurement structure for SEM.

4.5.3.1 Goodness of fit statistics of the 14-item dataset

The lavaan 0.6-7 of the first-order CFA did not converge after 869 iterations and neither yielded model fit indices nor complete information (standard errors, z-score and probability statistics) for the different correlation matrices. This implied that the estimates in the model are unreliable.

4.5.3.2 Item-to-factor, alpha reliability and inter-factor correlations of the 14-item scale

In addition, the first order CFA yielded very low to quite high item-to-factor loadings of the eight items in the risky sexual conditions subscale with the least being .16 for the item that assesses *testing for HIV status (sex1nottesthiv)* and the highest being .76 for the item that assesses *reaction to sexual advances (sex5sexadvanc)*, and below average to high item-to-factor loadings of the six items in the risky sexual actions subscale with the least being .42 for the item that assesses *condom use with anyone (sex14nocondom)* and the highest being .82 for the item that assesses *experience of sexual intercourse (sex9hadsex).* Of the eight items in the risky sexual conditions' subscale, the two items that assessed HIV testing and disclosure had the least

© University of Pretoria

correlation coefficients of .16 and .24 respectively thus proving that they are both weak to the sexual risk behaviour measurement structure and worthwhile removing from the dataset.

This CFA also yielded 1) a high alpha reliability coefficient of .89 for the entire scale, and fair to quite high reliability coefficients of the two subscales with the least being .73 for the risky sexual conditions subscale and the highest being .83 for the risky sexual actions subscale, which implies that some items particularly in the risky sexual conditions subscale are inconsistent; and 2) a very high covariance or inter-factor correlation of .91, which implies that the risky sexual conditions factor and risky sexual actions factor are highly correlated and jointly measure the sexual risk behaviour construct.

Since the two items that assess *testing for own HIV status* and *disclosure of own HIV status to someone* on the risky sexual conditions factor yielded very loadings, they were removed from the sexual risk behaviour scale and other first-and-second-order CFAs were performed on the 12 retained items which included six items in the risky sexual conditions' subscale and six in the risk sexual actions subscale.

4.5.3.3 Goodness of fit statistics of the 12-item measurement model

The lavaan 0.6-10 of the first-order CFA on the dataset for 12 items converged fully after 127 iterations. The goodness of fit tests of this model yielded adequate fit indices. These included a CFI of .98, TLI of .97, RMSEA of .05 and SRMR of .08.

Likewise, the lavaan 0.6 - 7 of the second-order CFA on the same dataset ended normally after 126 iterations. The partial information matrix gave comparable model fit indices. This model fit statistics imply that the observed and expected correlation information matrices of this construct are slightly different (Blunch, 2008; Byrne, 2016), and as such empirically and theoretically suitable for SEM.

4.5.3.4 Item-to-factor and alpha reliability correlations of the 12-item scale

In addition, the two CFAs yielded quite medium to quite high correlation coefficients for items in the risky sexual conditions subscale with the least rounded coefficient being .46 for the item that assesses *possession of friends of opposite sex (sex7oppsex)* and the highest being .76 for the item that assesses *reaction to sexual advances (sex5sexadvanc).*

The two CFAs also yielded quite medium to high correlations coefficients for items in the risky sexual actions subscale with the least coefficient being .41 for the item that assesses *condom use during sexual intercourse (sex14nocondom)* and the highest being .83 for the item that assesses *experience of sexual intercourse (sex9hadsex)*. (See Table 11 for the CFA loadings of each item on their respective factors).

They also yielded quite high to very high Cronbach's alpha reliability coefficients for the risky sexual conditions' subscale of .78, for the risky sexual actions' subscale of .83, and for the entire sexual risk behaviour

© University of Pretoria

scale of .89. These reliability coefficients imply that the 12 items retained in the entire scale as well as the six items retained in each of the two subscales for this scale are internally consistent and suitable for assessing sexual risk behaviour among adolescents.

4.5.3.5 Inter-factor and factor-to-construct correlations of the 12-item scale

The two CFAs showed that the correlations between the two factors in this scale and between each factor and the sexual risk behaviour construct vary from quite moderate to very high.

As can be seen in Table 10, the correlation coefficient between the risky sexual conditions factor and risky sexual actions factor was .92 which is very high, the correlation coefficient between the risky sexual actions factor and the sexual risk behaviour construct was .44 which is quite medium, and the correlation coefficient between the risky sexual conditions factor and the sexual risk behaviour construct was 2.09 which is very high.

These inter-factor and factor-to-construct correlation coefficients imply that the two factors in this scale are correlated, adequately represent and assess the sexual risk behaviour construct, and their dataset is suitable for SEM. Hence, the dataset for 12 items was relied on in the subsequent analyses of this study. See results of the CFAs on the initial and retained items of the sexual risk behaviour scale in part E of appendix 2.

Table 10. CFA inter-factor and factor-to-construct correlations of the 12-item sexual risk behaviour scale

	Construct	Observed variable
Observed variables	Sexual risk behaviour	Risky sexual conditions
Risky sexual conditions	2.093**	
Risky sexual actions	.438**	.918**

Notes: The correlation coefficient showed in the third column is from a first-order CFA model that was performed on the 12 items which were retained after removing from the risky sexual conditions' dataset, the two items that had a normed MSA indices of <.50 and factor loadings of <.30.
The coefficients showed in the second column are from a second-order CFA model which was performed on the 12 items.
**Correlation coefficient is significant (p=.000) at .01 level of significance.

4.5.4 Conclusion

Results of EFA and CFA show that two of the 14 items used to assess risky sexual conditions *(testing for personal HIV status and disclosing own HIV status to someone)* not only feebly correlated with other items in the same factor but also weakened the power of the scale in assessing sexual risk behaviour among adolescents. The removal of these items from the initial scale helped to enhance the sampling adequacy, goodness of fit, inter-item, item-to-factor, inter-factor, factor-to-construct, and internal consistency reliability data of sexual risk behaviour in the final CFA models. The improvements in this data not only imply that the 12 items retained in the scale and the specific items in the subscales for risky sexual conditions and actions are valid and dependable for assessing sexual risk behaviours among adolescents involved in this study, but also that the dataset derived from the 12 items is suitable for further SEM examinations.

© University of Pretoria

4.6 Summary of the EFA and CFA Results

This subsection summarises the data derived from EFAs and CFAs performed on the items for peer influence, socioeconomic status, community stressors, psychosocial distresses, coping methods, and sexual risk behaviour to verify their precision, reliability and suitability for SEM.

It begins with a presentation and description of statistics on the item-to-factor loadings of each scale, followed by a presentation and description of the goodness of fit indices for the psychometric measurement model, and ends with a presentation and description of the psychometric properties of each scale.

4.6.1 Loadings of the final items to factors of each scale in this study

The EFA and CFA data presented in Table 11 show that some scales had items with MSA indices that are less than .5 and rotated loadings to the respective factors that are less than .30 and these items were removed to improve the precision, cogency and reliability of the scales for this study. Results of CFAs on the final scales in this Table show that loadings of the retained items on the respective factors varied as follows:

Firstly, the loadings of the 12 items to the respective factors in the peer influence and socioeconomic status scale were low to high with the least loading being .37 for the item that assesses *possession of farmland* (*q262land)* and the highest .814 for the item that assesses *peer influence to anything abnormal (q252not_norm)*.

Secondly, the loadings of the 28 items to the respective factors in the community stressors scale were moderate to high with the least loading being .45 for the item that assesses *experience of illnesses (cs21sickness)* and the highest being .83 for the item that assesses *uneasiness with PLHIV (st6uneasy).*

Thirdly, the loadings of the 74 items to their respective factors in the psychosocial distresses scale were moderate to high with the least loading being .47 for the item that assesses *extent of sleeping compared to others (sle37_sleepmore)* and the highest being .85 for the item that assesses *cheating people (del69cheat)*.

Fourthly, the loadings of the 29 items to the respective factors in the coping scale were quite moderate to high with the least being .41 for the items that assesses *reaction to bad things even if they are fun (sc4refuse)* and the highest being .80 for the item that assesses *advice of not giving up (soc8nogivup).*

Fifthly, the loadings of the 12 items of the two-factor sexual risk behaviour scale were quite moderate to high with the least being .41 for the item that assesses *condom use with anyone (sex14nocondom)* and the highest being .83 for the item that assesses *experience of sexual intercourse (sex9hadsex)*.

These item-to-factor loadings imply that the items and factors retained in each of the five scales fairly to highly correlate and measure the intended construct, and that their data is suitable for further analyses.

© University of Pretoria

Table 11. Summary of the CFA item loadings on the observed factors for each construct in this study

Items used to assess each observed factor	Loading to each observed factor													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
A) Peer and Socioeconomic Influence Construct														
1) Peer influence**	**.360**													
*To change views/beliefs on anything (q251belief) **	*.729*													
To do anything not normal to own ways (q252not_norm)	*.814*													
To engage in dating, sex, etc. (q253dating)	*.598*													
To break any rule at home or school (q254breakrule)	*.761*													
2) Socioeconomic status**		**.467**												
*I live in cemented house (q261cement_hse) **		*.519*												
We have land to farm on (q262land)		*.373*												
I eat at least 3 meals in a day (q263meals)		*.582*												
I sleep on a mattress and in a blanket (q264mattress)		*.674*												
I get soap to wash or bath with each day (q265soap)		*.517*												
I put on different clothes each day (q266clothes)		*.653*												
I have shoes/sandals to put on (q267choes)		*.666*												
I/we have a radio/television at home (q268radio_tv)		*.611*												
B) Community Stressors Construct*														
3) Poverty			**.357**											
Experienced problems of getting food (cs1food)			*.509*											
Experienced lack of or removal from home (cs2home)			*.667*											
Experienced lack of water at home (cs3water)			*.639*											
Experienced lack of electricity/lighting at home (cs4lighting)			*.555*											
Experienced lack of work of the home head (cs5work)			*.542*											
Experienced housing that is bad/shack/leaks (cs6badhous)			*.575*											
4) Personal threats				**.722**										
Experienced situations of serious injury (cs7injury) [Low load]				-										
Experienced legal action, etc. (cs8legal) [Low load]				-										
Experienced problems with police/law enforcers (cs9police)[MSA <.5]				-										
Experienced lack of a job (cs10lackjob) [Low load]				-										
Experienced theft of property (cs11theftprop) [Low load]				-										
Experienced illness of parent/sibling, etc. (cs12illness)				*.580*										
Experienced death of parent/sibling, etc. (cs13Death)				*.827*										
Experienced neglect by parent/sibling, etc. (cs14neglect)				*.637*										
5) Interpersonal problems					***.612***									
Faced relationship problem with parents, ...(cs15probm_fam)					*.564*									
Faced relationship problem with your child (cs16probm_child)					*.605*									
Faced relation prob with girl/boyfriend (cs17prob_relatnshp)					*.558*									
Faced relation prob with other friends (cs18probm_comm)					*.661*									
Faced relation prob with neighbours (cs19prob_nei)					*.611*									
Faced relation prob with workmates (cs20probm_workmat)					*.574*									
Experienced own sicknesses(cs21sickness)					*.454*									
Relations prob due own/family members pregn (cs22pregn)					*.526*									

© University of Pretoria

Items used to assess each observed factor	Loading to each observed factor													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
6) HIV-related stigma						***.231***								
a) Internal (blame/judgmental) stigma														
Getting HIV is a punishment for bad acts (st1punish) [MSA <.5]						-								
I feel scared among those with AIDS signs (st2scared)						*.686*								
Those with HIV should blame themselves (st3blame)						*.786*								
If you have HIV must have done something wrong(st4wrong)						*.772*								
People with HIV should be ashamed (st5ashamed)						*.812*								
I feel uneasy among people with AIDS (st6uneasy)						*.833*								
b) External (social distancing) stigma														
If in class …, I wouldn't sit next to …with AIDS sign (st7sit)						*.811*								
I feel less about people with HIV/AIDS (st8feelless)						*.689*								
I wouldn't like those with AIDS next door (st9nextdoor)						*.813*								
I wouldn't like friendship with HIV + person (st10nofriend)						*.808*								
I wouldn't give work to those with AIDS (st11nowork)						*.798*								
I wouldn't eat on same plate with HIV+ person (st12plate)						*.804*								
C) Psychosocial Distress Construct**														
7) Internalizing signs														
a) Anger/temper/tantrums							*.895*							
I am jealous/resentful of others (tep1jealous)							*.531*							
I get teased/mocked/annoyed a lot (tep2teased).							*.669*							
My feelings change suddenly (tep3sudden)							*.606*							
I have a hot temper (tep4tempr)							*.584*							
I'm not ashamed doing things I shouldn't (tep5unshamed)							*.566*							
I feel too guilty (tep6guilty)							*.562*							
I am easily embarrassed (tep7embarrassed)							*.648*							
I act without stopping to think (tep8think)							*.611*							
b) Inattentiveness/attention deficit							***.892***							
I fail to finish things that I start (att9fail_fin)							*.608*							
I have difficulty in paying attention (att10attention)							*.638*							
I can't get my mind off some thoughts (att11mind)							*.628*							
I have difficulty sitting in one place (att12sitting)							*.623*							
I feel confused or disorganised (att13confused)							*.613*							
I day dream a lot (att14daydream)							*.567*							
I am easily distracted (att15distract)							*.636*							
c) Anxiety/worry							***.836***							
I am afraid of some situations/places (anx16afraid)							*.502*							
I am afraid I might do something bad (anx17dobad)							*.515*							
I feel that others are out to trap me (anx18trapme)							*.585*							
I am too shy or timid (anx19timid)							*.611*							
I bite my fingernails (anx20bitenail)							*.556*							
I am nervous or tense (anx21nervous)							*.652*							
Parts of my body shake (anx22sake)							*.696*							

© University of Pretoria

Items used to assess each observed factor	Loading to each observed factor													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I am too fearful (anx23fearful)							.649							
I worry a lot (anx24worry)							.656							
d) Depression							***.845***							
There is very little I enjoy (dep25no_joy)							.555							
I do not eat as well as I should (dep26noteat)							.499							
I cry a lot (dep27_cry)							.690							
I feel overtired without good reason (dep28_overtired)							.748							
I am unhappy, sad or depressed (dep29_unhappy)							.668							
e) Loneliness							***.861***							
I feel that no one loves me (lon30_nolove)							.572							
I feel lonely (lon31_lonely)							.603							
I refuse to talk (lon32_talk)							.578							
I keep things to myself (lon33_myself)							.588							
I feel heart without a reason (lon34_hurt)							.723							
f) Sleep-unrest							***.947***							
I have nightmare (sle35_nigthmare) [EFA load < 0.3, fair factor load]							.614							
I sleep less than most kids (sle36_sleepless).							.566							
I sleep more than many kids' day/night (sle37_sleepmore)							.472							
I have difficulty in sleeping (sle38_slepdific)							.568							
g) Psychosis or thought problems							.851							
I hear sounds others think aren't there (sle39i_sound).							.658							
I pinch a lot my skin/body (sle40_pin)							.619							
I see things others think aren't there (sle41_illsn)							.655							
I store up many things I don't need (sle42_storeup)							.632							
I do things others think aren't normal (sle43_notnom)							.523							
I have views others think are strange (sle44_strange)							.643							
I repeat certain acts over and over (sle45_repeat)							.662							
h) Somatisation/bodily pains							.761							
I get body pains (som461_pain)							.700							
I get headaches (som462headach)							.608							
I get stomach-aches (som463stomac)							.589							
I get skin rashes. (som464skin)							.600							
I vomit a lot (som465vomit)							.618							
i) Suicide-ideation							***.745***							
I feel or have felt worthless (su47worrthless)							.775							
I think or thought my life is a failure (su48failure)							.718							
I feel or felt like hurting myself (su49hurting)							.705							
I feel or felt like ending my life (su50iending)							.518							
8) Externalizing signs														
a) Disobedience								***.626***						
I disobey my parents (dis51parent)								.680						
I disobey rules at home or school (dis52rules)								.682						

© University of Pretoria

Items used to assess each observed factor	Loading to each observed factor													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I run away from home (dis53ruaway)								.762						
b) Disruptiveness								***.779***						
I am stubborn (dis54stuborn								.685						
I talk too much (dis55talkmuch) * *[EFA load < .3 but fair CFA load]*								.485						
I tease other people (dis56tease)								.702						
I threaten to hurt people (dis57threaten)								.686						
I use dirty language (dis58obscene)								.714						
I brag or show off (dis59brag)								.674						
c) Destructiveness								***.686***						
I destroy my own things (dis60ownprop)								.741						
I destroy things of other people (dis61otherprop)								.806						
d) Aggressiveness								***.650***						
I partake in many fights (agg62fights)								.592						
I interact with kids who get in trouble (agg63troubl)								.757						
I physically attack people (agg64attack)								.732						
e) Delinquency								***.685***						
I drink alcohol (del65alcohol)								.596						
I smoke/chew/sniff cigarettes (del66smoke)								.630						
I use drugs like marijuana, etc. (del67marijun)								.658						
I set fires (del68fires)								.809						
I lie to or cheat other people (del69cheat)								.846						
I steal from different places (del70steal)								.770						
D) Coping Methods Construct														
Membership to social clubs														
Linked to/partake in religious group (clu1religiousgp) [MSA <.5]									-					
Linked to/participate in peer group (clu2peergp) [Low load]									-					
Linked to/participate in clan club (clu3clan) [MSA < 0.5]									-					
Linked to/participate in sports club/team (clu4sports) [Low load]									-					
Linked to community welfare club (clu5communty) [Low load]									-					
Linked to/participate in health/care club (clu6health) [Low load]									-					
9) Social-support									***.348***					
a) Emotional support														
Persons I am usually with showed I am needed (soc1needed)									.702					
Persons I am usually with comforted me (soc2comfort).									.745					
Persons I am usually with Left me alone (soc3leftalone.									.478					
Persons I am usually with didn't show kindness (soc4kindnes)									-					
Persons I am usually with criticized/blamed me (soc5blamed)									-					
Persons L am usually with made me feel loved (soc6loved)									.718					
b) Informational support														
Persons I am often with assured me of reliance (soc7relianc)									.664					
Persons I am often with told me not to give up (soc8nogivup)									.800					
Person I am often with was there if needed (soc9available)									.755					

© University of Pretoria

Items used to assess each observed factor	Loading to each observed factor													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Persons I am often with helped me get positive (soc10helped									*.791*					
Persons I am with took care when I couldn't … (soc11tookcare									*.691*					
Persons … advised on what can distract me (soc12addeddistr									*.656*					
10) Self-control										***.642***				
I have hard time stopping bad acts (sc1hardstopping)										-				
I get diverted quite easily (sc2diverted)										*.624*				
I say unsuitable things (sc3isayunsuitab)										*.453*				
I refuse bad things even if they are fun (sc4refuse) [though MSA < .5]										*.406*				
I'm good at resisting temptation (sc5resist) [MSA < 0.5]										-				
People say I have high self-discipline (sc6discipl) [MSA < 0.5]										-				
Excitement … keeps me from …doing work (sc7excitemnt)										*.709*				
Do things that make me feel good … regret later (sc8regret)										*.653*				
Can't stop doing things even if ... they are wrong (sc9nonstop										*.608*				
Act without thinking through all alternatives (sc10notthink										*.630*				
11) Socialisation											***.941***			
Spent time relaxing (ocs4relaxing)											*.550*			
Spent time sporting/exercising (ocs5exercise)											*.430*			
Told someone my problems (ocs6tellprobl) [low EFA load]											-			
Spent time interacting with peers (ocs7peers)											*.503*			
Took part in social activities (ocs8social)											*.578*			
Turned to prayers/worship (ocs9prayers)											*,538*			
Cried or kept to myself (ocs10cried)											*.470*			
12) Deflection												***.898***		
Focused on knowing/solving issues (ocs1knowing)												*.660*		
Spent most time working hard (ocs2workinghard)												*.734*		
Focused on what is positive to life (ocs3positiv)												*.699*		
Blamed self or someone else (ocs11blamed)												*.439*		
Assumed the worst may have occurred (ocs12worstoccr)												*.500*		
*Assumed there is no problem (ocs13noproble) **												-		
Made jokes of the situation (ocs14jokes)												*.540*		
E) Sexual Risk Behaviour Construct														
13) Risky sexual condition signs														
I have not tested for HIV personally (sex1nottesthiv) [MSA < 0.5]													-	
I have not told anyone my HIV state (sex2disclosure) [MSA <.5]													-	
I peep at sex organs of others (sex3peepsexorgns)													*.534*	
I show off my sexual organs (sex4showsexorgns)													*.580*	
I allow/would agree to sexual advances (sex5sexadvanc)													*.757*	
I have friends who have sexual partners (sex6friends)													*.719*	
I have friends of opposite sex (sex7oppsex)													*.462*	
I have been asked for sexual relationships (sex8askedsex)													*.713*	
14) Risky sexual action signs														
I have ever had sexual intercourse (sex9hadsex)														*.826*

© University of Pretoria

Items used to assess each observed factor	Loading to each observed factor													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
I have been forced into sexual intercourse (sex10forcedsex)														*.679*
I have been offered gifts or money for sex (sex11gifts)														*.734*
The persons I've had sex with look older (sex12sexolder)														*.701*
I have had sex with more than one person (sex13sexmore1)														*.790*
I have not used a condom with anyone (sex14nocondom)														*.407*

Notes:

*Correlation coefficients obtained from the first order CFA.

**Correlation coefficients obtained from the second-order CFA.

Each correlation coefficient was significant (p=.000) at .01 level of significance.

The italicized un-bolded items are the specific measures for the factors described above them.

The un-italicized and un-bolded and underlined statements are latent measures of the bolded Arabic-numbered factors.

The bolded Arabic numbered variables are the factors used to observe latent constructs in structural models.

Each item loads to one factor and errors of measurement for each factor are not correlated.

The items shaded with a blue colour were removed from the final CFA models either because (1) their EFA normed MSA values are less than the cut-off co-efficient of .50, or (2) their EFA rotated loadings to the measurement structure are less than the cut-off co-efficient of .300, or (3) their EFA rotated loading co-efficient is relatively low even though it is more than the .300 cut-off mark.

The yellow shadings indicate the reasons for removing the item from their respective models.

© University of Pretoria

4.6.2 Goodness of fit of the measurement scales in this study

The CFA data summarised in Table 12 show that the final scales of this study have CFI values that are greater than .90 as well as RMSEA and SRMR values for all scales that are less than .80 which are considered adequate (Blunch, 2008).

This goodness of fit statistics imply that the final sample data derived from the final scales (psychometric measurement structures) of this study matches the expected set of data from a population with normal distribution and is therefore valid and suitable for SEM.

Table 12. CFA goodness of fit statistics for the five psychometric measurement models of the study

Measurement Model	X^2	df	CFI	SRMR	RMSEA	CI
Peer and socioeconomic influences	444.00	53	.947	.063	.072	.066-.078
Community stressors	1662.18	344	.962	.057	.052	.049-.054
Psychosocial distress	6227.27	2536	.982	.051	.032	.031-.033
Coping methods	2903.09	371	.909	.071	.069	.067-.071
Sexual risk behaviour	258.26	53	.975	.077	.052	.046-.058
Overall**	7757.68	799	.820	0.10	0.08	

Notes:
Data in this table is got from the goodness of fit statistics of the final first- and second order CFAs performed on the dataset for each scale.
The RMSEA and SRMR indices of .05 or less indicate a good fit while indices of .08 or less indicates adequate fit (Blunch, 2008).
The CFI and TLI indices of .95 or greater indicate a good fit while indices of .90 or greater indicate adequate fit (Blunch, 2008).
**This data is got from the unstandardized solution covariance structure analysis maximum likelihood estimation based on only statistically significant variables in the model.

4.6.3 Psychometric properties of the final scales in this study

The psychometric properties of the final scales used to assess the observed variables of the five constructs in the theorised structural model for this research were adequate.

As can be seen in Table 13, the rounded reliability coefficient for the revised subscales ranged from .64 for sleep unrest to .94 for HIV-related stigma, and the coefficients for scales ranged from .77 for peer and socioeconomic influence to .96 for psychosocial distresses.

These reliability coefficients imply that the final scales have adequate internal consistency for assessing peer and socioeconomic influence, community stressors, psychosocial distresses, coping methods, sexual risk behaviours and their respective factors among adolescents involved in this study.

© University of Pretoria

Table 13. Psychometric properties of the adopted and final scales for this study

Scales and subscales	Items and reliability of the adopted scales		Items adopted	Items excluded*	Items and reliabilities of the final scales		Average and range of scores on the final scales and subscales			
	N	Cronbach's α	N	N	N	Cronbach's α	Mean *(x̄)*	*SD*	Min	Max
Peer and socioeconomic influence	**12**	**-**	**12**	**0**	**12**	**.773**	**6.11**	**2.973**	**0**	**12**
Peer-influence	11	.84	4	0	4	.815	1.07	1.409	0	4
Socioeconomic status	9	-	8	0	8	.798	5.04	2.446	0	8
Community stressors	**34**	**-**	**34**	**6**	**28**	**.884**	**10.84**	**8.187**	**0**	**38**
Poverty	6	-	6	0	6	.751	2.31	1.879	0	6
Personal-threats	5	-	8	5	3	.717	1.63	1.152	0	3
Interpersonal-problems	11	-	8	0	8	.786	0.98	1.638	0	8
HIV-related stigma	12	.87	12	1	11	.944	5.92	7.079	0	21
Psychosocial distresses	**112**	**.81**	**74**	**0**	**74**	**.964**	**25.54**	**22.59**	**0**	**105**
Internalizing signs	**-**	**-**	**54**	**0**	**54**	**.956**	**21.34**	**18.05**	**0**	**82**
Anger/tantrums	-	-	8	0	8	.817	3.48	3.338	0	16
Inattentiveness	-	-	7	0	7	.812	2.67	2.955	0	14
Anxiety	-	-	9	0	9	.836	4.83	4.069	0	18
Depression	-	-	5	0	5	.765	2.26	2.351	0	10
Loneliness/withdrawal	-	-	5	0	5	.753	2.08	2.227	0	10
Sleep-unrest	-	-	4	0	4	.638	1.45	1.719	0	8
Psychosis/thought problems	-	-	7	0	7	.828	1.47	2.415	0	13
Somatisation/fatigue	-	-	5	0	5	.762	2.19	2.093	0	10
Suicide-ideation	-	-	4	0	4	.781	0.92	1.515	0	8
Externalizing signs	**-**	**-**	**20**	**0**	**20**	**.924**	**4.20**	**6.100**	**0**	**37**
Disobedience	-	-	3	0	3	.753	0.80	1.236	0	6
Disruptiveness	-	-	6	0	6	.812	1.55	2.317	0	12
Destructiveness	-	-	2	0	2	.746	0.43	0.879	0	4
Aggressiveness	-	-	3	0	3	.729	0.70	1.173	0	6
Delinquency	-	-	6	0	6	.881	0.72	1.787	0	12
Coping methods	**48**	**-**	**42**	**13**	**29**	**.858**	**37.90**	**9.277**	**0**	**58**

© University of Pretoria

Club-membership	6	-	6	6	0	-				
Social-support	14	.83	12	2	10	.905	16.21	4.843	0	20
Self-control	10	.81	10	3	7	.778	10.70	3.023	0	14
Socialisation	5	.62	7	1	6	.679	5.56	2.863	0	12
Deflection	13	.75	7	1	6	.768	5.419	3.246	0	12
Sexual risk behaviours	**45**	**.84**	**14**	**2**	**12**	**.886**	**2.26**	**2.971**	**0**	**12**
Risky sexual conditions	-	.76	8	2	6	.784	1.34	1.617	0	6
Risky sexual actions	-	.79	6	0	6	.829	0.92	1.559	0	*6*
Total	**251**		**176**	**21**	**155**					

Notes:
(*) These items were eliminated from the various scales during the exploratory and confirmatory factor analysis stages.
(-) The number of items and or Cronbach's internal consistency reliability coefficients of the adopted scale are not specified.

© University of Pretoria

4.7 Conclusion

This chapter has outlined the EFA and CFA process and outcomes of validating the scales and sample data in preparation for structural equation modelling. It has also identified the items with inadequate measurement precision and connection with other items in the same pool that were thus excluded from the final scales and sample datasets. More specifically, no item was excluded from the 12-item scale for peer influence and socioeconomic status and 74-item scale for psychosocial distresses, while six items were excluded from the 34-item scale for community stressors, 13 items were excluded from the 42-item scale for coping methods, and two items were excluded from the 14-item scale for sexual risk behaviour.

Therefore, the final 12-item scale for peer and socioeconomic influence, 28-item scale for community stressors, 74-item scale for psychosocial distresses, 29-item scale for coping methods, and 12-item scale for sexual risk behaviour together with their respective subscales are theoretically and empirically fit and reliable for structural equation modelling and can adequately assess the intended factors and constructs among adolescents living with and affected by HIV who live in HIV-affected homes. Since the items in these scales are wide-ranging and applicable in diverse contexts, they may be utilised to assess similar risks in other adolescents.

In the next chapter, results of the univariate, bivariate, GLM, and SEM path tests performed to address the objectives of this study are presented based on the research conceptual framework shown in Figure 2.

© University of Pretoria

CHAPTER FIVE: PRESENTATION OF RESEARCH RESULTS

In this chapter, results of the analysis for each research objective and hypothesis are reported in five subsections. The first subsection provides the socio-demographic characteristics of the sample.

The second subsection provides a description of the observed levels of personal and familial and environmental factors, peer influences, socioeconomic status, community stressors, psychosocial distresses, coping methods, and sexual risk behaviours among adolescents living with HIV, not living with HIV and not aware of their HIV status to address the first research objective.

The third subsection provides results of GLM tests on relationships between the observed psychosocial factors and sexual risk behaviour of the entire adolescents' sample to address the second research objective.

The fourth subsection provides results of GLM tests for effects of socio-demographic attributes in the relationships between peer influence, socioeconomic status, community stressors, psychosocial distresses, coping methods and sexual risk behaviour of the adolescent sample to address the third research objective.

The fifth subsection provides results of pathways for psychosocial predictors of sexual risk behaviour among the adolescent sample and each of the three adolescent groups to address the fourth research objective.

5.1 Socio-demographic description of the adolescent sample

Personal attributes. As can be seen in Table 14, most of the adolescents involved in this study were females aged from 10 to 14 years and believed in the Catholic and Anglican religions. Most of them attended school and were educated up to the upper-primary school levels. They were mainly either not living with HIV or unaware of their HIV status, and most of them were aware of their HIV status during early adolescence ($\bar{x}$ = 10 years, *SD* = 3.22). Many (43%) were orphaned and majority of them had lost their fathers (paternal orphaned) and experienced orphanhood during their preadolescence and childhood stages and for a period that spanned more than four years.

Family and environmental attributes. The data in Table 15 further indicates that most adolescents resided in the Lira district, belonged to Lango-Acholi ethnic group, and lived in a home with four or more people and some of whom were sick. They also mostly lived with both parents, mothers/sisters and grandparents, and with caregivers working as farmers or traders or civic workers who were either HIV-positive or negative, did not use alcohol and discussed HIV/sexuality issues. Very few of the adolescents had received HIV or psychosocial care and many experienced low to moderate socioeconomic status and peer influence.

© University of Pretoria

5.2 Psychosocial and Sexual Risk Rates among Adolescents Living with and Affected by HIV

The first research hypothesis states that "adolescents living with and affected by HIV will exhibit considerable and comparable rates of the observed personal and familial and environmental situations, peer influences, socioeconomic status, community stressors, psychosocial distresses, sexual risk behaviour, and poor coping with adversities since they all live in HIV-affected homes".

The results of the tests for this hypothesis are showed in Table 14 and 15 and explained by the results for testing of sub-hypotheses. In general, whereas the adolescents who were participated in this study reported noteworthy rates of the observed psychosocial and sexual experiences, the adolescents living with HIV showed higher rates than the uninfected or unaware of almost all risk factors. The effect-size of HIV status on most of the observed factors was more than .2, which implies that the three groups were affected differently and the group living with HIV could have faced poorer parenting and more problems that may have resulted in HIV-reinfections than their colleagues in same homes.

5.2.1 Personal circumstances

The first sub-hypothesis states that there is no significant variation in rates of the observed personal situations of the three adolescent groups.

As can be seen in Table 14, the adolescents who were unaware of their HIV status were *younger* ($\bar{x}$ = 13.3 years, *SD* = 2.59) than those who were living with HIV ($\bar{x}$ = 14.1 years, *SD* = 2.72) or not living with HIV ($\bar{x}$ = 14.3 years, *SD* = 2.81), (X^2(2, N=1,437) = 39.97, *p*<.001, *d*=.17). The adolescents who were living with HIV had slightly more *females* than the groups for adolescents who were not living with HIV and unaware of their HIV status, (X^2(2, N=1,437) = 0.98, *p*=.613, *d*=.03). *Catholics and Anglicans* seemed more likely to have been with or without HIV, while Muslims and Pentecostals seemed more likely to have been unaware of their HIV status, (X^2(8, N=1,437) = 47.85, *p*<.000, *d*=.18).

Furthermore, whereas the adolescents who were not aware of their HIV status seemed more likely to have *been in school* than the other adolescents (X^2(2, N=1,437) = 11.39, *p*=.003, *d*=.09), those who were living with HIV seemed more likely to have *attained the upper-primary education levels* and the adolescents who were not living with HIV seemed more likely to have *attained post-primary education*, (X^2(4, N=1,437) = 16.94, *p*=.002, *d*=.11). The adolescents who were living with HIV also seemed more likely to have become *aware of their HIV status* at a younger age ($\bar{x}$ = 9 years, *SD* = 2.53) than those who were not living with HIV ($\bar{x}$ = 12 years, *SD* = 3.71), (*H* (2, N=1,437) = 384.68, *p*<.001, *d*=.17), which implies that many of them acquired HIV from their mothers and were notified of their HIV status early. However, the effect-size of HIV status on these factors was small, which

© University of Pretoria

implies that these adolescents slightly differed regarding age, gender, religion, school attendance and attainment, and awareness of their HIV status.

There was also considerable variation in the levels of parental death among the three adolescent groups. Data in Table 14 show that half of the 615 orphaned adolescents were not living with HIV, 33% were living with HIV, and the rest were unaware. The adolescents who were living with HIV seemed more likely to have *been orphaned* than the other groups, (X^2(4, N=1,437) = 129.94, p<.001, d=.30). Also, the adolescents who were unaware of their HIV status ($\bar{x}$ = 5.9 years, *SD* = 3.46) and who were living with HIV ($\bar{x}$ = 6.5 years, *SD* = 3.50) *had been orphaned at a younger age* than the adolescents who were not living with HIV ($\bar{x}$ = 7.7 years, *SD* = 3.79), (F (2, 612) = 12.88, p<.001, d=.19). *Death of both parents* was higher for the orphans who were living with HIV, while paternal or maternal deaths were higher for the orphans who were not living with HIV (X^2(4, N=615) = 33.19, p<.001, d=.23). The orphans who were living with HIV also faced *orphanhood for a slightly longer time* ($\bar{x}$ = 7.8 years, *SD* = 3.63) than the adolescents who were not living with HIV ($\bar{x}$ = 7.1 years, *SD* = 4.11) or those who were unaware of their HIV status ($\bar{x}$=7.6 years, *SD* = 4.34), (F (2, 612) = 2.18, p=.114, d=.09). However, the effect-size of HIV status on these orphanhood characteristics was small to medium, which implies that these adolescents could be similar regarding the age and length of orphanhood, but different regarding parental death and the type of orphanhood they face.

© University of Pretoria

Table 14. Personal attributes of the adolescents, segregated by HIV-status

	Total (N=1,437)		Living with HIV (n=289)		HIV-uninfected (n=756)		HIV-unaware (n=392)		Sig.	Effect-size
Observed personal variables	N/ X̄	%/SD	n/x̄	%/SD	n/x̄	%/SD	n/x̄	%/SD	p value	Cohen's d
HIV status of the sample [a]	1,437	100%	289	20.1%	756	**52.6%**	392	27.3%	**<.001**	
Age they knew of HIV status [b]	10.00	(3.227)	9.09	(2.528)	**11.97**	(3.706)			**<.001**	**.17**
Age in years [b]	14.01	(2.765)	14.13	(2.715)	**14.34**	(2.805)	13.29	(2.588)	**<.001**	**.17**
10 – 14 years	811	56.4%	152	52.6%	385	50.9%	274	**69.9%**	**<.001**	
15 – 19 years	626	43.6%	137	47.4%	371	**49.1%**	118	30.1%		
Gender [b]									.613	.03
Female	778	54.1%	162	**56.1%**	411	54.4%	205	52.3%		
Male	659	45.9%	127	43.9%	345	45.6%	187	**47.7%**		
Religion [b]									**<.001**	**.18**
Catholic	563	39.2%	121	41.9%	321	**42.5%**	121	30.9%		
Anglican	533	37.1%	102	35.3%	293	**38.8%**	138	35.2%		
Muslim	170	11.8%	32	11.1%	60	7.9%	78	**19.9%**		
Pentecostal, SDA, Orthodox	171	11.9%	34	11.7%	82	10.9%	55	**14.1%**		
Current schooling status [a]										
Attending school	1,201	83.6%	247	85.5%	609	80.6%	345	**88.0%**	**.003**	.09
Not attending school	236	16.4%	42	14.5%	147	**19.4%**	47	11.9%		
Highest education level [b]									**.002**	.11
< Primary 4	267	18.6%	37	12.8%	150	19.8%	80	**20.4%**		
Primary 4 - 7	788	54.8%	173	**59.9%**	386	51.1%	229	58.4%		
> Primary 7	382	26.6%	79	27.3%	220	**29.1%**	83	21.2%		
Occupation [b]									**<.001**	**.17**
None	340	23.7%	57	19.7%	166	22.0%	117	**29.8%**		
Student	877	61.0%	192	**66.4%**	443	58.6%	242	61.7%		
Farmer	162	11.3%	23	8.0%	116	**15.3%**	23	5.9%		
Tender/driver/hawker	39	2.7%	12	**4.2%**	19	2.5%	8	2.0%		
Parental survival [b]	822	57.2%	87	30.1%	448	59.3%	287	**73.2%**	**<.001**	
Parental death/orphan-hood [c]	615	42.8%	202	**69.9%**	308	40.7%	105	26.8%	**<.001**	**.30**

© University of Pretoria

Age at parental death [c]	6.99	(3.714)	6.49	(3.503)	**7.70**	(3.791)	5.86	(3.463)	**<.001**	**.19**
Orphaned at ≤ 5 years	200	32.5%	77	38.1%	79	25.6%	44	**41.9%**	**<.001**	.12
Orphaned at >5-9 years	264	42.9%	83	41.1%	134	43.5%	47	**44.8%**		
Orphaned at > 9 years	151	24.6%	42	20.8%	95	**30.8%**	14	13.3%		
Type of orphan-hood [c]	615	100%	202	32.95%	308	50.1%	105	17.1%	**<.001**	**.23**
Paternal orphans	382	62.1%	97	15.8%	211	**34.3%**	74	12.0%		
Maternal orphans	128	20.8%	48	7.8%	62	**10.1%**	18	2.9%		
Double orphaned	105	17.1%	57	**9.3%**	35	5.7%	13	2.1%		
Span of orphan-hood [c]	7.41	(4.008)	**7.81**	(3.633)	7.08	(4.106)	7.61	(4.342)	.114	.09
≤ 2 years	53	8.6%	10	1.6%	32	**5.2%**	11	1.8%	.191	
>2-4 years	112	18.2%	34	5.5%	59	**9.6%**	19	3.1%		
> 4 years	450	73.2%	158	25.7%	217	**35.3%**	75			

Notes:
[a] The percentages are between adolescent groups.
[b] The means *(x̄)*, standard deviations *(SD)* and percentages *(%)* are within adolescent groups.
[c] The percentages are within adolescent groups who are orphans.
The variables without *%* sign are stated in means with their *SD* in parentheses and *p* values got from a one-way ANOVA on responses of the three adolescent groups.
The *p* values for variables with *%* sign were from chi-square tests on cross-tabulations between adolescents' HIV-status and personal attributes.
The *p* values are significant if ≤.05. The significant *p* values are bold.
Cohen's *d* is the strength-of-effect of the relationships between adolescent's HIV-status and the other observed attributes. The *d* value of .2 = small effect, .5 = medium effect, and .8 = high effect.

© University of Pretoria

5.2.2 Familial and environmental circumstances

The second sub-hypothesis states that there is no significant variation in levels of the observed familial and environmental situations of the three adolescent groups.

As can be seen in Table 15, there are considerable variations in the extent of most of the observed familial and environmental circumstances among the three adolescent groups.

Home-locality and ethnicity. The adolescents who were living with HIV were significantly more likely to have *resided* in Lira, while the adolescents who were not living with HIV were more likely to have resided in Rukungiri, and those who were unaware of their HIV status were more likely to have resided in Kayunga, (X^2(4, N=1,437) = 159.83, p<.001, d=.33). Also, the Lango-Acholi significantly outnumbered other *ethnicities* in each adolescent group, (X^2(10, N=1,437) = 155.92, p<.001, d=.33). This indicates the presence of a link between the adolescents' HIV status and these attributes.

Number of homes resided in and the number and health of people lived with. Adolescents resided in an average of two homes during their lifetime ($\bar{x}$ = 1.6, SD = .98) and those who were living with HIV resided in more homes ($\bar{x}$ =1.9, SD = 1.08) than the adolescents not living with HIV ($\bar{x}$ = 1.5, SD = .89) or those who were not aware of their HIV status ($\bar{x}$ = 1.7, SD = 1.002), (H (2, N=1,437) = 80.92, p<.001, d=.48). Additionally, the adolescents resided in homes shared by seven people ($\bar{x}$ = 7, SD = 2.6) and those who were living with HIV resided in homes with fewer people ($\bar{x}$ = 6.1, SD = 2.1) than the adolescents who were not living with HIV ($\bar{x}$ = 6.7, SD = 2.7) or unaware of their HIV status ($\bar{x}$ = 7.2, SD = 2.8), (H (2, N=1,437) = 33.79, p<.001, d=.31). The adolescents also resided with an average of one sick person in the home, ($\bar{x}$ = 1.4, SD = 1.05), and those who were living with HIV shared a home with more sick people ($\bar{x}$ = 1.6, SD = .99) than the adolescents who were not living with HIV ($\bar{x}$ = 1.4, SD = .95) or unaware of their HIV status ($\bar{x}$ = 1.3, SD = 1.26), (H (2, N=1,437) = 22.91, p<.001, d=.25). The effect-size of HIV status on these factors was medium, which implies that these adolescents were considerably different and those who were living with HIV could have been facing more home instability, interacting with fewer family members, and facing a heavier burden of caring for their own and other family members' sickness than did the adolescents who were not living with HIV and unaware of their HIV status.

Usual caregivers. Although the adolescents who were living with HIV seemed more likely to have been looked after by their fathers, brothers, grandparents, or uncles/aunties, the adolescents who were not living with HIV seemed more likely to have been cared for by both parents and mothers or sisters, (X^2(10, N=1,437) = 121.05, p<.001, d=.29). This could be attributed to several adolescents who were living with HIV having experienced the death of their mothers or both parents.

Caregivers' stability, occupation and alcohol use. Adolescents lived with an average of *two caregivers* during their lifetime ($\bar{x}$ = 1.7, SD = .74) and those who were living with HIV seemed more likely to have lived with *fewer lifetime caregivers* ($\bar{x}$ = 1.67, SD = .79) than those who were not living with HIV ($\bar{x}$ = 1.69, SD = .66) and

© University of Pretoria

unaware of their HIV status ($\bar{x}$ = 1.88, *SD* = .85), (X^2(4, N=1,437) = 33.61, *p*<.001, *d*=.15). Furthermore, whereas the adolescents who were living with HIV seemed more likely to have been with caregivers who were *civic workers*, the adolescents who were not living with HIV seemed more likely to have been with caregivers who were *farmers*, and those who were unaware of their HIV status seemed more likely to have been with caregivers who were *jobless, traders, or drivers* (X^2(14, N=1,437) = 55.37, *p*<.001, *d*=.20). The adolescents who were living with HIV also seemed more likely to have lived with caregivers who *consumed alcohol* than the adolescents who were not living with HIV and those who were unaware of their HIV status (X^2(4, N=1,437) = 20.89, *p*<.001, *d*=.12), which implies that they were more aware of their caregivers' alcohol consumption. However, the effect-size of the HIV status on these factors was small, which implies that these adolescents could have been slightly different regarding their caregivers' stability, use of alcohol and type of work.

Caregivers' HIV status and sexuality discussions with children. Whereas the adolescents who were not living with HIV seemed more likely to have lived with HIV-positive caregivers, those who were living with HIV seemed more likely to have lived with HIV-negative caregivers, and those who were unaware of their HIV status seemed more likely to have lived with caregivers of unknown HIV-status, (X^2(4, N=1,437) = 101.57, *p*<.001, *d*=.27). Adolescents who were not living with HIV also seemed more likely to have discussed sexuality issues with their caregivers compared to those who were living with HIV or unaware of their HIV status, (X^2(2, N=1,437) = 112.28, *p*<.001, *d*=.28). There was a medium effect of HIV status on these factors, which implies that these adolescents could have been moderately different concerning their caregivers' HIV status and the extent to which they discuss with them sexuality issues.

Access to HIV/psychosocial care. Adolescents who were living with HIV seemed more likely to have received HIV/psychosocial care than those who were not living with HIV or not aware of their HIV status, (X^2(4, N=1,437) = 700.81, *p*<.001, *d*=.65). The effect-size of HIV status on the utilisation of HIV/psychosocial care was medium, which implies that the decision of adolescents to make use of or decline these services could have been influenced by their HIV status. It also means that those living with HIV could have been considerably more prone to the positive and negative effects of receiving these services.

© University of Pretoria

Table 15. Familial and environmental attributes of the adolescents, segregated by HIV-status

	Total (N=1,437)		Living with HIV (n=289)		HIV-uninfected (n=756)		HIV-unaware (n=392)		Sig.	Effect-size
Observed attributes	N/ X̄	%/SD	n/x̄	%/SD	n/x̄	%/SD	n/x̄	%/SD	p value	Cohen's *d*
Home locality [a]									**<.001**	**.33**
Lira	587	40.8%	163	**56.4%**	278	36.8%	146	37.2%		
Rukungiri	446	31.0%	71	24.6%	316	**41.8%**	59	15.1%		
Kayunga	404	28.1%	55	19.0%	162	21.4%	187	**47.7%**		
Ethnicity [a]									**<.001**	**.33**
Muganda	158	11.0%	26	9.0%	73	9.7%	59	**15.1%**		
Musoga	120	8.4%	17	5.9%	55	7.3%	48	**12.2%**		
Munyankole	239	16.6%	50	17.3%	161	**21.3%**	28	7.1%		
Mukiga	215	15.0%	20	6.9%	155	**20.5%**	40	10.2%		
Langi and Acholi	571	39.7%	160	**55.4%**	267	35.3%	144	36.7%		
Mugishu, Itesot, Munyoro, etc.	134	9.3%	16	5.5%	45	6.0%	73	**18.6%**		
Number of homes lived in [a]	1.62	(0.98)	**1.93**	(1.08)	1.47	(0.89)	1.70	(1.002)	**<.001**	**.48**
1 home	843	58.7%	110	38.1%	518	**68.5%**	215	54.8%	**<.001**	**.24**
2 homes	413	28.7%	123	**42.6%**	171	22.6%	119	30.4%		
>2 homes	181	12.6%	56	**19.4%**	67	8.9%	58	14.8%		
Time spent in HIV-affected home [a]	10.86	(5.02)	9.35	(4.99)	**11.84**	(4.79)	10.08	(5.06)	**<.001**	**.43**
≤ 4 years	236	16.4%	65	**22.5%**	95	12.6%	76	19.4%	**<.001**	**.24**
> 4-8 years	163	11.3%	63	**21.8%**	52	6.9%	48	12.2%		
> 8-12 years	434	30.2%	70	24.2%	236	31.2%	128	**32.7%**		
> 12-16 years	422	29.4%	69	23.9%	251	**33.2%**	102	26.0%		
> 16 years	182	12.7%	22	7.6%	122	**16.1%**	38	9.7%		
Number of persons in home [a]	6.74	(2.6)	6.09	(2.1)	6.74	(2.7)	**7.22**	(2.8)	**<.001**	**.31**
1-3 residents	93	6.5%	22	**7.6%**	49	6.5%	22	5.6%	**<.001**	.13
4-6 residents	677	47.1%	166	**57.4%**	355	47.0%	156	39.8%		
> 6 residents	667	46.4%	101	34.9%	352	46.6%	214	**54.6%**		
Number of sick persons in home [a]	1.40	(1.05)	**1.57**	(0.99)	1.37	(0.95)	1.32	(1.26)	**<.001**	**.25**
None	255	17.8%	38	13.1%	115	15.2%	102	**26.0%**	**<.001**	**.21**

© University of Pretoria

1 resident	605	42.1%	101	34.9%	358	**47.4%**	146	37.2%		
2 residents	405	28.2%	107	**37.0%**	204	27.0%	94	24.0%		
>2 residents	164	11.4%	43	**14.9%**	78	10.3%	43	11.0%		
Don't know	8	0.6%	00	0.0%	1	0.1%	7	**1.8%**		
Caregivers lived with [a]	1.74	(0.74)	1.67	(0.79)	1.69	(0.66)	1**.88**	(0.85)	**<.001**	
1 caregiver	566	39.4%	138	**47.8%**	297	39.3%	131	33.4%	**<.001**	.15
2 caregivers	740	51.5%	120	41.5%	413	**54.6%**	207	52.8%		
>2 caregivers	131	9.1%	31	10.7%	46	6.1%	54	**13.8%**		
Type of usual caregiver [a]									**<.001**	**.29**
Both parents	572	39.8%	53	18.3%	344	**45.5%**	175	44.6%		
Dad/step dad / brother only	114	7.9%	27	**9.3%**	60	7.9%	27	6.9%		
Mum/step mum / sister only	401	27.9%	83	28.7%	221	**29.2%**	97	24.7%		
Grandparents	204	14.2%	61	**21.1%**	80	10.6%	63	16.1%		
Others (uncle/aunt/home tender)	146	10.1%	65	**22.5%**	51	6.7%	30	7.6%		
Caregivers' usual job [a]									**<.001**	.20
None/student	52	3.6%	10	3.5%	26	3.4%	16	**4.1%**		
Sales/house/bar tending	29	2.0%	9	**3.1%**	8	1.1%	12	**3.1%**		
Farming	992	69.0%	193	66.8%	570	**75.4%**	229	58.4%		
Trading	187	13.0%	39	13.5%	64	8.5%	84	**21.4%**		
Civic worker (cleric, health, teach)	136	9.5%	29	**10.0%**	71	9.4%	36	9.2%		
Driving/touting/building/repairs	41	2.9%	9	3.0%	17	2.3%	15	**3.9%**		
Caregivers' alcohol consumption [a]	339	23.6%	93	**32.2%**	162	21.4%	84	21.4%	**<.001**	.12
Caregivers' HIV-status [a]									**<.001**	**.27**
Positive	954	66.4%	144	49.8%	582	**77.0%**	228	58.2%		
Negative	328	22.8%	114	**39.4%**	102	13.5%	112	28.6%		
Unknown	155	10.8%	31	10.7%	72	9.5%	52	**13.3%**		
Caregiver to child sexuality talks [a]									**<.001**	**.28**
Got sexuality talks from caregivers [a]	1,223	85.1%	261	90.3%	692	**91.5%**	270	68.9%		
Not got sexuality talks from caregivers	214	14.9%	28	9.7%	64	8.5%	122	**31.1%**		
Status of HIV/psychosocial care service [a]										

© University of Pretoria

Received service	436	30.3%	266	**92.0%**	128	16.9%	42	10.7%	**<.001**	**.65**
Not received service	1,001	69.7%	23	8.0%	628	83.1%	350	**89.3%**		
Experience of peer-influence [a]										
Not been peer-influenced	1,003	69.8%	169	58.5%	540	71.4%	294	**75.0%**	**<.001**	
Ever been peer-influenced	434	30. 2%	120	**41.5%**	216	28.6%	98	25.0%	**<.001**	
Level of peer-influence [a]									**<.001**	.18
Low ($\bar{x}$ score of ≤ 1)	1,003	69.8%	169	58.5%	540	71.4%	294	**75.0%**		
Quite moderate ($\bar{x}$ score >1-2)	127	8.8%	34	11.8%	46	6.1%	47	**12.0%**		
Moderate ($\bar{x}$ score > 2 - 3)	164	11.4%	48	**16.6%**	83	11.0%	33	8.4%		
Quite high ($\bar{x}$ score >3 - 4)	143	10.0%	38	**13.1%**	87	11.5%	18	4.6%		
Socioeconomic status [b]									.104	.09
Low/1st quartile ($\bar{x}$ ≤ 2)	254	17.7%	43	14.9%	150	**19.8%**	61	15.6%		
Quite moderate/2nd quartile ($\bar{x}$ > 2 - 4)	297	20. 7%	62	21.5%	146	19.3%	89	**22.7%**		
Moderate/3rd quartile ($\bar{x}$ >4 - 6)	390	27.1%	93	**32.2%**	191	25.3%	106	27.0%		
Quite high/4th quartile ($\bar{x}$ >6 – 8)	496	34.5%	91	31.5%	269	**35.6%**	136	34.7%		

Notes:

[a] The means *($\bar{x}$)*, standard deviations *(SD)* and percentages *(%)* are within adolescent groups.

The variables without *%* sign are stated in means with their *SD* in parentheses and *p* values derived from the Kruskal-Wallis equality-of-populations rank tests on responses of the three adolescent groups.

The *p* values for variables with *%* sign were from chi-square tests on cross-tabulations between adolescents' HIV status and family attributes.

The *p* values are significant if equal to or less than .05. The significant *p* values are bolded.

Cohen's *d* is the strength-of-effect of the relationships between adolescent's HIV-status and the other observed attributes.

The *d* value of .2 = small effect, .5 = medium effect, and .8 = high effect.

© University of Pretoria

5.2.3 Peer influence and economic status

The third sub-hypothesis states that there is no significant variation in the levels of peer influence and economic status of the three adolescent groups.

As can be seen in Table 15 and 16, adolescents obtained an average score of 1.07 (*SD* = 1.41) out of a maximum of four on the subscale for peer influence. The adolescents who were living with HIV experienced a higher rate of peer influence ($\bar{x}$ = 1.41, *SD* = 1.49) than those who were not living with HIV ($\bar{x}$ = 1.02, *SD* = 1.47) or unaware of their HIV status ($\bar{x}$ = .91, *SD* = 1.18), (*H* (2, N=1,437) = 23.36, *p*<.001, *d*=.25). The adolescents also obtained an average score of 5.04 (*SD* = 2.45) out of a maximum of eight on the subscale for socioeconomic status. In this instance, the socioeconomic status of the adolescents who were unaware of their HIV status ($\bar{x}$ = 5.10, *SD* = 2.27) and those who were living with HIV ($\bar{x}$ = 5.06, *SD* = 2.31) was slightly higher than that of the adolescents who were not living with HIV ($\bar{x}$ = 4.99, *SD* = 2.58), (*H* (2, N=1,437) = 0.02, *p*=.989, *d*=.09). There was a medium effect of HIV status on the extent of peer influence and a small effect on the socioeconomic status of these adolescents, which implies that they could have been considerably different regarding the extent of peer influence, but similar regarding socioeconomic wellbeing.

© University of Pretoria

Table 16. Adolescents' mean levels of peer influence, socioeconomic status, community stressors, psychosocial distresses, coping methods, and sexual risk behaviour

Constructs and observed factors	Total (N=1,437)		Living with HIV (n=289)		HIV-uninfected (n=756)		HIV-unaware (n=392)		Sig.	Effect-size
	$\bar{X}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	$\bar{x}$	SD	p value	Cohen's *d*
Peer-socioeconomic influence	6.12	(2.973)	**6.47**	(2.839)	6.02	(3.144)	6.01	(2.701)	.093	.09
Peer influence	1.07	(1.409)	**1.41**	(1.495)	1.02	(1.465)	0.91	(1.176)	**<.001**	**.25**
Socioeconomic status	5.04	(2.445)	5.06	(2.313)	4.99	(2.580)	**5.10**	(2.270)	.989	.07
Community-stressors	10.84	(8.187)	11.39	(8.737)	9.48	(8.005)	**13.04**	(7.588)	**<.001**	**.41**
Poverty of basic needs	2.31	(1.878)	**2.94**	(2.062)	2.24	(1.863)	1.97	(1.645)	**<.001**	**.32**
Personal threats	1.63	(1.152)	**1.86**	(1.110)	1.52	(1.218)	1.66	(1.018)	**<.001**	**.20**
Interpersonal problems	0.98	(1.637)	**1.89**	(2.325)	0.75	(1.364)	0.76	(1.230)	**<.001**	**.47**
HIV-related stigma	5.92	(7.079)	4.71	(5.939)	4.97	(7.074)	**8.66**	(7.148)	**<.001**	**.59**
Judgmental attitudes	2.49	(3.208)	1.79	(2.525)	2.07	(3.150)	**3.81**	(3.392)	**<.001**	**.56**
Social-distancing attitudes	3.43	(4.276)	2.91	(3.891)	2.89	(4.267)	**4.85**	(4.251)	**<.001**	**.51**
Psychosocial-distresses	25.54	(22.59)	**38.70**	(27.17)	18.62	(18.82)	29.17	(20.29)	**<.001**	
Internalizing symptoms	21.34	(18.05)	**31.43**	(20.35)	15.73	(15.50)	24.70	(16.74)	**<.001**	
Anger	3.48	(3.338)	**5.04**	(3.687)	2.64	(2.855)	3.94	(3.433)	**<.001**	**.58**
Inattentiveness	2.67	(2.954)	**3.87**	(3.444)	1.96	(2.571)	3.17	(2.873)	**<.001**	**.57**
Anxiety	4.83	(4.069)	**5.98**	(4.136)	3.80	(3.722)	5.96	(4.143)	**<.001**	**.57**
Depression	2.25	(2.350)	**3.64**	(2.772)	1.62	(2.026)	2.45	(2.114)	**<.001**	**.70**
Loneliness	2.08	(2.227)	**3.22**	(2.409)	1.51	(2.006)	2.32	(2.125)	**<.001**	**.64**
Sleep-unrest	1.45	(1.718)	**1.93**	(1.870)	1.05	(1.530)	1.86	(1.760)	**<.001**	**.54**
Psychosis	1.47	(2.415)	**2.46**	(3.054)	0.96	(1.977)	1.70	(2.391)	**<.001**	**.50**
Somatisation	2.19	(2.093)	**3.18**	(2.424)	1.71	(1.911)	2.40	(1.865)	**<.001**	**.56**
Suicide-ideation	0.92	(1.514)	**2.10**	(1.867)	0.47	(1.113)	0.89	(1.428)	**<.001**	**.92**
Externalizing symptoms	4.20	(6.100)	**7.27**	(8.820)	2.89	(4.546)	4.47	(5.396)	**<.001**	
Disobedience	0.80	(1.235)	**1.29**	(1.464)	0.63	(1.110)	0.79	(1.188)	**<.001**	**.43**
Disruptiveness	1.55	(2.317)	**2.42**	(3.104)	1.12	(1.912)	1.73	(2.144)	**<.001**	**.41**
Destructiveness	0.43	(0.879)	**0.71**	(1.085)	0.25	(0.700)	0.58	(0.937)	**<.001**	**.51**
Aggressiveness	0.70	(1.172)	**1.23**	(1.545)	0.49	(0.912)	0.73	(1.176)	**<.001**	**.43**

© University of Pretoria

Delinquency	0.72	(1.787)	**1.62**	(2.859)	0.42	(1.282)	0.64	(1.329)	**<.001**	**.36**
Coping-methods	37.90	(9.277)	36.38	(9.728)	**39.12**	(9.821)	36.67	(7.348)	**<.001**	**.23**
Social-support	16.21	(4.843)	15.10	(5.360)	16.43	(4.711)	**16.59**	(4.580)	**<.001**	**.21**
Emotional support	6.64	(1.999)	6.08	(2.263)	**6.81**	(1.897)	6.71	(1.914)	**<.001**	**.31**
Informational support	9.57	(3.163)	9.01	(3.387)	9.62	(3.126)	**9.88**	(3.017)	**<.001**	.16
Self-control	10.70	(3.023)	9.86	(3.296)	**11.19**	(2.844)	10.39	(2.977)	**<.001**	**.35**
Socialisation	5.56	(2.863)	**5.85**	(2.593)	5.79	(3.116)	4.91	(2.407)	**<.001**	**.28**
Deflection	5.42	(3.246)	5.56	(2.966)	**5.70**	(3.415)	4.77	(3.017)	**<.001**	**.23**
Sexual risk behaviour	2.26	(2.971)	**3.49**	(3.839)	2.01	(2.762)	1.83	(2.329)	**<.001**	**.30**
Risky sexual conditions	1.34	(1.617)	**1.98**	(1.982)	1.20	(1.540)	1.16	(1.324)	**<.001**	**.32**
Risky sexual actions	0.92	(1.559)	**1.51**	(2.068)	0.81	(1.437)	0.67	(1.204)	**<.001**	**.25**

Notes:
The mean *(x̄)*, standard deviation *(SD)* and *p* values in this table are computed within adolescent groups.
These values are derived from the Kruskal-Wallis equality-of-populations rank tests on the scores of adolescents to each scale in this study.
The *p* values are significant if equal to or less than .05. The significant *p* values are bolded.
Cohen's *d* is the strength-of-effect of the relationships between adolescent's HIV-status and the other observed attributes.
The *d* value of .2 = small effect, .5 = medium effect, and .8 = high effect.

© University of Pretoria

5.2.4 Community stressors

The fourth sub-hypothesis states that there is no significant variation in the levels of community stressors of the three adolescent groups.

As can be seen in Table 16, adolescents obtained a mean score of 10.84 (SD = 8.19) out of a maximum of 32 on the scale for community stressors. Whereas the adolescents who were unaware of their HIV status experienced a higher rate of HIV-stigma ($\bar{x}$ = 8.66, SD = 7.15) than the adolescents who were living with HIV ($\bar{x}$ = 4.71, SD = 5.94) or not living with HIV ($\bar{x}$ = 4.97, SD = 7.07), (H (2, N=1,437) = 116.85, p<.001, d=.59), those who were living with HIV experienced higher rates of poverty ($\bar{x}$ = 2.94, SD = 2.06, H (2, N=1,437) = 38.01, p<.001, d=.32), personal threats ($\bar{x}$ = 1.86, SD = 1.11, H (2, N=1,437) = 16.16, p=.001, d=.20) and interpersonal problems ($\bar{x}$ =1.89, SD = 2.33, H (2, N=1,437) = 78.02, p<.001, d=.47) than the groups that were not living with HIV or unaware of their HIV status. The effect-size of HIV status on these stressors was small to medium, which implies that these adolescents could be similar regarding the extent of personal threats but considerably different regarding the extent of poverty, interpersonal problems and HIV-stigma. It also implies that ignorance about the personal HIV status may foment discriminative attitudes towards others suspected of having AIDS.

5.2.5 Psychosocial distresses

The fifth sub-hypothesis states that there is no significant variation in levels of psychosocial distresses between the three adolescent groups.

As the data in Table 16 show, adolescents obtained an average score of 25.54 (*SD* = 22.59) out of a maximum of 105 on the scale for psychosocial distress. The adolescents who were living with HIV experienced higher rates of all the observed internalising ($\bar{x}$ = 31.43, *SD* = 20.35, *H* (2, N=1,437) = 179.35, *p*<.001, *d*=.50 to .92) and externalising symptoms ($\bar{x}$ = 7.27, *SD* = 8.82, *H* (2, N=1,437) = 78.91, *p*<.001, *d*=.36 to .51) than the adolescents who were not living with HIV and those who were unaware of their HIV status. The effect-size of HIV status on every observed distress symptom was medium to high, which implies that these groups differed significantly regarding susceptibility to distress and this could have been influenced by their HIV status.

5.2.6 Coping methods

The sixth sub-hypothesis states that there is no significant variation in the levels of coping with adversities of the three groups.

As can be seen in Table 16, adolescents obtained an average score of 37.90 (*SD* = 9.38) out of a maximum of 58 on the scale for coping methods. Those who were not living HIV experienced a higher rate of coping with adversities ($\bar{x}$ = 39.12, *SD* = 9.82) than the adolescents who were unaware of their HIV status ($\bar{x}$ = 36.67, SD = 7.35) and living with HIV ($\bar{x}$ = 36.38, *SD* = 9.73), (*H* (2, N=1,437) = 20.02, *p*=.001, *d*=.23).

© University of Pretoria

Whereas the adolescents who were living with HIV exhibited a higher rate of coping by socialisation strategies ($\bar{x}$ = 5.85, *SD* = 2.59) than the adolescents who were not living with HIV and unaware of their HIV status, (*H* (2, N=1,437) = 28.58, *p*<.001, *d*=.28), those who were not living with HIV showed higher rates of coping by self-control ($\bar{x}$ = 11.19, *SD* = 2.84), (*H* (2, N=1,437) = 43.98, *p*<.001, *d*=.35) and deflection strategies ($\bar{x}$ = 5.70, *SD* = 3.42), (*H* (2, N=1,437) = 20.33, *p*<.001, *d*=.23) than the adolescents who were living with or unaware of their HIV status, and those who were unaware of their HIV status showed higher rates of coping by social support strategies ($\bar{x}$ = 16.59, *SD* = 4.58) than the adolescents who were living with HIV ($\bar{x}$ = 15.10, *SD* = 5.36) or not living with HIV ($\bar{x}$ = 16.43, *SD* = 4.71), (*H* (2, N=1,437) = 17.26, *p*<.001, *d*=.21). The effect-size of HIV status on these coping methods was medium, which implies that these adolescents were moderately different regarding how they cope with problems and this could have been influenced by their HIV status.

5.2.7 Sexual risk behaviour

The seventh sub-hypothesis states that there is no significant variation in the levels of sexual risk behaviour of the three groups.

The results in Table 16 also show that the adolescents obtained a mean score of 2.26 (*SD* = 2.97) out of a maximum of 12 on the sexual risk behaviour scale. Those who were living with HIV experienced a higher rate of sexual risk behaviour ($\bar{x}$ = 3.49, *SD* = 3.84) than the adolescents who were not living with HIV ($\bar{x}$ = 2.01, *SD* = 2.76) or unaware of their HIV status ($\bar{x}$ =1.83, *SD* = 2.33), (*H* (2, N=1,437) = 32.55, *p*<.001, *d*=.30). Compared to the other groups, the adolescents who were living with HIV also experienced higher rates of risky sexual conditions ($\bar{x}$ = 1.98, *SD* = 1.98; *H* (2, N=1,437) = 38.40, *p*<.001, *d*=32) and acts ($\bar{x}$ =1.51, *SD* = 2.07; *H* (2, N=1,437) = 24.34, *p*<.001, *d*=.25). The effect-size of HIV status on the observed sexual behaviours was medium, which implies that these adolescents experienced considerably different rates of sexual risk behaviour and this could have been influenced by their HIV status.

5.2.8 Summary of the psychosocial and sexual risk levels

Overall, whereas the three adolescent groups showed considerable rates of the observed psychosocial sexual experiences, the adolescents living with HIV were most prone to the risk-factors especially low post-primary education attainment, double and longer time of orphanhood, home instability, working as bar/home tenders, living with many sick people and with caregivers who were relatives, or HIV-negative, or alcohol users, receiving HIV/psychosocial care, negative peer influence, poverty reflected by absence of basic needs, personal threats, interpersonal problems, psychosocial distress, risky sexual behaviour, and low ability to cope by constructive methods such as self-control and seeking social support. This group could be experiencing poorer

© University of Pretoria

parenting and more problems which may be resulting in sexual risk behaviour and repeated HIV-infections than their colleagues in the same home.

Hence, seven null sub-hypotheses which concisely state that there is no significant variation in levels of the observed psychosocial circumstances and sexual risk behaviour of the three groups, are rejected.

5.3 Psychosocial Predictors and Mediators of Sexual Risk Behaviour of Adolescents

The second research hypothesis states that "the observed socio-demographic attributes, peer influence, socioeconomic status, community stressors, and psychosocial distresses will be significantly associated with sexual risk behaviour of adolescents living in HIV-affected homes, and these associations will be mediated by their coping methods".

Results of the GLM tests on this hypothesis are explained in the next subsections based on the sub-hypotheses that are inferred in the conceptual model for this study, which is provided in Figure 2.

5.3.1 Predictors of sexual risk behaviour, without controlling effects of other exogenous variables

In this subsection, we first test the relationships between the observed variables for each exogenous construct and sexual risk behaviour, without controlling for effects of the other observed psychosocial variables in the conceptual model, to identify all probable independent psychosocial predictors of sexual risks among adolescents involved in this study.

The results of the tests which were performed without controlling for effects of the categorical levels and covariates of the variables in each model, are indicated in Tables 17 to 22 and explained according to hypothesis. Results of the tests which were performed when controlling for effects of the categorical levels and covariates of the variables in each model, are indicated in Table 22 and presented in appendix 3.

5.3.1.1 Socio-demographic attributes and sexual risk behaviour

The **first sub-hypothesis** of the second hypothesis states that **"the observed socio-demographic attributes will be significantly associated with the sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the tests on this model, which have been presented in Table 17, show that HIV status, sex, age group, religious conviction, occupation, number of ill people in the home, number of caregivers lived with in a lifetime, work of the caregiver, caregivers' alcohol intake, caregivers' HIV status, district of residence, ethnicity, schooling status, and status of HIV/psychosocial care significantly affected sexual risk behaviour of adolescents, while the type of caregiver directly marginally did so.

© University of Pretoria

Other observed socio-demographic factors like education level, parental death, age at death of the first parent, span of orphan-hood, home stability, span of stay in the affected home, number of people in the home, and caregivers' talks about HIV or sexuality issues did not significantly affect sexual risk behaviour.

Table 17. Effects of socio-demographic attributes on sexual risk behaviour of all 1,437 adolescents in the sample

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	3897.104[a]	53	73.530	11.454****	<.001
Intercept	7.321	1	7.321	1.140	.286
Personal attributes					
HIV status	88.296	2	44.148	6.877***	.001
Gender	25.010	1	25.010	3.896***	.049
Age group	164.111	1	164.111	25.563****	<.001
Highest education level	24.866	2	12.433	1.937	.145
Religious conviction	55.992	3	18.664	2.907***	.034
Occupation	149.625	4	37.406	5.827****	<.001
Parental death *(Yes)*	1.686	1	1.686	.263	.608
Age at death of first parent	2.939	2	1.470	.229	.795
Span of orphan-hood	23.322	2	11.661	1.816	.163
Family attributes					
Homes stability/lived in	17.741	2	8.871	1.382	.252
Span in HIV-affected home	44.022	4	11.006	1.714	.144
Number of people in the home	21.728	2	10.864	1.692	.184
Number of ill people in home	50.203	3	16.734	2.607***	.050
Caregivers' stability/lived with	41.093	2	20.547	3.201***	.041
Type of usual caregiver *(dad, etc.*	48.751	4	12.188	1.898*	.108
Work of usual caregiver	79.399	4	19.850	3.092***	.015
Alcohol use by usual caregiver	231.621	2	115.810	18.040****	<.001
Caregiver to child HIV/sexuality talks	.153	1	0.153	.024	.877
Caregivers' HIV status	62.898	2	31.449	4.899***	.008
Environmental attributes					
Home locality	242.398	2	121.199	18.879****	<.001
Ethnicity or tribe	90.667	5	18.133	2.825***	.015
Being in or out of school	71.751	1	71.751	11.177****	<.001
HIV/psychosocial care	89.481	1	89.481	13.938****	<.001

Note: [a] *R* Squared = .318 (Adjusted *R* Squared = .290). The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**, and marginally significant at a *p* value of > .10 to ≤ .14*.

After controlling for effects of categorical levels and covariates of the observed socio-demographic attributes, results of the test for strengths and directions of relationships among them, which are presented in Table 22 and placed in appendix 3, showed that living with HIV (β = 1.03, t (1,357) = 3.68, p < .001), not living

© University of Pretoria

with HIV (*β* = .39, *t* (1,357) = 2.13, *p* = .034) and being female (*β* = .28, *t* (1,357) = 1.97, *p* = .049), in the younger adolescence stage (*β* = .24, *t* (1,357) = 5.06, *p* < .001), a student (*β* = 1.59, *t* (1,357) = 2.58, *p* = .010) or house-bar tender/trader (*β* = 1. 97, *t* (1,357) = 2.68, *p* = .007) or farmer (*β* = 1.45, *t* (1,357) = 2.29, *p* = .022), with a caregiver who is HIV positive (*β* = .63, *t* (1,357) = 2.51, *p* = .012), a Muganda (*β* = .65, *t* (1,357) = 1.92, *p* = .055) or Lango (*β* = 1.30, *t* (1,357) = 2.35, *p* = .019), and a recipient of HIV/psychosocial care (*β* = .77, *t* (1,357) = 3.73, *p* < .001) significantly *positively* predicted sexual risk behaviour.

However, being in school (*β* = -.79, *t* (1,357) = -3.34, *p* < .001), educated up to any lower primary school level (*β* = -.53, *t* (1,357) = -1.88, *p* = .061) or upper primary school level (*β* = -.35, *t* (1,357) = -1.73, *p* = .084), a believer in the Anglican faith (*β* = -1.21, *t* (1,437) = -2.46, *p* = .014), with no (*β* = -.58, *t* (1,357) = -2.09, *p* = .037) or with one sick person in the home (*β* = -.62, *t* (1,357) = -2.52, *p* = .012), with one (*β* = -.66, *t* (1,357) = -2.16, *p* = .031) or two caregivers (*β* = -.73, *t* (1,357) = -2.53, *p* = .012), with a caregiver who is jobless (*β* = -1.31, *t* (1,357) = -2.64, *p* = .008) or farmer (*β* = -.69, *t* (1,357) = -1.98, *p* = .048) or trader (*β* = -1.16, *t* (1,357) = -2.88, *p* = .003) or civic worker (*β* = -.92, *t* (1,357) = -2.25, *p* = .024), a resident of Lira (*β* = -2.81, *t* (1,357) = -4.71, *p* < .001) or Rukungiri (*β* = -2.74, *t* (1,357) = -4.11, *p* < .001), and *significantly negatively* predicted sexual risk behaviour.

In addition, being a Catholic (*β* = -.42, *t* (1,357) = -1.53, *p* = .125) or Pentecostal/Adventist (*β* = -.47, *t* (1,357) = -1.14, *p* = .143), orphaned for less than two years (*β* = -.69, *t* (615) = -1.56, *p* = .119) or more than two to four years (*β* = -.48, *t* (615) = -1.54, *p* = .125), and living in two homes for a lifetime (*β* = -.38, *t* (1,357) = -1.52, *p* = .129) *marginally negatively* predicted sexual risk behaviour. This implies that the changes in the value of these factors are associated with the changes (increase or decrease) in the sexual risk behaviour mean scores (Minitab LLC, 2023) of the adolescents involved in this study.

The combined socio-demographic factors in this model explained .29 (29%) of the variance in sexual risk behaviour, implying that the factors not built in this model explained 71% of the variance. Hence, the first sub-hypothesis of the second hypothesis is partially accepted.

5.3.1.2 Peer influence, socioeconomic status and sexual risk behaviour

The **second sub-hypothesis** of the second hypothesis states that **"peer influence and socioeconomic status will be significantly associated with the sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the test on this model, which are provided in Table 18, indicate that peer influence and socioeconomic status significantly affected sexual risk behaviour of these adolescents.

After controlling for the categorical levels and covariates of peer influence and socioeconomic status, results of the test for strengths and directions of relationships among them, which are presented in Table 22 and placed in appendix 3, showed that experiencing little peer influence (*β* = -2.37, *t* (1,437) = -15.02, *p* < .001)

© University of Pretoria

and a low (β = -1.01, t (1,437) = -4.76, p < .001) or quite moderate (β = -.35, t (1,437) = -1.73, p = .085) or moderate (β = -.57, t (1,437) = -3.07, p = .002) socioeconomic status significantly *negatively* predicted sexual risk behaviour in these adolescents. This implies that socioeconomic adversities may be restraining some of these adolescents from risky sexual situations and acts.

Table 18. Effects of peer influence and socioeconomic status on sexual risk behaviour of all 1,437 adolescents in the sample

Source of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	2000.373[a]	4	500.093	67.061****	<.001
Intercept	7869.571	1	7869.571	1055.285****	<.001
Peer influence	1681.190	1	1681.190	225.442****	<.001
Socioeconomic status	183.113	3	61.038	8.185****	<.001

Note: [a.] *R* Squared = .158 (Adjusted *R* Squared = .155). The *F*-value or ratio of the source variable is statistically significant at a probability value of < .001****, < .05***, < .10**, and marginally significant at a probability value of > .10 to ≤ .14*.

The two observed variables explained .155 (15.5%) of the variance in sexual risk behaviour of adolescents in this study, implying that 84.5% of the variance is due to other factors not included in this model. Hence, the aforesaid second sub-hypothesis of the second hypothesis is fully accepted.

5.3.1.3 Community stressors and sexual risk behaviour

The **third sub-hypothesis** of the second hypothesis states that **"the observed community stressors will be significantly associated with the sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the tests on this model, which have been presented in Table 19, show that poverty reflected by absence of basic needs, personal threats, interpersonal problems, and social distancing HIV stigma significantly affected sexual risk behaviour of the adolescents, while blame or judgmental HIV stigma did not.

Table 19. Effects of community stressors and sexual risk behaviour of all 1,437 adolescents in the sample

Source of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	5084.602[a]	5	1016.920	191.611****	<.001
Intercept	440.947	1	440.947	83.085****	<.001
Poverty	416.541	1	416.541	78.486****	<.001
Personal threats	476.779	1	476.779	89.836****	<.001
Interpersonal problems	2358.275	1	2358.275	444.353****	<.001
HIV related stigma					
Blame/judgmental attitudes	.600	1	.600	.113	.737
Social distancing attitudes	31.676	1	31.676	5.968***	.015

Notes: [a.] *R* Squared = .401 (Adjusted *R* Squared = .399).
The *F*-value or ratio of the source variable is statistically significant at a probability value of < .001****, < .05***, < .10**.
The F-value or ratio of the source variable is marginally significant at a probability value of > .10 to ≤ .14*.

© University of Pretoria

After controlling for effects of covariates of the stressors, results of the test for strengths and directions of relationships among them, which are presented in Table 22 and placed in appendix 3, showed that proneness to personal threats (β = .33, t (1,437) = 9.48, p <.001) and interpersonal problems (β = .94, t (1,437) = 21.08, p < .001) significantly *positively* predicted sexual risk behaviour, proneness to poverty (β = -.32, t (1,437) = -8.86, p <.001) and social distancing HIV stigma (β = -.06, t (1,437) = -2.44, p <.001) *negatively* predicted sexual risk behaviour, while proneness to judgmental HIV stigma did not (β = .01, t (1,437) = .34, p = .737).

The combined observed stressors in this model explained .399 (39.9%) of the variance in sexual risk behaviour, implying that 61.1% of the variance is due to factors not included in this model. Hence, the aforesaid third sub-hypothesis of the second hypothesis is largely accepted.

5.3.1.4 Psychosocial distresses and sexual risk behaviour

The **fourth sub-hypothesis** of the second hypothesis states that **"the observed psychosocial distresses will be significantly associated with the sexual risk behaviour of adolescents who live in HIV-affected homes".**

Data of the tests on this model (in Table 20) show that anger, inattention, anxiety, depression, psychosis, suicide ideation, disobedience, disruptiveness, destructiveness, and delinquency significantly affected sexual risk behaviour of the adolescents. However, loneliness, sleep unrest, somatisation and aggressiveness did not.

Table 20. Effects of psychosocial distresses on sexual risk behaviour of all 1,437 adolescents in the sample

Source of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	5405.250[a]	14	386.089	75.477****	<.001
Intercept	470.518	1	470.518	91.982****	<.001
Anger/tantrums/mood swings	29.152	1	29.152	5.699***	.017
Inattentiveness	29.907	1	29.907	5.847***	.016
Anxiety	31.644	1	31.644	6.186***	.013
Depression	126.648	1	126.648	24.759****	<.001
Loneliness	0.014	1	0.014	0.003	.959
Sleep unrest	5.606	1	5.606	1.096	.295
Psychosis	67.788	1	67.788	13.252****	<.001
Somatisation/fatigue	5.743	1	5.743	1.123	.290
Suicide ideation	62.042	1	62.042	12.129****	<.001
Disobedience	69.936	1	69.936	13.672****	<.001
Disruptiveness	39.324	1	39.324	7.687***	.006
Destructiveness	86.082	1	86.082	16.828****	<.001
Aggressiveness	9.501	1	9.501	1.857	.173
Delinquency	480.217	1	480.217	93.878****	<.001

Notes: [a] R Squared = .426 (Adjusted R Squared = .421). The F-value or ratio of the source variable is statistically significant at a probability (p) value of < .001****, < .05***, < .10**. The F-value of the source variable is marginally significant at a p value of > .10 to ≤ .14*.

© University of Pretoria

After controlling for effects of covariates of the observed psychosocial distresses, results of the test for strengths and directions of relationships among them, which are presented in Table 22 and placed in appendix 3, showed that proneness to anger (β = .07, t (1,437) = 2.39, p = .017), anxiety (β = .06, t (1,437) = 2.49, p = .013), psychosis (β = .14, t (1,437) = 3.64, p < .001), suicide ideation (β = .19, t (1,437) = 3.48, p < .001), disobedience (β = .24, t (1,437) = 3.69, p < .001), disruptiveness (β = .11, t (1,437) = 2.77, p = .006), destructiveness (β = .39, t (1,437) = 4.10, p < .001) and delinquency (β = .53, t (1,437) = 9.69, p < .001), significantly *positively* predicted adolescents' sexual risk behaviour. However, proneness to inattention (β = -.08, t (1,437) = -2.42, p = .016) and depression (β = -.19, t (1,437) = -4.98, p < .001) *negatively* predicted sexual risk behaviour, and loneliness (β = -.002, t (1,437) = -.05, p = .959), sleep unrest (β = .06, t (1,437) = 1.0, p = .295), somatisation (β = .04, t (1,437) = 1.06, p = .290), and aggressiveness (β = -.10, t (1,437) = -1.36, p = .173) did not.

The combined observed psychosocial distresses in this model explained .421 (42.1%) of the variance in sexual risk behaviour, implying that 57.9% of the variance is explained by other factors not built in this model. Hence, the fourth sub-hypothesis of the second hypothesis is partially accepted.

5.3.1.5 Coping methods and sexual risk behaviour

The **fifth sub-hypothesis** of the second hypothesis states that **"the observed coping methods will be significantly associated with the sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the tests on this model, which is provided in Table 21, show that coping with adversities by social support, self-control, socialisation, and deflection significantly affected adolescents' sexual risk behaviour.

Table 21. Effects of coping methods on sexual risk behaviour of all 1,437 adolescents in the sample

Source of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	2417.381[a]	4	604.345	84.334****	<.001
Intercept	2510.798	1	2510.798	350.372****	<.001
Social support	153.512	1	153.512	21.422****	<.001
Self-control	972.477	1	972.477	135.705****	<.001
Socialization	133.887	1	133.887	18.683****	<.001
Deflection	647.369	1	647.369	90.338****	<.001

Notes: [a.] R Squared = .191 (Adjusted R Squared = .188).
The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**.
The *F*-value or ratio of the source variable is marginally significant at a *p* value of > .10 to ≤ .14*.

After controlling for effects of covariates of the observed coping methods, results of the test for strengths and directions of relationships among them, which are summarised in Table 22 and presented in appendix 3, showed that whereas coping with adversities by deflection (β = .31, t (1,437) = 9.51, p < .001), significantly *positively* predicted their sexual risk behaviour, coping with adversities by self-control (β = -.307, t

© University of Pretoria

(1,437) = -11.65, $p < .001$), or socialisation ($\beta = -.16$, t (1,437) = -4.32, $p < .001$), or seeking emotional and informational support ($\beta = -.08$, t (1,437) = -4.53, $p < .001$) *negatively* predicted their sexual risk behaviour.

The combined observed coping methods in this model explained .188 (18.8%) of the variance in their sexual risk behaviour, implying that 81.2% of the variance is due to factors not included in this model. Hence, the fifth sub-hypothesis of the second hypothesis is fully accepted.

5.3.1.6 Summary of predictors of sexual risk behaviour, without controlling effects of other variables

Results of the GLM tests for relationship between sexual risk behaviour and the observed variables of each exogenous construct in the conceptual framework showed that living with or without HIV infection, female gender, a younger age, involvement in work that provides no or unreliable income such as learning or farming or house/bar tending, living with HIV-positive caregivers, negative norms of the Baganda and Lango tribe, and receiving HIV/psychosocial care significantly *positively* predicted adolescents' sexual risk behaviour. This implies that these socio-demographic factors facilitate sexual risks in adolescents living in HIV-affected homes.

Conversely, school attendance, attainment of any primary school education, the Catholic or Anglican or Pentecostal/Adventist/Orthodox religious convictions, orphan-hood for a short time of up to four years, absence or presence of one sick person in the home, living in two homes and with one to two caregivers in a lifetime, living with caregivers who are jobless or engage in work that ensure food security like farming and regular income like trading, and experiencing other positive situations in Lira and Rukungiri district, significantly or marginally *negatively* predicted sexual risk behaviour. This implies that these factors tend to protect or restrain the adolescents who live in HIV-affected homes from engaging in sexual risk behaviour. The combined socio-demographic factors in this model explained 29% of the variance in their sexual risk behaviour.

Second, experiencing less negative peer influence and a low to moderate socioeconomic status (being in the first to third economic quartiles) significantly *negatively* predicted adolescents' sexual risk behaviour. This implies that the adolescents who were more susceptible to negative peer influence and socioeconomic opulence tended to engage in risky sexual behaviour. The combined observed variables of peer influence and socioeconomic status in this model explained 15.5% of the variance in sexual risk behaviour.

Third, exposure to personal threats and interpersonal problems significantly *positively* predicted adolescents' sexual risk behaviour while exposure to poverty reflected by absence of basic needs and social distancing HIV stigma *negatively* predicted sexual risk behaviour. This implies that the observed stressors affect differently the sexual behaviour of the adolescents involved in this study. The combined observed community stressors in this model explained 39.9% of the variance in the sexual risk behaviour of these adolescents.

Fourth, whereas proneness to anger, anxiety, psychosis, suicide ideation, disobedience, disruptiveness, destructiveness and delinquency significantly *positively predicted* sexual risk behaviour among these

© University of Pretoria

adolescents, proneness to inattention and depression significantly *negatively* predicted it among them. This implies that these distresses affected their sexual risk behaviour differently. The combined observed distresses in this model explained 42.1% of the variance in their sexual risk behaviour.

Fifth, coping with adversities using deflective methods (such as joking about the problems faced or assuming the worst may have occurred) significantly *positively* predicted sexual risk behaviour among these adolescents, while coping by self-control or socialisation or obtaining social support significantly *negatively* predicted their sexual risk behaviour. This implies that the observed coping strategies affected the sexual behaviour of these adolescents differently. The combined observed coping methods in this model explained 18.8% of the variance in their sexual risk behaviour.

This subsection has presented the psychosocial predictors of sexual risk behaviour without controlling for the effects of other observed variables. The next subsection presents the psychosocial predictors of adolescents' sexual risk behaviour when controlling for the effects of coping methods.

5.3.2 Coping-mediated psychosocial predictors of sexual risk behaviour

To identify the coping-mediated psychosocial predictors of adolescents' sexual risk behaviour and finally address the second objective of this study, we examined six different models in the theorised framework, when controlling for the effects of coping methods. They included: (1) socio-demographic attributes, coping methods and sexual risk behaviour; (2) peer influence, socioeconomic status, coping methods and sexual risk behaviour; (3) community stressors, coping methods and sexual risk behaviour; (4) psychosocial distresses, coping methods and sexual risk behaviour; (5) peer influence, socioeconomic status, community stressors, psychosocial distresses, coping methods and sexual risk behaviour; and (6) socio-demographic attributes, peer influence, socioeconomic status, community stressors, psychosocial distresses, coping methods and sexual risk behaviour.

Results of the tests performed without controlling for effects of the categorical levels and covariates of the variables in each of these models, are provided in Tables 23 to 28 and explained according to hypothesis. Results of the tests performed when controlling for effects of the categorical levels and covariates of the variables in each of these models, are indicated in Table 29 and presented in appendix 3.

5.3.2.1 Socio-demographic attributes and sexual risk behaviour whilst controlling for coping

The **first sub-hypothesis** of the second hypothesis states that **"the observed coping methods will significantly mediate in the relationship between socio-demographic attributes and sexual risk behaviour of the adolescents who live in HIV-affected homes"**.

Data of the tests performed without controlling for categorical levels and covariates of the variables in this model, which is provided in Table 23 below, show that HIV status, sex, age group, education level, religious

© University of Pretoria

conviction, occupation, span of orphan-hood, number of people in the home, number of caregivers lived with in a lifetime, caregivers' HIV status and type of work and alcohol consumption, home locality, ethnicity, schooling status, access to HIV or psychosocial care, and coping with adversities through self-control or deflection or socialisation or seeking social support either significantly or marginally affected these adolescents' sexual behaviour. The other variables in this model notably, parental death, age at death of the first parent, home stability, span of stay in affected home, number of sick people in the home, type of caregiver, and HIV/sexuality discussions from caregivers, did not significantly affect their sexual risk behaviour.

After controlling for effects of categorical levels and covariates of the observed socio-demographic and coping variables in this model, results of the tests for strengths and directions of relationships among them, which are provided in Table 29 and presented in appendix 3, showed that being *HIV infected* (β = .88, t (1,357) = 3.35, p < .001) or uninfected (β = .34, t (1,357) = 1.88, p = .061), a female (β = .28, t (1,357) = 2.10, p = .036), in a younger adolescence stage (β = .23, t (1,357) = 5.25, p < .001), a student (β = 1.02, t (1,357) = 1.76, p = .079) or a farmer (β = .97, t (1,357) = 1.63, p = .103) or a house/bar tender or trader or driver (β = 1.29, t (1,357) = 1.87, p = .062), either significantly or marginally *positively* associated with sexual risk behaviour of these adolescents. Similarly, living with a caregiver who is HIV-positive (β = .69, t (1,357) = 2.87, p = .004), being a Muganda (β = .77, t (1,357) = 2.41, p = .016) or Lango (β = 1.42, t (1,357) = 2.72, p = .007), receiving HIV/psychosocial care (β = .61, t (1,357) = 3.09, p = .002) and coping with adversities using deflection methods like ignoring the problems faced (β = .17, t (1,357) = 5.13, p < .001), significantly *positively* associated with their sexual risk behaviour.

However, having been educated up to primary four school level or less (β = -.51, t (1,357) = -1.92, p = .055) or from primary five to seven school levels (β = -.36, t (1,357) = -1.88, p = .061), a believer of the Catholic (β = -.67, t (1,357) = -2.22, p = .027) or Anglican (β = -.65, t (1,357) = -2.52, p = .012) or Pentecostal/Adventist (β = -.47, t (1,357) = -1.54, p = .124) religions, orphaned for one to two years (β = -.71, t (615) = -1.71, p = .087) or three to four years (β = -.48, t (615) = -1.63, p = .104), with one to three people in the same home (β = -.52, t (1,357) = -1.81, p = .071), with one sick person in the same home (β = -.35, t (1,357) = -1.53, p = .125, with two caregivers (β = -.46, t (1,357) = -1.69, p = .090), with a caregiver who was unemployed (β = -1.21, t (1,357) = -2.61, p = .009) or engaged in farming (β = -.59, t (1,357) = -1.81, p = .071) or trading (β = -.92, t (1,357) = -2.52, p = .012) or civic work (β = -.94, t (1,357) = -2.46, p = .014), either significantly or marginally *negatively* associated with adolescents' sexual risk behaviour. Similarly, being resident in the Lira (β = -2.60, t (1,357) = -4.64, p < .001) or Rukungiri districts (β = -1.96, t (1,357) = -3.09, p = .002), attending school (β = -.79, t (1,357) = -3.59, p < .001), and coping with adversities using self-control (β = -.22, t (1,357) = -8.28, p < .001) or social support (β = -.08, t (1,357) = -4.98, p <.001) or socialisation (β = -.06, t (1,357) = 1.68, p = .094) methods either significantly or

© University of Pretoria

marginally *negatively* associated with adolescents' sexual risk behaviour. The other variables in this model[15] did not significantly increase or decrease their sexual risk behaviour.

Table 23. Effects of coping methods in relations between socio-demographics and sexual risk behaviour of all 1,437 adolescents

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	4905.937[a]	57	86.069	15.199****	<.001
Intercept	42.572	1	42.572	7.518***	.006
Personal attributes					
HIV status	64.434	2	32.217	5.689***	.003
Gender	25.004	1	25.004	4.415***	.036
Age group	156.256	1	156.256	27.593****	<.001
Highest education level	24.117	2	12.058	2.129*	.119
Religious conviction	36.820	3	12.273	2.167**	.090
Occupation	94.205	4	23.551	4.159***	.002
Parental death *(Yes)*	1.408	1	1.408	0.249	.618
Age at death of first parent	5.111	2	2.555	0.451	.637
Span of orphan-hood	23.992	2	11.996	2.118*	.121
Family attributes					
Homes stability/lived in	9.481	2	4.740	0.837	.433
Span in HIV-affected home	32.928	4	8.232	1.454	.214
Number of people in the home	24.453	2	12.227	2.159*	.116
Number of ill people in home	15.171	3	5.057	.893	.444
Caregivers' stability/lived with	25.170	2	12.585	2.222*	.109
Type of the usual caregiver (dad, etc.)	35.988	4	8.997	1.589	.175
Work of usual caregiver	62.194	4	15.549	2.746***	.027
Alcohol use by usual caregiver	160.578	2	80.289	14.178****	<.001
Caregiver to child HIV/sexuality talks	2.449	1	2.449	.433	.511
Caregivers' HIV status	52.730	2	26.365	4.656***	.010
Environmental attributes					
Home locality	169.526	2	84.763	14.968****	<.001
Ethnicity or tribe	84.375	5	16.875	2.980***	.011
Being in or out of school	73.194	1	73.194	12.925****	<.001
HIV or psychosocial care	53.916	1	53.916	9.521***	.002
Coping methods					

[15] i.e. being orphaned (β = -.16 t (1,357) = -.49, p = .618), orphaned in childhood i.e. at the age of five and less years (β = .31 t (1,357) = .94, p = .347) orphaned in preadolescence i.e. in the age of more than five to nine years (β = .21 t (1,357) = .73, p = .465), unemployed (β = .39, t (1,357) = .67, p = .503), in either one home (β = .11, t (1,357) = .38, p = .707) or two homes for a lifetime (β = -.15, t (1,357) = -.62, p = .537), in the home for four and less years (β = .06, t (1,357) = .17, p = .864) or more than four to eight years (β = .53, t (1,357) = 1.41, p = .159) or more than eight to 12 years (β = .12, t (1,357) = .39, p = .692) or more than 12 to 16 years (β = -.14, t (1,357) = -.57, p = .569), in the home with four to six people (β = .066, t (1,357) = .454, p = .650), with either no sick person in the home (β = -.195, t (1,357) = -.740, p = .459) or two sick persons in the home (β = -.19, t (1,357) = -.83, p = .406), with one caregiver (β = -.19, t (1,357) = -.68, p = .498), with both parents (β = -.04, t (1,357) = -.13, p = .894) or father/brother (β = -.21, t (1,357) = -.66, p = .508) or mother/sister (β = .37, t (1,357) = 1.39, p = .163) or grandparents (β = .10, t (1,357) = .36, p = .723), with a caregiver who uses (β = .38, t (1,357) = .67, p = .505) or does not use alcohol (β = -.49, t (1,357) = -.88, p = .380), with a caregiver who is HIV-negative (β = .38, t (1,357) = 1.46, p = .144) or discusses sexuality issues (β = .14, t (1,357) = .66, p = .511), and being a Musoga (β = .06, t (1,357) =.17, p = .865) or Munyankole (β = .52, t (1,357) = .78, p = .434) or Mukiga (β = .57, t (1,357) = .86, p = .393).

© University of Pretoria

Social support	140.149	1	140.149	24.749****	<.001
Self-control	387.792	1	387.792	68.480****	<.001
Socialization	15.944	1	15.944	2.816**	.094
Deflection	149.101	1	149.101	26.330****	<.001

Notes: [a] *R* Squared = .400 (Adjusted *R* Squared = .374). The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**. The *F*-value or ratio of the source variable is marginally significant at a *p* value of > .10 to ≤ .14*.

The combined variables in this model explained .374 (37.4%) of the variance in sexual risk behaviour. This is .084 (8.4%) higher than the explained variance in sexual risk behaviour in the model that consisted of the observed socio-demographic and sexual risk behaviour factors only, which was .290 (29%). This difference in the variance in sexual risk behaviour between these two models is further evidence that coping with adversities using self-control, socialisation, deflection and social support methods significantly intervened in the relationships between the observed socio-demographic attributes and sexual risk behaviour of the adolescents who were involved in this study. Hence, the first sub-hypothesis of the second hypothesis is accepted.

5.3.2.2 Peer-socioeconomic influences and sexual risk behaviour whilst controlling for coping

The **second sub-hypothesis** of the second hypothesis states **"that the observed coping methods will significantly mediate in the relationship between peer influence, socioeconomic status, and sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the tests on all variables in this model presented in Table 24 show that peer influence, socioeconomic status, and coping with adversities by self-control or socialisation or deflection significantly affected adolescents' sexual risk behaviour. However, coping with adversities by getting social support, did not significantly affect their sexual risk behaviour.

Table 24. Effects of coping methods in links among peer influence, socioeconomic status, and sexual behaviour of all 1,437 adolescents

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	3325.842[a]	6	554.307	84.746****	<.001
Intercept	619.637	1	619.637	94.734****	<.001
Peer and socioeconomic influences					
Peer influence	704.745	1	704.745	107.746****	<.001
Socioeconomic status	101.804	1	101.804	15.564****	<.001
Coping methods					
Social support	13.543	1	13.543	2.071	.150
Self-control	696.938	1	696.938	106.552****	<.001
Socialization	106.223	1	106.223	16.240****	<.001
Deflection	470.337	1	470.337	71.908****	<.001

Notes: [a] *R* Squared = .262 (Adjusted *R* Squared = .259). The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**. The *F*-value or ratio of the source variable is marginally significant at a *p* value of > .10 to ≤ .14*

© University of Pretoria

After controlling for effects of categorical levels and covariates of variables in this model, results of the test for strength and directions of relationships among them, which are provided in Table 29 and presented in appendix 3, showed that coping with adversities by deflection (β = .26, t (1,437) = 8.49, p <.001), significantly *positively* related with sexual risk behaviour of these adolescents. However, experiencing less negative peer influence (β = -1.71, t (1,437) = -10.37, p <.001), a low (β = -.84, t (1,437) = -4.76, p < .001) or quite moderate (β = -.45, t (1,437) = -2.39, p = .002) or moderate (β = -.57, t (1,437) = -3.29, p = .002) socioeconomic status and coping with adversities by self-control (β = -.26, t (1,437) = -10.26, p < .001) and socialisation (β = -.14, t (1,437) = -4.09, p < .001) significantly *negatively* associated with their sexual risk behaviour. Coping with adversities by seeking social support (β = -.03, t (1,437) = -1.47, p = .150) did not significantly predict their sexual risk behaviour.

The combined variables in this model explained .261 (26.1%) of the variance in sexual risk behaviour. This is.106 (10.6%) higher than the explained variance in sexual risk behaviour in the model that consisted of the observed variables for peer influence, socioeconomic status and sexual risk behaviour only, which was .155 (15.5%). The considerable difference in the variance in sexual risk behaviour between these two models is further evidence that coping with adversities especially using self-control, socialisation and deflection methods, to a considerable extent, mediated in the relationships among peer influence, socioeconomic status and sexual risk behaviour of adolescents. Hence, the second sub-hypothesis of the second hypothesis is partially accepted.

5.3.2.3 Community stressors and sexual risk behaviour whilst controlling for coping

The **third sub-hypothesis** of the second hypothesis states that **"the observed coping methods will significantly mediate in the relationship between community stressors and sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the tests on variables in this model, which is presented in Table 25, show that poverty reflected by absence of basic needs, personal threats, interpersonal problems, and coping with adversities by self-control, socialisation, deflection and obtaining social support significantly affected these adolescents' sexual risk behaviour. However, judgmental and social distancing HIV stigma, did not.

After controlling for effects of covariates of the variables in this model, results of the test for strengths and directions of relationships among them, which are provided in Table 29 and presented in appendix 3, show that being prone to personal threats (β = .26, t (1,437) = 6.94, p <.001), interpersonal problems (β = .87, t (1,437) = 19.32, p <.001) and coping with adversities by deflection (β = .19, t (1,437) = 7.00, p <.001) significantly *positively* associated with the sexual risk behaviour of adolescents.

However, being prone to poverty reflected by absence of basic needs (β = -.30, t (1,437) = -8.45, p <.001) and coping with adversities by self-control (β = -.11, t (1437) = -4.52, p <.001) or socialisation (β = -.12, t (1437) = -4.03, p <.001) or getting social support (β = -.02, t (1437) = -1.61, p = .108) either significantly or marginally

© University of Pretoria

negatively predicted adolescents' sexual risk behaviour. The other stressors, especially judgmental (β = -.03, t (1437) = -.88, p = .378) and social distancing HIV stigma (β = -.03, t (1437) = -1.09, p = .274), did not.

Table 25. Effects of coping methods in the links between community stressors and sexual risk behaviour of all 1,437 adolescents

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	5458.018[a]	9	606.446	119.841****	<.001
Intercept	212.175	1	212.175	41.928****	<.001
Community stressors					
Poverty	361.051	1	361.051	71.348****	<.001
Personal threats	243.514	1	243.514	48.122****	<.001
Interpersonal problems	1889.094	1	1889.094	373.309****	<.001
HIV-related stigma					
Blame/judgmental attitudes	3.935	1	3.935	.778	.378
Social distancing attitudes	6.060	1	6.060	1.197	.274
Coping methods					
Social support	13.098	1	13.098	2.588**	.108
Self-control	103.231	1	103.231	20.400****	<.001
Socialization	82.116	1	82.116	16.227****	<.001
Deflection	248.271	1	248.271	49.061****	<.001

Notes: [a] R Squared = .430 (Adjusted R Squared = .427).
The F-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**.
The F-value or ratio of the source variable is marginally significant at a p value of > .10 to ≤ .14*.

The combined exogenous variables in this model explained .427 (42.7%) of the variance in sexual risk behaviour. This is .028 (2.8%) higher than the explained variance in sexual risk behaviour in the model that consisted of the observed variables for community stressors and sexual risk behaviour, which was .399 (39.9%). The 2.8% difference in the variance in sexual risk behaviour between these two models is evidence that coping using self-control, socialisation, deflection and social support methods somehow intervened in the relationships between the observed community stressors (except HIV stigma) and sexual risk behaviours of the adolescents who were involved in this study. Hence, the third sub-hypothesis of the second hypothesis is partly accepted.

5.3.2.4 Psychosocial distresses and sexual risk behaviour, whilst controlling for coping

The **fourth sub-hypothesis** of the second hypothesis states that **"the observed coping methods will significantly mediate in the relationships between psychosocial distresses and sexual risk behaviour of adolescents who live in HIV-affected homes".**

Data of the tests on all variables in this model, which is presented in Table 26, show that anger, inattentiveness, anxiety, depression, psychosis, suicide ideation, disobedience, disruptiveness, destructiveness, delinquency, and coping with adversities by socialisation and deflection significantly affected adolescents' sexual

© University of Pretoria

risk behaviour. The other variables in this model especially loneliness sleep unrest, somatisation, aggressiveness, and coping with adversities by self-control and seeking social support, did not.

Table 26. Effects of coping methods in links between psychosocial distresses and sexual risk behaviour of all 1,437 adolescents

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	5649.415[a]	18	313.856	63.309****	<.001
Intercept	25.112	1	25.112	5.065***	.025
Psychosocial distresses					
Anger	32.322	1	32.322	6.520***	.011
Inattentiveness	39.046	1	39.046	7.876***	.005
Anxiety	20.745	1	20.745	4.185***	.041
Depression	86.770	1	86.770	17.503****	<.001
Loneliness	.001	1	0.001	.000	.990
Sleep unrest	1.553	1	1.553	.313	.576
Psychosis	37.639	1	37.639	7.592***	.006
Somatisation	8.626	1	8.626	1.740	.187
Suicide ideation	68.308	1	68.308	13.779****	<.001
Disobedience	69.488	1	69.488	14.017****	<.001
Disruptiveness	34.359	1	34.359	6.931***	.009
Destructiveness	73.655	1	73.655	14.857****	<.001
Aggressiveness	6.635	1	6.635	1.338	.248
Delinquency	478.341	1	478.341	96.488****	<.001
Coping methods					
Social support	3.888	1	3.888	.784	.376
Self-control	.327	1	0.327	.066	.797
Socialization	55.482	1	55.482	11.191****	<.001
Deflection	219.039	1	219.039	44.183****	<.001

Notes:
[a] *R* Squared = .446 (Adjusted *R* Squared = .439).
The *F*-value or ratio of the source variable is statistically significant at a probability value of < .001****, < .05***, < .10**.
The *F*-value or ratio of the source variable is marginally significant at a *p* value of > 0.10 - ≤ .14*.

After controlling for effects of covariates for these variables, data of the test for strengths and directions of relationships among them (which is indicated in Table 29 and presented in appendix 3), showed that being prone to anger (β = .08, *t* (1,437) = 2.55, *p* = .011), anxiety (β = .05, *t* (1,437) = 2.05, *p* = .041), psychosis (β = .11, *t* (1,437) = 2.76, *p* = .006), suicide ideation (β = .20, *t* (1,437) = 3.71, *p* < .001), disobedience (β = .25, *t* (1,437) = 3.74, *p* < .001), disruptiveness (β = .11, *t* (1,437) = 2.63, *p* = .009), destructiveness (β = .36, *t* (1,437) = 3.85, *p* < .001), delinquency (β = .53, *t* (1,437) = 9.82, *p* < .001) and coping using deflection methods (β = .19, *t* (1,437) = 6.65, *p* < .001) significantly *positively* associated with adolescents' sexual risk behaviour.

© University of Pretoria

However, inattentiveness (β = -.09, t (1,437) = -2.81, p = .005), depression (β = -.17, t (1,437) = -4.18, p < .001) and coping with adversities using socialisation methods (β = -.10, t (1,437) = -3.35, p < .001) significantly *negatively* predicted their sexual risk behaviour, and the other variables in this model[16] did not.

The combined variables in this model explained .439 (43.9%) of the variance in sexual risk behaviour. This is .018 (1.8%) higher than the explained variance in sexual risk behaviour in the model that consisted of the observed psychosocial distresses and sexual risk behaviour, which was .421 (42.1%). The 1.8% difference in the variance in sexual risk behaviour between these two models is evidence that coping especially using socialisation and deflection methods somehow intervened in the relationships between the observed psychosocial distresses and sexual risk behaviour of the adolescents involved in this study. Hence, the fourth sub-hypothesis of the second hypothesis is partially accepted.

5.3.2.5 Peer influence, socioeconomic status, stressors, distresses, sexual risk whilst controlling for coping

The **fifth sub-hypothesis** of the second hypothesis states that **"coping methods will significantly mediate in the relationships between peer influence, socioeconomic status, community stressors, psychosocial distresses, and sexual risk behaviour of adolescents who live in HIV-affected homes, without controlling for effects of their socio-demographic attributes"**.

Data of the tests on variables in this model, which is presented in Table 27, show that peer influence, poverty reflected by absence of basic needs, personal threats, interpersonal problems, judgmental HIV stigma, inattentiveness, depression, psychosis, somatisation, suicide ideation, destructiveness, aggressiveness, delinquency, and coping with adversities by self-control or socialisation or deflection, significantly affected adolescents' sexual risk behaviour. However, social distancing HIV stigma and sleep unrest affected sexual risk behaviour marginally and the other variables in this model especially socioeconomic status, anger, anxiety, loneliness, disobedience, disruptiveness, and coping by either self-control or obtaining social support, did not.

After controlling for effects of categorical levels and covariates for all variables in this model, results of the test for strengths and directions of relationships amongst them, which are indicated in Table 29 and presented in appendix 3, showed that experiencing negative peer influence (β = .98, t (1,437) = 6.63, p < .001), personal threats (β =.17, t (1,437) = 4.68, p < .001), and interpersonal problems (β = .46, t (1,437) = 9.59, p < .001), either significantly or marginally *positively* associated with sexual risk behaviour of adolescents. Similarly, proneness to sleep unrest (β =.07, t (1,437) = 1.54, p = .124), psychosis (β = .09, t (1,437) = 2.39, p = .017), somatisation (β =.06, t (1,437) = 1.81, p = .071), suicide ideation (β =.15, t (1,437) = 2.84, p = .005), destructiveness (β = .35, t (1,437) = 3.98, p < .001), delinquency (β =.45, t (1,437) = 8.69, p < .001), and coping

[16] i.e. proneness to loneliness (β = .01, t (1,437) = .01, p = .990), sleep unrest (β = .03, t (1,437) = .56, p = .576), somatisation (β = .05, t (1,437) = 1.32, p = .187), aggression (β = -.09, t (1,437) = -1.16, p = .248), and coping with adversities by self-control (β = -.01, t (1,437) = -.26, p = .797) and seeking social support (β = -.01, t (1,437) = -.89, p = .376).

© University of Pretoria

with adversities using deflection methods such as blaming others for the problems faced (β =.13, t (1,437) = 4.98, p < .001) either significantly or marginally *positively* associated with sexual risk behaviour of adolescents.

Table 27. Effects of coping in links among peer influence, socioeconomic status, stressors, distresses, and sexual risk behaviour

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	6821.929[a]	25	272.877	65.735****	<.001
Intercept	2.564	1	2.564	.618	.432
Peer influence-socioeconomic status					
Peer influence	182.502	1	182.502	43.964****	<.001
Socioeconomic status	6.056	1	6.056	1.459	.227
Community stressors					
Poverty	98.067	1	98.067	23.624****	<.001
Personal threats	90.977	1	90.977	21.916****	<.001
Interpersonal problems	381.517	1	381.517	91.906****	<.001
HIV-related stigma					
Blame/judgmental attitudes	17.275	1	17.275	4.162***	.042
Social distancing attitudes	10.859	1	10.859	2.616*	.106
Psychosocial distresses					
Anger	4.602	1	4.602	1.109	.293
Inattentiveness	17.379	1	17.379	4.186***	.041
Anxiety	1.621	1	1.621	.391	.532
Depression	54.910	1	54.910	13.228****	<.001
Loneliness	.025	1	.025	.006	.939
Sleep unrest	9.813	1	9.813	2.364*	.124
Psychosis	23.609	1	23.609	5.687***	.017
Somatisation/fatigue	13.527	1	13.527	3.259**	.071
Suicide ideation	33.365	1	33.365	8.037***	.005
Disobedience	.703	1	.703	.169	.681
Disruptiveness	8.782	1	8.782	2.115	.146
Destructiveness	65.817	1	65.817	15.855****	<.001
Aggressiveness	22.721	1	22.721	5.473***	.019
Delinquency	313.355	1	313.355	75.486****	<.001
Coping methods					
Social support	2.152	1	2.152	.518	.472
Self-control	.112	1	.112	.027	.869
Socialization	36.090	1	36.090	8.694***	.003
Deflection	103.033	1	103.033	24.820****	<.001

Notes:
[a] *R* Squared = .538 (Adjusted *R* Squared = .530).
The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**.
The *F*-value or ratio of the source variable is marginally significant at a *p* value of > .10 to ≤ .14*

© University of Pretoria

However, proneness to poverty reflected by absence of basic needs (β = -.19, t (1,437) = -4.86, p < .001), judgmental HIV stigma (β = -.06, t (1,437) = -2.04, p = .042), social distancing HIV stigma (β = -.04, t (1,437) = -1.62, p = .106), inattentiveness (β = -.06, t (1,437) = -2.05, p = .041), depression (β = -.14, t (1,437) = -3.64, p < .001), aggression (β = -.16, t (1,437) = -2.34, p = .019), and coping with adversities by socialisation (β = -.08, t (1,437) = -2.95, p = .003), significantly or marginally *negatively* associated with their sexual risk behaviour. The other variables in this model, namely socioeconomic status (β = .07, t (1,437) = 1.21, p = .227) anger (β =.03, t (1,437) = 1.05, p = .293), anxiety (β = .01, t (1,437) = .63, p = .532), loneliness (β = -.003, t (1,437) = -.08, p = .939), disobedience (β = .03, t (1,437) = .41, p = .681), disruptiveness (β =.05, t (1,437) = 1.45, p = .146) and coping by self-control (β =.004, t (1,437) = .16, p = .869) or seeking social support (β = .01, t (1,437) = .72, p = .472), did not.

The combined exogenous variables in this model explained .530 (53%) of the variance in sexual risk behaviour. This explained variance is:

Firstly, 37.5% higher than the explained variance in sexual risk behaviour in the model that consisted of the variables for peer influence, socioeconomic status and sexual risk behaviour, which was 15.5 per cent.

Secondly, it is 13.1% higher than the explained variance in sexual risk behaviour in the model that consisted of the observed variables for community stressors and sexual risk behaviour, which was 39.9 per cent.

Thirdly, it is 10.9% higher than the explained variance in sexual risk behaviour in the model that consisted of the observed variables for psychosocial distresses and sexual risk behaviour, which was 42.1 per cent.

Fourthly, it is 34.2% higher than the explained variance in sexual risk behaviour in the model that consisted of the observed variables for coping methods and sexual risk behaviour, which was 18.8 per cent.

The considerable difference in the variances in sexual risk behaviour between these models provided evidence that the statistically significant variables in this model interacted to predict sexual risk behaviour of adolescents involved in this study without controlling for the effects of their socio-demographic attributes. Hence, the fifth sub-hypothesis for the second hypothesis is partially accepted.

5.3.2.6 All the observed exogenous variables and sexual risk behaviour of adolescents

The second hypothesis states that **"coping methods will significantly mediate in the relationships between socio-demographic attributes, peer influence, socioeconomic status, community stressors, psychosocial distresses, and sexual risk behaviour of adolescents who live in HIV-affected homes".**

Data of the tests on variables in this model, which is presented in Table 28, showed that gender, age group, education level, caregivers' HIV status, locality of residence, ethnicity, schooling status, peer influence, poverty reflected by absence of basic needs, personal threats, interpersonal problems, internalising distresses (namely inattentiveness, depression, sleep unrest, psychosis, somatisation, suicide ideation), externalising distresses (namely destructiveness and delinquency) and coping with adversities using deflection methods,

© University of Pretoria

significantly affected sexual risk behaviour. However, HIV status, religious conviction, parental death, number of homes lived in a lifetime, caregivers' use of alcohol, and judgmental HIV stigma marginally affected adolescents' sexual risk behaviour. The other variables in this model did not (see data in Table 29).

Table 28. Effects of coping in links among demographics, peer influence, socioeconomic status, stressors, distresses and sexual risks

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	7683.866[a]	80	96.048	26.770****	<.001
Intercept	17.338	1	17.338	4.832***	.028
Personal attributes					
HIV status	15.373	2	7.686	2.142*	.118
Gender	37.103	1	37.103	10.341***	.001
Age group	107.042	1	107.042	29.834****	<.001
Highest education level	25.605	2	12.803	3.568***	.028
Religious conviction	19.551	3	6.517	1.816*	.142
Occupation	20.290	4	5.072	1.414	.227
Parental death *(Yes)*	8.186	1	8.186	2.281*	.131
Age at death of the first parent	8.181	2	4.090	1.140	.320
Span of orphan-hood	3.415	2	1.708	.476	.621
Family context or attributes					
Homes stability/lived in	15.516	2	7.758	2.162*	.115
Span in HIV-affected home	16.618	4	4.155	1.158	.328
Number of people in the home	6.654	2	3.327	.927	.396
Number of sick people in home	9.077	3	3.026	.843	.470
Caregivers' stability/lived with	8.762	2	4.381	1.221	.295
Type of the usual caregiver	17.310	4	4.327	1.206	.306
Work of usual caregiver	10.791	4	2.698	.752	.557
Alcohol use by usual caregiver	15.681	2	7.840	2.185*	.113
Caregiver to child HIV/sexuality talks	6.939	1	6.939	1.934	.165
Caregivers' HIV status	40.588	2	20.294	5.656***	.004
Environmental attributes					
Home locality	44.091	2	22.046	6.144***	.002
Ethnicity or tribe	60.527	5	12.105	3.374***	.005
Being in or out of school	35.217	1	35.217	9.815***	.002
HIV/psych-socio care	.149	1	.149	.041	.839
Peer influence-socioeconomic status					
Peer influence scores	86.828	1	86.828	24.200****	<.001
Socioeconomic status scores	14.075	3	4.692	1.308	.270
Community stressors					
Poverty	72.378	1	72.378	20.173****	<,001
Personal threats	21.134	1	21.134	5.890***	.015

© University of Pretoria

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Interpersonal problems	279.968	1	279.968	78.031****	<,001
HIV related stigma					
Blame/judgmental attitudes	8.654	1	8.654	2.412*	.121
Social distancing attitudes	.527	1	.527	.147	.702
Psychosocial distresses					
Anger	1.531	1	1.531	.427	.514
Inattentiveness	11.344	1	11.344	3.162**	.076
Anxiety	2.007	1	2.007	.559	.455
Depression	13.484	1	13.484	3.758**	.053
Loneliness	2.697	1	2.697	.752	.386
Sleep unrest	10.461	1	10.461	2.916**	.088
Psychosis	25.999	1	25.999	7.246***	.007
Somatisation	15.036	1	15.036	4.191***	.041
Suicide ideation	21.271	1	21.271	5.928***	.015
Disobedience	3.183	1	3.183	.887	.346
Disruptiveness	2.263	1	2.263	.631	.427
Destructiveness	68.883	1	68.883	19.199****	<.001
Aggressiveness	5.146	1	5.146	1.434	.231
Delinquency	283.103	1	283.103	78.905****	<.001
Coping methods					
Social support	.353	1	.353	.098	.754
Self-control	.001	1	.001	.000	.984
Socialization	6.875	1	6.875	1.916	.167
Deflection	32.393	1	32.393	9.028***	.003

Notes:
[a] *R* Squared = .627 (Adjusted *R* Squared = .603).
The *F*-value or ratio of the source variable is statistically significant at a probability value of < .001****, < .05***, < .10**.
The F-value or ration of the source variable is marginally significant at a *probability* value of > .10 - ≤ .14*.

After controlling for effects of categorical levels and covariates for the variables in this model, data of the test for strengths and directions of relationships amongst them (which is indicated in Table 29 and presented in appendix 3), showed that living with HIV(β =.34, t (1,357) = 1.58, p = .115) or not living with HIV (β = .28, t (1,357) = 1.91, p = .056) and being a female (β = .35, t (1,357) = 3.22, p = .001) and in a younger adolescence stage (β = .19, t (1,357) = 5.46, p <.001), engaged in farming (β =.80, t (1,357) = 1.68, p = .094), in one home (β = .47, t (1,357) = 1.96, p = .050), with one caregiver (β =.37, t (1,357) = 1.56, p = .120), with a caregiver who is either HIV-positive (β = .47, t (1,357) = 2.42, p = .016) or HIV-negative (β =.72, t (1,357) = 3.36, p < .001), and a Muganda (β =.86, t (1,357) = 3.30, p < .001) or Lango (β = 1.01, t (1,357) = 2.38, p = .017) by ethnicity significantly or marginally *positively* related with adolescents' sexual risk behaviour.

© University of Pretoria

Likewise, being prone to personal threats (*β* =.09, *t* (1,357) = 2.43, *p* = .015), interpersonal problems (*β* = .43, *t* (1,357) = 8.83, *p* < .001), sleep unrest (*β* =.09, *t* (1,357) = 1.71, *p* = .088), psychosis (*β* = .09, *t* (1,357) = 2.69, *p* = .007), somatisation (*β* =.07, *t* (1,357) = 2.05, *p* = .041), suicide ideation (*β* =.13, *t* (1,357) = 2.44, *p* = .015), destructiveness (*β* = .38, *t* (1,357) = 4.38, *p* < .001), delinquency (*β* =.46, *t* (1,357) = 8.88, *p* < .001), and coping with adversities by deflection (*β* =.08, *t* (1,357) = 3.01, *p* = .003) significantly or marginally *positively* related with adolescents' sexual risk behaviour. This implies these factors increase sex risks among the adolescents involved in this study.

However, being in school (*β* = -.56, *t* (1,357) = -3.13, *p* = .002) and educated up to any lower-primary (*β* = -.44, *t* (1,357) = -2.04, *p* = .042) or upper-primary school levels (*β* = -.41, *t* (1,357) = -2.66, *p* = .008), a believer in the Pentecostal or Adventist religion (*β* = -.56, *t* (1,357) = -2.30, *p* = .022), orphaned (*β* = -.39, *t* (1,357) = -1.51, *p* = .131), a maternal orphan (*β* = -.58, *t* (615) = -1.69, *p* = .090), with a jobless caregiver (*β* = -1.39, *t* (1,437) = -2.29, *p* < .022), and resident in the Lira (*β* = -1.52, *t* (1,357) = -3.22, *p* < .001) or Rukungiri areas (*β* = -.86, *t* (1,357) = -1.65, *p* = .100), significantly or marginally *negatively* related with sexual risk behaviour of the adolescents.

Similarly, being less influenced by peers (*β* = -.74, *t* (1,357) = -4.92, *p* < .001), in a moderate socioeconomic status (*β* = -.28, *t* (1,357) = -1.93, *p* = .054), and prone to poverty reflected by absence of basic needs (*β* = -.18, *t* (1,357) = -4.49, *p* < .001), judgmental HIV stigma (*β* = -.05, *t* (1,357) = -1.55, *p* = .121), inattention (*β* = -.06, *t* (1,357) = -1.78, *p* = .076), and depression (*β* = -.07, *t* (1,357) = -1.94, *p* = .053) significantly or marginally *reduced* sexual risks in the adolescents. The remaining variables in this model[17] were not significantly associated with their sexual behaviour.

The combined psychosocial variables in this model explained .603 (60.3%) of the variance in sexual risk behaviour. This variance is higher than the explained variances in sexual risk behaviour in each of the models which were examined earlier, and provides further evidence that the psychosocial variables in this model (especially the aforesaid) mainly interrelate to influence the sexual risk behaviour of the adolescents who live in HIV-affected homes. It also implies that the variables which were not assessed in this model contributed to about 40% of the changes in their sexual risk behaviour. Hence, the second hypothesis for this study, is partly accepted.

[17] Namely, being a Catholic (*β* = -.27, *t* (1,357) = -1.28, *p* = .200) or Anglican (*β* = -.29, *t* (1,357) = -1.42, *p* = .157), orphaned at five and less years of age (*β* = .34, *t* (1,357) = 1.30, *p* = .193) or at more than five to nine years of age (*β* = .33, *t* (1,357) = 1.44, *p* = .149), orphaned for two or less years (*β* = -.31, *t* (1,357) = -.93, *p* = .353), orphaned for more than two to four years (*β* = -.14, *t* (1,357) = -.58, *p* = .560), jobless (*β* =.46, *t* (1,357) = .97, *p* = .332) or a student (*β* = .41, *t* (1,357) = .87, *p* = .385) or maid or driver or trader (*β* = .67, *t* (1,357) = 1.19, *p* = .232), in two homes for a lifetime (*β* =.17, *t* (1,357) = .88, *p* = .379), in the HIV-affected home for four or fewer years (*β* = .25, *t* (1,357) = .89, *p* = .371) or more than four to eight years (*β* = .39, *t* (1,357) = 1.30, *p* = .192) or more than eight to 12 years (*β* = .12, *t* (1,357) =.51, *p* = .612) or more than 12 to 16 years (*β* = -.09, *t* (1,357) = -.51, *p* = .613), with one to three people (*β* = -.20, *t* (1,357) = -.87, *p* = .387) or four to six people in the home (*β* = .09, *t* (1,357) = .75, *p* = .453), with no (*β* = -.25, *t* (1,357) = -1.18, *p* = .238) or one (*β* = -.07, *t* (1,357) = -.37, *p* = .713) or two (*β* = -.20, *t* (1,357) = -1.51, *p* = .291) sick people in the home, with two caregivers in a lifetime (*β* = .27, *t* (1,357) = 1.20, *p* = .230), with caregivers who are both parents (*β* = -.003, *t* (1,357) = -.01, *p* = .989) or is a father/step father/brother (*β* = -.11, *t* (1,357) = -.42, *p* = .678) or is a mother/step mother/sister (*β* = .25, *t* (1,357) = 1.16, *p* = .248) or is a grandparent (*β* = -.09, *t* (1,357) = -.38, *p* = .705), with the caregiver who is jobless (*β* = -.32, *t* (1,357) = -.85, *p* = .393) or farmer (*β* = .05, *t* (1,357) = .18, *p* = .859) or trader (*β* = -.14, *t* (1,357) = -.48, *p* = .635) or public/civic worker (*β* = -.16, *t* (1,357) = -.50, *p* = .616), with a caregiver who drinks alcohol (*β* = -.28, *t* (1,357) = -.61, *p* = .539) or does not drink alcohol (*β* = -.52, *t* (1,357) = -1.17, *p* = .243), with a caregiver discusses HIV/sexuality matters (*β* = .23, *t* (1,357) = 1.39, *p* = .165), a Musoga (*β* = .32, *t* (1,357) = 1.14, *p* = .256) or Munyankole (*β* = .41, *t* (1,357) = .77, *p* = .440) or Mukiga (*β* = .45, *t* (1,357) = .86, *p* = .388), beneficiary of HIV or psychosocial care (*β* = -.03, *t* (1,357) = -.20, *p* = .839), either in the first economic quartile (*β* = -.12, *t* (1,357) = -.67, *p* = .501) or second economic quartile (*β* =-.09, *t* (1,357) = -.59, *p* = .558), and prone to social distancing HIV stigma (*β* = .01, *t* (1,357) =.38, *p* = .702), anger (*β* =.02, *t* (1,357) = .65, *p* = .514), anxiety (*β* = -.02, *t* (1,357) = -.75, *p* = .455), loneliness (*β* = -.03, *t* (1,357) = -.87, *p* = .386), disobedience (*β* = .06, *t* (1,357) = .94, *p* = .346), disruptiveness (*β* =.03, *t* (1,357) = .79, *p* = .427), aggressiveness (*β* = -.08, *t* (1,357) = -1.19, *p* = .231), social support (*β* = -.01, *t* (1,357) = -.31, *p* = .754), self-control (*β* =.00, *t* (1,357) = -.02, *p* = .984) and socialisation (*β* = -.04, *t* (1,357) = -1.38, *p* = .167).

© University of Pretoria

5.3.2.7 Summary of the coping-mediated psychosocial predictors of sexual risk behaviour

The results of the GLM tests on six sub-hypotheses showed that the observed coping methods mediated differently in the associations between the observed socio-demographic attributes, peer influence, socioeconomic status, community stressors, psychosocial distresses, and sexual risk behaviour of the adolescents who were involved in this study.

In the model that consisted of the observed socio-demographic attributes and coping methods against sexual risk behaviour, coping by deflection methods significantly or marginally *positively* mediated the relationships between living with or with no HIV infection, female gender, younger age, school attendance, involvement in work that provides unreliable income such as house/bar tending, living with caregivers who are HIV-positive, some sociocultural norms of the Baganda or Lango tribes, receiving HIV/psychosocial care, and sexual risk behaviour. This means that the deflective coping methods used by the adolescents influenced the relationships between these socio-demographic factors and sexual risk behaviour by increasing the risks.

On the other hand, coping by self-control, socialisation or social support methods significantly *negatively* mediated in the associations between school attendance and attainment, the Catholic and Anglican religious convictions, the short period of orphanhood, living with one to three people in the home, living with two caregivers (family stability) and with caregivers who are jobless or engage in farming or trading or civic work, residing in Lira or Rukungiri districts, and sexual risk behaviour. This implies that these three coping methods influenced the relationships between the aforesaid socio-demographic circumstances and sexual risk behaviour of the adolescents by reducing the risks. The four coping methods contributed to the associations between the aforesaid socio-demographic factors and sexual risk behaviour of adolescents by 8.4%.

In the model that consisted of peer influence, socioeconomic status and coping methods against sexual risk behaviour, coping by deflection methods significantly *positively* mediated the relationships between being peer influenced and in a higher socioeconomic status and sexual risk behaviour. This implies that the deflective coping methods adopted by the adolescents in this study affect the relationships between peer influence, socioeconomic status and sexual risk behaviour by increasing risks. However, proneness to coping by self-control and socialisation significantly *negatively* mediated the relationships between peer influence, socioeconomic status and sexual risk behaviour in this population. This means that these two coping methods influence the relationships among these variables by reducing risks. The four coping methods contributed to the associations between peer influence, socioeconomic status and sexual risk behaviour of adolescents by 10.4%.

In the model that consisted of the observed community stressors and coping methods against sexual risk behaviour, coping by deflection significantly *positively* mediated the relationships between proneness to personal threats and interpersonal problems and sexual risk behaviour. This implies that the deflective methods of coping with adversities which were used by the adolescents influenced the relationships among these

© University of Pretoria

variables by increasing risk. However, coping by self-control or socialisation or receiving social support significantly or marginally *negatively* mediated the relationships between proneness to poverty reflected by absence of basic needs and sexual risk behaviour. This implies that the three coping methods influence the relationships among these variables by reducing risk. The four observed coping methods contributed to the relations between the aforesaid community stressors and sexual risk behaviour of adolescents by 2.8%.

In the model that consisted of the observed psychosocial distresses and coping methods against sexual risk behaviour, coping by deflection significantly *positively* mediated in the relationships between experience of anger, anxiety, psychosis, suicide ideation, disobedience, disruptiveness, destructiveness, delinquency, and sexual risk behaviour. This means that deflective methods of coping used by adolescents influence the relationships among these variables by reducing sexual risk. However, proneness to coping by socialisation significantly *negatively* mediated the relationship between proneness to inattentiveness and depression and sexual risk behaviour in this population. This implies that the socialisation strategies of adolescents influence the relationships between these variables by reducing risks. The four coping methods contributed to the associations between the aforesaid psychosocial distresses and sexual risk behaviour of adolescents by 1.8%.

In the model which consisted of all observed psychosocial and sexual risk variables in the theorised structural model for this study, only coping by deflection significantly *positively* mediated in the relationships between adolescents' socio-demographic attributes (especially living with or without HIV infection and being female, younger, a farmer, in one home for the lifetime, with one caregiver in a lifetime, with a caregiver who is HIV positive or negative, a Muganda or Lango by tribe), community stressors (such as being prone to either personal threats or interpersonal problems), psychosocial distresses (especially being prone to either sleep unrest or psychosis or somatisation or suicide ideation or destructiveness or delinquency) and sexual risk behaviour.

Overall, whereas coping with adversities using deflection strategies positively mediated the associations between psychosocial factors and sexual risk behaviour of adolescents in all models, coping with adversities using either self-control or socialisation or social support methods negatively mediated these associations.

This subsection has presented the coping-mediated psychosocial predictors of sexual risk behaviour in all adolescents involved in this study. The next subsection presents other probable mediators in the associations between variables in the different combinations of exogenous constructs and sexual risk behaviour, without controlling for effects of coping.

5.3.3 Other mediators in relationships between psychosocial factors and sexual risk behaviour

To identify other mediators in the associations between the psychosocial factors and sexual risk behaviour of adolescents and obtain an exhaustive list of important variables for further examination in the SEM

© University of Pretoria

path models, we examined six other models without controlling for the effects of coping methods. The models included (1) socio-demographic attributes, peer influence, socioeconomic status and sexual risk behaviour; (2) socio-demographic attributes, community stressors and sexual risk behaviour; (3) socio-demographic attributes, psychosocial distresses and sexual risk behaviour; (4) community stressors, peer influence, socioeconomic status and sexual risk behaviour; (5) psychosocial distresses, peer influences, socioeconomic status and sexual risk behaviour; and (6) community stressors, psychosocial distresses and sexual risk behaviour.

Data of the tests for relationships between the variables in these models is presented in Tables 30 to 35 according to the sub-hypotheses. Data for the tests performed on these models whilst controlling for effects of the categorical levels and covariates of the variables, is indicated in Table 36 and presented in appendix 3.

5.3.3.1 Socio-demographics and sexual risk behaviour when controlling for peer-socioeconomic influence

The **seventh sub-hypothesis** of the second hypothesis states that **"peer influence and socioeconomic status will significantly mediate the relationships between socio-demographic attributes and sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the tests for effects of the exogenous variables in this model, which is presented in Table 30 below, show that HIV status, gender, age group, occupation, ethnicity, schooling status, locality of residence, number of sick people in the home, number and type of caregivers lived with, caregivers' HIV status and type of work and use of alcohol, access to HIV or psychosocial care, peer influence and socioeconomic status, significantly affected sexual risk behaviour of these adolescents. The other variables in this model did not significantly affect their sexual risk behaviour.

After controlling for categorical levels and covariates of all observed exogenous factors in this model, results of tests for strengths and directions of relationships among them, which are summarised in Table 36 and presented in appendix 3, showed that being HIV infected (β = .90, t (1,357) = 3.42, p < .001), HIV uninfected (β = .35, t (1,357) = 1.96, p = .051), female (β = .34, t (1,357) = 2.52, p = .012), aged 10 – 14 years (β = .17, t (1,357) = 3.78, p < .001), either a farmer (β = 1.23, t (1,357) = 2.11, p = .035) or a trader (β = 1.77, t (1,357) = 2.54, p = .011) or a civic worker (β = 1.50, t (1,357) = 2.52, p = .012), significantly *positively* associated with sexual risk behaviour of these adolescents.

Similarly, living with a caregiver who is a biological mother or step mother or sister (β = .42, t (1,357) = 1.58, p = .114) and with a caregiver who is HIV positive (β = .48, t (1,357) = 2.03, p = .043), being a Muganda (β = .80, t (1,357) = 2.48, p = .013) and receiving HIV/psychosocial care (β = .59, t (1,357) = 2.99, p = .003), significantly or marginally *positively* associated with their sexual risk behaviour.

However, being in school (β = -.69, t (1,357) = -3.12, p = .002), a believer of the Anglican religion (β = -.50, t (1,357) = -1.94, p = .053), orphaned for more than two to four years (β = -.47, t (1,357) = -1.59, p = .112),

© University of Pretoria

with no (*β* = -.60, *t* (1,357) = -2.30, *p* = .021) or one sick person (*β* = -.49, *t* (1,357) = -2.12, *p* = .034) in the home, with two lifetime caregivers (*β* = -.52, *t* (1,357) = -1.92, *p* = .055), with a caregiver who is jobless (*β* = -.73, *t* (1,357) = -1.54, *p* = .123) or a trader (*β* = -.86, *t* (1,357) = -2.34, *p* = .019) or a civic worker (*β* = -.79, *t* (1,357) = -2.07, *p* = .039), resident in the Lira (*β* = -1.74, *t* (1,357) = -3.06, *p* = .002) or Rukungiri areas (*β* = -2.65, *t* (1,357) = -4.19, *p* <.001), significantly or marginally *negatively* associated with sexual risk behaviour of these adolescents.

Table 30. Effects of peer influence and socioeconomic status in the relationships between demographics and sexual risks of adolescents

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	4812.418[a]	57	84.428	14.722****	<.001
Intercept	1.526	1	1.526	.266	.606
Personal attributes					
HIV status	67.917	2	33.958	5.921***	.003
Gender	36.446	1	36.446	6.355***	.012
Age group	82.008	1	82.008	14.300****	<.001
Highest education level	7.332	2	3.666	.639	.528
Religious conviction	23.998	3	7.999	1.395	.243
Occupation	99.246	4	24.811	4.326***	.002
Parental death *(Yes)*	1.141	1	1.141	.199	.656
Age at death of first parent	0.588	2	0.294	.051	.950
Span of orphan-hood	18.846	2	9.423	1.643	.194
Family attributes					
Homes stability/lived in	11.867	2	5.934	1.035	.356
Span in HIV-affected home	33.542	4	8.385	1.462	.211
Number of people in the home	11.099	2	5.550	0.968	.380
Number of ill people in home	43.270	3	14.423	2.515**	.057
Caregivers' stability/lived with	33.405	2	16.703	2.912**	.055
Type of the usual caregiver	62.989	4	15.747	2.746***	.027
Work of usual caregiver	54.217	4	13.554	2.363**	.051
Alcohol use by usual caregiver	183.547	2	91.774	16.003****	<.001
Caregiver to child HIV/sexuality talks	0.629	1	0.629	.110	.741
Caregivers' HIV status	41.628	2	20.814	3.629***	.027
Environmental attributes					
Home locality	149.056	2	74.528	12.996****	<.001
Ethnicity or tribe	60.450	5	12.090	2.108**	.062
Being in or out of school	55.696	1	55.696	9.712***	.002
HIV/psychosocial care	51.566	1	51.566	8.992***	.003
Peer influence and economic status					
Peer influence	837.986	1	837.986	146.121****	<.001
Socioeconomic status	73.692	3	24.564	4.283***	.005

© University of Pretoria

Notes: [a] *R* Squared = .392 (Adjusted *R* Squared = .366). The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001[****], < .05[***], < .10[**]. The *F*-ratio of the source variable is marginally significant at a *p* value of > 0.10 to ≤ 0.14[*].

Similarly, experiencing less peer influence (*β* = -1.96, *t* (1,357) = -12.09, *p* <.001) and a low (*β* = -.56, *t* (1,357) = -2.72, *p* = .007) or quite moderate (*β* = -.35, *t* (1,357) = -1.74, *p* = .082) or moderate (*β* = -.58, *t* (1,357) = -3.25, *p* <.001) socioeconomic status, significantly or marginally *negatively* related with their sexual risk behaviour. The other variables in this model[18] did not significantly relate with their sexual risk behaviour.

The combined variables in this model explained .366 (36.6%) of the variance in sexual risk behaviour. This is .076 (7.6 %) higher than the explained variance in the model that consisted of socio-demographic and sexual risk variables only, which was .290 (29%). This provides evidence that peer and socioeconomic influence, especially experiencing less peer influence and a low to moderate socioeconomic status, to some extent mediated the associations between the aforesaid socio-demographic attributes and sexual risk behaviour of adolescents involved in this study. Hence, the seventh sub-hypothesis of the second hypothesis, is accepted.

5.3.3.2 Socio-demographics and sexual risk behaviour, whilst controlling for effects of community stressors

The **eighth sub-hypothesis** of the second hypothesis states that **"the observed community stressors will significantly mediate the relationships between socio-demographic attributes and sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the tests for effects of the exogenous variables in this model, which is presented in Table 31 below, showed that HIV status, gender, age group, religious conviction, occupation, number of people in the home, usual caregivers' type of work, caregivers' intake of alcohol, caregivers' HIV status, district of residence, ethnicity, schooling status, poverty reflected by absence of basic needs, personal threats, and interpersonal problems either significantly or marginally affected sexual risk behaviour of these adolescents. The other variables in this model did not significantly affect their sexual risk behaviour.

After controlling for effects of categorical levels and covariates of the observed exogenous factors in this model, data on the tests for strengths and directions of relationships between them, which is provided in Table 36 and presented in appendix 3, showed that being HIV infected (*β* = .54, *t* (1,357) = 2.23, *p* = .026), HIV uninfected (*β* = .32, *t* (1,357) = 2.01, *p* = .045), female (*β* = .24, *t* (1,357) = 2.02, *p* = .044), aged 10 to 14 years (*β* = .21, *t* (1,357) = 5.38, *p* < .001), orphaned in childhood (*β* = .49, *t* (1,357) = 1.66, *p* = .098) or preadolescence (*β*

[18] i.e. Being educated up to lower (*β* = -.29, *t* (1,357) = -1.11, *p* = .269) or upper primary (*β* = -.18, *t* (1,357) = -.94, *p* = .348) school levels, Catholic (*β* = -.33, *t* (1,357) = -1.25, *p* = .210), Pentecostal/Adventist (*β* = -.42, *t* (1,357) = -1.37, *p* = .170), orphaned (*β* = -.14 *t* (1,357) = -.45, *p* = .656), orphaned in childhood (*β* = .09, *t* (1,357) = .29, *p* = .769) or pre-adolescence (*β* = .03, *t* (1,357) = .10, *p* = .918), orphaned for two or fewer years (*β* = -.56, *t* (1,357) = -1.33, *p* = .183), unemployed (*β* = .76, *t* (1,357) = 1.29, *p* = .197), in one home (*β* = -.11, *t* (1,357) = -.37, *p* = .710) or two homes in a lifetime (*β* = -.30, *t* (1,357) = -1.25, *p* = .210), in a home for four and less years (*β* = -.43, *t* (1,357) = -1.23, *p* = .220) or more than four to eight years (*β* = -.14, *t* (1,357) = -.36, *p* = .718) or more than eight to 12 years (*β* = -.21, *t* (1,357) = -.69, *p* = .486) or more than 12 to 16 years (*β* = -.27, *t* (1,357) = -1.09, *p* = .273), in the home with one to three people (*β* = -.27, *t* (1,357) = -.94, *p* = .349) or four to six people (*β* = .10, *t* (1,357) = .71, *p* = .478), with two sick people in the home (*β* = -.23, *t* (1,357) = -.96, *p* = .337), with one caregiver (*β* = -.22, *t* (1,357) = -.74, *p* = .457), with caregivers who are both parents (*β* = -.19, *t* (1,357) = -.67, *p* = .503) or father/brother (*β* = -.28, *t* (1,357) = -.84, *p* = .400) or grandparents (*β* = .02, *t* (1,357) = .07, *p* = .946), with a caregiver who is a farmer (*β* = -.39, *t* (1,357) = -1.18, *p* = .239), with caregiver who uses alcohol (*β* = .49, *t* (1,357) =.86, *p* = .388) or does not use alcohol (*β* = -.43, *t* (1,357) = -.77, *p* = .439), with a caregiver who discusses sexuality issues (*β* = .07, *t* (1,357) = .33, *p* = .741), with a caregiver who is HIV negative (*β* = .09, *t* (1,357) = .33, *p* = .744), and either a Musoga (*β* = .03, *t* (1,357) = .09, *p* = .921) or Munyankole (*β* = .39, *t* (1,357) = .61, *p* = .545) or Mukiga (*β* = .46, *t* (1,357) = .69, *p* = .489) or Lango and Acholi (*β* = .77, *t* (1,357) = 1.46, *p* = .144).

© University of Pretoria

= .41, *t* (1,357) = 1.58, *p* = .113), significantly or marginally *positively* associated with sexual risk behaviour of the adolescents.

Table 31. Effects of community stressors in links among demographics and sexual risk behaviour of all 1,437 adolescents in the sample

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	6261.155[a]	58	107.951	23.350****	<.001
Intercept	38.703	1	38.703	8.371***	.004
Personal attributes					
HIV status	28.538	2	14.269	3.086***	.046
Gender	18.777	1	18.777	4.061***	.044
Age group	133.944	1	133.944	28.972****	<.001
Highest education level	12.179	2	6.090	1.317	.268
Religious conviction	27.466	3	9.155	1.980*	.115
Occupation	36.271	4	9.068	1.961**	.098
Parental death *(Yes)*	8.799	1	8.799	1.903	.168
Age at death of first parent	14.522	2	7.261	1.571	.208
Span of orphan-hood	10.321	2	5.161	1.116	.328
Family attributes					
Homes stability/lived in	14.796	2	7.398	1.600	.202
Span in HIV-affected home	10.199	4	2.550	.552	.698
Number of people in the home	26.395	2	13.198	2.855**	.058
Number of sick people in home	11.312	3	3.771	.816	.485
Caregivers' stability/lived with	1.970	2	0.985	.213	.808
Type of the usual caregiver	15.483	4	3.871	.837	.501
Work of usual caregiver	38.356	4	9.589	2.074**	.082
Alcohol use by usual caregiver	43.901	2	21.950	4.748***	.009
Caregiver to child HIV/sexuality talks	4.340	1	4.340	.939	.333
Caregivers' HIV status	48.344	2	24.172	5.228***	.005
Environmental attributes					
Home locality	97.454	2	48.727	10.540****	<.001
Ethnicity or tribe	59.198	5	11.840	2.561***	.026
Being in or out of school	30.936	1	30.936	6.691***	.010
HIV/psychosocial care	9.400	1	9.400	2.033	.154
Community stressors					
Poverty	180.872	1	180.872	39.123****	<.001
Personal threats	138.335	1	138.335	29.922****	<.001
Interpersonal problems	1441.748	1	1441.748	311.853****	<.001
HIV related stigma					
Blame/judgmental attitudes	2.181	1	2.181	.472	.492
Social distancing attitudes	1.313	1	1.313	.284	.594

Notes: [a]*R* Squared = .511 (Adjusted *R* Squared = .489). The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**. The *F*-ratio of the source variable is marginally significant at a *p* value of > .10 to ≤ .14*.

© University of Pretoria

Similarly, living with four to six people in the home (*β* = .27, *t* (1,357) = 2.08, *p* = .038), with a caregiver who is a farmer (*β* = .84, *t* (1,357) = 1.57, *p* = .117) and either HIV-negative (*β* =.69, *t* (1,357) = 3.22, *p* = .001) or HIV-positive (*β* = .61, *t* (1,357) = 2.59, *p* = .010), being a Muganda (*β* = .76, *t* (1,357) = 2.61, *p* = .009) or Lango (*β* = .94, *t* (1,357) = 2.00, *p* = .046), and experiencing personal threats (*β* = .21, *t* (1,357) = 5.47, *p* < .001) and interpersonal problems (*β* = .84, *t* (1,357) = 17.66, *p* < .001), significantly or marginally *positively* associated with their sexual risk behaviour.

However, being educated up to upper-primary school levels (*β* = -.28, *t* (1,357) = -1.59, *p* = .111), a believer in the Catholic (*β* = -.36, *t* (1,357) = -1.55, *p* = .122) or Anglican (*β* = -.45, *t* (1,357) = -1.92, *p* = .055) or Pentecostal/Adventist (*β* = -.64, *t* (1,357) = -2.34, *p* =.020) faiths, orphaned for two or less years (*β* = -.56, *t* (1,357) = -1.29, *p* =.137), with no sick person in the home (*β* = -.36, *t* (1,357) = -1.49, *p* = .137), and with a caregiver who is jobless (*β* = -.82, *t* (1,357) = -1.94, *p* =.053) or a trader (*β* = -.59, *t* (1,357) = -1.79, *p* = .072) or a civic worker (*β* = -.56, *t* (1,357) = -1.60, *p* =.109) significantly or marginally *negatively* associated with sexual risk behaviour of these adolescents. Similarly, being resident in Lira (*β* = -1.73, *t* (1,357) = -3.36, *p* < .001) or Rukungiri (*β* = -1.89, *t* (1,357) = -3.31, *p* < .001), currently in school (*β* = -.52, *t* (1,357) = -2.59, *p* = .010), and prone to poverty reflected by absence of basic needs (*β* = -.25, *t* (1,357) = -6.26, *p* < .001) significantly *negatively* associated with sexual risk behaviour. The other variables in this model[19] did not significantly associate with their sexual risk behaviour.

The combined variables in this model explained .489 (48.9%) of the variance in sexual risk behaviour. This is .199 (19.9%) higher than the variance in sexual risk behaviour in the model that consisted of socio-demographic attributes only, which was .290 (29%). This provides evidence that the community stressors, especially proneness to poverty reflected by absence of basic needs, personal threats and interpersonal problems, significantly mediated the relationships between the socio-demographic attributes and sexual risk behaviour of these adolescents. Hence, the eighth sub-hypothesis of the second hypothesis, is largely accepted.

5.3.3.3 Socio-demographics and sexual risk behaviour while controlling for effects of distresses

The **ninth sub-hypothesis** of the second hypothesis states that **"psychosocial distresses will significantly mediate the relationships between socio-demographic attributes and sexual risk behaviour of adolescents who live in HIV-affected homes".**

[19] These include being educated up to any lower-primary school level (*β* = -.32, *t* (1,357) = -1.33, *p* = .183), orphaned (*β* = -.39 *t* (1,357) = -1.38, *p* = .168), orphaned for more than two to four years (*β* = -.16, *t* (1,357) = -.59, *p* = .554), either jobless (*β* = .39, *t* (1,357) = .73, *p* = .465) or a student (*β* = .72, *t* (1,357) = 1.38, *p* = .169) or maid/trader (*β* = .92, *t* (1,357) = 1.46, *p* = .145), in one (*β* = .19, *t* (1,357) = .73, *p* = .467) or two (*β* = -.14, *t* (1,357) = -.66, *p* = .512) homes in a lifetime, in the HIV-affected home for four and less years (*β* = .05, *t* (1,357) = .16, *p* = .876) or more than four to eight years (*β* = .26, *t* (1,357) = .76, *p* = .447) or more than eight to 12 years (*β* = .14, *t* (1,357) = .51, *p* = .608) or more than 12 to 16 years (*β* = -.07, *t* (1,357) = -.33, *p* = .740), in the home with one to three people (*β* = -.14, *t* (1,357) = -.52, *p* = .602), with one (*β* = -.29, *t* (1,357) = -1.37, *p* = .170) or two (*β* = -.27, *t* (1,357) = -1.24, *p* = .215) sick people in the home, with one (*β* = .06, *t* (1,357) = .22, *p* = .827) or two (*β* = -.04, *t* (1,357) = -.17, *p* = .864) caregivers, with caregivers who are either both parents (*β* = .02, *t* (1,357) = .06, *p* = .949) or father/brother (*β* = -.19, *t* (1,357) = -.65, *p* = .513) or mother/sister (*β* = .22, *t* (1,357) = .94, *p* = .346) or grandparents (*β* = .02, *t* (1,357) = .09, *p* = .928), with a caregiver who is a farmer (*β* = -.25, *t* (1,357) = -.83, *p* = .408), with caregivers who drink (*β* = -.07, *t* (1,357) =-.13, *p* = .899) or do not drink (*β* = -.51, *t* (1,357) = -1.02, *p* = .310) alcohol, with caregivers who discuss HIV/sexuality issues (*β* = .18, *t* (1,357) = .97, *p* = .333), a Musoga (*β* = .19, *t* (1,357) = .60, *p* = .546) or Munyankole (*β* = .68, *t* (1,357) = 1.15, *p* = .249) or Mukiga (*β* = .87, *t* (1,357) = 1.46, *p* = .145), a recipient of HIV/psychosocial care (*β* = .25, *t* (1,357) = 1.43, *p* = .154) and prone to judgmental HIV stigma (*β* = .02, *t* (1,357) = .69, *p* = .492) and social distancing HIV stigma (*β* = -.01, *t* (1,357) = -.53, *p* = .594).

© University of Pretoria

Results of the tests for effects of the exogenous variables in this model, which are provided in Table 32, show that HIV status, gender, age group, education level, number of homes lived in, span in HIV-affected home, caregivers' alcohol use, caregivers' HIV status, district of residence, ethnicity, schooling status, inattention, depression, psychosis, suicide ideation, disobedience, disruptiveness, destructiveness and delinquency significantly affected sexual risk behaviour of these adolescents. However, anger and sleep unrest marginally affected their sexual risk behaviour and the other variables which were included in this model did not.

Table 32. Effects of psychosocial distresses in links among demographics and sexual risks of all 1,437 adolescents in the sample

Source term of variation	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected model	7056.583[a]	67	105.322	26.080****	<.001
Intercept	67.195	1	67.195	16.639****	<.001
Personal attributes					
HIV status	44.591	2	22.295	5.521***	.004
Gender	43.912	1	43.912	10.874***	.001
Age group	168.270	1	168.270	41.668****	<,001
Highest education level	53.519	2	26.759	6.626***	.001
Religious conviction	20.661	3	6.887	1.705	.164
Occupation	16.547	4	4.137	1.024	.393
Parental death *(Yes)*	2.062	1	2.062	0.511	.475
Age at death of first parent	4.541	2	2.270	.562	.570
Span of orphan-hood	10.656	2	5.328	1.319	.268
Family context or attributes					
Homes stability/lived in	21.504	2	10.752	2.662**	.070
Span in HIV-affected home	34.867	4	8.717	2.158**	.072
Number of people in the home	6.607	2	3.303	.818	.442
Number of sick people in home	16.928	3	5.643	1.397	.242
Caregivers' stability/lived with	1.119	2	0.559	.139	.871
Type of the usual caregiver	21.291	4	5.323	1.318	.261
Work of usual caregiver	21.578	4	5.395	1.336	.254
Alcohol use of the usual caregiver	25.598	2	12.799	3.169***	.042
Caregiver to child HIV/sexuality talks	8.636	1	8.636	2.138	.144
Caregivers' HIV status	44.142	2	22.071	5.465***	.004
Environmental attributes					
Home locality	94.048	2	47.024	11.644****	<.001
Ethnicity or tribe	79.688	5	15.938	3.947***	.001
Being in or out of school	56.888	1	56.888	14.087****	<.001
HIV/psychosocial care	4.546	1	4.546	1.126	.289
Psychosocial distresses					
Anger	10.030	1	10.030	2.484*	.115

© University of Pretoria

Source term of variation	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Inattentiveness	13.146	1	13.146	3.255**	.071
Anxiety	0.521	1	0.521	.129	.719
Depression	23.607	1	23.607	5.846***	.016
Loneliness	7.113	1	7.113	1.761	.185
Sleep unrest	8.953	1	8.953	2.217*	.137
Psychosis	69.440	1	69.440	17.195****	<.001
Somatisation/fatigue	8.648	1	8.648	2.142	.144
Suicide ideation	17.394	1	17.394	4.307***	.038
Disobedience	38.168	1	38.168	9.451***	.002
Disruptiveness	16.399	1	16.399	4.061***	.044
Destructiveness	80.652	1	80.652	19.972****	<.001
Aggressiveness	0.170	1	0.170	.042	.837
Delinquency	411.010	1	411.010	101.776****	<.001

Notes: [a]*R* Squared = .575 (Adjusted *R* Squared = .553). The *F*-value of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**. The *F*-value of the source variable is marginally significant at a *p* value of > .10 to ≤ .14*.

After controlling for effects of categorical levels and covariates of exogenous variables, data of the tests for strengths and directions of relationships among them, which is indicated in Table 36 and presented in appendix 3, showed that being HIV infected (*β* =.54, *t* (1,357) = 2.42, *p* = .016) or uninfected (*β* =. 47, *t* (1,357) = 3.12, *p* = .002), female (*β* = .38, *t* (1,357) = 3.29, *p* = .001), in ages 10 – 14 years (*β* = .24, *t* (1,357) = 6.46, *p* <.001), a farmer (*β* = .80, *t* (1,357) = 1.59, *p* = .112), in one home for a lifetime (*β* = .53, *t* (1,357) = 2.08, *p* = .038), in the affected home for five to eight years (*β* = .60, *t* (1,357) = 1.89, *p* = .059), and with a caregiver who is HIV positive (*β* = .46, *t* (1,357) = 2.26, *p* = .024) or negative (*β* = .74, *t* (1,357) = 3.29, *p* = .001), significantly or marginally *positively* associated with sexual risk behaviour of these adolescents. Similarly, being a Muganda (*β* = .79, *t* (1,357) = 2.90, *p* = .004) or Lango (*β* = 1.38, *t* (1,357) = 3.09, *p* = .002) and prone to distresses like anger (*β* = .05, *t* (1,357) = 1.58, *p* = .115), sleep unrest (*β* = .08, *t* (1,357) = 1.49, *p* = .137), psychosis (*β* = .15, *t* (1,357) = 4.15, *p* <.001), suicide (*β* = .11, *t* (1,357) = 2.08, *p* = .038), disobedience (*β* = .19, *t* (1,357) = 3.07, *p* = .002), disruptiveness (*β* = .08, *t* (1,357) = 2.02, *p* = .044), destructiveness (*β* = .41, *t* (1,357) = 4.47, *p* <.001) and delinquency (*β* = .54, *t* (1,357) = 10.09, *p* <.001), significantly or marginally *positively* associated with their sexual risk behaviour.

However, being educated up to any lower (β = -.69, t (1,357) = -3.04, p = .002) or upper primary (*β* = -.58, t (1,357) = -3.56, *p* < .001) school levels, currently in school (*β* = -.71, *t* (1,357) = -3.75, *p* < .001), a believer in the Catholic (*β* = -.38, *t* (1,357) = -1.73, *p* = .084) or Anglican (*β* = -.39, *t* (1,357) = -1.78, *p* = .076) or Pentecostal/Adventist/Orthodox (*β* = -.57, *t* (1,357) = -2.23, *p* = .026) religions, orphaned for two or less years (*β* = -.55, *t* (615) = -1.61, *p* = .108), with one to three people in the home (*β* = -.59, *t* (1437) = -1.56, *p* = .119), with no sick person in the home (*β* = -.34, *t* (1,357) = -1.50, *p* = .133), and with a jobless caregiver (*β* = -.66, *t* (1,357) = -1.67, *p* = .096), significantly or marginally *negatively* associated with sexual risk behaviour of these

© University of Pretoria

adolescents. Similarly, being resident in Lira (β = -2.26, t (1,357) = -4.64, p < .001) or Rukungiri (β = -.91, t (1,357) = -1.65, p = .098) and prone to inattention (β = -.06, t (1,357) = -1.80, p = .071) and depression (β = -.09, t (1,357) = -2.42, p = .016), significantly or marginally *negatively* associated with their sexual risk behaviour. The other variables in this model[20] did not significantly associate with adolescents' sexual risk behaviour.

The combined variables in this model explained .553 (55.3%) of the variance in sexual risk behaviour. This is .263 (26.3%) higher than the variance in sexual risk behaviour in the model that consisted of socio-demographic attributes only, which was .29 (29%). This is more evidence that some observed psychosocial distresses especially anger, inattention, depression, sleep unrest, psychosis, suicide ideation, disobedience, disruptiveness, destructiveness and delinquency, to a great extent, mediated the relationships between socio-demographic attributes and sexual risk behaviour of the adolescents. Hence, the ninth sub-hypothesis of the second hypothesis is partially accepted.

5.3.3.4 Community stressors and sexual risk behaviour while controlling for peer-socioeconomic influence

The **tenth sub-hypothesis** of the second hypothesis states that **"peer influence and socioeconomic status will significantly mediate the relationships between the observed community stressors and sexual risk behaviour of adolescents who live in HIV-affected homes".**

Data of the tests for effects of the exogenous variables in this model, which is presented in Table 33 below, show that peer influence, socioeconomic status, poverty, personal threats, interpersonal problems, and social distancing HIV stigma, significantly affected sexual risk behaviour of these adolescents – while judgmental HIV stigma, did not significantly affect their sexual risk behaviour.

After controlling for effects of the categorical levels and covariates of the observed variables in this model, data of the test for strength and direction of relationships among them indicated in Table 36 and presented in appendix 3 showed that proneness to personal threats (β = .24, t (1,437) = 6.78, p < .001) and interpersonal problems (β = .88, t (1,437) = 19.82, p < .001) significantly *positively* associated with sexual risk behaviour of these adolescents. However, experiencing less peer influence (β = -.99, t (1,437) = -6.90, p < .001), a low (β = -.62, t (1,437) = -3.11, p = .002) or quite moderate (β = -.35, t (1,437) = -1.95, p = .051) or moderate (β = -.52, t (1437) = -3.24, p = .001) socioeconomic status, poverty reflected by absence of basic needs (β = -.22, t (1,437) = -5.33, p <.001) and social distancing HIV stigma (β = -.05, t (1,437) = -2.22, p = .027), significantly

[20] i.e. being orphaned (β = -.19 t (1,357) = -.72, p = .475), orphaned in childhood (β = .11 t (1,357) = .49, p = .684), orphaned in preadolescence (β = .24 t (1,357) = .99, p = .319), orphaned for two and less years (β = -.48, t (1,357) = -1.35, p = .179) or for more than two to four years (β = -.33, t (1,357) = -1.29, p = .194), jobless (β = .49, t (1,357) = .98, p = .326) or a student (β = .59, t (1,357) = 1.21, p = .227) or maid/trader/driver (β = .81, t (1,357) = 1.37, p = .171), in two homes for a lifetime (β = .150, t (1,357) = .739, p = .460), in the home for four and less years (β = .29, t (1,357) = .98, p = .325) or for more than eight to 12 years (β = .23, t (1,357) = .89, p = .373) or for more than 12 to 16 years (β = -.12, t (1,357) = -.56, p = .575), in the home with one to three people (β = -.28, t (1,357) = -1.13, p = .258) or four to six people (β = .03, t (1,357) = .24, p = .807), with one (β = -.03, t (1,357) = -.15, p = .883) or two sick persons (β = -.17, t (1,357) = -.83, p = .406) in the home, with one (β = .09, t (1,357) = .39, p = .700) or two (β = .12, t (1,357) = .52, p = .603) caregivers, with both parents (β = -.15, t (1,357) = -.59, p = .554) or father/brother (β = -.22, t (1,357) = -.81, p = .418) or mother/sister (β = .18, t (1,357) = .79, p = .428) or grandparents (β = -.15, t (1,357) = -.59, p = .550) as the caregiver, with a caregiver who is a farmer (β = -.08, t (1,357) = -.29, p = .774) or a trader (β = -.32, t (1,357) = -1.02, p = .309) or a civic worker (β = -.25, t (1,357) = -.78, p = .437), with caregiver who uses alcohol (β = -.333, t (1,357) = -.69, p = .488) or does not use alcohol (β = -.64, t (1,357) = -1.37, p = .172), with caregivers who discuss HIV/sexuality issues (β = .26, t (1,357) = 1.46, p = .144), a Musoga (β = .30, t (1,357) = 1.03, p = .304) or Munyankole (β = .40, t (1,357) = .73, p = .468) or Mukiga (β = .13, t (1,357) = .23, p = .821), a recipient of HIV/psychosocial care (β = .18, t (1,357) = 1.06, p = .289) and prone to anxiety (β = .01, t (1,357) = .36, p = .719), loneliness (β = -.06, t (1,357) = -1.33, p = .185), somatisation (β = .06, t (1,357) = 1.46, p = .144), and aggression (β = -.01, t (1,357) = -.21, p = .837).

© University of Pretoria

negatively associated with their sexual risk behaviour. Proneness to judgmental HIV stigma (β = .003, t (1,437) = .09, p = .932) did not significantly associate with their sexual risk behaviour.

Table 33. Effects of peer influence and socioeconomic status in the relations between stressors and sexual risk behaviour of adolescents

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	5411.193[a]	9	601.244	118.048****	<.001
Intercept	474.466	1	474.466	93.156****	<.001
Peer influence-socioeconomic status					
Peer influence	242.720	1	242.720	47.655****	<.001
Socioeconomic status	70.215	3	23.405	4.595***	.003
Community stressors					
Poverty	144.454	1	144.454	28.362****	<.001
Personal threats	234.265	1	234.265	45.995****	<.001
Interpersonal problems	2000.022	1	2000.022	392.683****	<.001
Judgmental HIV-related stigma	.038	1	.038	.007	.932
Social distancing HIV-related stigma	25.077	1	25.077	4.924***	.027

Note: [a.] R Squared = .427 (Adjusted R Squared = .423). The F-value or ratio of the source variable is statistically significant at a probability (p) value of < .001****, < .05***, < .10**, and marginally significant at a p value of > .10 to ≤ .14*

The combined exogenous variables in this model explained .423 (42.3%) of the variance in sexual risk behaviour. This is .024 (2.4%) higher than the variance in sexual risk behaviour in the model that consisted of the observed community stressors only, which was .399 (39.9%). This provides further evidence that low peer influence and socioeconomic status, to some extent, mediated the associations between the community stressors and sexual risk behaviour of the adolescents involved in this study. Hence, the tenth sub-hypothesis of the second hypothesis, is accepted.

5.3.3.5 Psychosocial distresses and sexual risk behaviour while controlling for peer-socioeconomic influence

The **eleventh sub-hypothesis** of the second hypothesis states that **"peer influence and socioeconomic status will significantly mediate the relationships between the observed psychosocial distresses and sexual risk behaviour of adolescents who live in HIV-affected homes".**

Data of the tests for effects of the exogenous variables in this model, which is presented in Table 34 below, show that peer influence, socioeconomic status, inattention, anxiety, depression, sleep unrest, psychosis, somatisation, suicide ideation, disruptiveness, destructiveness, aggressiveness, and delinquency significantly affected sexual risk behaviour of these adolescents. However, anger, loneliness, and disobedience, did not significantly affect their sexual risk behaviour.

After controlling for effects of categorical levels and covariates of the variables in this model, data of the test for strengths and directions of relationships among them (which is indicated in Table 36 and presented in

© University of Pretoria

appendix 3) showed that experience of anxiety (*β* = .04, *t* (1,437) = 1.79, *p* = .073), sleep unrest (*β* = .09, *t* (1,437) = 1.88, *p* = .060), psychosis (*β* = .12, *t* (1,437) = 3.07, *p* = .002), somatisation (*β* = .09, *t* (1,437) = 2.47, *p* = .014), suicide ideation (*β* = .14, *t* (1,437) = 2.66, *p* = .008), disruptiveness (*β* = .10, *t* (1,437) = 2.55, *p* = .011), destructiveness (*β* = .35, *t* (1,437) = 3.79, *p* <.001), and delinquency (*β* = .57, *t* (1,437) = 10.73, *p* <.001) significantly *positively* associated with sexual risk behaviour of these adolescents.

However, experiencing less peer influence (*β* = -1.32, *t* (1,437) = -8.82, *p* < .001), a low (*β* = -.73, *t* (1,437) = -4.22, *p* < .001) or quite moderate (*β* = -.52, *t* (1,437) = -3.16, *p* = .002) or moderate (*β* = -.61, *t* (1437) = -4.03, *p* < .001) socioeconomic status, inattention (*β* = -.06, *t* (1,437) = -1.87, *p* = .062), depression (*β* = -.14, *t* (1,437) = -3.52, *p* < .001) and aggression (*β* = -.18, *t* (1,437) = -2.50, *p* = .012), significantly *negatively* associated with their sexual risk behaviour. The other assessed psychosocial distresses notably, anger (*β* = .02, *t* (1,437) = .65, *p* = .515), loneliness (*β* = .02, *t* (1,437) = .41, *p* = .680) and disobedience (*β* = .09, *t* (1,437) = 1.30, *p* = .193), did not significantly associate with their sexual risk behaviour.

Table 34. Effects of peer influence and economic status in relationships between distresses and sexual risk behaviour of adolescents

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	5934.711[a]	18	329.706	69.319****	<.001
Intercept	643.044	1	643.044	135.197****	<.001
Peer influence-socioeconomic status					
Peer influence	370.210	1	370.210	77.835****	<.001
Socioeconomic status	118.292	3	39.431	8.290****	<.001
Psychosocial distresses					
Anger	2.020	1	2.020	.425	.515
Inattentiveness	16.574	1	16.574	3.485**	.062
Anxiety	15.262	1	15.262	3.209**	.073
Depression	59.014	1	59.014	12.407****	<.001
Loneliness	.808	1	.808	.170	.680
Sleep unrest	16.798	1	16.798	3.532**	.060
Psychosis	44.948	1	44.948	9.450***	.002
Somatisation/fatigue	28.927	1	28.927	6.082***	.014
Suicide ideation	33.727	1	33.727	7.091***	.008
Disobedience	8.054	1	8.054	1.693	.193
Disruptiveness	30.865	1	30.865	6.489***	.011
Destructiveness	68.364	1	68.364	14.373****	<.001
Aggressiveness	29.787	1	29.787	6.263***	.012
Delinquency	547.721	1	547.721	115.156****	<.001

Notes: [a] R Squared = .468 (Adjusted R Squared = .461). The F-value or ratio of the source variable is statistically significant at a p value of < .001****, < .05***, < .10**. The F-value of the source variable is marginally significant at a p value of > .10 to ≤ .14*.

© University of Pretoria

The combined exogenous variables in this model explained .461 (46.1%) of the variance in sexual risk behaviour. This is .04 (4%) higher than the variance in sexual risk behaviour in the model that consisted of variables for psychosocial distresses only, which was .421 (42.1%). This again provides evidence that low peer influence and socioeconomic status, to some extent, mediated the relationships between psychosocial distresses and sexual risk behaviour of the adolescents involved in this study. Hence, the eleventh sub-hypothesis of the second hypothesis is partially accepted.

5.3.3.6 Community stressors and sexual risk behaviour whilst controlling for psychosocial distresses

The **twelfth sub-hypothesis** of the second hypothesis states that **"psychosocial distresses will significantly mediate the relationships between community stressors and sexual risk behaviour of adolescents who live in HIV-affected homes".**

Data of the tests for effects of the exogenous variables in this model, which is presented in Table 35 below, show that poverty reflected by absence of basic needs, personal threats, interpersonal problems, HIV stigma, anger, inattention, depression, psychosis, suicide ideation, destructiveness, disruptiveness, aggressiveness and delinquency, significantly or marginally affected sexual risk behaviour of the adolescents. The other variables in this model (namely anxiety, loneliness, sleep unrest, somatisation, and disobedience), did not significantly affect their sexual risk behaviour.

After controlling for effects of covariates of the variables in this model, data of tests for strengths and directions of relationships among them, which is indicated in Table 36 and presented in appendix 3, showed that proneness to personal threats (β = .23, t (1,437) = 6.39, p < .001), interpersonal problems (β = .50, t (1,437) = 10.29, p < .001), anger (β = .053, t (1,437) = 1.92, p = .056), psychosis (β = .11, t (1,437) = 3.04, p = .002), suicide ideation (β = .18, t (1,437) = 3.45, p < .001), destructiveness (β = .36, t (1,437) = 4.04, p < .001), disruptiveness (β = .06, t (1,437) = 1.56, p = .119) and delinquency (β = .43, t (1,437) = 8.10, p < .001), significantly or marginally *positively* related with sexual risk behaviour of these adolescents.

However, proneness to poverty reflected by absence of basic needs (β = -.26, t (1,437) = -7.54, p < .001), judgmental HIV stigma (β = -.06, t (1,437) = -1.98, p = .048), social distancing HIV stigma (β = -.05, t (1,437) = -2.39, p = .017), inattention (β = -.06, t (1,437) = -1.83, p = .068), depression (β = -.18, t (1437) = -4.72, p < .001) and aggression (β = -.13, t (1437) = -1.93, p < .054), significantly *negatively* associated with their sexual risk behaviour. The other observed variables in this model namely, anxiety (β = .02, t (1437) =.89, p = .374), loneliness (β = -.01, t (1437) = -.31, p = .756), sleep unrest (β = .06, t (1437) = 1.19, p = .235), somatisation (β = .03, t (1437) = .74, p = .457) and disobedience (β = .08, t (1437) = 1.35, p = .178), did not significantly associate with their sexual risk behaviour.

© University of Pretoria

The combined variables in this model explained .506 (50.6%) of the variance in sexual risk behaviour. This is .107 (10.7%) higher than the variance in sexual risk behaviour in the model that consisted of community stressors only, which was .399 (39.9%). This again provides evidence that the internalising and externalising psychosocial distresses, especially anger, inattentiveness, depression, psychosis, suicide ideation, disruptiveness, destructiveness, aggressiveness and delinquency, to some extent mediated the relationships between the observed community stressors and sexual risk behaviour of the adolescents involved in this study. Hence, the twelfth sub-hypothesis of the second hypothesis is partially accepted.

Table 35. Effects of psychosocial distress in the relationships between stressors and sexual risk behaviour of all 1,437 adolescents

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	6503.723[a]	19	342.301	78.543****	<.001
Intercept	474.210	1	474.210	108.810****	<.001
Community stressors					
Poverty	247.647	1	247.647	56.824****	<.001
Personal threats	177.646	1	177.646	40.762****	<.001
Interpersonal problems	462.076	1	462.076	106.026****	<.001
HIV-related stigma					
Blame/judgmental attitudes	17.093	1	17.093	3.922***	.048
Social distancing attitudes	24.943	1	24.943	5.723***	.017
Psychosocial distresses					
Anger	15.990	1	15.990	3.669**	.056
Inattentiveness	14.527	1	14.527	3.333**	.068
Anxiety	3.446	1	3.446	.791	.374
Depression	97.106	1	97.106	22.282****	<.001
Loneliness	.421	1	.421	.097	.756
Sleep unrest	6.156	1	6.156	1.413	.235
Psychosis	40.244	1	40.244	9.234***	.002
Somatisation/fatigue	2.414	1	2.414	.554	.457
Suicide ideation	51.991	1	51.991	11.930****	<.001
Disobedience	7.929	1	7.929	1.819	.178
Disruptiveness	10.593	1	10.593	2.431*	.119
Destructiveness	71.116	1	71.116	16.318****	<.001
Aggressiveness	16.156	1	16.156	3.707**	.054
Delinquency	286.200	1	286.200	65.670****	<.001

Notes: [a] *R* Squared = .513 (Adjusted *R* Squared = .506). The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**. The *F*-value of the source variable is marginally significant at a *p* value of > .10 to ≤ .14*

© University of Pretoria

5.3.3.7 Summary of other mediators in relations among psychosocial factors and sexual risk behaviour

In summary, the GLM tests results on variables in the aforesaid six other combinations of exogenous constructs in the theorised structural model showed more mediators in relationships between adolescent's psychosocial circumstances and sexual risk behaviour to be considered for further SEM path analysis.

Firstly, results of the three models which tested relationships between sexual risk behaviour and the observed socio-demographic attributes, community stressors and psychosocial distresses of adolescents separately whilst controlling the effects of peer influence and socioeconomic status in each of them showed that low peer influence and socioeconomic status significantly *negatively* mediated the relationships between sexual risk behaviour and some socio-demographic factors (especially school attendance, the Anglican religious convictions, absence or presence of a sick person in the home, living with two lifetime caregivers and with caregivers who engage in trading or civic work, and exposure to other situations in the Lira and Rukungiri areas). Low peer influence and socioeconomic status also significantly negatively mediated the relationships between sexual risk behaviour and community stressors (especially poverty of basic needs and social distancing HIV stigma), and the relationships between sexual risk behaviour and psychosocial distresses (especially inattention, depression and aggression).

The observed variables for peer influence and socioeconomic status accounted for 7.6% out of 36.6% of the variance in adolescents' sexual risk behaviour in the model that tested relationships between their socio-demographic attributes and sexual risk behaviour, 2.4% out of 42.3% of the variance in sexual risk behaviour in the model that tested relationships between their community stressors and sexual risk behaviour, and 4% out of 46.1% of the variance in sexual risk behaviour in the model that tested associations between their psychosocial distresses and sexual risk behaviour. This implies that low peer influence and socioeconomic status to some extent intervened in each of the models by reducing the effects of the aforesaid variables on the sexual behaviour of the adolescents involved in this study.

Secondly, results of the model that tested relationships between the observed socio-demographic attributes and sexual risk behaviour whilst controlling for effects of community stressors showed that proneness to personal threats and interpersonal problems significantly or marginally *positively* mediated the relationships between some observed socio-demographic attributes (especially living with or with no HIV infection, female gender, younger age, parental death in childhood or in preadolescence, involvement in farming, living with four to six people in the home, living with caregivers of whichever HIV status, being a Muganda or Lango by tribe), and sexual risk behaviour of these adolescents. However, proneness to poverty reflected by absence of basic needs significantly *negatively* mediated in the relationships between sexual risk behaviour and some socio-demographic attributes (especially school attendance, the Anglican or Pentecostal/Adventist/Orthodox religious convictions, living with caregivers who are jobless or traders, and other situations in the Lira and Rukungiri

© University of Pretoria

areas). The community stressors included in this model (especially poverty reflected by absence of basic needs, personal threats and interpersonal problems) accounted for 19.9% out of 48.9% of the variance in adolescents' sexual risk behaviour. This is evidence that these stressors, to a great extent, mediated the relationship between the socio-demographic situations and the sexual risk behaviour of adolescents involved in this study.

Thirdly, results of the model that tested relationships between socio-demographic attributes and sexual risk behaviour whilst controlling for effects of psychosocial distresses showed that proneness to anger, psychosis, suicide ideation, disobedience, disruptiveness, destructiveness and delinquency significantly or marginally *positively* mediated the relationships between some observed socio-demographic factors (especially living with or with no HIV infection, female gender, younger age, involvement in farming, living in one home for a lifetime, living in the affected home for a quite long time of more than four to eight years, living with caregivers of whichever HIV status, and being a Muganda or Lango by tribe), and sexual risk behaviour of adolescents. However, proneness to inattention and depression significantly *negatively* mediated the relationship between some socio-demographic factors (especially school attendance, attainment of any primary school level, the Catholic or Anglican or Pentecostal/Adventist/Orthodox religious convictions, caregivers' unemployment, and other situations in Lira and Rukungiri districts), and sexual risk behaviour of the adolescents. The psychosocial distresses included in this model (especially anger, inattention, depression, sleep unrest, psychosis, suicide ideation, disobedience, disruptiveness, destructiveness and delinquency) accounted for 26.3% out of 55.3% of the variance in adolescents' sexual risk behaviour. This is evidence that the aforesaid internalising and externalising distresses, to a considerable extent, mediated the relationships between socio-demographic attributes and sexual risk behaviour of adolescents involved in this study.

Fourthly, results of the model that tested relationships between community stressors and sexual risk behaviour whilst controlling for effects of psychosocial distresses showed that proneness to anger, psychosis, suicide ideation, destructiveness, disruptiveness and delinquency, significantly or marginally *positively* mediated the relationships between some community stressors (especially proneness to personal threats and interpersonal problems) and sexual risk behaviour of the adolescents. However, proneness to inattention, depression and aggression, significantly *negatively* mediated the relationships between some observed community stressors (especially, poverty reflected by absence of basic needs and HIV-related stigma) and sexual risk behaviour. The psychosocial distresses included in this model (especially anger, inattentiveness, depression, psychosis, suicide ideation, disruptiveness, destructiveness, aggressiveness and delinquency) accounted for 10.7% out of 50.6% of the variance in adolescents' sexual risk behaviour. This is further evidence that the internalising and externalising distresses, to some extent, mediated the relationship between these adolescents' stressful experiences and sexual risk behaviour.

© University of Pretoria

Fifthly, results of the model that tested relationships between adolescent's coping methods and sexual risk behaviour whilst controlling for effects of peer influence, socioeconomic status, community stressors and psychosocial distresses simultaneously, showed that proneness to peer influence, personal threats, interpersonal problems, sleep unrest, psychosis, somatisation, suicide ideation, destructiveness and delinquency, significantly or marginally *positively* mediated the relationship between coping by deflection and sexual risk behaviour of the adolescents. However, proneness to community stressors (especially poverty reflected by absence of basic needs and HIV-related stigma), distresses (especially inattentiveness, depression, aggressiveness) and coping with adversities especially by socialisation, significantly or marginally *negatively* mediated in the relationships between coping and sexual risk behaviour of the adolescents. The variables included in this model jointly accounted for 53% of the variance in sexual risk behaviour.

Overall, results of GLM tests for effects of other exogenous variables in the various models show that the other factors *mediating* in the associations between the psychosocial situations and sexual risk behaviour of adolescents *by raising risks* were negative peer influence, living in economic opulence, and experiencing personal threats, interpersonal problems, anger, sleep unrest, psychosis, somatisation, suicide ideation, disobedience, disruptiveness, destructiveness and delinquency. The other factors *mediating* these relationships *by reducing risks* were absence of peer influence and experiencing a low socioeconomic status, poverty reflected by absence of basic needs, HIV-related stigma, inattention, depression, and aggression. These factors were included to the list for SEM path analysis.

This subsection has presented other mediators in associations between variables in different combinations of exogenous constructs and adolescents' sexual risk behaviour without controlling for effects of coping. The next subsection presents socio-demographic moderators of relations among factors in various combinations of exogenous constructs in the structural model and adolescents' sexual risk behaviour.

5.4 Demographic Moderators of Links among other Exogenous Variables and Sexual Risk

The third research hypothesis states that "socio-demographic factors will moderate the coping-mediated associations between peer influence, socioeconomic status, community stressors, psychosocial distresses and sexual risk behaviour of the adolescents who live in HIV-affected homes".

To identify the demographic factors which significantly or marginally **moderate** (increase or decrease) adolescents' susceptibility to the psychosocial and sexual risks, ensure that these factors are considered in SEM path analyses and ultimately address the third objective of this study, GLM tests were also performed on the variables for different models where the socio-demographic factors were excluded and included. Results of the tests for relationships between sexual risk behaviour and the variables in these models, without controlling for

© University of Pretoria

effects of their categorical levels and covariates, are indicated in Table 37 to 39 and explained according to sub-hypothesis in the next subsections. The results of the tests for associations between the variables in these models, when controlling for the effects of coping and the categorical levels and covariates of the variables, are indicated in Table 40 and presented in appendix 3.

5.4.1 Moderators of coping-mediated links among peer-socioeconomic influences and sexual risk

The **first sub-hypothesis** of the third hypothesis states that **"socio-demographic factors will moderate the coping-mediated associations between peer influence, socioeconomic status and sexual risk behaviour of adolescents who live in HIV-affected homes".**

Results of the tests for effects of the exogenous variables in this model, which are presented in Table 37, show that HIV status, gender, age group, occupation, number and type of caregivers lived with, caregivers' HIV status and occupation and alcohol use, home locality, ethnicity, schooling status, HIV or psychosocial care status, peer influence, socioeconomic status, and coping by self-control, socialisation, deflection and seeking social support significantly or marginally affected adolescents' sexual risk behaviour.

The remaining variables in this model notably, education level, religious conviction, orphan-hood, age at death of the first parent, orphan-hood span, number of homes lived in, time span in the home, number of ill people in the home and HIV/sexuality discussions from caregivers, did not significantly affect sexual risk behaviour of these adolescents.

Table 37. Effects of demographic factors in the coping-mediated links between peer influence, socioeconomic status and sexual risk

Source term of variation	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected model	5296.449[a]	59	89.770	16.715****	<.001
Intercept	9.583	1	9.583	1.784	.182
Personal attributes					
HIV status	56.964	2	28.482	5.303***	.005
Gender	29.932	1	29.932	5.573***	.018
Age group	99.657	1	99.657	18.556****	<.001
Highest education level	9.269	2	4.635	.863	.422
Religious conviction	23.267	3	7.756	1.444	.228
Occupation	75.000	4	18.750	3.491***	.008
Parental death *(Yes)*	1.242	1	1.242	.231	.631
Age at death of first parent	2.441	2	1.220	.227	.797
Span of orphan-hood	20.720	2	10.360	1.929	.146
Family attributes					
Homes stability/lived in	7.468	2	3.734	.695	.499
Span in HIV-affected home	24.502	4	6.125	1.141	.336
Number of people in the home	14.992	2	7.496	1.396	.248

© University of Pretoria

Source term of variation	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Number of ill people in the home	14.738	3	4.913	.915	.433
Caregivers' stability/lived with	36.726	2	18.363	3.419**	.033
Type of the usual caregiver (dad, etc.)	49.175	4	12.294	2.289**	.058
Work of usual caregiver	51.625	4	12.906	2.403***	.048
Alcohol use by usual caregiver	151.061	2	75.531	14.064****	<.001
Caregiver to child HIV/sexuality talks	2.035	1	2.035	0.379	.538
Caregivers' HIV status	42.650	2	21.325	3. 971***	.019
Environmental attributes					
Home locality	115.474	2	57.737	10.751****	<.001
Ethnicity or tribe	70.665	5	14.133	2.632**	.022
Being in or out of school	63.451	1	63.451	11.815****	<.001
HIV/psychosocial care	35.091	1	35.091	6.534***	.011
Peer influence-socioeconomic status					
Peer influence	323.529	1	323.529	60.242****	<.001
Socioeconomic status	49.086	1	49.086	9.140***	.003
Coping methods					
Social support	49.504	1	49.504	9.218 ****	.002
Self-control	263.547	1	263.547	49.073****	<.001
Socialization	12.730	1	12.730	2.370*	.124
Deflection	98.438	1	98.438	18.329****	<.001

Notes: [a] *R* Squared = .432 (Adjusted *R* Squared = .406). The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < 0.05***, < .10**. The *F*-value of the source variable is marginally significant at a *p* value of > .10 to ≤ .14*.

After controlling for effects of categorical levels and covariates of variables in this model, data of the test for strengths and directions of the relationships among them, which is indicated in Table 40 and presented in appendix 3, showed that being HIV infected (*β* = .83, *t* (1,357) = 3.24, *p* < .001), HIV uninfected (*β* = .31, *t* (1,357) = 1.76, *p* = .079), female (*β* = .31, *t* (1,357) = 2.36, *p* = .018), aged 10 – 14 years (*β* = .19, *t* (1,357) = 4.31, *p* < .001), a student (*β* = .92, *t* (1,357) = 1.63, *p* = .104) or a farmer (*β* = 1.14, *t* (1,357) = 1.97, *p* = .049) or a house-bar tender/trader (*β* = 1.32, *t* (1,357) = 1.95, *p* = .052), with a caregiver who is a biological/step mother/sister (*β* = .45, *t* (1,357) = 1.78, *p* = .076), with a caregiver who is HIV-positive (*β* = .59, *t* (1,357) = 2.56, *p* = .011), a Muganda (*β* = .82, *t* (1,357) = 2.62, *p* = .009), a Lango (*β* = 1.01, t (1,357) = 1.98, p = .048), and a recipient of HIV or psychosocial care (β = .49, t (1,357) = 2.56, p = .011) *significantly or marginally moderated* the relationships between peer influence (β = 1.34, t (1,357) = 7.76, p < .001), a higher socioeconomic status (β = .19, t (1,357) = 3.02, p = .003) and sexual risk behaviour *by raising risks* as coping with adversities using deflection methods (*β* = .14, *t* (1,357) = 4.28, *p* < .001) also mediated in these relationships *by raising risks*.

However, being a believer in the Catholic (*β* = -.48, *t* (1,357) = -1.91, *p* = .056) or Anglican (*β* = -.51, *t* (1,357) = -2.04, *p* = .042) religions, orphaned for one to two years (*β* = -.62, *t* (1,357) = -1.54, *p* = .123) and three to four years (*β* = -.47, *t* (1,357) = -1.64, *p* = .101), with a caregiver who is jobless (*β* = -.77, *t* (1,357) = -1.69, *p* =

© University of Pretoria

.091) or a trader (*β* = -.76, *t* (1,357) = -2.13, *p* = .033) or a civic worker (*β* = -.87, *t* (1,357) = -2.34, *p* = .020), resident in Lira (*β* = -1.89, *t* (1,357) = -3.42, *p* < .001) or Rukungiri district (*β* = -2.01, *t* (1,357) = -3.27, *p* = .001), and in school (*β* = -.74, *t* (1,357) = -3.44, *p* < .001) significantly or marginally moderated the relationships between coping methods especially self-control (*β* = -.19, *t* (1,357) = -7.01, *p* < .001) or socialisation (*β* = -.053, *t* (1,357) = -1.54, *p* = .124) or social support (*β* = -.50, *t* (1,357) = -3.04, *p* = .002) and sexual behaviour by reducing risks. The other demographic factors in the model[21] did not significantly moderate these relationships.

The combined variables in this model explained .403 (40.3%) of the variance in sexual risks. This is .142 (14.2%) higher than the explained variance in sexual risk behaviour in the model that consisted of the observed variables for peer influence, socioeconomic status and coping methods only, which was .261 (26.1%). This is further evidence that the aforesaid socio-demographic factors moderated the coping-mediated associations between high peer influence and socioeconomic status and sexual risk behaviour of the adolescents.

Hence, the first sub-hypothesis of the third hypothesis is partially accepted.

5.4.2 Moderators of coping-mediated links among community stressors and sexual risk

The **second sub-hypothesis** of the third hypothesis states that **"socio-demographic factors will moderate the coping-mediated associations between community stressors and sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the tests for effects of the exogenous variables in this model, which is presented in Table 38 below, show that HIV status, gender, age, education status, age at first parental death, number of people in the home, caregivers' HIV status or work or alcohol use, home locality, ethnicity, poverty reflected by absence of basic needs, personal threats, interpersonal problems, and coping by self-control, socialisation, deflection and social support significantly or marginally affected adolescents' sexual risk behaviour. The other variables in this model did not significantly affect their sexual risk behaviour.

Table 38. Effects of demographic factors in the coping-mediated relationships between community stressors and sexual risk behaviour

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	6513.925[a]	62	105.063	23.6 52****	<.001
Intercept	.028	1	.028	.006 ***	.936
Personal attributes					
HIV status	22.813	2	11.406	2.568**	.077
Gender	19.628	1	19.628	4.419***	.036

[21] i.e. education level, Pentecostalism or Adventism, parental death, age at death of the first parent, span of orphan-hood, joblessness, number of homes lived in, span of existence in the HIV-affected home, number of people in the home, absence or presence of sick persons in the home, living with one or two or more caregivers in a lifetime, having either both parents or father/brother or grandparents or other relative as the caregiver, having a caregiver who is a farmer, being with caregivers who use alcohol, discussing sexuality issues with caregivers, having a caregiver who is HIV unliving or unaware, and being a Musoga or Munyankole or Mukiga.

© University of Pretoria

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Age group	130.276	1	130.276	29.327****	<.001
Highest education level	15.520	2	7.760	1.747	.175
Religious conviction	23.406	3	7.802	1.756	.154
Occupation	30.006	4	7.502	1.689	.150
Parental death *(Yes)*	8.876	1	8.876	1.998	.158
Age at death of first parent	18.543	2	9.272	2.087*	.124
Span of orphan-hood	9.353	2	4.676	1.053	.349
Family attributes					
Homes stability/lived in	11.769	2	5.885	1.325	.266
Span in HIV-affected home	11.573	4	2.893	.651	.626
Number of people in the home	22.724	2	11.362	2.558**	.078
Number of sick people in home	6.971	3	2.324	.523	.666
Caregivers' stability/lived with	7.700	2	3.850	.867	.421
Type of the usual caregiver (father...)	15.266	4	3.816	.859	.488
Work of usual caregiver	32.850	4	8.213	1.849*	.117
Alcohol use by usual caregiver	44.088	2	22.044	4.963 ***	.007
Caregiver to child HIV/sexuality talks	5.326	1	5.326	1.199	.274
Caregivers' HIV status	51.434	2	25.717	5.789***	.003
Environmental attributes					
Home locality	79.938	2	39.969	8.998****	<.001
Ethnicity or tribe	73.215	5	14.643	3.296***	.006
Being in or out of school	34.018	1	34.018	7.658***	.006
HIV/psychosocial care	5.539	1	5.539	1.247	.264
Community stressors					
Poverty	185.689	1	185.689	41.802 ****	<.001
Personal threats	48.060	1	48.060	10.819***	.001
Interpersonal problems	1214.836	1	1214.836	273.881****	<.001
HIV related stigma					
Blame/judgmental attitudes	0.752	1	0.752	0.169	.681
Social distancing attitudes	0.989	1	0.989	0.223	.637
Coping methods					
Social support	37.609	1	37.609	8. 467***	.004
Self-control	89.676	1	89.676	20.188****	<.001
Socialization	14.602	1	14.602	3.287**	.070
Deflection	84.017	1	84.017	18.914****	<.001

Notes: [a] *R* Squared = .531 (Adjusted *R* Squared = .509). The *F*-value or ratio of the source variable is statistically significant at a *p* value of < .001****, < .05***, < .10**The *F*-value of the source variable is and marginally significant at a *p* value of > .10 to ≤ .14*.

After controlling for effects of categorical levels and covariates of variables in this model, data of the test for strengths and directions of relationships among them (which is indicated in Table 40 and presented in

© University of Pretoria

appendix B), showed that being HIV infected (β = .52, t (1,357) = 2.19, p = .028), HIV uninfected (β = .24, t (1,357) = 1.53, p = .124), female (β = .25, t (1,357) = 2.10, p = .036), aged 10 – 14 years (β = .21, t (1,357) = 5.42, p < .001), orphaned in childhood (β = .57, t (1,357) = 1.97, p = .049) or in pre-adolescence (β = .43, t (1,357) = 1.73, p = .084), with four to six people in the home (β = .23, t (1,357) = 1.75, p = .081), with a caregiver who is HIV-positive (β =.71, t (1,357) = 3.37, p < .001) or negative (β = .66, t (1,357) = 2.84, p = .005), and a Muganda (β = .85, t (1,357) = 2.98, p = .003) or a Mukiga (β = .96, t (1,357) = 1.63, p = .104) or Lango (β = 1.04, t (1,357) = 2.26, p = .024) by tribe, significantly or marginally moderated the relationships between some community stressors (especially proneness to personal threats (β = .14, t (1,357) = 3.29, p = .001) and interpersonal problems (β = .78, t (1,357) = 16.54, p < .001)) and sexual risk behaviour of the adolescents by increasing their risks **as** coping by deflection (β = .13, t (1,357) = 4.35, p < .001) mediated in these relationships similarly.

However, attending school (β = -.55, t (1,357) = -2.77, p = .006), attaining any upper-primary school levels (β = -.32, t (1,357) = -1.85, p = .064) and being a believer in the Catholic (β = -.42, t (1,357) = -1.85, p = .064) or Anglican (β = -.44, t (1,357) = -1.94, p = .052) or Pentecostal/Adventist/Orthodox (β = -.59, t (1,357) = -2.21, p = .027) religions, with caregivers who are jobless (β = -.80, t (1,357) = -1.93, p = .054) or traders (β = -.49, t (1,357) = -1.52, p = .128) or civic workers (β = -.59, t (1,357) = -1.75, p = .080) and resident in Lira (β = -1.71, t (1,357) = -3.38, p < .001) or Rukungiri district (β = -1.56, t (1,357) = -2.77, p = .006), significantly or marginally moderated the relationship between proneness to poverty reflected by absence of basic needs (β = -.26, t (1,357) = -6.47, p < .001) and sexual risk behaviour of adolescents by reducing risk **as** coping by self-control (β = -.12, t (1,357) = -4.49, p < .001), or socialisation (β = -.06, t (1,357) = -1.81, p = .070), or getting social support (β = -.04, t (1,357) = -2.91, p = .004), mediated this relationship similarly. The other variables in the model did not moderate or mediate in these relationships (see data in Table 40).

The combined variables in this model explained .509 (50.9%) of the variance in sexual risk behaviour. This is .082 (8.2%) higher than the explained variance in sexual risk behaviour in the model that consisted of the observed variables for coping methods and community stressors only, which was .427 (42.7%). This provides further evidence that aforesaid socio-demographic factors moderated the coping-mediated associations between some community stressors (especially poverty reflected by absence of basic needs, personal threats, and interpersonal problems) and sexual risk behaviour of the adolescents in this study. Hence, the second sub-hypothesis of the third hypothesis is partially accepted.

5.4.3 Moderators of coping-mediated links among psychosocial distresses and sexual risk

The **third sub-hypothesis** of the third hypothesis states that **"socio-demographic factors will moderate the coping mediated associations between the psychosocial distresses and sexual risk behaviour of adolescents who live in HIV-affected homes".**

© University of Pretoria

Data of the tests for effects of the exogenous variables in this model, which is presented in Table 39 below, show that of the socio-demographic variables in this model, only HIV status, gender, age group, education level, the number of homes lived in, span in HIV-affected home, caregivers' HIV status or alcohol use, home locality, ethnicity, and schooling status significantly or marginally affected adolescents' sexual risk behaviour. Similarly, some psychosocial distresses and coping methods in this model affected adolescents' sexual risk behaviour, and this included inattentiveness, depression, sleep unrest, psychosis, somatisation, suicide ideation, disobedience, disruptiveness, destructiveness, delinquency, deflection, and socialisation.

Table 39. Effects of demographic factors in the coping-mediated relationships between distresses and sexual risk behaviour

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	7121.707[a]	71	100.306	25.075****	<.001
Intercept	44.018	1	44.018	11.004****	<.001
Personal attributes					
HIV status	31.520	2	15.760	3.940***	.020
Gender	41.566	1	41.566	10.391***	.001
Age group	163.201	1	163.201	40.798****	<.001
Highest education level	54.682	2	27.341	6.835***	.001
Religious conviction	18.396	3	6.132	1.533	.204
Occupation	15.947	4	3.987	.997	.408
Parental death *(Yes)*	2.823	1	2.823	.706	.401
Age at death of first parent	3.687	2	1.843	.461	.631
Span of orphan-hood	9.833	2	4.917	1.229	.293
Family context attributes					
Homes stability/lived in	18.067	2	9.034	2.258*	.105
Span in HIV-affected home	34.271	4	8.568	2.142**	.074
Number of people in the home	6.959	2	3.480	.870	.419
Number of sick people in home	8.018	3	2.673	.668	.572
Caregivers' stability/lived with	1.936	2	.968	.242	.785
Type of the usual caregiver (dad, etc.)	19.633	4	4.908	1.227	.297
Work of usual caregiver	17.246	4	4.312	1.078	.366
Alcohol use of the usual caregiver	27.460	2	13.730	3.432***	.033
Caregiver to child HIV/sexuality talks	6.846	1	6.846	1.711	.191
Caregivers' HIV status	42.381	2	21.190	5.297***	.005
Environmental attributes					
Home locality	83.838	2	41.919	10.479****	<.001
Ethnicity or tribe	81.207	5	16.241	4.060***	.001
Being in or out of school	60.338	1	60.338	15.084****	<.001
HIV/psychosocial care	2.271	1	2.271	.568	.451
Psychosocial distresses					

© University of Pretoria

Source term of variation	Type III Sum of Squares	df	Mean Square	F	Sig.
Anger	8.105	1	8.105	2.026	.155
Inattentiveness	14.380	1	14.380	3.595**	.058
Anxiety	.233	1	.233	.058	.809
Depression	19.195	1	19.195	4.798***	.029
Loneliness	5.273	1	5.273	1.318	.251
Sleep unrest	8.738	1	8.738	2.184*	.140
Psychosis	53.112	1	53.112	13.277****	<.001
Somatisation/fatigue	12.446	1	12.446	3.111**	.078
Suicide ideation	19.640	1	19.640	4.910***	.027
Disobedience	33.538	1	33.538	8.384***	.004
Disruptiveness	16.547	1	16.547	4.137***	.042
Destructiveness	75.421	1	75.421	18.854****	<.001
Aggressiveness	.743	1	.743	.186	.667
Delinquency	407.657	1	407.657	101.908****	<.001
Coping methods					
Social support	5.541	1	5.541	1.385	.239
Self-control	.160	1	.160	.040	.842
Socialization	9.228	1	9.228	2.307*	.129
Deflection	54.803	1	54.803	13.700****	<.001

Note: [a.] *R* Squared = .581 (Adjusted *R* Squared = .558). The *F*-value or ratio of the source variable is statistically significant at a probability *(p)* value of < .001****, < .05***, < .10**. The F-value of the source variable is marginally significant at a *p* value of > .10 to ≤ .14*.

After controlling for effects of categorical levels and covariates of variables in this model, data of tests on the strengths and directions of relations among them, which is provided in Table 40 and presented in appendix 3, showed that being HIV infected (β = .51, t (1,357) = 2.26, p = .024), HIV uninfected (β = .38, t (1,357) = 2.49, p = .013), female (β = .79, t (1,357) = 1.57, p = .118), of ages 10 – 14 years (β = .24, t (1,357) = 6.39, p < .001), a farmer (β = .79, t (1,357) = 1.57, p = .118), in one home for a lifetime (β = .49, t (1,357) = 1.97, p = .049), in the affected home for more than four to eight years (β = .65, t (1,357) = 2.06, p = .039), with a caregiver who is HIV positive (β = .48, t (1,357) = 2.33, p = .020) or negative (β = .73, t (1,357) = 3.25, p = .001), and a Muganda (β = .81, t (1,357) = 2.98, p = .003) or Lango (β = 1.38, t (1,357) = 3.12, p = .002) by tribe, significantly or marginally moderated the relationships between some psychosocial distresses[22] and sexual risk behaviour by raising risk. At the same time, coping with adversities using deflection methods mediated in these relationships similarly (β = .104, t (1,357) = 3.70, p < .001).

However, attending school (β = -.73, t (1,357) = -3.88, p < .001) and being educated up to any lower-primary (β = -.68, t (1,357) = -3.04, p = .002) or upper-primary (β = -.59, t (1,357) = -3.63, p < .001) school levels,

[22] Notably, sleep unrest (β = .08, t (1,357) = 1.48, p = .140), psychosis (β = .13, t (1,357) = 3.64, p < .001), somatisation (β = .07, t (1,357) = 1.76, p = .078), suicide ideation (β = .12, t (1,357) = 2.22, p = .027), disobedience (β = .19, t (1,357) = 2.89, p = .004), disruptiveness (β = .08, t (1,357) = 2.03, p = .042), destructiveness (β = .39, t (1,357) = 4.32, p < .001), delinquency (β = .53, t (1,357) = 10.09, p < .001).

© University of Pretoria

a believer in the Catholic (*β* = -.38, *t* (1,357) = -1.73, *p* = .084) or Anglican (*β* = -.38, *t* (1,357) = -1.74, *p* = .082) or Pentecostal/Adventist/Orthodox (*β* = -.53, *t* (1,357) = -2.09, *p* = .037) religions, with jobless caregivers (*β* = -.64, *t* (1,357) = -1.63, *p* = .104) and resident in Lira district (*β* = -2.16, *t* (1,357) = -4.44, *p* < .001) significantly or marginally moderated the relationships between some distresses [i.e. inattentiveness (*β* = -.06, *t* (1,357) = -1.89, *p* = .050) and depression (*β* = -.09, *t* (1,357) = -2.19, *p* = .029)] and sexual risk behaviour by reducing risks **as** coping by socialisation also mediated in the relationships similarly (*β* = -.05, *t* (1,357) = -1.52, p = .129).

The combined variables in this model explained .558 (55.8%) of the variance in sexual risk behaviour. This is .119 (11.9%) higher than the explained variance in sexual risk behaviour in the model that consisted of the observed variables for coping methods and psychosocial distresses only, which was .439 (43.9%). This provides further evidence that the aforesaid socio-demographic factors moderated the coping-mediated relationships between psychosocial distresses and sexual risk behaviour of these adolescents. Hence, the third sub-hypothesis of the third objective is partially accepted.

5.4.4 Moderators of coping-mediated links among other exogenous variables and sex risk

The **third hypothesis** of this study states that **"socio-demographic factors will moderate the coping mediated associations between peer influence, socioeconomic status, community stressors, psychosocial distresses and sexual risk behaviour of adolescents who live in HIV-affected homes"**.

Data of the tests for strengths and directions of associations between the variables in the overall model, which is indicated in Table 28 and 40 and presented in appendix 3, show that being HIV infected (*β* =.34, *t* (1,357) = 1.58, *p* = .115), HIV uninfected (*β* = .28, *t* (1,357) = 1.91, *p* = .056), female (*β* = .35, *t* (1,357) = 3.22, *p* = .001), of ages 10 – 14 years (*β* = .19, *t* (1,357) = 5.46, *p* <.001), a farmer (*β* =.80, *t* (1,357) = 1.68, *p* = .094), in one home for the lifetime (*β* = .47, *t* (1,357) = 1.96, *p* = .050), with one caregiver in a lifetime (*β* =.37, *t* (1,357) = 1.56, *p* = .120), with caregivers who are HIV positive (*β* = .47, *t* (1,357) = 2.42, *p* = .016) or negative (*β* =.72, *t* (1,357) = 3.36, *p* < .001), and adopting some negative sociocultural norms of especially the Baganda (*β* =.86, *t* (1,357) = 3.30, *p* < .001) or Lango (*β* = 1.01, *t* (1,357) = 2.38, *p* = .017) ethnic groups significantly or marginally moderated the relationships between experience of some stressors [notably, personal threats (*β* =.09, *t* (1,357) = 2.43, *p* = .015), interpersonal problems (*β* = .43, *t* (1,357) = 8.83, *p* < .001),] and the sexual behaviour of adolescents by raising risks as coping by deflection mediated in these relationships similarly (*β* =.08, *t* (1,357) = 3.01, *p* = .003). The same socio-demographic factors significantly or marginally moderated the relationships between these adolescents' sexual behaviour and psychosocial distresses [especially sleep unrest (*β* =.09, *t* (1,357) = 1.71, *p* = .088), psychosis (*β* = .09, *t* (1,357) = 2.69, *p* = .007), somatisation (*β* =.07, *t* (1,357) = 2.05, *p* = .041), suicide ideation (*β* =.13, *t* (1,357) = 2.44, *p* = .015), destructiveness (*β* = .38, *t* (1,357) = 4.38, *p* < .001) and delinquency (*β* =.46, *t* (1,357) = 8.88, *p* < .001)] by raising risks as coping by deflection mediated these relationships similarly.

© University of Pretoria

However, attending school (β = -.56, t (1,357) = -3.133, p = .002) and being educated up to less than primary four (β = -.44, t (1,357) = -2.04, p = .042) or more than primary five to seven (β = -.41, t (1,357) = -2.66, p = .008), a believer in the Pentecostal or Adventist or Orthodox (β = -.56, t (1,357) = -2.30, p = .022), orphaned (β = -.39, t (1,357) = -1.51, p = .131) especially maternally (β = -.58, t (615) = -1.69, p = .090), with a jobless caregiver (β = -1.39, t (1,437) = -2.29, p < .022) and resident in Lira district (β = -1.52, t (1,357) = -3.22, p < .001) or Rukungiri district (β = -.86, t (1,357) = -1.65, p = .100) significantly or marginally moderated the relationships between absence of peer influence (β = -.74, t (1,357) = -4.92, p < .001), a moderate socioeconomic status (β = -.28, t (1,357) = -1.93, p = .054), poverty reflected by absence of basic needs (β = -.18, t (1,357) = -4.49, p < .001), judgmental HIV stigma (β = -.05, t (1,357) = -1.55, p = .121), inattention (β = -.06, t (1,357) = -1.78, p = .076), or depression (β = -.07, t (1,357) = -1.94, p = .053) and sexual behaviour of adolescents by reducing risks.

The combined variables in this model explained .603 (60.3%) of the variance in sexual risk behaviour. This is .073 (7.3%) higher than the explained variance in sexual risk behaviour in the model that consisted of the observed variables for peer influence, socioeconomic status, community stressors, psychosocial distresses, and coping methods only, which was .530 (53%). This also provides evidence that the aforesaid socio-demographic factors positively or negatively moderated the relationships between some variables in this model and the sexual risk behaviour of adolescents. Hence, the third hypothesis of this study is partially accepted.

5.4.5 Summary of moderators of coping-mediated links among other variables and sexual risk

Results of the GLM tests on the third research hypothesis have showed that some observed socio-demographic factors significantly positively or negatively moderate the relationships between the observed variables for peer influence, socioeconomic status, community stressors, psychosocial distresses, coping methods and sexual risk behaviour of the adolescents involved in this study.

In the model testing the first sub-hypothesis of the third hypothesis, living with or without HIV infection, female gender, a younger age, involvement in work which provides unreliable income such as farming or house/bar tending or hawking, living with caregivers who are HIV-positive or mothers/sisters, the negative sociocultural norms of the Baganda and Lango tribes, and receiving HIV/psychosocial care significantly moderated the relationships between negative peer influence, living in socioeconomic opulence and sexual risk behaviour by increasing risk as coping with adversities using deflection methods also mediated the relationships by adding to the risks. However, school attendance, the Catholic or Anglican religious convictions, experiencing orphanhood for a shorter period, living with caregivers who engage in work that provides regular income such as trading or civic work, and experiencing other positive situations in Lira and Rukungiri districts significantly moderated the relationship between adolescents' coping with adversities using self-control or socialisation or social support methods and sexual risk behaviour by reducing risk. These socio-demographic factors contributed

© University of Pretoria

14.2% of the total variance in sexual risk behaviour attributable to all observed variables in this model, which is 40.3%. This is evidence that the aforesaid socio-demographic factors moderate the coping-mediated relationships between peer influence, socioeconomic status and sexual risk behaviour of the adolescents.

In the model testing the second sub-hypothesis of the third hypothesis, living with or with no HIV infection, female gender, younger age, parental death in childhood or preadolescence, living with four to six people in the home and with caregivers who are HIV-positive or negative, and the negative sociocultural norms of the Baganda or Bakiga or Lango tribes, significantly moderated especially the relationship between personal threats, interpersonal problems and sexual risk behaviour by increasing their risks as coping with adversities using deflection mediated the relationships by adding to the risks. However, attending school, attaining any upper-primary school level, religious conviction, living with caregivers who are jobless or engage in work that provides regular income such as trading, and experiencing other positive situations in Lira and Rukungiri districts, significantly moderated the relationship between poverty reflected by absence of basic needs and sexual risk behaviour by decreasing their risk **as** coping with adversities through self-control, socialisation and social support methods also mediated the relationships by reducing risk. These socio-demographic factors contributed 8.2% of the total variance in sexual risk behaviour attributable to all observed variables in this model of 50.9%. This is evidence that the above socio-demographic factors moderate coping-mediated relationships between the observed community stressors (especially poverty reflected by absence of basic needs, personal threats and interpersonal problems) and sexual risk behaviour.

In the model testing the third sub-hypothesis of the third hypothesis, living with or with no HIV infection, female gender, younger adolescence, involvement in work that provides unreliable income such as farming, living in the home for a long time and with caregivers who are HIV-positive or negative, and the negative sociocultural norms of the Baganda and Lango tribes, significantly moderated the relationship between psychosocial distress (sleep unrest, psychosis, somatisation, suicide ideation, disobedience, disruptiveness, destructiveness, delinquency) and sexual risk behaviour by increasing risk **as** coping with adversities using deflection methods mediated the relationships by adding to the risks. However, attending school, attaining any primary school level, religious conviction, living with a jobless caregiver and experiencing other positive situations in Lira district, significantly moderated the relationships between some distresses (inattention, depression) and sexual risk behaviour of adolescents by reducing risk **as** coping with adversities through socialisation mediated the relationships by reducing risk. These socio-demographic factors contributed 11.9% of the total variance in sexual risk behaviour attributed to the observed variables in this model, which is 55.8%. This is evidence that the aforesaid socio-demographic factors moderate the relationships between the above coping methods (socialisation and deflection), distresses and sexual risk behaviour of adolescents.

© University of Pretoria

In the model testing the overall hypothesis, living with or with no HIV infection, female gender, younger adolescence, participating in work that provides unreliable income like farming, living in one home and with one caregiver (single parenting), living with caregivers who are HIV-positive or negative, and the negative sociocultural norms of the Baganda or Lango ethnic groups significantly moderated the relationships between experiencing personal threats, relational problems, sleep unrest, psychosis, somatisation, suicide ideation, destructiveness, delinquency, and sexual risk behaviour by raising risks. At the same time, coping with adversities by deflection mediated these relationships by raising the risks. However, school attendance, attainment of any primary school level, religious conviction, maternal orphan-hood, caregivers' joblessness and other positive situations in the Lira and Rukungiri areas, significantly moderated the associations sexual risk behaviour and low peer influence, moderate socioeconomic status, poverty reflected by absence of basic needs, judgmental HIV stigma, inattention and depression by reducing risks. The socio-demographic factors contributed 7.3% of the variance in sexual risk behaviour attributable to all variables in this model, which is 60.3%. This increment in variance is evidence that the aforesaid demographic factors moderate the coping-mediated relationships between some observed psychosocial factors and sexual risk behaviour of the adolescents involved in this study.

Overall, the results of GLM tests on the various models presented in subsections 5.3.1 to 5.3.3 and 5.4.1 to 5.4.4 have identified several socio-demographic factors, community stressors, psychosocial distresses, and coping methods that significantly and marginally predict, mediate and moderate sexual risk behaviour of the adolescents as a whole. These factors are summarised in Table 41 and presented in appendix 3. However, these test results do not specify the psychosocial factors that predict or mediate or moderate sexual risks in each of the three adolescent groups, and the pathways by which the key factors influence their sexual risk behaviour.

The next subsection thus presents results of the path analysis on factors that significantly and marginally predicted, mediated and or moderated adolescents' sexual risk behaviour in the GLM tests on the theorised structural model for this study.

5.5 Pathways for Predictors of Sexual Risk Behaviour among Adolescents

This section presents results of the SEM path tests which were performed on all psychosocial variables that significantly or marginally correlated with sexual risk behaviour in each general linear model test to identify the most important predictors of sexual risk behaviour among the adolescents who were involved in this study, and establish the strengths, directions and pathways by which these factors influenced their sexual behaviour.

The variables which were selected for SEM path tests are indicated in Table 41 and presented in appendix 3. The results of these tests are summarised in Table 42 below, and segregated by adolescents' HIV

© University of Pretoria

status in the Tables 43 to 50, which are presented in appendix 4. This data is illustrated in the SEM path outcome models, which are presented in the Figures 4 to 7.

For brevity and clarity of data in these figures, only pathways and coefficients of the significant observed and latent factors are presented and explained. Overall, the results show that although paths for psychosocial predictors of sexual risk behaviour in the HIV infected, uninfected and unaware adolescents were similar, the strength and directions by which some psychosocial factors influenced their sexual risk behaviour varied.

The Table 42 below provides the coefficients of all paths in the model and specifies those where the directions of predictors for sexual risks varied in these adolescents.

© University of Pretoria

Table 42. Standardised coefficients of SEM paths for psychosocial predictors of sexual risk behaviour in each adolescent group

SEM path list			Parameter	HIV status of the adolescent groups			
				Infected	Uninfected	Unaware	Combined
Community stressors	===>	Poverty of basic needs		0.520**	0.215**	7.077E-7**	0.159**
Community stressors	===>	Personal threats	_Parm01	0.297**	0.733**	0.561**	0.644**
Community stressors	===>	Interpersonal problem	_Parm02	0.843**	0.421**	0.369**	0.431**
Community stressors	===>	Internal HIV stigma	_Parm03	0.528**	0.297**	0.428**	0.313**
Internalising distress	===>	Anger		0.833**	0.743**	0.767**	0.798**
Internalising distress	===>	Attention problem	_Parm04	0.775**	0.786**	0.827**	0.809**
Internalising distress	===>	Anxiety	_Parm05	0.806**	0.796**	0.744**	0.791**
Internalising distress	===>	Depression	_Parm06	0.714**	0.739**	0.682**	0.755**
Internalising distress	===>	Sleep unrest	_Parm07	0.769**	0.768**	0.723**	0.765**
Internalising distress	===>	Psychosis	_Parm08	0.773**	0.717**	0.733**	0.757**
Internalising distress	===>	Somatisation	_Parm09	0.678**	0.659**	0.539**	0.674**
Internalising distress	===>	Suicide ideation	_Parm10	0.645**	0.645**	0.543**	0.667**
Externalising distress	===>	Disobedience		0.734**	0.584**	0.662**	0.676**
Externalising distress	===>	Disruptiveness	_Parm11	0.859**	0.793**	0.745**	0.814**
Externalising distress	===>	Destructiveness	_Parm12	0.807**	0.632**	0.703**	0.727**
Externalising distress	===>	Aggressiveness	_Parm13	0.865**	0.554**	0.729**	0.751**
Externalising distress	===>	Delinquency	_Parm14	0.878**	0.766**	0.804**	0.835**
Psychosocial distress	===>	Internalising distress		0.796**	0.879**	0.786**	0.828**
Psychosocial distress	===>	Externalising distress	_Parm15	0.974**	0.898**	0.859**	0.924**
Sexual risk behaviour	===>	Risky sexual conditions		0.873**	0.982**	0.878**	0.922**
Sexual risk behaviour	===>	Risky sexual actions	_Parm16	0.914**	0.733**	0.779**	0.814**
Coping methods	===>	Socialization		0.669**	0.767**	0.619**	0.729**
Coping methods	===>	Deflection	_Parm17	0.994**	0.996**	0.994	0.995**
Coping methods	===>	Social support [b]	_Parm18	0.175**	0.252**	-0.004	0.175**

© University of Pretoria

SEM path list			Parameter	HIV status of the adolescent groups			
				Infected	Uninfected	Unaware	Combined
Coping methods	===>	Self-control [a]	_Parm19	0.069	0.087**	-0.199**	0.027
Psychosocial distress	===>	Sexual risk behaviour	_Parm20	0.828**	0.479**	0.756**	0.735
HIV uninfected	===>	Sexual risk behaviour	_Parm21				0.085
Female	===>	Sexual risk behaviour	_Parm22	0.066*	0.024	0.022	0.046
Age range 10 – 14 years	===>	Sexual risk behaviour	_Parm23	-0.155**	-0.188**	-0.178**	-0.176
Educated to ≤ primary 4 level	===>	Sexual risk behaviour	_Parm24	-0.001	-0.142**	-0.275**	-0.136
Educated from primary 5-7 level	===>	Sexual risk behaviour [b]	_Parm25	0.002	-0.111**	-0.218**	-0.110
Pentecost/SDA/Ortho religions	===>	Sexual risk behaviour	_Parm26	-0.066*	-0.039	-0.019	-0.046
Caregiver HIV/sexuality talks	===>	Sexual risk behaviour [b]	_Parm27	-0.005	-0.016	0.097**	0.044
HIV+ caregiver	===>	Sexual risk behaviour	_Parm28	0.121*	0.013	0.123	0.085
HIV- caregiver	===>	Sexual risk behaviour	_Parm29	0.161**	0.035	0.147**	0.109**
Lira district	===>	Sexual risk behaviour	_Parm30	-0.466**	-0.273**	-0.197	-0.344**
Muganda by ethnicity	===>	Sexual risk behaviour	_Parm31	0.045	0.094**	0.101**	0.071**
Lango/Acholi by ethnicity	===>	Sexual risk behaviour [b]	_Parm32	0.419**	0.100**	-0.040	0.196**
Attending school	===>	Sexual risk behaviour	_Parm33	-0.123**	-0.129**	-0.111**	-0.132**
Peer pressed	===>	Sexual risk behaviour [b]	_Parm34	0.060	0.169**	-0.059	0.071**
1-3rd socioeconomic quartile	===>	Sexual risk behaviour	_Parm35	0.110**	0.062**	0.073	0.095**
Community stressors	===>	Coping methods	_Parm36	-0.114	-0.910**	-1.144**	-0.855**
Psychosocial distress	===>	Coping methods [b]	_Parm37	0.134**	-0.031	0.452**	0.226**
HIV infected	===>	Psychosocial distresses	_Parm38				0.093**
HIV uninfected	===>	Psychosocial distresses	_Parm39				-0.106**
Educated to ≤ primary 4 level	===>	Psychosocial distresses [b]	_Parm40	0.085	-0.011	0.294**	0.073**
Educated to primary 5-7 level	===>	Psychosocial distresses	_Parm41	0.151**	0.019	0.210**	0.085**
Anglican	===>	Psychosocial distresses	_Parm42	-0.171**	-0.051	-0.111**	-0.103**
No job	===>	Psychosocial distresses	_Parm43	0.159	0.259**	0.400	0.272**

© University of Pretoria

SEM path list			Parameter	HIV status of the adolescent groups			
				Infected	Uninfected	Unaware	Combined
Student	===>	Psychosocial distresses	_Parm44	0.355**	0.217*	0.528**	0.359**
Tender/driver/hawker	===>	Psychosocial distresses	_Parm45	0.189**	0.128**	0.164*	0.167**
Farmer	===>	Psychosocial distresses	_Parm46	0.193*	0.238**	0.252*	0.239**
No sick person in home	===>	Psychosocial distresses [b]	_Parm47	-0.158**	0.065*	-0.006	-0.053**
One sick person in home	===>	Psychosocial distresses [b]	_Parm48	-0.223**	-0.043	0.023	-0.112**
Lived with 1 caregiver	===>	Psychosocial distresses [b]	_Parm49	0.006	-0.559**	-0.111	-0.194**
Lived with 2 caregivers	===>	Psychosocial distresses	_Parm50	-0.165**	-0.574**	-0.165**	-0.267**
Caregiver engaged in trade	===>	Psychosocial distresses	_Parm51	-0.064	-0.055*	-0.092*	-0.069**
HIV- caregiver	===>	Psychosocial distresses [b]	_Parm52	-0.234**	0.001	-0.082	-0.124**
Rukungiri district	===>	Psychosocial distresses	_Parm53	-0.324**	-0.501**	-0.513**	-0.447**
Psychosocial care	===>	Psychosocial distresses	_Parm54	0.042	0.172**	0.039	0.143**
Peer pressed	===>	Psychosocial distresses	_Parm55	0.339**	0.393**	0.469**	0.375**
1-3rd socioeconomic quartile	===>	Psychosocial distresses	_Parm56				-0.047**
Tender/driver/hawker	===>	Coping methods	_Parm57	0.061	0.087**	0.179**	0.109**
Farmer	===>	Coping methods	_Parm58	0.059	0.177**	0.148*	0.127**
No sick person in home	===>	Coping methods	_Parm59	-0.375**	-0.231**	-0.283**	-0.320**
Lived with 1 caregiver	===>	Coping methods	_Parm60	-0.133	-0.316**	-0.362**	-0.235**
Lived with 2 caregivers	===>	Coping methods	_Parm61	-0.126	-0.252**	-0.271**	-0.204**
Lira district	===>	Coping methods	_Parm62	-0.176**	-0.543**	-1.139**	-0.544**
Rukungiri district	===>	Coping methods	_Parm63	-0.427**	-0.806**	-0.759**	-0.629**
HIV/Psychosocial care	===>	Coping methods [b]	_Parm64	-0.021	0.153**	0.211**	0.159**
Peer pressed	===>	Coping methods	_Parm65	0.042	0.495**	0.226**	0.371**

Notes: ([a]) This variable was retained in the final analysis, though insignificant, because it is one of the coping measures.
([b]) The SEM paths where the directions of influence for psychosocial predictors of sexual risk behaviour of the adolescent groups varied.
Coefficients with (**) or (*) label show that the effect of the source variable on the outcome variable in the path list is significant at .05 or .10 significance level.

© University of Pretoria

5.5.1 Pathways for predictors of sexual risk behaviour among all 1,437 adolescents in the sample

As can be seen in the Table 42 above and Figure 4 below, living with no HIV infection, female gender, some risky norms of the Baganda and Lango tribes, living with caregivers of any HIV status and who discuss sexuality issues, and experiencing negative peer influence, low to moderate socioeconomic status and psychosocial distresses (especially anger, anxiety, sleep unrest, psychosis, somatisation, suicide ideation, disobedience, disruptiveness, destructiveness, and delinquency) significantly directly influenced adolescents' sexual behaviour *by raising risks*. However, the younger adolescence stage, school attendance, attainment of any primary school level, the Pentecostal or Adventist or Orthodox religious convictions, and other situations in Lira (such as society strict adherence to sociocultural norms that promote sexual sanctity until marriage and ridicule of boys and girls who engage in sex early) significantly directly reduced their risky sexual behaviour.

In addition, living with HIV infection, attaining any primary school level, joblessness, participation in work that provides no or unreliable income (such as learning or farming or house/bar tending or hawking), living with caregivers who engage in work that necessitates periodic absence from home (such as trading), receiving HIV/ psychosocial care, experiencing negative peer influence and coping with adversities especially using deflection methods indirectly affected adolescents' sexual risk behaviour by raising psychosocial distresses. However, living with no HIV infection, the Anglican religious convictions, absence or presence of someone who is sick in the home, living with one to two caregivers (caregivers' stability) and with caregivers who are HIV-negative, and experiencing a low to moderate socioeconomic status and other positive situations in Rukungiri district (such as collective responsibility over children) indirectly affected their sexual risk behaviour by reducing distresses. Coping with adversities especially using self-control, social support, or socialisation methods also indirectly influenced their sexual risk behaviour by reducing the effects of other negative situations in Lira.

Figure 4 further shows that some psychosocial factors influenced adolescents' sexual risk behaviour more indirectly through their effects on the psychosocial distresses faced and coping methods utilised. In particular, absence of sick person in the home, living with one to two caregivers in a lifetime and experiencing other positive situations in Rukungiri district reduced distresses and these in turn raised adolescents' sexual risk behaviour. These factors also reduced adolescents' ability to cope with adversities using various methods and this raised psychosocial distresses, which in turn contributed to sexual risk behaviour. However, participation in work that provides unreliable income (such as house/bar tending and hawking), receiving HIV/psychosocial care and experiencing negative peer influence raised psychosocial distresses which then elevated sexual risk behaviour in this adolescent population. These factors also raised coping with adversities especially using deflection methods and this raised distresses, which then increased to risky sexual behaviour.

Furthermore, **experiencing community stressors** particularly poverty reflected by absence of basic needs, personal threats, interpersonal problems and HIV-related judgmental attitudes or stigma, affected the

© University of Pretoria

sexual risk behaviour of these adolescents more indirectly via different pathways. These stressors reduced these adolescents' ability to cope with adversities using deflection or self-control or social support or socialisation methods by -.85. **Coping with adversities** using these methods not only *raised* psychosocial distresses by .22, which in turn *contributed* to sexual risk behaviour in these adolescents but also *reduced* the impact of other negative situations in Lira district by -.54, which in turn *reduced* their sexual risk behaviour by -.34.

The Figure 4 also shows that **psychosocial distresses** mediated the effects of living with or without HIV infection, attaining any primary school level, the Anglican religious convictions, joblessness, involving in work that provides no or unreliable income such as learning or farming or house/bar tending, living with caregivers who are HIV-negative or who engage in work that provides regular income (such as trading), absence or presence of a sick person in the home and living with one to two caregivers, on the sexual risk behaviour of adolescents. The psychosocial distresses also mediated the effects of receiving HIV/psychosocial care and experiencing negative peer influence, low to moderate socioeconomic status, other negative situations in Rukungiri and coping, on the sexual risk behaviour of this group. In addition, the coping methods mediated the effects of participation in work that provides unreliable income (such as farming and house/bar tending), sharing the home with people who are not sick, living with one to two caregivers, receiving HIV/psychosocial care, and experiencing negative peer influence and other negative situations in Rukungiri, on the psychosocial distresses of adolescents. Overall, the coping methods utilised, psychosocial distress faced, and exposure to other positive situations in Lira district mediated the effects of stressors on the sexual risk behaviour of this adolescent group.

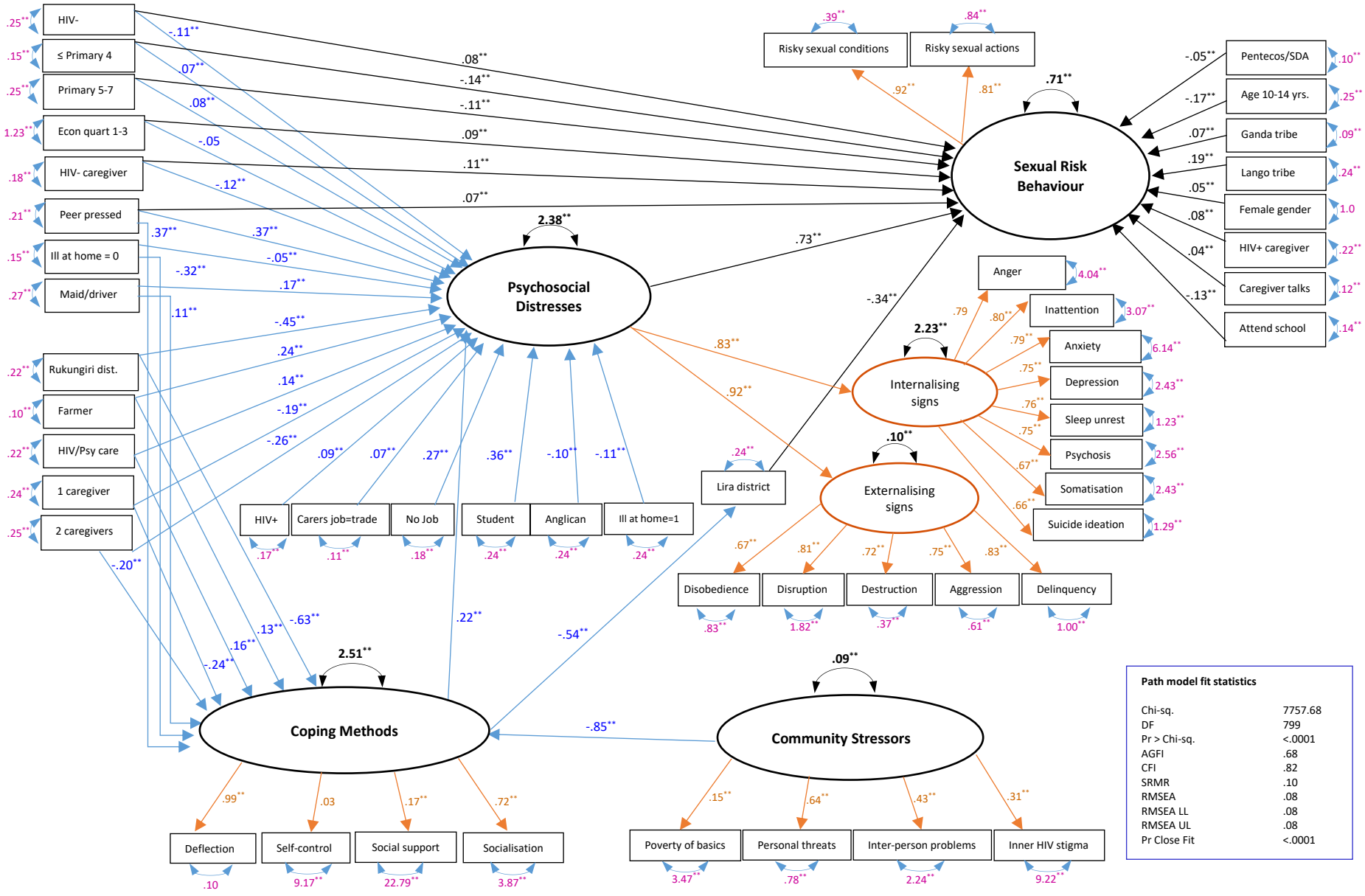
Regarding the prominence of these factors, psychosocial distresses (.79), the negative norms of the Lango ethnicity (.19) and living with HIV-negative caregivers (.11) were the most prominent factors that *directly increased* sexual risk behaviour in these adolescents while the positive situations in Lira district (-.34), the younger adolescence age (-.17), attainment of any lower-primary school level (-.14) and school attendance (-.13) were the most prominent factors that *directly reduced* sexual risk behaviour among them. In addition, negative peer influence (.37), involvement in work that provides no or unreliable income (such as learning (.36) or joblessness (.27) or farming (.24)) and coping with adversities by deflection (.22) were the most prominent factors that *increased* psychosocial distresses **while** the other positive situations in Rukungiri (-.45) and Lira (-.34) and living with two caregivers (-.26) were the most prominent factors that *reduced* distresses in these adolescents. Also, negative peer influence (.37), receiving HIV/psychosocial care (.16) and involvement in work that provides low or unreliable income such as farming (.13) or house/bar tending (.11), were the most prominent factors that *raised* coping especially using less-constructive methods like deflection **while** some positive situations in Rukungiri area (-.63), absence of a sick person in the home (-.32), and living with one (-.24) to two (-.20) caregivers were the most prominent factors that *reduced* coping with adversities in this adolescent.

© University of Pretoria

Finally, the path coefficients for the psychosocial predictors of sexual risk behaviour (in Table 42) show that there are variations in the strengths and directions of relationships for some of the variables in the models where adolescents living with and affected by HIV were looked at separately. Hence, the next subsections present and explain the path results for each group.

© University of Pretoria

Figure 4: Pathways for psychosocial predictors of sexual risk behaviour among all 1,437 adolescents in the sample



© University of Pretoria

5.5.2 Pathways for predictors of sexual risk behaviour among 289 adolescents living with HIV

Data from the path tests (in Table 42 and Figure 5) show that female gender, attaining any upper-primary education level, living with caregivers of whichever HIV status, and experiencing negative norms of the Baganda or Lango tribes, negative peer influence, low to moderate socioeconomic status and psychosocial distresses (especially anger, anxiety, sleep unrest, psychosis, somatisation, suicide ideation, disobedience, disruptiveness, destructiveness, delinquency) directly influenced sexual risk behaviour of the adolescents living with HIV *by raising risks*. However, the younger adolescence stage, school attendance, attainment of any lower-primary school level, the Pentecostal or Adventist or Orthodox religious convictions, sexuality discussions from caregivers, and other positive situations in Lira district such as family or society ridicule of adolescents who have sex and pregnancies directly influenced sexual risk behaviour by *reducing risks* in this group.

In addition, attaining any primary school level, joblessness, participation in work that provides no or unreliable income (such as learning or farming or house/bar tending or hawking), living with one caregiver or single parenting, receiving HIV/psychosocial care, and experiencing negative peer influence and coping with adversities especially using less-constructive socialisation methods (such as often praying or partying) indirectly influenced sexual risk behaviour *by raising* distresses. However, the Anglican religious convictions, absence and presence of a sick person in the home, living with two caregivers in a lifetime or with caregivers who engage in work that provides regular income such as trading and experience of other positive situations in Rukungiri district (such as collective responsibility over children) indirectly influenced sexual risk behaviour by reducing psychosocial distresses in this adolescent group. Similarly, coping with adversities especially through constructive methods such as self-control or obtaining social support indirectly influenced their sexual risk behaviour by reducing the effects of other negative situations in Lira district.

Figure 5 further shows that some socio-demographic factors indirectly influenced sexual risk behaviour in this group through their effects on the distresses faced and coping methods utilised. Specifically, absence of a sick person in the home, living with two caregivers in a lifetime, and exposure to other positive situations in Rukungiri district *lessened* the distresses, which then *raised* sexual risk behaviour in this adolescent group. These socio-demographic factors also *lessened* their ability to cope with adversities using constructive methods such as self-control and seeking social support (possibly because of the perception that the caregivers or significant others would always address their problems) and this contributed to psychosocial distresses, which then raised sexual risk behaviour. However, participation in work that provides unreliable income such as house/bar tending or hawking, living with one caregiver (single parenting), receiving HIV/psychosocial care and experiencing negative peer influences *raised* psychosocial distresses, which in turn raised sexual risk behaviour in this adolescent group. Also, experiencing negative peer influences and participation in work that provides low or

© University of Pretoria

unreliable income such as house/bar tending *raised* coping with adversities especially using less-constructive deflection and socialisation methods (such as joking about the problems faced or often attending risky social events) and these coping methods contributed to distresses, which then *raised* sexual risks in this group.

Furthermore, **experiencing community stressors** especially poverty reflected by absence of basic needs, personal threats, interpersonal problems and HIV-related judgmental attitudes, influenced sexual risk behaviour of the adolescents living with HIV more indirectly through different factors and pathways. These stressors *reduced* this groups' ability to cope with adversities especially using constructive methods such as self-control and obtaining social support by -.11. This groups' **coping methods** not only *added* to psychosocial distresses by .13, which in turn *contributed* to their sexual risk behaviour but also *lessened* the effects of other negative situations in Lira district by -.18, which in turn *reduced* their sexual risk behaviour by -.34.

Figure 5 also shows that the psychosocial distresses mediated the effects of attaining any primary education level, the Anglican religious convictions, joblessness, involvement in work that provides no or unreliable income (such as learning or farming or house/bar tending or hawking), absence or presence of a sick person in the home, living with one to two caregivers, living with caregivers who are HIV-negative and engage in work that provides some regular income such as trading, and receiving HIV/psychosocial care, on the sexual behaviour of the adolescents living with HIV. The psychosocial distresses also mediated the effects of negative peer influence, other situations in Rukungiri district and coping with adversities using various methods, on the sexual behaviour of this adolescent group.

Furthermore, **coping with adversities** through various methods mediated the effects of participation in work that provides no or unreliable income (such as learning or farming or house/bar tending), absence of a sick person in the home, living with one to two caregivers, receiving HIV/psychosocial care, negative peer influence and other situations in Rukungiri district, on the psychosocial distresses in this adolescent group. Additionally, the coping methods utilised, psychosocial distresses experienced and other situations in Lira district mediated the effects of stressors on the sexual risk behaviour of this adolescent group.

Concerning the prominence of the predictors, psychosocial distresses (.83) and the negative norms of the Lango ethnicity (.42) were the most prominent factors that *directly increased* sexual risk behaviour among the adolescents living with HIV while the positive situations in Lira district (-.47), the younger adolescence stage (-.15) and school attendance (-.12) were the most prominent factors that *directly decreased* sexual risk behaviour in this group. Involvement in learning (.36) and exposure to negative peer influence (.34) were the most prominent factors in raising distresses while other positive situations in Rukungiri district (such as collective responsibility over children) were the most prominent factors that reduced distresses (-.32) and coping with adversities (-.43) especially using unproductive methods in this adolescent group.

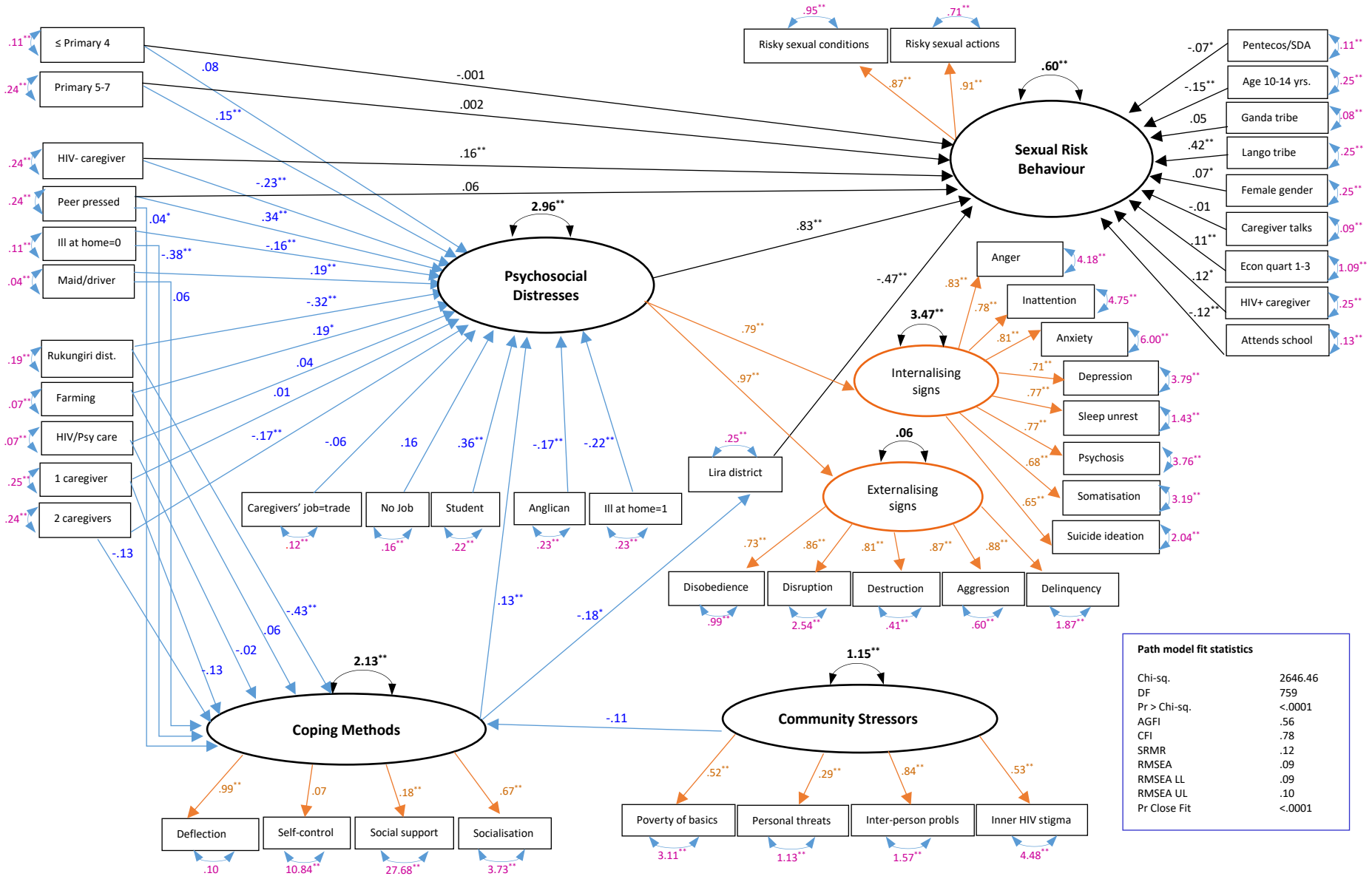
© University of Pretoria

Additionally, the path results presented in Table 42 show that there were some notable differences in the directions of predictors for psychosocial and sexual risk behaviour of the adolescents in this group and those who were HIV uninfected or unaware. Unlike in these two groups, attainment of any upper-primary school level directly *raised* sexual risk behaviour (-.11, -.22 vs. .002) of the adolescents who were living with HIV. Similarly, living with one caregiver (single parenting) raised psychosocial distresses (-.56, -.11 vs. .01) which in turn raised sexual risk behaviour (.83) in this adolescent group, and receipt of HIV/psychosocial care reduced their ability to cope with adversities (.15, .21 vs. -.02) and this contributed to distresses (.13) which in turn raised sexual risk behaviour (.83). However, these factors did not seem to have much effect on the psychosocial distresses and sexual risk behaviour of the adolescents in this group.

These results highlight the paths and directions of the key psychosocial factors to consider when planning and implementing interventions for addressing sexual risks in this group.

© University of Pretoria

Figure 5: Pathways for psychosocial predictors of sexual risk behaviour among 289 HIV-infected adolescents involved in this study



© University of Pretoria

5.5.3 Pathways for predictors of sexual risk behaviour among 756 HIV-uninfected adolescents

Data from the path tests (in Table 42 and Figure 6) again show that female gender, living with caregivers of whichever HIV status, and experiencing negative norms of the Baganda and Lango tribes, negative peer influence, a lower to moderate socioeconomic status and psychosocial distresses (especially anger, anxiety, sleep unrest, psychosis, somatisation, suicide ideation, disobedience, disruptiveness, destructiveness, delinquency) directly influenced the sexual behaviour of the adolescents who were not living with HIV by *increasing risks*. However, the younger adolescence stage, school attendance, attainment of any primary education level, Pentecostal or Adventist or Orthodox religious convictions, sexuality discussions from caregivers, and exposure to other positive situations in Lira district directly influenced sexual behaviour by *reducing risk* in this adolescent group.

In addition, attainment of any upper-primary education level, joblessness, involvement in work that provides no or unreliable income (such as learning or farming or house/bar tending), absence of a sick person in the home, living with a caregiver who is HIV-negative, receiving HIV/psychosocial care, and experiencing negative peer influence indirectly influenced sexual risk behaviour *by raising* distresses. Conversely, attainment of any lower-primary education level, the Anglican religious convictions, presence of a sick person in the home, living with one to two caregivers in a lifetime or with caregivers who engage in work that provides regular income such as trading, exposure to other positive situations in Rukungiri, and coping with adversities especially using constructive methods such as self-control and obtaining social support indirectly influenced sexual risk behaviour *by reducing* distresses in this group. Coping using these methods also indirectly influenced their sexual risk behaviour *by reducing* the effects of other negative situations in Lira district.

Figure 6 further shows that some socio-demographic factors indirectly influenced sexual risk behaviour of this adolescent group through their effects on the distresses faced and coping methods used. In particular, absence of a sick person in the home, involvement in work that provides unreliable or low income (such as farming or house/bar tending), receiving psychosocial care and experiencing negative peer influence, *raised* psychosocial distresses and this in turn *increased* sexual risk behaviour in this adolescent group. With the exception of absence of a sick person in the home, these socio-demographic factors *raised* coping with adversities using whichever method and this *reduced* psychosocial distresses, which then *raised* sexual risk behaviour in this adolescent group. Additionally, living with one to two caregivers in a lifetime (caregivers' stability), and exposure to other positive situations in Rukungiri district *reduced* distresses, which then *raised* sexual risk behaviour in this group. These socio-demographic factors and absence of a sick person in the home also *reduced* coping with adversities especially using the unproductive methods and this somewhat *lessened* distresses, which in turn *raised* sexual risk behaviour in this group.

© University of Pretoria

Furthermore, **experiencing community stressors** (notably, poverty reflected by absence of basic needs, personal threats, interpersonal problems and HIV judgmental attitudes) influenced sexual risk behaviour in this adolescent group more indirectly through various factors and pathways. These stressors significantly *reduced* this groups' ability to cope with adversities using self-control or social support or socialisation or deflection methods by -.91. This groups' coping methods not only contributed to *reducing* psychosocial distresses by -.03, which in turn contributed to raising sexual risk behaviour in this adolescent group but also lessened the effects of other negative circumstances in the Lira by -.54, which in turn reduced their sexual risk behaviour by -.27.

Figure 6 also shows that psychosocial distresses mediated the effects of attainment of any primary education level, the Anglican religious values, joblessness, learning or working as a farmer and house/bar tender, absence and presence of a sick person in the home, living with one to two caregivers in a lifetime, living with caregivers who are HIV-negative and engage in jobs that provide regular income such as trading, and receiving psychosocial care, on the sexual behaviour of HIV-uninfected adolescents. The aforesaid psychosocial distresses also mediated the effects of negative peer influence, other situations in Rukungiri district and coping with adversities using various methods, on the sexual risk behaviour of this adolescent group.

Furthermore, coping with adversities through various methods mediated the effects of involvement in work that provides unreliable income such as farming and house/bar tending, absence of a sick person in the home, living with one to two caregivers in a lifetime, receiving psychosocial care, negative peer influence, and other situations in Rukungiri district, on the psychosocial distresses in this group. The coping methods utilised, psychosocial distresses experienced and other situations in Lira district also mediated the effects of community stressors on the sexual risk behaviour of this adolescent group.

Concerning the prominence of the factors, results show that slightly like the adolescents living with HIV, psychosocial distresses (.39), and negative peer influence (.17) were the most prominent factors *directly positively* influencing sexual risk behaviour in the HIV uninfected adolescents while the positive situations in the Lira area (-.27), the younger adolescence stage (-.19), attainment of any lower-primary school level (-.14) and school attendance (-.13) were the most prominent factors *directly negatively* influencing sexual risk behaviour in this adolescent group. Negative peer influence (.39), joblessness (.26) and involvement in strenuous chores like farming (.24) or learning (.22) were the prominent factors in raising distresses while living with one (-.56) to two (-.57) caregivers and the other positive situations in Rukungiri district (-.50) were the most prominent factors in reducing distresses in this adolescent group. Experiencing community stressors (-.91) and some other negative situations in Rukungiri district (-.80) as well as living with one (-.32) to two (-.25) caregivers were the most prominent factors *reducing* coping with adversities while negative peer influence (.50), involvement in work that provides unreliable income like farming (.18) and receipt of psychosocial care (.15) were the main factors

© University of Pretoria

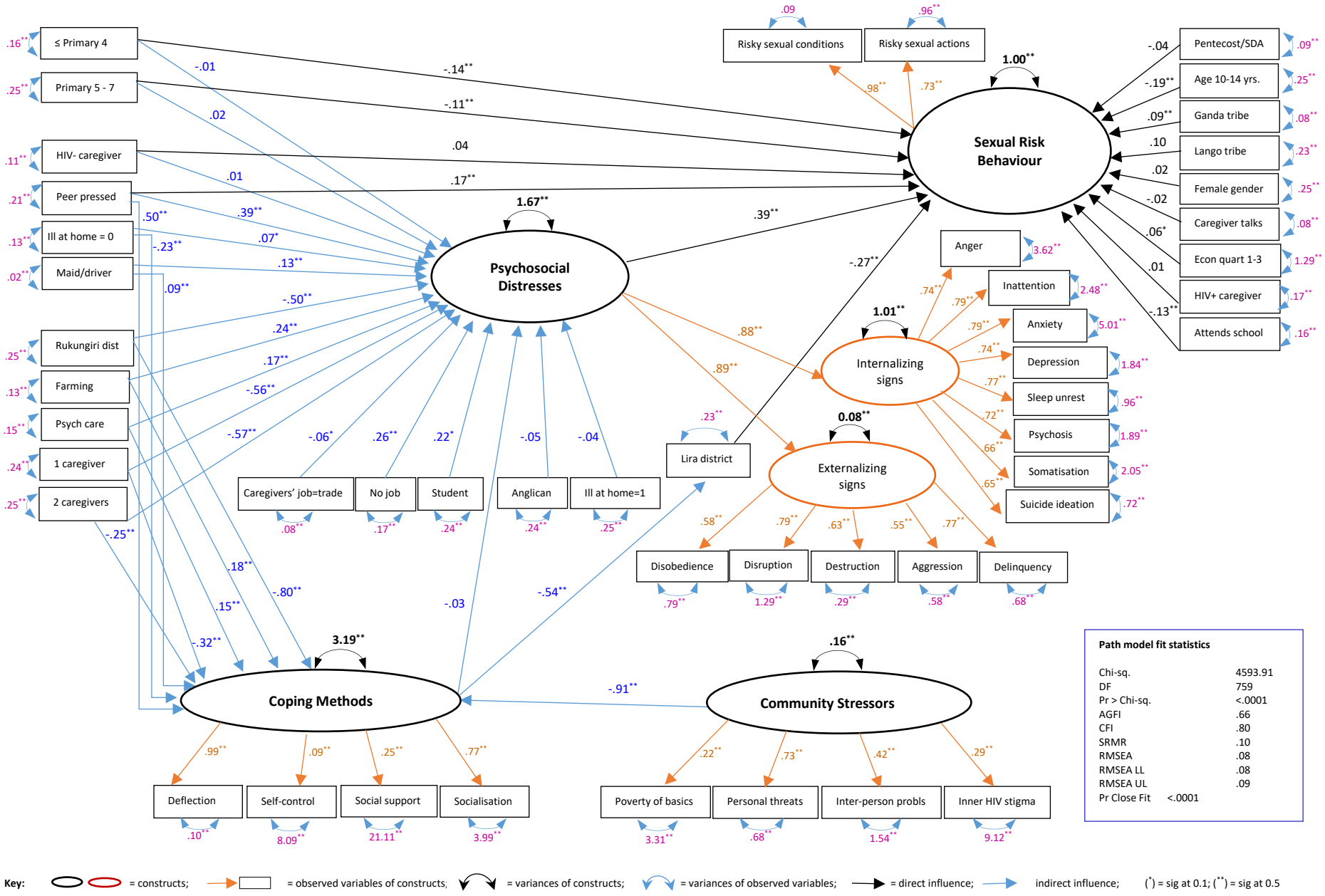
increasing coping with adversities (especially using relatively less-constructive deflection and socialisation methods like ignoring problems or often attending risky social events) in this adolescent group.

Regarding the directions of impact of the predictors among HIV infected and uninfected adolescents, results showed that unlike in the adolescents living with HIV, attainment of any upper-primary school level directly *reduced* sexual risk behaviour (.002 vs. -.11) in the HIV uninfected adolescents. Additionally, attainment of any lower-primary school level (.09 vs. -.01), living with one caregiver in a lifetime or single parenting (.01 vs. -.56) and coping with adversities using constructive methods (.13 vs. -.03) *reduced* the distresses while absence of a sick person (-.16 vs. .07) and living with HIV-negative caregivers (-.23 vs. .001) in the home raised psychosocial distresses in this adolescent group. Results also show that unlike in the group of adolescents who were living with HIV, receipt of psychosocial care raised coping using various methods (-.02 vs. .15) and this helped to slightly reduce psychosocial distresses in the group of adolescents who were not living with HIV.

The differences in directions of impact of these factors (especially education attainment) on the psychosocial distresses and sexual risk behaviour of the HIV uninfected and infected adolescents imply that the protective benefit of schooling against psychosocial distresses and sexual risk behaviour increases with education level among the adolescents who are living with HIV but diminishes with education level among the adolescents who live with HIV. The positive relationship between absence of a sick person at home and manifestation of distresses among adolescents who are not living with HIV implies that some other risky situations, rather than the health of the people they live with in the home, foment distresses for this adolescent group. Hence, the changes in directions of impact of the aforesaid factors should be considered when devising and implementing programmes to address the psychosocial and sexual risks among the adolescents living with and affected by HIV who live in HIV affected homes.

© University of Pretoria

Figure 6: Pathways for psychosocial predictors of sexual risk behaviour among 756 HIV-uninfected adolescents



© University of Pretoria

5.5.4 Pathways for predictors of sexual risk behaviour among 392 HIV-unaware adolescents

Data from the path tests (in Table 42 and Figure 7) also show that female gender, living with caregivers of whichever HIV status, HIV/sexuality discussions from caregivers, and experiencing negative norms of the Baganda tribe, low to moderate socioeconomic status, negative peer influence and psychosocial distresses (especially anger, anxiety, sleep unrest, psychosis, somatisation, suicide ideation, disobedience, disruptiveness, destructiveness, and delinquency) directly influenced sexual risk behaviour in the adolescents who were unaware of their HIV status by raising risk. However, the younger adolescence stage, school attendance, attainment of any primary school level, the Pentecostal or Adventist or Orthodox religious convictions, and experiencing some positive norms of the Lango tribe (such as adherence to sexual sanctity until marriage and ridicule of boys and girls who engage in sex or cause or become pregnant) and other positive situations in Lira (such as the existing extended family system for fostering and supporting vulnerable children), directly influenced sexual risk behaviour by reducing it in this group.

Additionally, attainment of any primary school level, absence or presence of a sick person in the home, joblessness, involvement in work that provides no or unreliable income (such as learning or farming or house/bar tending), receiving psychosocial care, experiencing negative peer influence, and coping with adversities especially using less-constructive deflection and socialisation methods (such as ignoring the problems faced and often participating in risky social events), indirectly influenced sexual risk behaviour by raising the aforesaid psychosocial distresses in this group. However, the Anglican religious convictions, living with one to two caregivers, living with caregivers who are HIV-negative or who engage in jobs that provide regular income such as trading, and experiencing other positive situations in Rukungiri, indirectly influenced sexual risk behaviour by reducing distresses in this adolescent group. The coping methods mentioned above also indirectly influenced sexual risk behaviour of this group by reducing the effects of the other negative situations in Lira district.

Figure 7 further shows that some socio-demographic factors indirectly influenced this groups' sexual risk behaviour through their effects on the psychosocial distresses faced and coping methods utilised. Specifically, absence and presence of a sick person in the home, involvement in work that provides unreliable income such as farming or house/bar tending, receiving psychosocial care and experiencing negative peer influence elevated psychosocial distresses, which then increased sexual risk behaviour in this adolescent group. Except for the absence of a sick person in the home, these socio-demographic factors also raised coping with adversities especially using unconstructive deflection and socialisation methods and these method of coping raised psychosocial distresses, which then increased sexual risk behaviour in this group. Additionally, living with one to two caregivers in a lifetime (caregivers' stability) and experiencing other positive situations in Rukungiri district lessened distresses, which then raised sexual risk behaviour in this adolescent group. The caregivers' stability

© University of Pretoria

and other positive situations in Rukungiri district also lessened coping using constructive methods and this raised distresses by .45, which then contributed to sexual risk behaviour in this group.

Furthermore, experiencing community stressors (especially, poverty reflected by absence of basic needs, personal threats, interpersonal problems, and HIV judgmental attitudes) influenced sexual risk behaviour of these adolescents **more indirectly** via different factors and pathways. These stressors significantly lessened the HIV unaware adolescents' ability to cope with adversities especially using constructive methods such as self-control and social support by -1.14. This not only *contributed* to the occurrence of the aforesaid distresses by .45, which then *contributed* to sexual risk behaviour in this adolescent group but also *reduced* the effects of other adversities in Lira district by -1.14, which then *reduced* their sexual risk behaviour by -.20.

Additionally, psychosocial distresses mediated the effects of attainment of any primary school level, the Anglican religious convictions, joblessness, involvement in work which provides no or unreliable income (such as learning or farming or house/bar tending), absence and presence of a sick person in the home, living with one to two caregivers in a lifetime, living with caregivers who are HIV-negative or who engage in work that provides regular income (such as trading), receiving psychosocial care, negative peer influence, other situations in Rukungiri district and coping, on the sexual risk behaviour of this adolescent group. Coping with adversities using the aforesaid methods mediated the effects of participation in work that offers unreliable income (such as farming or house/bar tending), absence of a sick person in the home, living with one to two caregivers, receiving psychosocial care, negative peer influence and other situations in Rukungiri district, on the psychosocial distresses. The coping methods utilised, distresses faced, and other situations in Lira district mediated the effects of community stressors on the sexual risk behaviour of this adolescent group.

Also, slightly different from the path results for the HIV infected and uninfected groups, psychosocial distresses (.76), living with caregivers who are HIV-negative (.15) or positive (.12), and experiencing sexuality discussions from caregivers (.10) and the negative norms of the Baganda tribe (.10) were the most prominent factors that *directly increased* sexual risk behaviour among the HIV-unaware adolescents **while** attainment of any lower (-.28) or upper (-.22) primary education level, experiencing positive situations in Lira district (-.20), the younger adolescence stage (-.19) and school attendance (-.11) were the main factors that *directly reduced* their sexual risk behaviour. Negative peer influence (.47), coping with adversities (.45), unemployment (.40), involvement in work that provides no or unreliable income such as learning (.53) or farming (.25), attainment of any lower (.29) or upper (.21) primary school level and receiving psychosocial care (.04) were the main factors that *raised* distresses **while** the other positive situations in Rukungiri district (-.51), living with one (-.11) to two (-.17) caregivers and the Anglican religious convictions (-.11) were the main factors that *reduced* distresses in this group. Experiencing stressors (-1.14), other negative situations in Rukungiri district (-.76) and living with one (-.36) to two (-.27) caregivers were the main factors that *reduced* coping with adversities through various

© University of Pretoria

methods **while** experiencing negative peer influence (.23), receiving psychosocial care (.21), participation in work that provides low or unreliable income such as house/bar tending (.18) or farming (.15) were the main factors that *raised* coping with adversities especially using social support methods in this adolescent group.

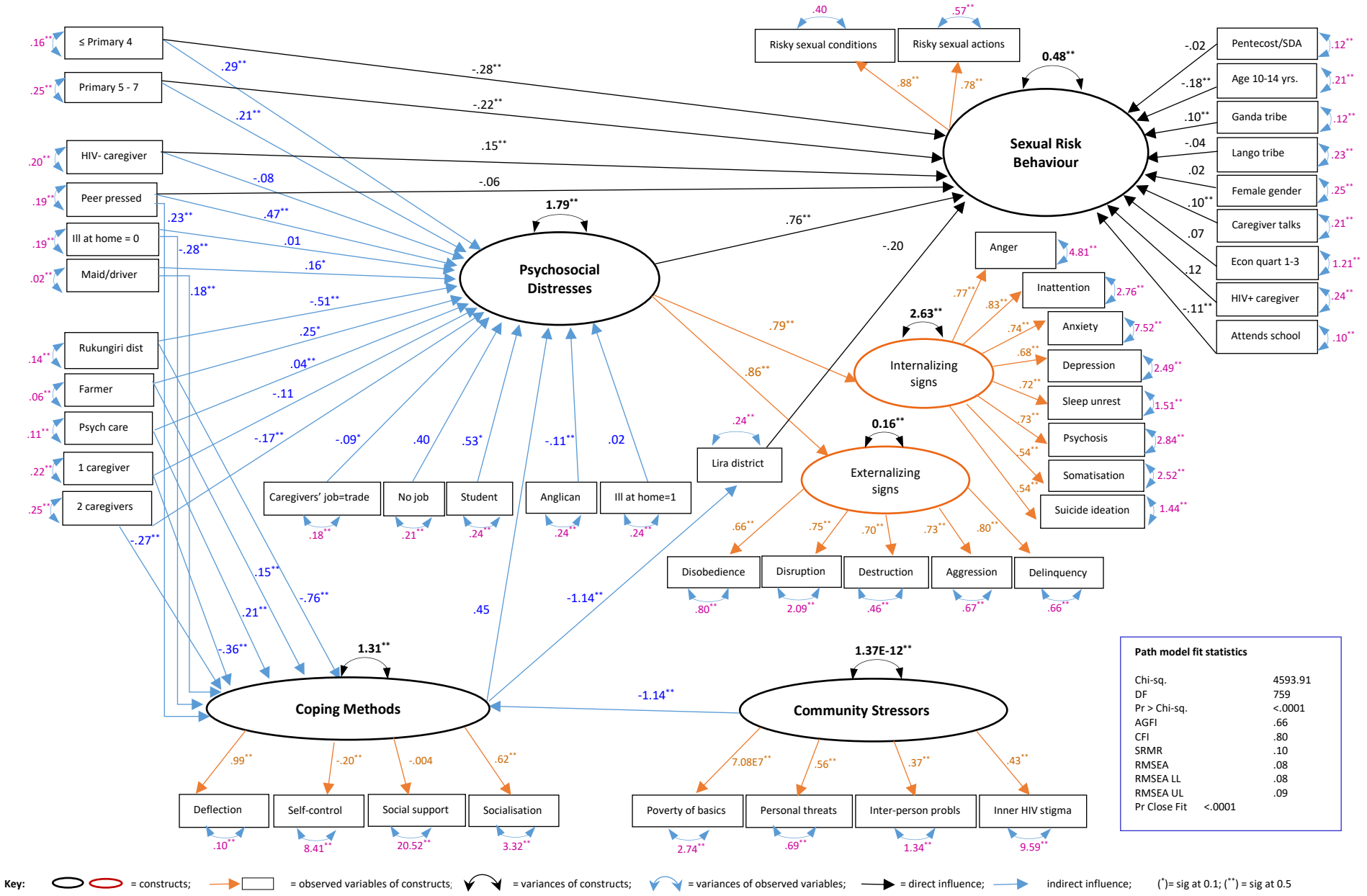
Regarding the directions of impact of the predictors among the HIV infected and unaware adolescents, results show that unlike in the group of adolescent who were living with HIV, the sexuality discussions from caregivers directly *elevated* sexual risk behaviour (-.01 vs. .10) among the adolescents who were unaware of their HIV status while the negative peer influence (.06 vs. -.06), attainment of any upper-primary school level (.002 vs. -.22) and some norms related to the Lango ethnicity (.42 vs. -.04) directly *reduced* sexual risk behaviour in this adolescent group. In addition, unlike in the group for adolescent who were living with HIV, the presence of a sick person in the home (-.22 vs. .02) *elevated* psychosocial distresses while living with one caregiver (.01 vs. -.11) *lessened* the psychosocial distresses and coping with adversities especially using self-control (.07 vs. -.20) and social support (.18 vs. -.004) in the group for adolescents who were unaware of their HIV status. It is also worth noting that, unlike in the group for adolescents who were living with HIV, receiving psychosocial care (-.02 vs. .21) raised coping with adversities especially using less-constructive methods (such as deflection and socialisation) and these coping methods amplified distresses, which then raised sexual risks among the adolescents who were not aware of their HIV status.

There were also notable differences in the directions of impact of some predictors among the adolescents who were not living with HIV and those who were unaware of their HIV status. Results in Table 42 and Figures 6 and 7 show that, unlike in the group of adolescents who were not living with HIV, the sexuality discussions from caregivers directly *raised* sexual risk behaviour (-.02 vs. .10) while some norms of the Lango ethnicity (.10 vs. -.04) *lessened* sexual risk behaviour among the adolescents who were unaware of their HIV status. The results also show that, unlike in the group of adolescent who were not living with HIV, attainment of any lower-primary school level (-.01 vs. .29) and coping with adversities (-.03 vs. .45) especially using less-constructive methods (such as deflection and socialisation) *raised* distresses among the adolescents who were unaware of their HIV status **while** living with HIV-negative caregivers (.001 vs. -.08) and coping especially using more-constructive methods such as self-control (.09 vs. -.20) and social support (.25 vs. -.004) contributed to *lessening* psychosocial distresses, which then contributed to sexual risk behaviour in the adolescents who were unaware of their HIV status. This implies that these socio-demographic factors impacted differently on the psychosocial distresses, sexual risk behaviours and coping methods of HIV unaware and uninfected adolescents.

The variations in directions of impact of these factors should be considered when devising and implementing programmes to address the psychosocial and sexual risks of the HIV affected adolescents who live in HIV-affected home settings.

© University of Pretoria

Figure 7: Pathways for psychosocial predictors of sexual risk behaviour among 392 HIV-unaware adolescents



© University of Pretoria

5.5.5 Summary of the pathways for psychosocial predictors of sexual risk behaviour

The results have shown that HIV status, female gender, younger adolescence stage, school attendance, attainment of any primary school level, religious conviction, joblessness, involvement in work that provides no or unreliable income (such as learning or farming or house/bar tending), caregivers' HIV status and type of work (especially trading), sexuality discussions from caregivers, sharing a home with someone who is sick or not sick, caregivers' stability, receiving HIV/psychosocial care, the positive and negative norms (especially of the Baganda and Lango) and other situations in Rukungiri and Lira districts, and experiencing negative peer influence, low to moderate socioeconomic status, community stressors (except social distancing attitudes), psychosocial distresses (except loneliness), and coping with adversities using various methods (except self-control), significantly influence sexual risk behaviour of the adolescents who live in HIV-affected homes.

Psychosocial distresses are the most prominent factors that directly increase sexual risk behaviour while the positive situations in Lira district, the positive norms of the Lango tribe, the younger adolescence stage, and school attendance are the most prominent factors that directly reduce sexual risk behaviour in these adolescents. In addition, involvement in work with no or unreliable income and experiencing negative peer influence significantly increase psychosocial distresses while caregiver stability and receipt of HIV/psychosocial care do not seem to have much effect on the occurrence of psychosocial distresses in adolescents as a whole.

Results further show that whereas the pathways for psychosocial predictors of sexual risk behaviour are similar across the three adolescent groups involved in this study, the strength and directions by which some factors influence their sexual behaviour vary. First, unlike for the whole group of adolescents, results for the group of adolescents living with HIV show that attainment of upper-primary education raises sexual risk behaviour, living with caregivers who are HIV-negative lessens the psychosocial distresses, and discussion of HIV or sexuality issues with caregivers lessens sexual risk behaviour.

Second, unlike for the group of adolescents living with HIV, the results for the adolescents who were not living with HIV showed that attainment of upper-primary education levels directly reduces sexual risk behaviour. In addition, attainment of lower-primary education levels and caregiver stability reduces psychosocial distresses while absence of a sick person in the home raises psychosocial distresses in this group. Also, receiving psychosocial care raises coping with adversities by less-constructive methods such as deflection and socialisation through unsafe social activities in this group.

Third, unlike for the adolescents who were not living with HIV, results of the group for adolescents who were unaware of their HIV status showed that discussion of sexuality issues with caregivers directly raises sexual risk behaviour while some positive norms of the Lango ethnic group reduce sexual risk behaviour in this adolescent group. In addition, attainment of lower-primary education levels and coping with adversities

© University of Pretoria

especially using less-constructive methods like deflection raises psychosocial distresses while living with HIV-negative caregivers reduces them in the HIV-unaware group.

Fourth, results contrasting the three groups show that whereas attainment of any upper-primary school level reduces sexual risk behaviour in the HIV uninfected and unaware adolescents (-.11 vs. -.22), this factor instead increases sexual risks in the adolescents living with HIV (.002). This means that attainment of any upper-primary education level does not necessarily restrain the adolescents living with HIV from engaging in sexual risk behaviour. Likewise, whereas negative peer influence lessens sexual risks in the HIV unaware adolescents (-.06), this factor instead increases sexual risks in the adolescents living with HIV and not living with HIV (.06 vs. .17). This implies that these two groups could be less resilient to the negative sexuality norms of peers than the HIV-unaware adolescents. It also implies that the adolescents who are unaware of their HIV status could be the ones mainly setting-up or urging their peers into social or sexual risks as they spectate. These findings highlight the need for specific interventions to not only strengthen the protective factors but also prevent and mitigate the risk factors among these adolescents.

In the next chapter, we briefly restate and discuss the results based on the five research objectives.

© University of Pretoria

CHAPTER SIX: DISCUSSION OF RESULTS

This study assessed the psychosocial and sexual experiences among adolescents living with and affected by HIV who live in HIV-affected homes, and how the psychosocial experiences of these adolescents interact to influence their sexual risk behaviour. This chapter briefly states and discusses the results of each research objective and hypothesis.

Overall, the results showed that whereas the three groups experienced noteworthy levels of the observed psychosocial and sexual factors, the adolescents living with HIV were most prone to the risk-factors notably, low post-primary education attainment, double orphanhood, home instability, working as house/bar tenders, living with many sick people and with caregivers who were relatives, or HIV-negative, or alcohol users, receiving HIV/psychosocial care, negative peer influence, poverty, personal threats, interpersonal problems, psychosocial distress, risky sexual behaviour, and low ability to cope using constructive methods like self-control.

The results also showed that main factors that increased sexual risk behaviour in the entire adolescent sample were susceptibility to risky sociocultural norms (especially among the younger girls of the Baganda and Lango tribes), single parenting, sexuality talks from caregivers, negative effects of receiving HIV/psychosocial care, negative peer influence, personal and interpersonal problems, psychosocial distress, and coping by deflecting problems. The main factors that reduced sexual risk behaviour in the entire sample were school attendance, religious conviction, not experiencing long periods of orphanhood, parenting from two caregivers, sharing a home with only a few people and receiving constructive social support and socialisation, and not experiencing poverty, HIV-stigma, inattention, depression or aggression. These sociodemographic factors and community stressors mainly interacted with coping methods via psychosocial distresses to influence sexual risk behaviour in the entire sample and the different groups of adolescents.

6.1 Psychosocial and Sexual Risk Levels among Adolescents Living with and Affected by HIV

The results have shown that the adolescents living with and affected by HIV experience noteworthy levels of the observed socio-demographic factors, peer influences, socioeconomic circumstances, community stressors, psychosocial distresses, coping methods and sexual risk behaviours. The results also showed that although these adolescents all live in homes that are affected by HIV/AIDS, they exhibited varied rates of the observed psychosocial and sexual experiences.

Sociodemographic circumstances

The adolescents living with HIV were significantly more prone to most of the sociodemographic situations that may result in HIV-transmission or re-infection. They were aware of their HIV status from a younger

© University of Pretoria

age and were more likely to have been orphaned twice mainly during childhood and pre-adolescence, to have been involved in risky activities such as working as house/bar tenders, and to have rarely attended post-primary education although they attained primary-level education more than the HIV-uninfected. This implies that they had to deal with the negative effects of awareness of their HIV or orphanhood status longer, participating in risky child labour and not continuing with education. These findings could be ascribed to many of them acquiring HIV from their mothers and experiencing repeated illnesses that resulted in caregivers testing their HIV status early, facing economic hardships (Cluver et al., 2013), lacking bursaries for post-primary education, failing to cope with stressful school situations (Kihumuro et al., 2021; Kimera et al., 2020), and performing poorly in school (Mutumba, 2014).

Adolescents living with HIV were again more likely to have experienced home instability and being cared for by fathers, grandparents or other relatives, and to have been in the current home with fewer residents including several who were sick. This implies that some of them, especially the orphans, may have periodically lived with relatives who provided their necessities but probably experienced a sense of lack of family and belonging while carrying the burden of caring for their own or other family members' morbidities and worrying about their own health and other family members' sickness and likely death. The small reported number of residents in the home and the usual caregivers in this group can be attributed to the reluctance of caregivers in homes with HIV-infected children and other relatives of children in HIV-affected families to take in more people due to the stigma and heavy burden of care.

They were also more likely to have been Lango/Acholi who lived in Lira district (which is one of the areas devastated by recent wars), to have lived with caregivers who were HIV-negative or alcohol users, to have received HIV/psychosocial care, and to have experienced peer influence. These circumstances could have resulted in not only orphanhood, home instability, family negligence, a lack of belonging and psychological distress, but also in distrusting family members and trusting the risky advice and behaviours of their peers (Mahmood & Shujja, 2013). Additionally, more HIV-negative caregivers could be taking care of their relative's children who are living with HIV or could be providing little guidance to their children which result in risky sexual behaviour and HIV infections among them. Use of HIV/psychosocial care could have not only improved their physical health and optimism of achieving lifetime social goals (Mutumba, 2014) but also negatively affected their perception of risk and psychological health, which could have resulted in repeated risky sexual behaviour and HIV-infections. The higher rates of the HIV-unaware adolescents living with caregivers that were unaware of their HIV status can be ascribed to caregivers being scared of what may occur if their own or children's HIV tests were positive.

© University of Pretoria

The HIV unaware adolescents were less likely to advance to post-primary school levels despite being relatively socioeconomically better-off than the other two groups of adolescents. This means that other psychosocial risks such as caregivers' instability could be negatively affecting their further education. They experienced parental death in childhood or preadolescence, which means that they may have experienced grief for a long period. Many of them were prone to sharing a home with many people and to living with different caregivers who are jobless or engage in house/bar tending and vending. They were also mainly living with caregivers who did not know their HIV status or discuss HIV issues or provide psychosocial care, which implies that they may be experiencing a low HIV-risk perception. These circumstances could be exacerbating psychosocial distresses and sexual risk behaviour in this group.

The findings also showed that the HIV-uninfected adolescents were much more likely to have attended post-primary education, engaged in farming, and faced orphanhood partially, in late adolescence and for a shorter time. They experienced home stability and parenting from both parents, the mother, or caregivers who were HIV-positive, did not use alcohol and discussed sexuality issues. They were also much more likely to have lived in Rukungiri where families emphasise formal social relationships. This implies that they may have experienced a longer school socialisation period, better parental care and family stability, and lesser food insecurity and problems of orphanhood than the adolescents living with HIV and unaware of their status. Also, the HIV-positive caregivers could be either producing or fostering more children who are not living with HIV owing to the availability of preventative treatments or supervising their children strictly which result in avoiding risky sexual behaviour and HIV infection among them. Some caregivers may be also avoiding discussing HIV/sexuality issues with the adolescents living with HIV due to fear of evoking painful memories while the other caregivers of especially those who are not living with HIV may be discussing such issues because they believe it would raise their risk-perception and protect them from danger. These circumstances could have reduced their exposure to various psychosocial and sexual risks and protected them against HIV-infection.

Some of these findings concur with those of earlier studies which found that most of the adolescents living with HIV had lost either their father or mother, or both and were living with caregivers who are relatives (Birungi et al., 2008; Bakeera-Kitaka, et al., 2019; Mutumba, 2014). Cluver et al. (2013) and Mellins et al. (2012) also found that adolescents living with or exposed (orphaned) to HIV faced more double orphanhood, home tasks and instability, and a shorter stay in the home than those not living with or exposed to HIV. The findings of this research and earlier studies suggest that the HIV status creates unequal circumstances for adolescents who liv in HIV-affected homes, which makes each group more vulnerable to some risks than the other.

© University of Pretoria

Community stressors

Whereas the adolescents who were living with HIV and unaware of their HIV status displayed higher levels of personal judgemental and social distancing HIV-stigma, the adolescents living with HIV experienced higher levels of poverty of the basics, interpersonal problems and personal threats. This could be ascribed to adolescents' and other family members' recurrent illnesses and the death or negligence of essential family members, which may have resulted in low productivity and socioeconomic hardship. Discriminative and demeaning comments and acts by their peers, family, school and community members may have led to poor interpersonal relationships, while access to counselling may have reduced their HIV-misconceptions and stigma.

Kalungwana et al. (2022) also found lower levels of interpersonal relationships in children living with HIV than in children not living with HIV. Earlier studies found high rates of HIV-stigma, poverty reflected by absence of basic needs, personal threats (concern about own and family members' unemployment, continuous sickness and medication, imminent death, property theft, or school performance), and interpersonal problems with peers or significant others among adolescents living with HIV (Avalos et al., 2010; Mutumba, 2014; NAFOPHANU, 2019). The findings also concur with those of Visser et al. (2008) who found that people who are aware of someone living with HIV (e.g. adolescents living with HIV due to the higher access to HIV/psychosocial care), had lower rates of HIV-stigma than others. However, other studies found that adolescents living with and exposed to HIV had comparable rates of stressors related to poverty, social abuse, personal and caregivers' illness, family abuse/ conflicts, neighbourhood insecurity, and HIV-stigma (Mellins & Malee, 2013; Mutumba et al., 2016).

Findings of the current and earlier studies imply that HIV infection creates various psychosocial adversities in families and communities which could be fomenting sexual risk behaviour, especially among adolescents living with HIV. This highlights the need for families, schools, communities and social/AIDS/SRH service organisations to implement interventions that prevent poverty, personal threats and interpersonal problems among adolescents living with HIV, and judgmental and social distancing stigma in other adolescents.

Psychosocial distress

Adolescents who were living with HIV experienced significantly higher levels of all observed forms of internalising and externalising distress, with the most prominent being suicide ideation, depression, loneliness, and anger. This could be ascribed to involvement in work that provides unreliable income, home instability, double and maternal orphanhood, single parenting, sick people in the home, HIV/psychosocial care, negative peer influences and other stressful situations, especially HIV-stigma, interpersonal problems with family members, poverty reflected by absence of basic needs, and personal threats, e.g. significant others' negligence, illness or death situations. These may have led to insufficient family bonding or the rekindling of bad memories and weakening their ability to effectively cope with problems resulting in distress and risky sexual behaviour.

© University of Pretoria

The current findings concur with those of some previous studies that also showed that adolescents who live with HIV experience higher rates of anxiety (Battles & Weiner, 2002; Visser et al., 2018), depression (Battles & Weiner, 2002; Cluver et al., 2007; Elkington et al., 2011a), loneliness (Bomba et al., 2010), attention deficit (Bomba et al., 2010; Gadow et al., 2012a, 2012b), hyperactivity (Gadow et al., 2012a, 2012b; Visser et al., 2018), psychosis (Bomba et al., 2010), somatic and affective problems (Visser et al., 2018), disobedience (Gadow et al., 2012a, 2012b; Kalungwana et al., 2022), aggression (Kalungwana et al., 2022), antisocial tendencies, and delinquent behaviour (Bomba et al., 2010; Kalungwana et al., 2022; Puthanakit et al., 2013) than adolescents who were not living with, but exposed to HIV.

However, some earlier studies showed comparable rates of anxiety, depression (Kang et al., 2011; Mellins et al., 2009), suicidal ideation (Battles & Weiner, 2002) and other forms of psychological distress (Foster et al., 2012) among adolescents living with or exposed to HIV while other studies showed lower rates of attention-deficit disorder, hyperactivity (Mellins et al., 2011; Visser et al., 2018), depression (Gadow et al., 2012a, 2012b; Mellins et al., 2011), anxiety, loneliness, aggression (Malee et al., 2011a; Mellins et al., 2011; Mellins & Malee, 2013), somatisation, and delinquency (Gadow et al., 2010a, 2012b) in HIV-infected than in uninfected but affected adolescents. The results underscore the need for interventions to prevent and mitigate psychosocial distress especially among adolescents living with HIV.

Coping

The adolescents living with HIV were significantly more likely than the other groups to cope with adversities by socialisation (attending social events like parties), and less likely to cope with adversities using self-control (refusing bad things), deflection (like keeping busy), and seeking emotional/informational support. The lower rate of coping using constructive methods among adolescents living with HIV could be ascribed to low self-worth and life skills, and fear of their problems being disclosed to others and used against them (NAFOPHANU, 2019).

To some extent, these findings concur with the previous studies that also found that children living with HIV have higher daily living and socialisation abilities and less adaptive functioning (similar to coping using self-control or deflection) than those who are not living with HIV (Kalungwana et al., 2022). Other studies found that adolescents with chronic illnesses such as AIDS have lower family communication, affective involvement and behavioural control than healthy children (Louthrenoo et al., 2013, 2018), even though they often use active (confrontation or seeking social support) and passive (withdrawal or depressive reaction) methods of coping with various stressors and psychological distresses (Meijer et al., 2002; Murphy et al., 2000, 2001).

The findings underscore the need to enhance the coping skills of the adolescents who live in HIV-affected homes to address their psychosocial and sexual health risks in a sustainable way.

© University of Pretoria

Sexual risk behaviour

The adolescents who were living with HIV showed a significantly higher rate of sexual risk behaviour than those who were not living with HIV or unaware of their HIV status. This could be attributed to the extreme negative peer influences and socioeconomic hardships, especially for those belonging to the Baganda and Lango tribes where some families are relaxing their stance regarding teenage sexual relationships. In addition, being on ART might have improved the health for some of these adolescents and lowered the perception of risk in others, which could have resulted in sexual risk behaviour. The other contributing factors could be the higher exposure to personal threats and interpersonal problems arising from parental death or concern about their own and caregivers' sickness or uncertainty about achieving future aspirations. These factors may have led to some of them experiencing a low sense of belonging, imitating the negative norms of their friends, construing family tolerance of their risky social relationships as approval, and experiencing distress and sexual risk behaviour.

These findings concur with those from earlier studies that also showed that adolescents living with HIV had significantly higher rates of early (Bauermeister et al., 2012; Elkington et al., 2012) unprotected sex (Mellins et al., 2011; Sturdevant et al., 2001) than those who were not living with or exposed to HIV. This was ascribed to poverty, ill health and psychological stress. However, the current findings differ from those of other studies that found that adolescents who were exposed to HIV but were not living with HIV, had significantly higher rates of early sex onset (Bauermeister et al., 2009; Elkington et al., 2009; Leonard et al., 2010; Mellins et al., 2011), multiple sexual partners, and unprotected sex (Bauermeister et al., 2012; Elkington et al., 2012; Koeing et al., 2010, 2011) than those living with HIV.

Interventions are needed to address the psychosocial factors contributing to the high vulnerability to sexual risk behaviour, especially among adolescents who are living with HIV.

6.2 Coping-Mediated Psychosocial Predictors of Sexual Risk Behaviour among Adolescents

The results indicate that some observed psychosocial factors generate circumstances that either inspire or deter sexual risk behaviour among adolescents who live in HIV-affected homes, when controlling for the effects of coping. For instance, HIV positivity and negativity could have created feelings of carelessness (WHO, 2022), and the way female adolescents were socialised could have hindered the development of psychosocial skills (such as assertiveness and self-control), which are important for avoiding, resisting or managing socioeconomic and sexuality challenges (Jewkes et al., 2010) and therefore increased their vulnerability to sexual risk behaviour. Discussing sexuality matters with caregivers might also have aroused adolescents' sexual

© University of Pretoria

curiosity and encouraged some of them to experiment (Puffer et al., 2011). Similarly, receiving HIV/psychosocial care may have not only increased their knowledge about positive HIV prevention practices and revived their health and optimism regarding the achievement of their lifetime social and reproductive aspirations, such as attending school, dating, marrying and producing children (Bakeera-Kitaka et al., 2019; Birungi et al., 2008; Fair & Albright, 2012; Leonard et al., 2010; Mutumba et al., 2016), but also lowered the perception of risk in some of them, which could have resulted in sexual risk behaviour. The perceived tolerance for some negative sociocultural practices such as cohabitation and premarital sexual relationships, especially among the Baganda and Lango, could have resulted in some adolescents engaging in sexual risk behaviour.

Furthermore, living with one caregiver for a lifetime may have deprived some of these adolescents of the values of dual parenting, such as shared support and supervision, which are important for developing a sense of belonging, self-esteem, self-control and other life skills. These deprivations could have created some psychosocial distress, which could contribute to sexual risk behaviour (Brown et al., 2000; Donenberg et al., 2001). Living with caregivers who are HIV-positive could also have deprived these adolescents of the appropriate care and supervision (Borawski et al., 2003; McBride et al., 2003) due to the caregivers' socioeconomic and psychological distresses (Magadi & Uchudi, 2015) associated with recurrent sicknesses and poor physical functioning (Murphy et al., 2010). Similarly, experiencing negative peer influence (Santor et al., 2000) and socioeconomic opulence or comfort or satisfaction (Jennings et al., 2017) may have weakened the confidence of these adolescents to avoid or resist risky social situations on their own by creating excessive esteem and carelessness (WHO, 2022), which could result in risk-taking behaviour by some. Experiencing personal threats (such as caregivers' or own unemployment), interpersonal problems (such as neglect and worries about own or significant others' illnesses and imminent death) and psychosocial distress (such as anger, sleep unrest, psychosis, somatisation, suicide ideation, destructiveness, delinquency) could have created displeasure with others in their midst (WHO, 2022) and feelings of a lack of affection, which could result in risk-taking behaviour. It is also possible that coping by deflection, such as ignoring the possible consequences, could have created a belief that the problems faced are minor, which may have resulted in some adolescents continuing with their usual risky sexual behaviour.

However, it is possible that schooling could have enhanced adolescents' self-esteem and perception of risk (Bakeera-Kitaka et al., 2019), which contributed to their decision to avoid risky sexual circumstances and practices. Religious convictions may also have helped to not only reduce conflicts and instability in affected families (Brody et al., 1999), but also to instil sexual risk consciousness and self-regulation in these adolescents, which could have resulted in their decision to abstain from risky sexual behaviour. Orphanhood could have caused perpetual feelings of despair (which are usually more intense soon after death), but could also have increased HIV-risk perception, resulting in avoiding the practices that may have cost their parents' lives

© University of Pretoria

(Bauermeister et al., 2012). Living with a few people in the home and with caregivers who engage in farming, trading or civil work could have given these adolescents some degree of socioeconomic and emotional satisfaction due to their caregivers earning an income and being able to provide food and other basic needs, which may have resulted in less sexual risk behaviour. Similarly, living with two caregivers could have enabled these adolescents to experience parental care, which helped to instil discipline and protect them against sexual risk behaviour (Borawski et al., 2003; McBride et al., 2003). It is also possible that some other positive psychosocial factors in Rukungiri and Lira, such as emphasis on sexual sanctity until marriage, could have restrained some of these adolescents from engaging in premarital sexual relationships.

Furthermore, while on the one hand experiencing low to moderate socioeconomic status could have created despair, it could have, on the other hand, created some socioeconomic satisfaction that restrained some of these adolescents from engaging in intimate social relationships and risky sexual behaviour. Experiencing stressors (such as poverty and HIV-stigma) and distresses (such as inattention, depression and aggression) could have generated feelings of self-doubt and rejection by others in some, but could also have resulted in disinterest in sexual and other social relationships. Coping by socialisation (for example by constructively interacting with peers or participating in social activities such as prayer) and social support (such as obtaining informational or emotional help), could have enabled adolescents to not only acquire life skills, but to also recall their past stressful experiences and to choose to avoid or reduce risks similar to those that had caused them.

These findings concur with those of some other studies that did not control for effects of coping or other observed variables and found that adolescents' sexual risk behaviour was increased by living with HIV (Koenig et al., 2010), not living with HIV (Koenig et al., 2010; Bauermeister et al., 2012) and by being female (Mellins et al., 2011; Sunday et al., 2019), younger (Avalos et al., 2010; Elkington et al., 2012; Puffer et al., 2011), out of school, with an HIV-positive caregiver (Cluver et al., 2013; Elkington et al., 2012; Magadi & Uchudi, 2015; Oparerio et al., 2011), in a particular tribe (Murphy et al., 2010), being negatively influenced by peers (Adimora et al., 2018; Chigbu et al., 2021; Cluver et al., 2013; Delavera & Eryando, 2021; Elkington et al., 2012; Kato & Omona, 2021; Oparerio et al., 2011; Whitton et al., 2022), associating with sexually active or antisocial friends (Alex-Hart et al., 2015; Amoateng et al., 2014; Avalos et al., 2010; Awotidebe et al., 2014; Bauermeister et al., 2012; Bingenheimer et al., 2015; Chigbu et al., 2021; Cluver et al., 2012, 2013; Kang et al., 2011; Mellins et al., 2012; Mutumba et al., 2016; Operario et al., 2011; Pienaar & Visser, 2012), and experiencing personal threats (such as worries about own or a family member's illness, domestic or neighbourhood abuses, serious injury, theft of personal property and legal problems) (Avalos et al., 2010; Cluver et al., 2013; Kalichman et al., 2005, 2006; Operario et al., 2011; Wong et al., 2008). They also agree in part with the findings of a study that involved adolescents who did not specify their HIV status and which showed an insignificant association between orphanhood and age at the onset of sexual activity (Magadi & Uchidi, 2015), and with other studies that showed

© University of Pretoria

that experiencing interpersonal problems (such as negative relationships with caregivers (Visser, 2017) or relationship abuses and breakups, or excessive use of alcohol (Avalos et al., 2010; Visser, 2017) and psychosocial distress (such as depression, anxiety (Cluver et al., 2013; Brown et al., 2010; Brown et al., 2006; Houck et al., 2014; Mellins et al., 2009; Nduna et al., 2010; Shanaube et al., 2022), somatisation (Dawson et al., 2008), suicide ideation (Cluver et al., 2013), anhedonia (Dawson et al., 2008), disruptiveness, aggressiveness and conduct problems) (Brown et al., 2010; Puffer et al., 2011; Vaz et al., 2010) increased sexual risk behaviour in adolescents who were living with or affected by HIV.

The findings partly concur with those of some earlier studies about coping with adversities, which found that positive affect regulation or self-control (Hessler & Katz, 2010; Houck et al., 2014) and obtaining social support (Nestadt et al., 2013; Vaz et al., 2010) reduced the sexual risk behaviour of adolescents who were living with, or affected by HIV. Perceived social support from caregivers had been found to reduce internalised HIV stigma (Visser et al., 2008), and threats related to injury or death (Wang et al., 2012), religiousness (Mutumba, 2014) as well as receiving (Du et al., 2015; Petersen et al., 2010; Schwarzer & Schulz, 2013) or being satisfied with social support (Ali et al., 2021; Mutumba, 2014) from significant others reduced psychological distress (such as depression, anxiety, aggression, delinquency and other social problems) in adolescents who were living with HIV. The findings also partly agree with the findings of other studies that found that the use of passive or deflective coping methods (such as avoidance or denial of the problem) (Schwarzer & Schulz, 2013) and negative self-control methods (such as poor affect regulation) (Dawson et al., 2008; Hessler & Katz, 2010; Tende, 2020) associated with poor psychological adjustment and use of active coping methods (such as confronting or adapting with sources of stress) (Compas, 2012) associated with positive psychological adjustment in adolescents living with HIV.

However, the findings of this research differ partly from those of some earlier studies that found that orphanhood (Cluver et al., 2013; Operario et al., 2011; UNICEF, 2017), male gender (Avalos et al., 2010; Murphy et al., 2010; Visser, 2017), older age (Cluver et al., 2013; Mellins et al., 2011; Murphy et al., 2010; UNICEF, 2017; Sunday et al., 2019; Visser, 2017), alcohol use (Murphy et al., 2010; Visser, 2017), family instability or being in many homes and with various caregivers (Cluver et al., 2013), living with sick people (Cluver et al., 2013; Pienaar & Visser, 2012), biological mothers (Mellins et al., 2011) or jobless caregivers (Elkington et al., 2012), and experiencing high socioeconomic vulnerability (such as a shortage of food, water, land, housing, bedding or clothing) (Ali et al., 2021; Avalos et al., 2010; Cluver et al., 2013; Delavera & Eryando, 2021; Tende, 2020), and perceived stigma (Cluver et al., 2013; Pienaar & Visser, 2012) or seclusion (Dawson et al., 2008; Houck et al., 2010) increased sexual risk behaviour in adolescents who were living with, or affected by HIV. The findings also differed partly from those of other studies that concluded that awareness of HIV status (i.e. whether living with HIV or not living with HIV), parent-to-child communication (Elkington et al., 2011a, 2011b; Mellins et al., 2011)

© University of Pretoria

and receiving HIV care (Bakeera-Kitaka et al., 2019; Delavera & Eryando, 2021) decreased sexual risk behaviour in adolescents who were living with or affected by HIV (Elkington et al., 2011a; Mellins et al., 2011). Some other studies found that gender, age and level of education were not significantly associated with psychological distress (Mutumba, 2014), living in the same home with HIV positive caregivers were significantly negatively associated with psychological distress (such as anxiety, depression, aggression, delinquency) (Elkington et al., 2011a), whereas Pentecostalism, the death of a father and coping through frequent prayers significantly positively associated with psychological distress (Mutumba, 2014) in adolescents who were living with HIV.

This discussion has shown that while the earlier studies in Uganda examined mainly demographic variables and their relationships with the sexual risk behaviour of adolescents who were living with HIV and attending health care, this research, which was undertaken to obtain a holistic picture of the factors that influence risky sexual behaviour, assessed a wide spectrum of psychosocial variables and their relationships with the sexual risk behaviour of adolescents with diverse HIV status who lived in HIV-affected home settings. It has also shown that the findings of this study differed in part from those of earlier studies regarding the strength and direction of relationships between some psychosocial variables and adolescents' sexual risk behaviour. This could have been due to variations in the ages, HIV status, size and social settings of the research samples.

6.3 Other Mediators in Relations between Exogenous Variables and Sexual Risk Behaviour

The results have also shown that experiencing negative peer influence and living in socioeconomic opulence significantly positively mediate (elevate) the effects of some sociodemographic circumstances (i.e. living with or without HIV, female gender, younger age, or a Muganda by tribe, working as a farmer or trader, living with a caregiver who is HIV-positive or a mother/sister, receiving HIV/psychosocial care), community stressors (i.e. personal threats and interpersonal problems), psychosocial distresses (i.e. anxiety, sleep unrest, psychosis, somatisation, suicide ideation, disruptiveness, destructiveness, delinquency) on the sexual behaviour of the adolescents. However, experiencing a low peer influence and socioeconomic status significantly negatively mediate (attenuate) the effects of some socio-demographic factors (i.e. school attendance, Anglican religious values, short duration of orphanhood, sharing a home with or without a sick person, parenting from two caregivers, living with caregivers who are jobless or work as traders or civic workers, other risky situations in Lira and Rukungiri districts), community stressors (i.e. poverty and social distancing HIV stigma), psychosocial distresses (i.e. inattention, depression, aggression) on their sexual behaviour.

These results concur with some previous studies which found that negative peer influence is associated with high-risk sexual behaviour such as early, non-consensual, transgenerational and unprotected sex among adolescents living with or exposed (orphaned) to HIV (Cluver et al., 2013; Elkington et al., 2012; Oparerio et al.,

© University of Pretoria

2011). The findings also concur with other studies which found that negative peer influence is significantly positively associated with psychosocial problems (Santor et al., 2000) and early sex initiation (Delavera & Eryando, 2021) among adolescents. The findings also agree with other studies which found that disruptiveness and delinquency significantly moderate adolescents' social relationships (Vitaro et al., 2000) while exposure to delinquent peers significantly positively predicts involvement in disruptive behaviour among adolescents (Mrug & Windle, 2009; Müller et al., 2017), especially males and those with a higher impulsivity, risk tolerance, social dominance, cool appearance, unstructured spare time activities and lower parental supervision (Müller et al., 2017). However, the findings differ with that of Keenan et al. (1995) who noted that peer pressure has an insignificant moderating effect on attention-deficit hyperactivity disorder in this population.

Furthermore, exposure to stressors related to personal threats (like serious injury or legal action or problems with law enforcers or joblessness or theft of personal property or illness or death or neglect by significant others) and interpersonal problems (such as conflicting with parents or siblings or own children or friends or neighbours or workmates) significantly or marginally *positively* mediated the associations between sexual risk behaviour and living with or with no HIV infection, female gender, younger age, parental death in childhood and in preadolescence, living with a moderate number of people (four to six) and with caregivers whichever HIV status in the home, living with caregivers who engage in farming, and values of the Baganda or Lango ethnic groups. This implies these stressors intervened by increasing the risk of these socio-demographic factors on the sexual behaviour of this population.

However, poverty reflected by absence of basic needs like food or water or shelter significantly or marginally *negatively* mediated the relationships between sexual risk behaviour and school attendance, attainment of upper-primary education, the Catholic or Anglican or Pentecostal or Adventist or Orthodox religious convictions, orphan-hood for a shorter time, absence of a sick person in the home, living with caregivers who engage in work that ensure some economic safety like trading, and other situations in Lira and Rukungiri districts among adolescents involved in this study. This implies that shortage of basic needs intervened by reducing the impact of these socio-demographic factors on the sexual risk behaviour of adolescents.

These findings concur with Avalos et al. (2010) and Cluver et al. (2013) who found that the same stressors interact with various socio-demographic attributes to predict sexual risk behaviour among adolescents living with and exposed to or orphaned by HIV. The current findings, however, differ with other studies which noted that perceived HIV stigma and biases positively relate with sexual risk behaviour of adolescents who are living with HIV (Pienaar & Visser, 2012), AIDS orphaned and living with HIV positive caregivers (Cluver et al., 2013).

Additionally, psychosocial distresses (i.e. anger or sleep unrest or psychosis or suicide ideation or disobedience or disruptiveness or destructiveness or delinquency) significantly or marginally *positively* mediated the relationships between living with or without HIV and being female, younger, involved in work that provides

© University of Pretoria

unreliable income like farming, in one home for a lifetime, in the HIV-affected home for more than four to eight years, with a caregiver who is either HIV positive or negative, a Muganda or Lango by ethnicity and sexual risk behaviour among adolescents by increasing their risk. This implies that these internalising and externalising distresses may bring about other risky psychological and physical feelings such as excessive esteem and energy, carelessness (WHO, 2022), impulsivity, risk tolerance, and social dominance (Müller et al., 2017). These feelings could amplify the effects of the aforesaid socio-demographic factors on the sexual behaviour of this adolescent group. However, experiencing inattention and depression significantly *negatively* mediated the relationships between sexual risk behaviour and school attendance, attainment of any level of primary education, the Catholic or Anglican or Pentecostal or Adventist or Orthodox religious convictions, orphan-hood for short time, living with a small number of (one to three) people or with no sick person in the home or with caregivers who are jobless in the home, and the other positive situations in Lira and Rukungiri among adolescents. This implies that these psychosocial distresses create feelings of absentmindedness or worthlessness or hopelessness or imminent death which lower the desire for social and sexual relationships in this population (WHO, 2022).

These findings again partly concur with Cluver et al. (2013)'s results who found that depression and suicide ideation mediate in the relationships between AIDS-orphan-hood and sexual health risks especially engaging in sex early, with multiple and older partners, without using a condom, and in exchange for gifts or money among HIV-exposed adolescents. Similarly, Martin-Storey and Benner (2019) noted that externalising problems like delinquency exacerbate the link between gender, race-based discrimination and sexual risk behaviour during adolescence.

The findings also concur with other studies conducted among adolescents who were living with HIV and those who were HIV-orphaned or uninfected or living with HIV-positive caregivers, which showed that younger age (Gadow et al., 2012a, 2012b; Musisi & Kinyanda, 2009; Mutumba, 2014), female gender (Cluver et al., 2007; Gadow et al., 2012a, 2012b; Mutumba et al., 2016) and living with a caregiver who is HIV-positive (Musisi & Kinyanda, 2009) or HIV-negative (Elkington et al., 2011a) positively relates with internalising distresses. The findings also partly agree with other studies which found that parental death, type of caregiver (Mellins et al., 2011; Mutumba, 2014; Mutumba et al., 2016), maternal and double orphan-hood (Cluver et al., 2007) and counselling support (Musisi & Kinyanda, 2009) were not linked with the occurrence of psychological distresses.

However, the current findings partly differ with that of Cluver et al. (2013) who found that anxiety mediated the relationship between AIDS orphan-hood and sexual health risks, and with other studies conducted among adolescents who were living with HIV and those who were HIV-orphaned or uninfected or living with HIV-positive caregivers, which showed that the male gender positively associated with delinquency and other conduct problems (Cluver et al., 2007) and Pentecostalism positively associated with depression (Mutumba, 2014). The current findings also differed with that of some other studies among adolescents living with and or

© University of Pretoria

exposed to HIV which showed that living with HIV-positive caregivers negatively associated with mental health problems such as anxiety, withdrawal, depression and delinquency (Mellins et al., 2011; Mutumba et al., 2016) while older age (Mellins et al., 2011; Mutumba et al., 2016), low caregiver-to-child communication (Elkington et al., 2011a), living with HIV (Mellins et al., 2012) and experiencing orphanhood (Battles & Weiner, 2002) positively associated with distresses such as anxiety and delinquency. Furthermore, being HIV infected or exposed or uninfected were not significantly associated with changes in depression and anxiety (Mutumba et al., 2016).

Finally, **experiencing psychosocial distresses** (especially anger, psychosis, suicide ideation, disruptiveness, disruptiveness and delinquency) significantly or marginally *positively* mediated the relationships between these adolescents' susceptibility to personal threats or interpersonal problems and their sexual risk behaviour. This suggests that the aforesaid distresses created other psychosocial and physical functioning feelings such as carelessness (WHO, 2022), impulsivity, or risk tolerance (Müller et al., 2017) which elevated the effects of the aforesaid psychosocial stressors on sexual risk behaviour in this population. However, experiencing psychosocial distresses (like inattention, depression and aggression) significantly *negatively* mediated the relationships between sexual risk behaviour and experiencing community stressors especially poverty reflected by absence of basic needs and judgmental and social distancing HIV stigma. This suggests that the distresses may have caused other disheartening feelings like worthlessness and hopelessness, which elevated the effects of the aforesaid stressors on sexual risk behaviour in these adolescents.

These results concur with those of Cluver et al. (2013) that found that psychosocial distresses (especially posttraumatic stress disorders and suicidal tendencies) not only significantly *positively* predicted sexual health risk among HIV exposed adolescents, but also significantly *positively* mediated the relationships between sexual health risks and exposure to stressors related to poverty, personal threats, interpersonal abuses, and HIV stigma in the same population.

The findings also concur with other studies which showed that psychosocial distresses like post-traumatic stress disorders and suicide ideation directly positively associated with HIV-related stigma, absence of basic needs, on-going worries about the personal and parents' unemployment or property theft or ill-health or imminent death, and relational problems with family members or neighbours among adolescents living with or exposed to HIV (Mutumba, 2014; Mutumba et al., 2016; Visser et al., 2008; Wang et al., 2012).

The findings of this study highlight the need to: 1) undertake further research to expound why and how the aforesaid psychosocial factors in this study beget or attenuate sexual risk behaviour in this population; and 2) formulate and implement family and school and community-based interventions to not only prevent and mitigate the psychosocial factors (i.e. personal and familial and environmental situations, community stressors, psychosocial distresses and coping methods) that foment sexual risk behaviours in this population. This could

© University of Pretoria

include providing coping and life-skills education, HIV/mental care and counselling, and economic and educational assistance to adolescents living in HIV-affected homes regardless of their HIV status.

6.4 Demographic Moderators of Links among Other Exogenous Variables and Sexual Risk

The results have also shown that of the sociodemographic factors which were assessed in this study, only living with or without HIV infection, female gender, the younger adolescence stage, involvement in work that offers unreliable income such as farming, home stability, single parenting, living with caregivers who were HIV positive or negative, and susceptibility to some negative norms of the Baganda and Lango tribes significantly moderated the relationships between some stressors (i.e. personal threats and interpersonal problems), distresses (i.e. sleep unrest, psychosis, somatisation, suicide ideation, destructiveness, delinquency) and sexual risk behaviour of the adolescents by increasing their occurrence as coping with adversities using deflection strategies also increased them. On the other hand, attending school, attaining any primary education level, Pentecostal or Adventist religious convictions, death of the mother, caregivers' joblessness, and experiencing a moderate socioeconomic status, low peer influence, and other positive situations in Lira and Rukungiri districts, significantly moderated the relationships between poverty reflected by absence of basic needs, judgmental HIV stigma, inattention, depression and sexual risk behaviour of these adolescents by reducing their occurrence.

Some other socio-demographic factors also had significant moderating effects on the coping-mediated associations between sexual risk behaviour and the observed variables for peer influence, socioeconomic status, community stressors and psychosocial distresses among adolescents. For instance, in the model that consisted of adolescents' socio-demographic attributes, peer influence, socioeconomic status, coping methods and sexual risk behaviour, participation in work that provides unreliable income such as house/bar tending or hawking, parenting from caregivers who are biological or step mothers/sisters, and receiving HIV/psychosocial care significantly moderated the relationships between negative peer influence, living in socioeconomic opulence and sexual risk behaviour by increasing their occurrence – as coping with adversities using deflection methods also increased them. However, the Catholic or Anglican religious convictions, experiencing orphan-hood for a shorter period (less than five years) and living with caregivers who engage in work that provides regular income such as trading or civic work, significantly moderated the relationships between peer influence, socioeconomic status and sexual risk behaviour by reducing their risks – as coping with adversities using social support or self-control or socialisation methods also reduced them.

In the model that consisted of adolescents' socio-demographic attributes, community stressors, coping methods and sexual risk behaviour, parental death in childhood and preadolescence, sharing the home with a moderate number of people (four to six) and vulnerability to some negative norms of the Bakiga tribe

© University of Pretoria

significantly moderated the relationship between stressors (such as personal threats and interpersonal problems) and sexual risk behaviour by increasing their occurrence – as coping with adversities using deflection also mediated in these relationships by raising them. However, the Catholic and Anglican religious convictions and living with caregivers who engage in work that provides some regular income such as trading or civic work significantly moderated the relationship between poverty reflected by absence of basic needs and sexual risk behaviour by reducing their occurrence – as coping with adversities using self-control, socialisation and obtaining social support also significantly mediated in these relationships by reducing them.

In the model that consisted of adolescents' socio-demographics attributes, psychosocial distresses, coping methods and sexual risk behaviour, living in the affected home for longer time significantly positively moderated the relationships between vulnerability to some distresses (disobedience, disruptiveness) and sexual risk behaviour – as coping with adversities using deflection strategies raised their occurrence. However, the Catholic and Anglican religious convictions significantly moderated the associations between some distresses (such as inattention and depression) and sexual risk behaviour by reducing their occurrence – as coping with adversities through positive socialisation methods also significantly negatively mediated in these relationships.

This means that these socio-demographic factors created specific circumstances which moderated the effects of peer influence, socioeconomic status, community stressors, psychosocial distresses and sexual risk behaviours among adolescents who were involved in this study. Besides the earlier explanations about how the psychosocial factors may have predicted sexual risk behaviour among these adolescents, school attendance and involvement in work that provides unreliable income (such as house/bar tending and hawking) could have predisposed some adolescents to stressful chores and negative peer habits (such as substance use and partying), which resulted in psychosocial distress and sexual risk behaviour (Donenberg & Pao, 2003). Parenting from caregivers who were either biological or step mothers/sisters could have created some laxity in supervision which may have been exploited by some adolescents to engage in risky social and sexual relationships. Receiving HIV/psychosocial care could have exposed adolescents to some information which evoked their sexual aspirations (Birungi et al., 2008), curiosity and experimentation (Puffer et al., 2011; Sunday et al., 2019).

In addition, parental death in either childhood or preadolescence could have created a lasting traumatic imprint which not only keeps on reappearing and casting feelings of doubt about their future social wellbeing, but also results in antisocial and sexual risk behaviour, particularly among those neglected or discriminated against or stigmatised by the family or school or community members. Being with several people in a home could have created socioeconomic and relational uneasiness among these adolescents which results in seeking comfort from friends or sexual relationships. The fairly long time in the HIV-affected home could have deprived these adolescents of proper parenting and exposed them to sexual risks due to poor health functioning of the existing caregiver and absence of other family members who are able of giving the required care.

© University of Pretoria

On the other hand, religious teachings could have instilled values that restrained adolescents from engaging in situations and actions that generate distresses and result in sexual risk behaviour. Experiencing orphanhood for a shorter period could have increased HIV-risk perception, resulting in avoiding the practices that may have cost their parents' lives (Bauermeister et al., 2012). Living with caregivers who engage in trading and civic work could have given these adolescents some degree of socioeconomic and psychological satisfaction due to their caregivers having a regular income and providing the basic needs, which may have resulted in less distresses and sexual risk behaviour.

Some of these findings partly concur with Cluver et al. (2013) who found that parental AIDS illnesses (which is similar to living with a caregiver who is HIV positive) and AIDS orphan-hood positively associated with child abuses and community violence (which are part of the measures for stressors related to personal threats in this study) among HIV-exposed children. The findings however differ with other results of the Cluver et al. study which showed that parental AIDS-illnesses and AIDS orphan-hood *positively* associated with increased poverty reflected by absence of basic needs and AIDS-related stigma among HIV-exposed adolescents. There was not a direct relationship between parental AIDS-illness, poverty and stigma reported by adolescents.

The findings of the current study highlight the need for interventions that promote school retention, strengthen family and community systems of fostering or socialising children, and prevent or mitigate the personal and family situations that foment negative peer influences, stressful events, psychosocial distresses, risky coping methods, and sexual risk behaviours among adolescents who live in HIV-affected homes.

6.5 Pathways for Psychosocial Predictors of Sexual Risk Behaviour among Adolescents

The results have shown that whereas the pathways for the psychosocial predictors of sexual risk behaviour in the various groups of adolescents involved in this study are similar, the strengths and directions by which these factors influence sexual behaviour in each of the groups differ.

6.5.1 Path model for the whole adolescent sample

Similar to each of the three adolescent groups, the major factors that increased sexual risk behaviour among the adolescents as a whole were psychosocial distresses (i.e. anger, anxiety, sleep unrest, psychosis, somatisation, suicide ideation, disobedience, disruptiveness, destructiveness, delinquency) and the risky socio-demographic situations (i.e. living with or without HIV infection, female gender, joblessness, involvement in farming or house/bar tending work, living with HIV positive or negative caregivers and those who engaged in trading work, HIV/sexuality discussions from caregivers, receiving HIV/psychosocial care, negative norms of the Baganda and Lango tribes, low to moderate socioeconomic status and negative peer influence).

© University of Pretoria

Some of these factors (i.e. living with no HIV infection, female gender, living with caregivers of any HIV status, sexuality discussions from caregivers, negative norms of the Baganda and Lango tribes, low to moderate socioeconomic status, negative peer influence) directly increased sexual risk behaviour among this group of adolescents while the others indirectly increased their sexual risk behaviour mainly through the less-constructive coping methods utilised (especially deflection) and the aforesaid psychosocial distresses. The other factors that indirectly increased sexual risk behaviour in this population were community stressors (especially personal threats and interpersonal problems) but they did so by on the one hand reducing coping using constructive methods (self-control, social support and socialisation) and on the other raising coping using less-constructive methods (such as deflection). This in turn amplified distresses, which then raised sexual risks among this group.

The results further showed that the main factors which decreased sexual risk behaviour in this group of adolescents were the younger adolescence stage, school attendance, any level of primary education attainment, religious convictions, absence or presence of a sick person in the home, living with one to two caregivers (caregivers' stability), and living in districts such as Rukungiri or Lira where several families adhere to sociocultural norms of sexual sanctity until marriage and identifying who children could marry. The other important factors that decreased sexual risk behaviour in these adolescents were vulnerability to community stressors (notably poverty of the basics needs and HIV-related judgmental attitudes), psychosocial distresses (notably inattention, depression and aggression) and coping with adversities using more-constructive methods (notably obtaining social support and socialising through occasional participation in prayers and other safe social activities). These socio-demographic factors (except the younger adolescence stage, school attendance, attainment of any primary education level, religious convictions and other positive situations in Lira district) indirectly decreased sexual risk behaviour in this group via these coping methods and psychosocial distresses.

The majority of the socio-demographic factors, community stressors and coping methods in this path model converged around psychosocial distresses to increase sexual risk behaviour in this adolescent group. Community stressors affected sexual risk behaviour of this group through the coping methods they adopted, the psychosocial distresses they experienced, and the influences from other contextual factors in Lira district such as adherence to sociocultural norms that promote sexual sanctity until marriage. The coping methods and other contextual factors in Lira district intervened in the relationships between the community stressors and sexual risk behaviour of this adolescent group by reducing the impact of stressful events.

As explained earlier in section 6.2 and 6.3, experiencing the internalising distresses such as inattention or depression could have lowered this adolescent groups' sense of self-worth and ability to negotiate safer sex (Brown et al., 2000; Donenberg et al., 2001), while experiencing externalising distresses such as disobedience and delinquency could have brought about affective disorder (Donenberg et al., 2001) and feelings of carelessness (WHO, 2022). This could be resulting in unsafe sexual relationships with others. The HIV negative

© University of Pretoria

status could have not only contributed to low awareness about the causes or spread or prevention of HIV but also created a misconception that their usual sexual practices are safe (Brown et al., 2000). This may have contributed to some of them continuing with their usual practices even if they could result in HIV infection.

Furthermore, the female adolescents could have experienced several family chores and a lack of basic needs or school fees. These challenges may have resulted in dropping-out from school and lowering their self-esteem and ability to withstand negative peer influence and risky sexual behaviour (Brown et al., 2000; Donenberg et al., 2001). It is also possible that some evolving negative norms especially among the Baganda and Lango tribes, such as tolerance for premarital sexual relationships, could have been construed as social acceptance for engaging in early sex by some adolescents in these ethnic groupings and this could have thus increased their sexual risk behaviour.

In addition, living with caregivers who are HIV-positive could have deprived some of these adolescents the appropriate care and supervision (Borawski et al., 2003; McBride et al., 2003) due to the caregivers' socioeconomic and psychological distresses (Magadi & Uchudi, 2015) associated with recurrent sicknesses and poor physical functioning (Murphy et al., 2010), which may have resulted in sexual risk behaviour. Living with HIV-negative caregivers could have contributed to a low HIV-risk perception and led to rationalising risky social practices (such as dating or relating with sexually active peers) as safe, which may have resulted in sexual risk behaviour. Discussing sexuality matters with caregivers might have also aroused adolescents' sexual curiosity and encouraged some of them to experiment (Puffer et al., 2011). Experiencing negative peer influence and a low to moderate socioeconomic status may have weakened the confidence of these adolescents to avoid or resist risky social situations on their own (Ramirez-Valles et al., 2002; Santelli et al., 2000), which could result in sexual risk behaviour (Brown et al., 2000; Coley et al., 2013; Donenberg et al., 2001; Santelli et al., 2004).

On the other hand, being in the younger adolescence stage could have contributed to lower interest in sexual relationships and to being more under the protection caregivers, schools and community as a whole, which might have reduced exposure to risky social and sexual circumstances in this group. Primary school attendance and attainment could have enhanced these adolescents' self-esteem and perception of risk, which contributed to their decision to avoid risky sexual practices (Bakeera-Kitaka et al., 2019). Religious convictions may also have helped to reduce conflicts and instability in affected families (Brody et al., 1999) and instil sexual risk consciousness and self-regulation in these adolescents, which could have resulted in their decision to abstain from sex. Living in an area that experiences a high HIV burden and has family and community networks for supporting children who are living with and affected by HIV, could have enabled them to receive the basic care, needs and protection against other negative situations, which helped to preserve their sexual sanctity and cope with challenges that may result in sexual risk behaviour.

© University of Pretoria

Some of these findings agree with other studies which also found that not living with HIV (Koenig et al., 2010), female gender (Mellins et al., 2011; Sunday et al., 2019), older age (Amoateng et al., 2014; Cluver et al., 2013; Mellins et al., 2011; Murphy et al., 2010; Sunday et al., 2019; UNICEF, 2017), not attending school (UNICEF, 2017), living with a caregiver who is HIV-positive (Elkington et al., 2012; Magadi & Uchudi, 2015; Oparerio et al., 2011) or negative (Bauermeister et al., 2012; Mellins et al., 2009) and receiving much information about HIV or sexuality from caregivers (Puffer et al., 2011; Sunday et al., 2019) increases sexual risk behaviour in adolescents.

They also agree with other studies which found that negative peer influence or norms (Adimora et al., 2018; Chigbu et al., 2021; Cluver et al., 2013; Delavera & Eryando, 2021; Elkington et al., 2012; Kato & Omona, 2021; Oparerio et al., 2011; Whitton et al., 2022), relating with antisocial or sexually active peers (Alex-Hart et al., 2015; Amoateng et al., 2014; Awotidebe et al., 2014; Bingenheimer et al., 2015; Chigbu et al., 2021), high socioeconomic vulnerability (Ali et al., 2021; Delavera & Eryando, 2021; Tende, 2020) and low HIV-risk perception and ability to negotiate or practice safer sex (Bakeera-Kitaka et al., 2019; Brown et al., 2000) *increase* sexual risks among the HIV infected or exposed or uninfected or unaware adolescents. The results also partly agree with some earlier studies which found that adolescents who face poor affect regulation may not be able to cognitively link a negative stimulus with their impulsive action, or weigh the pros and cons of risk, or chart protective behaviour, and instead adopt short-term self-soothing actions (such as deflection or socialisation) over self-regulation (Cooper et al., 2003; Eisenberg et al., 2001; Tice et al., 2001).

However, some of the findings for this research differ from other studies which found that living with HIV (Koenig et al., 2010), male gender (Avalos et al., 2010; Murphy et al., 2010), orphanhood (Cluver et al., 2013; Operario et al., 2011; UNICEF, 2017), alcohol consumption (Murphy et al., 2010), living with a caregiver who is a biological mother (Mellins et al., 2011) or jobless (Elkington et al., 2012), sharing a home with a small number of people (Sunday et al., 2019) or with sick people (Cluver et al., 2013; Pienaar & Visser et al., 2012), home and caregivers' instability (Cluver et al., 2013) directly *increased* sexual risk behaviour of adolescents in these studies.

The findings also differ from other studies which found that: receiving HIV therapy *reduced* the risk of becoming sexually active among adolescents living with HIV (Bakeera-Kitaka et al., 2019), low parent to child communication significantly related with a recent sex activity and having many sexual partners among school going adolescents (Amoateng et al., 2014), and peer influence is not significantly associated with HIV-risk sexual behaviours in college youth of ages 18 to 24 years (Mpofu, 2012). The findings again differ from other studies which found that parental AIDS illness (same as living with an HIV-positive caregiver) and orphan-hood *indirectly* influence psychological distresses (depression, anxiety, suicidal tendencies and post-traumatic disorders) and sexual risk outcomes via community stressors (poverty, parental disability, community violence, child abuse and HIV-related stigma) in HIV-exposed children (Cluver et al., 2013). In other earlier research, it was found that age interacts with orphan-hood to elevate psychological distress in HIV-exposed adolescents (Cluver et al., 2012),

© University of Pretoria

living with HIV-positive caregivers *lessens* adolescents' mental health problems (Elkington et al., 2011a), and constructive adult support *raises* relational self-esteem and this in turn *elevates* the psychological well-being of HIV-affected children (Du et al., 2015).

This discussion has shown that the sociodemographic factors and stressful experiences function mainly through coping methods and psychosocial distresses to influence sexual risk behaviour for the adolescents as a whole. This finding highlights the need for integrated interventions to prevent and mitigate the socio-demographic factors, community stressors, psychosocial distresses, and coping methods that foment sexual risk behaviour among adolescents who live in HIV-affected homes, regardless of their HIV status.

6.5.2 Path models for HIV infected, uninfected and unaware adolescents

The results also showed that although the psychosocial predictors of sexual risk behaviour and patterns of relationships among them are similar in the path models for HIV infected, uninfected and unaware adolescents, the strength and directions by which some factors affected their sexual behaviour varied.

First, whereas the aforesaid psychosocial distresses modestly elevated sexual risk behaviour in the HIV uninfected group (.39), the same distresses highly elevated sexual risk behaviour in the groups living HIV (.83) and unaware of their HIV status (.76). This implies that psychosocial distresses were very important facilitators of sexual risk behaviour especially among these two adolescent groups.

Second, whereas attaining the upper-primary education levels increased sexual risk behaviour in the group of adolescents living with HIV, the same factor attenuated sexual risks in the HIV uninfected and unaware groups. This implies that the protective benefit of schooling against sexual risk behaviour increases with education level among the adolescents not living with HIV and diminishes with education level among the adolescents living with HIV. The low protective benefit of higher education levels against sexual risk behaviour among adolescents living with HIV could be ascribed to fear of dying before producing children and to the pressures exerted on them by peers or family or society for the same reasons.

Third, whereas negative peer influence attenuated sexual risk behaviour in the HIV-unaware adolescents, the same factor elevated sexual risks in the adolescents living with HIV and those uninfected. This implies that these two groups could be less resilient to the negative sexuality norms of peers or more prone to rationalising the sexual reproductive advices of peers even if they lead to HIV infection or transmission than the HIV-unaware adolescents. It is also possible that the HIV-unaware adolescents could be mostly the ones setting up or urging their colleagues to engage in risky social or sexual practices as they spectate.

Fourth, whereas coping with adversities highly lessened the effects of community stressors in the HIV unaware (-1.14) and uninfected (-.91) groups, it instead only slightly lessened the effects of the same stressors in the group for adolescents living with HIV (-.11). In addition, whereas coping helped to reduce psychosocial

© University of Pretoria

distresses in the HIV uninfected group, it instead elevated the same distresses in the groups for adolescents living with HIV and unaware of their HIV status. Also, while coping highly lessened the effects of other adverse circumstances in Lira district among the HIV uninfected and unaware groups, it slightly lessened the effects of the other adverse circumstances in Lira district among the group of adolescents who were living with HIV. This implies that the adolescents living with HIV mainly utilise less-constructive strategies of coping with their community stressors, psychosocial distresses and other adversities. Hence, there is need to train the adolescents living with HIV in effective coping skills.

Some earlier studies also found that coping by seeking social support from caregivers not only negatively associated with the occurrence of traumatic events (such as threats of injury or death to oneself or others) and HIV-related stigma but also negatively mediated the effects of traumatic events and HIV-related stigma on psychological distresses particularly depression in the HIV exposed-uninfected adolescents (Elkington et al., 2011a; Mutumba et al., 2016; Wang et al., 2012).

The findings of this study, however, contrast with other studies which noted that age, parental AIDS illness (same as living with an HIV-positive caregiver) and orphan-hood indirectly positively influence psychological distresses (i.e. depression, anxiety, suicide ideation and post-traumatic disorders) and sexual risk outcomes via stressors like poverty of basic needs, parental disability, community violence, child abuse and HIV-related stigma among HIV exposed children (Cluver at al., 2012, 2013).

For the current study, being younger and living with an HIV-positive caregiver neither directly nor indirectly influenced psychosocial distresses. However, being younger directly negatively influenced sexual risk behaviour and living with an HIV-positive caregiver directly positively did so in the HIV infected, uninfected and unaware adolescents. The difference in direction of effects of these factors could have been due to the variations in the economic and psychosocial conditions of the samples for the current and earlier studies.

This discussion has again shown that the sociodemographic factors and stressful experiences function mainly through coping methods and psychosocial distresses to influence sexual risk behaviour in each of the three adolescent groups who live in HIV-affected home settings. However, the strength and directions by which some factors influenced the psychosocial and sexual experiences for these groups differed. This finding highlights the need for special packages to prevent and alleviate the mental and sexual health risks among them.

6.6 Summary of discussion of the results

This chapter has shown that while the three groups involved in this study experienced noteworthy levels of the observed psychosocial and sexual factors, the adolescents living with HIV were most prone to the risk-factors notably, low post-primary education attainment, double orphanhood, home instability, involvement in

© University of Pretoria

work that provides unreliable income such as home/bar tending, living with many sick people and with caregivers who were relatives, or HIV-negative, or alcohol users, receiving HIV/psychosocial care, negative peer influence, poverty, personal threats, interpersonal problems, psychosocial distress, risky sexual behaviour, and low ability to cope with adversities using constructive methods such as self-control.

This chapter has also shown that besides these risk factors, female gender, the younger adolescence stage, single parenting and sexuality discussions from caregivers, significantly positively influenced sexual risk behaviour while some other observed factors notably, school attendance, religious conviction, a shorter duration of orphanhood, parenting by two caregivers, sharing a home with fewer people, and experiencing poverty, HIV stigma, inattention, depression, aggression and coping through constructive social support and socialisation, significantly negatively influenced their sexual behaviour.

It has further shown that these psychosocial factors interacted in various strengths and directions to influence these adolescents' sexual risk behaviour, and most of the factors functioned mainly through the coping methods they adopted and the psychosocial distresses they experienced to influence their sexual risk behaviour. For instance, coping with adversities through negative methods (such as ignoring the problems faced) affected the relationships between the psychosocial factors and sexual risk behaviour by increasing risk, while coping by positive methods (such as self-control and seeking social support) affected these relationships by reducing risk.

The chapter has finally shown that whereas the psychosocial distresses and some sociodemographic factors (such as the personal HIV-negative status, female gender, younger adolescence stage, school attendance and attainment, Pentecostal/Adventist religious convictions, negative norms of the Baganda and Lango tribes, caregivers' HIV status, sexuality discussions from caregivers, negative peer influence, low to moderate socioeconomic status, other situations in Lira district) were the main proximate factors influencing sexual risk behaviour in these adolescents, the other socio-personal experiences (such as the Anglican religious convictions, being a learner or unemployed, involvement in work that provides unreliable income like farming or home/bar tending, parenting by one or two caregivers, absence or presence of a sick person in the home, living with caregivers who engage in trading work, living with HIV, receiving HIV/psychosocial care, other situations in Rukungiri district) and community stressors (such as judgemental stigma, personal threats and interpersonal problems) were the distant determinants of their sexual risk behaviour. Additionally, whereas the patterns of interactions between these factors and sexual risk behaviour were similar across the three adolescent groups, the strength and directions by which some factors influenced their sexual risk behaviour differed.

In the next chapter, the research conclusion, value, limitations, strengths and implications are clarified.

© University of Pretoria

CHAPTER SEVEN: CONCLUSION, VALUE, LIMITATIONS, STRENGTHS AND IMPLICATIONS OT THE STUDY

This chapter provides the conclusions, value, limitations, strengths and implications of this study. It also indicates the dissemination methods and benefits of the findings.

7.1 Conclusion

While the adolescents who live in HIV-affected homes experience noteworthy levels of psychosocial and sexual risks, adolescents living with HIV exhibit significantly higher levels of nearly all risk factors. This implies that despite being more enrolled in school and HIV care programmes, this group experiences poorer family care and more psychosocial problems which result in sexual risk behaviour than their siblings in the same household.

The main factors that increase sexual risk behaviour in the adolescents include susceptibility to negative sociocultural norms, especially among the younger girls of the Baganda and Lango tribes, single parenting, sexuality discussions from caregivers, negative effects of receiving HIV/psychosocial care, negative peer influence, personal threats, interpersonal problems, psychosocial distress and coping by deflecting problems. Besides these sociodemographic risk factors, personal HIV status, involvement in work that provides unreliable income such as farming, and living in one home or with caregivers who are HIV-positive or negative, moderate the relationships between the other psychosocial factors and sexual risk behaviour by increasing risks. These risk factors may have prevented the development of protective skills like assertiveness, facilitated negative social relationships that evoked sexual curiosity and carelessness, raised optimism regarding the achievement of sexual and reproductive life goals, created a conviction that the problems being faced were minor and lowered their risk perception, which could have resulted in sexual risk behaviour.

It was also found that the sexual risk behaviour in this group of could to some extent be avoided by school attendance, religious conviction, experiencing orphanhood for a shorter time and parenting from two caregivers, sharing a home with only a few people and constructive social support and socialisation, and experiencing poverty, HIV stigma, inattention, depression and aggression. Besides these sociodemographic protective factors, death of the mother, caregivers' unemployment and adherence to sociocultural norms that promote sexual sanctity, moderated the relationships between the psychosocial factors and sexual risk behaviour of these adolescents by reducing risks. These protective factors may have led some adolescents to receiving protection and life skills from their caregivers or school or community, recalling their bad memories and experiencing feelings of despair, especially soon after a parental death, which could have improved their risk perception, morals and discipline, and helped them to refrain from sexual risk behaviour.

© University of Pretoria

The sociodemographic factors and community stressors, mainly interact with coping methods via psychosocial distress to predict sexual risk behaviour in these adolescent groups. Community stressors mainly reduced their ability to constructively cope with adversities and this not only amplified psychosocial distress which then increased vulnerability to risky sexual behaviours especially in the HIV infected and unaware adolescents, but also reduce the effects of other negative circumstances in the Lira area, which then reduced their sexual risk behaviour. In all groups, deflection is the most prominent coping method and it specifically exacerbated psychosocial distresses, which then increased sexual risk behaviour among them.

Finally, whereas the patterns of interactions between the psychosocial predictors of sexual risk behaviour were similar across the three adolescent groups, the strength and directions by which some factors[23] influence their sexual risk behaviour vary. For instance, community stressors affected sexual risk behaviour by reducing coping which in turn raised psychosocial distress which then increased sexual risk behaviour, but this is so only among the adolescents living with HIV or unaware of their HIV status. This means that these psychosocial factors influence sexual risk behaviour of the three adolescent groups differently, even though they all live in HIV-affected homes. This underscores the need for provision of socioeconomic, educational, mental health and life skills training support to the adolescents and caregivers who live in HIV affected homes.

The findings highlight the centrality of personal and family factors, psychosocial distresses and coping methods in predicting sexual risk behaviour of these adolescents. They also support and enrich the existing theories by showing the directions and pathways in which these factors interact to predict their sexual risk behaviour.

7.2 Value of the Study

Firstly, this study has contributed to our understanding about the extent of the various socio-demographic circumstances, community stressors, psychosocial distresses, coping methods and sexual risk behaviours among the adolescents living with and affected by HIV who live in HIV-affected homes of Uganda, and how these psychosocial factors interact and navigate to influence their sexual risk behaviour.

Secondly, it has clarified the conceptual framework for this study, which is presented in Figure 2. This framework asserted that the observed psychosocial factors will directly and indirectly associate with the sexual risk behaviour of adolescents who live in HIV-affected homes. The final SEM path outcome models showed that whereas some observed socio-demographic factors and all psychosocial distresses directly influenced sexual risk behaviour of these adolescents, the other observed psychosocial factors, especially community stressors and

[23] Such as, attainment of any lower or upper-primary education level, absence and presence of a sick person in the home, living with caregivers who are HIV-negative, caregivers' stability, sexuality discussions from caregivers, receipt of HIV/psychosocial care, negative peer influence, and some community stressors and coping methods.

© University of Pretoria

coping methods, indirectly influenced their sexual risk behaviour. In particular, the community stressors (poverty reflected by absence of basic needs, personal threats, interpersonal problems and personal judgmental attitudes related to HIV) negatively affected the ability of these adolescents to cope with adversities and some of the coping methods they used not only created psychosocial distresses which raised sexual risk behaviour, but also lowered the effects of other risky circumstances in Lira district, which then attenuated sexual risks among them. The final SEM path outcome models also revealed that whereas the conceptual model for this study assumed that some socio-demographic factors would influence the sexual risk behaviour of these adolescents by moderating their stressful experiences, this relationship does not exist.

Thirdly, this study has provided support to three theories from which the conceptual framework of this study borrows, namely:

(1) The Social-Personal Model for HIV Risk Behaviour (in Figure 1), which asserts that HIV risk behaviour in adolescents is a result of the interaction between their personal attributes, family context, environmental circumstances and peer and partner relationships (Donenberg & Pao, 2003).

(2) The Conceptual Model for Examining Stressors related to Sexual Risk Behaviour, which explicates that risky sexual behaviours are a result of the interplay among stressful life events related to poverty, personal threats and interpersonal problems (Avalos et al., 2010).

(3) The Socio-Ecological Model of Child Development, which states that children's behaviour is influenced by the interaction between their biological and psychological and familial characteristics, values of the neighbourhood, school or workplace, values of social networks, values of society, religion or culture, and changes in public policy and life (Bronfenbrenner, 1994).

This study has shown how the significant observed personal, family, society and other psychosocial factors interact and navigate to influence sexual risk behaviour among adolescents living with and affected by HIV who live in HIV-affected homes. These factors can be used to expound these and other relevant theories.

7.3 Limitations of the Study

This research was cross-sectional and utilised a quantitative approach to assess adolescents' psychosocial circumstances and sexual risk behaviour at a single point in time. It therefore did not analyse the antecedents and trends of their experiences over a period of time to establish the definitive cause-and-effect relationships between the psychosocial and sexual risks. However, it succeeded in analysing the psychosocial circumstances that negatively and positively influenced these adolescents' sexual risk behaviour, and used the findings of related studies to explain the likelihood of factors causing and affecting the relationships among their psychosocial circumstances and sexual risk behaviour. Hence, whereas the results of the relationships between

© University of Pretoria

the psychosocial factors and sexual risks of the adolescents in this study are credible, they may not be definitive. More research is needed to explain the causes and effects of the predictors for sexual risks in this population.

Second, the study utilised a questionnaire that included 201 structured items to interview adolescents on a range of sensitive lifetime psychosocial and sexual experiences. Although the administration of this questionnaire in a face-to-face manner and in local languages with short interludes during the interviews allowed the adolescents time to comprehend and respond to the questions, the results may have been affected by fatigue, recall and social desirability biases.

Third, the study found that the combined observed exogenous variables in the theorised structural model explained about 60% of the variance in these adolescents' sexual risk behaviour. This implies that the model did not control for some other vital personal and psychosocial factors, such as the adolescents' cognition or personality dispositions or customs and caregivers' affective and instrumental traits, even though they seem to play a role in the psychological and sexual health of children (Barawski et al., 2003; Brown et al., 2000; Meschke et al., 2002; Wilson & Donenberg, 2004). These factors may have affected the findings for this study.

Fourth, the study focused on adolescents of varied HIV status who lived in HIV-affected homes and the sample did not include those who lived in homes that were not affected by HIV. This research could therefore not ascertain whether the levels and factors for psychosocial and sexual risk experiences of adolescents in the sample were different from those in the general population. Since the findings discussed may not be generalised to adolescents living in homes that have not been directly affected by the HIV/AIDS epidemic, future related research should assess the extent and causes of the psychosocial circumstances and sexual risk behaviour of these adolescents to enable comparisons with the current results and ensure inclusive programming.

Fifth and last, although the overall sample for this study was large enough and carefully selected to include the three adolescent groups who live in HIV-affected homes, it was obtained from only three districts which were purposively selected based on a 3% adolescent HIV cut-off rate and availability of support groups for people living with or affected by HIV. In addition, the percentages of the final samples for the three adolescent groups were not equal to their proportions in the adolescent population and the quasi-sampling frame for this study. Similarly, the sample for the adolescents living with HIV was smaller than the other two groups. Hence, the findings, though credible, may not be representative of the adolescent groups who live in the HIV-affected homes of Uganda.

7.4 Strengths of the Study

The scales used and data collected for this study were systematically verified for relevancy, cogency, interconnectedness, precision, reliability, sampling adequacy and goodness of fit using factor analysis before the relevant tests were performed to assess the psychosocial predictors of sexual risk behaviour among adolescents

© University of Pretoria

living with, and affected by HIV who live in HIV-affected homes. Results of the confirmatory factor analyses showed that the data for the retained items in each factor was relevant, cogent, correlated, reliable and adequately fitted with the theorised factor structure. This means that the factor analysis of scales used to assess variables contributed to the reliability of the assessment of psychosocial and sexual risk behaviour.

In addition, the final data was examined for the factors that influence sexual risk behaviour when controlling for the effects of categorical levels and covariates of the observed psychosocial variables in the theoretical framework. This analysis process reduced the possibility of falsely declaring some observed psychosocial factors as significant or insignificant in influencing the sexual risk behaviour of this group of adolescents. The findings for this study are therefore credible.

Lastly, this research added the coping methods construct to the theoretical framework and assessed their effects on the relationships between the variables in different combinations of exogenous constructs against sexual risk behaviour (as indicated in Table 6) to identify the factors influencing sexual risks in this group of adolescents. The findings show that whereas the use of deflective coping methods mediate in these relationships by increasing risk, using self-control, socialisation and social support coping methods mediate by decreasing risk. These findings help to expound the theories on which this research was based.

7.5 Recommendations for Intervention and Further Research

This study found that some sociodemographic factors (personal, school, family, social and economic circumstances), community stressors, psychosocial distresses and coping methods positively and negatively influenced the sexual behaviour of the adolescents who live in HIV-affected homes. It also found that these factors functioned mainly through the coping methods they adopted and the psychosocial distresses they experienced to influence their sexual risk behaviour. These findings therefore highlight the need for family, school and community interventions to prevent and mitigate the risky personal, familial, societal, psychological, coping and sexual experiences to which adolescents living in HIV-affected homes are exposed. Some of these interventions could involve:

(1) Reviewing resources for adolescent HIV, sexual and mental health care to respond to these findings.

(2) Providing appropriate HIV, sexual and mental health education and care services to the adolescents living with, and affected by HIV who live in affected homes by (i) training these adolescents and their social service providers, in particular the caregivers, teachers, religious leaders, health workers and other community workers in effective communication and counselling, and (ii) providing life skills training to adolescents to enable them to cope with stressful situations, psychosocial distress, sexual risks and the negative effects of discussing sexuality issues and receiving HIV/psychosocial care.

© University of Pretoria

(3) Providing financial and material resources to HIV-affected families to help caregivers to provide positive parenting to the adolescents despite difficult situations.

(4) Creating and implementing a special education support scheme for children who live in HIV-affected homes to ensure that they continue to attend school and attain post-primary education.

In addition, this study was cross-sectional, quantitative and assessed psychosocial and sexual experiences among only adolescents who were living in HIV-affected homes at one point in time. It did not therefore examine the quantitative and qualitative antecedents and trends of psychosocial and sexual experiences of the adolescents who lived in homes that were affected and not affected by HIV over a period of time to establish the definitive differences, causes and effects of their experiences. A longitudinal mixed methods study is needed to further explain the various causes and effects of the psychosocial and sexual experiences of the adolescents who live in homes that are affected and not affected by HIV/AIDS and enable all-inclusive programming in future.

7.6 Dissemination and Benefits of Research Findings

To ensure that the findings of this study are accessed and utilised by the relevant stakeholders for policy advocacy, programming and further research:

First, a summary of the research findings and recommendations was prepared and distributed or presented to meetings of the different national, district and community organisations addressing HIV/sexual/mental health issues among adolescents in Uganda.

Second, different abstracts were written and presented to various scientific symposiums for the academia, policymakers and practitioners in behavioural, mental, HIV/AIDS, and sexual reproductive health.

Third, different manuscripts were written and submitted to relevant scholarly journals for publication.

Fourth, the full thesis and its products was uploaded to the website of the library repository for the University of Pretoria, where they can be accessed by the academia, policymakers, planners and practitioners.

© University of Pretoria

REFERENCES

Achenbach, T. M., & Rescorla, L. A. (2001). *Manual for the ASEBA school-age forms and profiles.* Research Centre for Children, Youth and Families, University of Vermont. https://aseba.org/wp-content/uploads/2019/02/ysr.pdf

Achenbach, T. M., & Rescorla, L. A. (2001). *Youth self-report for ages 11 - 18.* Research Centre for Children, Youth and Families, University of Vermont. https://aseba.org/wp-content/uploads/2019/02/ysr.pdf

Adimora, D. E., Akaneme, I. N., & Aye, E. N. (2018). Peer pressure and home environment as predictors of disruptive and risky sexual behaviours of secondary school adolescents. *African Health Sciences, 18*(2), 218-226. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6306969/pdf/AFHS1802-0218.pdf

Alex-Hart, B. A., Okagua, J., & Opara, P. (2015). Sexual behaviours of secondary school students in Port Harcourt. *Journal of Advances in Medicine and Medical Research, 6*(3), 325-334. https://journaljammr.com/index.php/JAMMR/article/view/1209/2425

Ali, M. M., Merdad, L., & Bellizzi, S. (2021). Socioeconomic variations in risky sexual behaviour among adolescents in 14 sub-Saharan Africa countries who report ever having had sex. *International Journal for Equity in health, 20*(11), 1-7. https://equityhealthj.biomedcentral.com/articles/10.1186/s12939-020-01352-8. file:///C:/Users/Stephen%20Kiirya/Downloads/s12939-020-01352-8.pdf

Amoateng, A. Y., Kalule-Sabiti, I. & Arkaah, Y. J. (2014). The effect of socio-demographic factors on risky sexual behaviours of adolescents in the North West Province of South Africa. *African Population Studies, 28*(1), 487-498. https://aps.journals.ac.za/pub/article/view/502

Asikhia, O. A., & Mohangi, K. (2015). A case study of school support and the psychological, emotional and behavioural consequences of HIV and AIDS on adolescents. *Journal of Social Aspects of HIV/AIDS, 12*(1), 123-133. http://www.tandfonline.com/doi/full/10.1080/17290376.2015.1125305

Ashaba, S., Cooper-Vince, C. E., Vořechovská, D., Rukundo, G. Z., Maling, S., Akena, D., & Tsai, A. C. (2019). Community beliefs, HIV stigma, and depression among adolescents living with HIV in rural Uganda. *African Journal of AIDS Research: AJAR*, *18*(3), 169–180. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6774805/

Atwine, B., Cantor-Graae, E., & Bajunirwe, E. (2005). Psychological distress among AIDS orphans in rural Uganda. *Journal of Social Science and Medicine, 61*(3), 555-564. http://www.sciencedirect.com/science/article/pii/S0277953605000171

Avalos, L. A., Jennifer, R., Mertens, J. R., Ward, C. L., Flisher, A. J., Bresick, G. F., & Weisner, C. M. (2010). Stress, substance use and sexual risk behaviours among primary care patients in Cape Town, South Africa. *AIDS Behaviour, 14*(2), 359-370. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2835823/

© University of Pretoria

Awotidebe, A., Phillips, J., & Lens, W. (2014). Factors contributing to the risk of HIV infection in rural school-going adolescents. *International Journal of Environmental Research and Public Health, 11*(11), 11805-11821. https://doi.org/10.3390/ijerph111111805. https://www.mdpi.com/1660-4601/11/11/11805

Bakeera-Kitaka, S., Nabukeera-Barungi, N., Nöstlinger, C., Addy, K., & Colebunders, R. (2008). Sexual risk reduction needs of adolescents living with HIV in clinical care setting. *AIDS Care, 20*(4), 426-433. http://www.tandfonline.com/doi/abs/10.1080/09540120701867099?journalCode=caic20

Bakeera-Kitaka, S., Smekens, T., Jespers, V., Wobudeya, E., Loos, J., Colebunders, R., Adipo, D., Kekitiinwa A., Musoke, P., Buve, A., & Nöstlinger, C. (2019). Factors influencing the risk of becoming sexually active among HIV infected Adolescents in Kampala and Kisumu, East Africa. *AIDS and Behaviour,* 23, 1375-1386. https://link.springer.com/article/10.1007/s10461-018-2323-y#article-info https://link.springer.com/article/10.1007/s10461-018-2323-y

Bandura, A. (1994). Social cognitive theory and exercise of control over HIV infection. In R. J. DiClemente and J. L. Peterson (Eds.), *Preventing AIDS: Theories and methods of behavioural interventions (pp. 25-59)*. Plenum.

Bandura, A. (2004). Health promotion by social cognitive means. *Health Education and Behaviour, 31*(2), 146-164. https://www.uky.edu/~eushe2/Bandura/Bandura2004HEB.pdf

Battles, H. B., & Weiner, L. S. (2002). From adolescence through young adulthood: Psychosocial adjustment associated with long-term survival of HIV. *Journal of Adolescent Health, 30*(3), 162-168. https://www.ncbi.nlm.nih.gov/pubmed/11869922

Bauermeister, J. A., Elkington, K., Brackis-Cott. E., Dolezal, C., & Mellins, C. (2009). Sexual behaviour and perceived peer norms: comparing perinatally infected and affected youth. *Journal of Youth and Adolescence, 38*(8), 1110–1122. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2769517/

Bauermeister, J. A., Elkington, K. S., Robbins, R. N., Kang, E., & Mellins, C. A. (2012). A prospective study of the onset of sexual behaviour and sexual risk in youth perinatally infected with HIV. *Journal of Sex Research, 49*(5), 413-422. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3208075/

Baumrind, D. (1999). The influence of parenting style on adolescent competence and substance use. Adolescents and Their Families, 1st Edition, Imprint Routledge. eBook ISBN9781315827063. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315827063-2/influence-parenting-style-adolescent-competence-substance-use-diana-baumrind?context=ubx

Bearinger, L. H., Sieving, R. E., Ferguson, J., & Sharma, V. (2007). Global perspectives on the sexual and reproductive health of adolescents: Patterns, prevention, and potential. *Lancet, 369*(9568), 1220-1231. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(07)60367-5/fulltext

© University of Pretoria

Bell, C., & McBride, D. (2010). Affect regulation and prevention of risky behaviours. *Journal of the American Medical Association, 304*(5), 565-566. https://www.researchgate.net/publication/45494274_Affect_Regulation_and_Prevention_of_Risky_Behaviours

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological* Bulletin, 107(2), 238-246. https://www.ncbi.nlm.nih.gov/pubmed/2320703

Better Care Network (2024). *Children Affected by HIV and AIDS.* https://bettercarenetwork.org/library/particular-threats-to-childrens-care-and-protection/children-affected-by-hiv-and-aids

Bingenheimer, J. B., Asante, E., & Ahiadeke, E. (2015). Peer influences on sexual activity among adolescents in Ghana. *Studies in Family Planning, 46*(1), 1-19. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4391617/

Birungi, H., Mugisha J. F., Nyombi, J., Obare, F., Evelia, H., & Nyinkavu, H. (2008). *Sexual and reproductive health needs of adolescents perinatally infected with HIV in Uganda: Frontiers Report.* Population Council. http://pdf.usaid.gov/pdf_docs/PNADN571.pdf

Blunch, N. J. (2008). *Introduction to structural equation modelling using SPSS and Amos*. Sage. https://www.amazon.com/Introduction-Structural-Equation-Modelling-Using/dp/1412945577

Bollen, K. A., & Stine, R. A. (1993). Bootstrapping goodness-of-fit measures in structural equation modelling. In K. A. Bollen & J. S. Long (Eds.). *Testing structural equation models,* 111–135. Sage.

Bollen, K. A., & Stine, R. A. (1992). Bootstrapping goodness-of-fit measures in structural equation modelling. *Sociological Methods and Research, 21*(2), 205-229. https://www.researchgate.net/publication/270606130_Bootstrapping_Goodness-of-Fit_Measures_in_Structural_Equation_Models#fullTextFileContent

Bomba, M., Nacinovich, R., Oggiano, S., Cassani, M., Baushi, L., Bertulli, C., Daniela Longhi, D., Coppini, S., Parrinello, G., Plebani, A., & Badolato, R. (2010). Poor health related quality of life and abnormal psychosocial adjustment in Italian children with perinatal HIV infection receiving highly active antiretroviral treatment. *AIDS Care 22*(7) 858-865. https://www.ncbi.nlm.nih.gov/pubmed/20635250. https://www.tandfonline.com/doi/full/10.1080/09540120903483018

Borawski, E. A., Levers-Landis, C. E., Lovegreen, L. D., & Trapl, E. S. (2003). Parental monitoring, negotiated unsupervised time, and parental trust: The role of perceived parenting practices in adolescent health risk behaviours. *Journal of Adolescent Health, 33*(2), 60-70. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3142794/

© University of Pretoria

Bordin, I. A., Rocha, M. M., Paula, C. S., Teixeira, M. C. T. V., Achenbach, T. M., Rescorla, L. A., & Silvares, E. F. M. (2013). Child behaviour checklist (CBL), youth self-report (YSR) and teacher's report form (TRF): an overview of the development of the original and Brazilian versions. *Cad. Saúde Pública, (29)*1. ISSN 0102-311X. http://dx.doi.org/10.1590/S0102-311X2013000500004

Bradshaw, D., Pettifor, A., MacPhail, C., & Dorrington, R. (2004). Trends in youth risk for HIV. In: Ijumba P, Day C, Ntuli A, editors. *South African Health Review 2003/04.* Health Systems Trust pp. 136-145. https://books.google.co.ug/books?id=If8-W8Czdn8C&pg=PA326&lpg=PA326&dq=Bradshaw,+D.,+Pettifor,+A.,+MacPhail,+C.,+%26+Dorrington,+R.+(2004).&source=bl&ots=ricTp2GnNT&sig=GUa5Ah18pveUs23kMV7VOgSJgXs&hl=en&sa=X&redir_esc=y#v=onepage&q=Bradshaw%2C%20D.%2C%20Pettifor%2C%20A.%2C%20MacPhail%2C%20C.%2C%20%26%20Dorrington%2C%20R.%20(2004).&f=false

Brody G. H., Zolinda Stoneman, Z., & Flor, D. (1999). *Parental Religiosity, Family Processes, and Youth Competence in Rural, Two-Parent African American Families.* Adolescents and Their Families, 1st Edition, Pages 11, Imprint Routledge. eBook ISBN9781315827063. https://www.taylorfrancis.com/chapters/edit/10.4324/9781315827063-3/parental-religiosity-family-processes-youth-competence-rural-two-parent-african-american-families-gene-brody-zolinda-stoneman-douglas-flor?context=ubx

Bronfenbrenner, U. (1979). The ecology of human development. Experiments by nature and design, Harvard University Press. https://khoerulanwarbk.files.wordpress.com/2015/08/urie_bronfenbrenner_the_ecology_of_human_developbokos-z1.pdf

Bronfenbrenner, U. (1994). Ecological models of human development, In T. Husen & T. N. Postlethwaite (Eds.), *International Encyclopaedia of Education, 3, (pp. 1643-1647), 2nd Edition.* Elsevier. https://www.ncj.nl/wp-content/uploads/media-import/docs/6a45c1a4-82ad-4f69-957e-1c76966678e2.pdf

Bronfenbrenner, U. (1992). Ecological systems theory. In R. Vasta (Ed.). *Six theories of child development: Revised formulations and current issues* (pp. 187-249). Jessica Kingsley Publishers. https://awspntest.apa.org/record/1992-98662-005

Brown, B. B., Clasen. D. R. & Eicher, S. E. (1986). Perceptions of peer pressure, peer conformity dispositions, and self-reported behaviour among adolescents. *Journal of Personality and Social Psychology, 22*(4), 521-530. https://psycnet.apa.org/record/1986-29673-001

Brown L. K., Lourie, K. J. & Pao, M. (2000). Children and adolescents living with HIV and AIDS: A review. *Journal of Child Psychology and Psychiatry, 41*(1), 81-96. https://www.ncbi.nlm.nih.gov/pubmed/10763677

© University of Pretoria

Brown, L. K., Hadley, W., Stewart, A., Lescano, C., Whiteley, L., Donenberg, G., & DiClemente, R. (2010). Psychiatric disorders and sexual risk among adolescents in mental health treatment. *Journal Consult Clinical Psychology, 78*(4), 590-597. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2911994/

Brown, L. K., Tolou-Shams, M., Lescano, C., Houck, C., Zeidman, J., Pugatch, D., & Lourie, K. J. (2006). Depressive symptoms as a predictor of sexual risk among African American adolescents and young adults. *Journal of Adolescent Health, 39*(3), 444.e1-444.e8. https://www.ncbi.nlm.nih.gov/labs/articles/16919811/

Buja, A., & Eyuboglu, N. (1991). Remarks of parallel analysis. *Multivariate Behavioural Research, 27*(4), 509-540. https://www.tandfonline.com/doi/abs/10.1207/s15327906mbr2704_2

Burke, H. M., Chen, M., Murray, K., Bezuidenhout, C., Ngwepe, P., Bernholc, A., & Medina-Marino, A. (2010). The effects of the integration of an economic strengthening and HIV prevention education programme on the prevalence of sexually transmitted infections and savings behaviours among adolescents: a full-factorial randomised controlled trial in South Africa. *BMJ Global Health, 5*(4), e002029. https://gh.bmj.com/content/bmjgh/5/4/e002029.full.pdf

Bull, B. A., & Drotar, D. (1991). Coping with cancer in remission: Stressors and strategies reported by children and adolescents. *Journal of Paediatric Psychology, 16*(6), 767-782. https://academic.oup.com/jpepsy/article-abstract/16/6/767/1532736?redirectedFrom=fulltext

Byrne, B. M. (2005). Factor analytic models: Viewing the structure of an assessment instrument from three perspectives. *Journal of Personality Assessment, 85*(1), 17-30. https://www.tandfonline.com/doi/pdf/10.1207/s15327752jpa8501_02?needAccess=true

Byrne, B. M. (2010). Structural equation modelling with Amos: Basic concepts, applications, and programming (Second edition). Routledge Taylor and Francis Group. file:///C:/Users/S-KIIRYA/Downloads/9780203805534_previewpdf.pdf

Byrne, B. M. (2016). Structural equation modelling with Amos: Basic concepts, applications, and programming (Third edition). Routledge Taylor and Francis Group. https://www.amazon.com/Structural-Equation-Modeling-AMOS-Applications/dp/1138797030

Carter, M. W., Kraft, J. M., Hatfield-Timajchy, K., Snead, M. C., Ozeryansky, L., Fasula, A. M., Koenig, L., & Kourtis, A. P. (2013). The reproductive health behaviours of HIV-infected young women in the United States: A literature review. *AIDS Patient Care and STDs, 27*(12), 669 - 680. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3868287/pdf/apc.2013.0208.pdf

Chernoff, M., Nachman, S., Williams, P., Brouwers, P., Morse, E., Heston, J., Hodge, J., Di Poalo, V., Deygoo, N. S., & Gadow, K. D. (2009). Mental health treatment patterns in perinatally HIV infected youth and

© University of Pretoria

controls. *Paediatrics, 124*(2), 627-636. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2764487/pdf/nihms-137100.pdf

Chigbu, E. F., Nwobi, N. L. Nwanna, U. C. Etele, A. V. (2021). Relationship between peer influence and sexual behaviour of in-school adolescents in South East Nigeria. *European Journal of Social Sciences Studies, 6*(4), 181 – 204. https://oapub.org/soc/index.php/EJSSS/article/view/1083/1669

Choi, J., Kim, S., Chen, J., & Dannels, S. A. (2011). A comparison of maximum likelihood and Bayesian estimation for polychoric correlation using Monte Carlo simulation. *Journal of Educational and Behavioural Statistics, 36*(4), 523-549. https://citeseer.ist.psu.edu/viewdoc/download;jsessionid=40E232881B2D5D48B9C5C8162E3F9D7F?doi=10.1.1.932.8844&rep=rep1&type=pdf

Christ, S. L., Lee, D. J., Lam, B. L., & Zheng, D. D. (2014). Structural equation modelling: a framework for ocular and other medical sciences research. *Ophthalmic Epidemiology*, *21*(1), 1-13. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5603171/pdf/nihms904775.pdf

Cluver, L. D., Gardner, F., & Operario, D. (2007). Psychological distress among AIDS-orphaned children in Urban South Africa. *Journal of Child Psychology and Psychiatry, 48*(8), 755-763. https://static1.squarespace.com/static/54e3c4b3e4b02a415877e452/t/565ed 185e4b0d50dfc90 ee50/1449054597710/j.1469-7610.2007.01757.x.pdf

Cluver, L. D., Orkin, M., Boyes, M, E., Sharr, L., Makasi, D., & Nikelo, J. (2013). Pathways from parental AIDS to child psychological, educational and sexual risk: Developing an empirically-based interactive theoretical model. *Journal of Social Science and Medicine, 87,* 185-193. http://dx.doi.org/10.1016/j.socscimed.2013.03.028

Cluver, L. D., Orkin, M., Gardner, F., & Boyes, M. E. (2012). Persisting mental health problems among AIDS orphaned children in South Africa. *Journal of Child Psychology and Psychiatry, 53*(4), 363-370. http://www.ncbi.nlm.nih.gov/pubmed/21883206

Cochran, W. G. (1977). *Sampling techniques (3rd Ed.)*. John Wiley & Sons. http://www.statisticshowto.com/probability-and-statistics/find-sample-size/

Cohen, J. (1990). Things I have learned (so far). *American Psychologist, 45*, 1304-1312. https://www.researchgate.net/publication/200772840_Things_I_learned_so_far

Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *Journal of the American Medical Association, 298*(14), 1685-1687. https://www.researchgate.net/publication/5918645_Psychological_stress_and_disease_JAMA_298_1685-

© University of Pretoria

1687/link/5871155808ae6eb871c07d9e/download?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19

Coley, R. L., Lombardi, C. M., Lynch, A. D., Mahalik, J. R., Sims, J. (2013). Sexual partner accumulation from adolescence through early adulthood: The role of family, peer and school social norms. *Journal of Adolescent Health, 53*(1), 91-97.e2. http://www.sciencedirect.com/science/article/pii/S1054139X13000426

Compas, B. E., Connor-Smith, J. K., Saltzman, H., Thomsen, A. H., & Wadsworth, M. (2001). Coping with stress during childhood and adolescence: Progress, problems, and potential. *Psychological Bulletin, 127*(1), 87-127. https://www.ncbi.nlm.nih.gov/pubmed/11271757

Compas, B. E., Jaser, S. S., Dunn, M. J., & Rodriguez, E. M. (2012). Coping with chronic illness in childhood and adolescence. *Annual Review of Clinical Psychology, 8,* 455-480. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3319320/

Cooper, M. L., Wood, P. K., Orcutt, H. K., & Albino, A. (2003). Personality and predisposition to engage in risky or problem behaviours during adolescence. *Journal of Personality and Social Psychology, 84*(2), 390-410. https://www.ncbi.nlm.nih.gov/pubmed/12585812

Crosby, R. A., DiClemente, R. J., Wingood, G. M., Salazar, L. F., Harrington, K., Davies, S. L., & Oh, M. K. (2003). Identification of strategies for promoting condom use: A prospective analysis of high-risk African American female teens. *Prevention Science, 4*(4), 263-270. https://link.springer.com/article/10.1023/A:1026020332309

Dawson, L. H., Shih, M. C., de Moor, C., & Shrier, L. (2008). Reasons why adolescents and young adults have sex: Associations with psychological characteristics and sexual behaviour. *Journal of Sex Research, 45*(3), 225-232. https://www.ncbi.nlm.nih.gov/pubmed/18686151

Delavera, A., & Eryando, T. (2021). Early sexual initiation among adolescent girls in Indonesia. *Public Health Science Journal, 13*(2), 161-175. https://journal.uin-alauddin.ac.id/index.php/Al-Sihah/article/view/22404/12885

Dewe, P., O'Driscoll, M., & Cooper, C. (2012). Theories of psychological distress at work. *Handbook of Occupational Health and Wellness,* 23-37. https://link.springer.com/chapter/10.1007/978-1-4614-4839-6_2

DiClemente, R. J., Crittenden, C. P., Rose, E., Sales, J. M., Wingood, G. M., Crosby, R. A., & Salazar, L. F. (2008). Psychosocial predictors of HIV-associated sexual behaviours and the efficacy of prevention interventions in adolescents at-risk for HIV infection: what works and what doesn't work? *Psychosomatic Medicine, 70*(5), 598-605. https://pubmed.ncbi.nlm.nih.gov/18541908/

© University of Pretoria

Donenberg, G. R., & Pao, M. (2003). Understanding HIV/AIDS: Psychosocial and psychiatric issues in youths. *Contemporary Psychiatry, 2*(7), 1-8. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4213805/

Donenberg, G. R., Bryant, F., Emerson, E., Wilson, H., & Pasch, K. (2003). Tracing the roots of early sexual debut among adolescents in psychiatric care. *Journal of American Academy of Child Adolescence Psychiatry, 42(5),* 594-608. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1201420/

Donenberg, G. R., Emerson, E., Bryant, F. B., Wilson, H., & Weber-Shifrin, E. (2001). Understanding AIDS-risk behaviour among adolescents in psychiatric care: Links to psychopathology and peer relationships. *Journal of American Academy of Child Adolescence Psychiatry, 40*(6), 642-653. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1201503/

Donenberg, G., Wilson, H., Emerson, E., & Bryant, F. (2002). Holding the line with a watchful eye: The impact of perceived parental monitoring and parental permissiveness on risky sexual behaviour among adolescents in psychiatric care. *AIDS Education Prevention, 14(*2), 138-157. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1226305/

Du, H., Li, X., Chi, P., Zhao, J., & Zhao, G. (2015). Relational self-esteem, psychological well-being, and social support in children affected by HIV. *Journal of Health Psychology, 20*(12), 1568-1578. https://www.ncbi.nlm.nih.gov/pubmed/24423572

Eaton, L., Flisher, A. J., & Aarø, L. E. (2003). Unsafe sexual behaviour in South African youth. *Social Science and Medicine (1982), 56*(1), 149-165. https://www.sciencedirect.com/science/article/abs/pii/S0277953602000175

Eisenberg, N., Cumberland, A., Spinrad, T. L., Fabes, R. A., Shepard, S. A., Reiser, M., Murphy, B. C., Losoya, S. H., & Guthrie, I. K. (2001). The relations of regulation and emotionality to children's externalizing and internalizing problem behaviour. *Child Development, 72*(4), 1112-1134. https://www.ncbi.nlm.nih.gov/pubmed/11480937 https://srcd.onlinelibrary.wiley.com/doi/epdf/10.1111/1467-8624.00337

Elkington, K., Bauermeister, J. A., Brackis-Cott, E., Dolezol, C., & Mellins, C. (2009). Substance use and sexual risk behaviours in perinatally human immunodeficiency virus-exposed youth: The role of caregivers, peers and HIV status. *Journal of Adolescent Health, 45*(2), 133-141. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2773689/

Elkington, K. S., Bauermeister, J. A., Robbins, R. N., Gromadzka, O., Abrams, E. J., Wiznia, A., Bamji, M., & Mellins, C. A. (2012). Individual and contextual factors of sexual risk behaviour in youth perinatally infected with HIV. *AIDS Patient Care STDs, 26*(7), 411-422. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3432574/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3432574/pdf/apc.2012.0005.pdf

© University of Pretoria

Elkington, K. S., Robbins, R. N., Bauermeister, J. A., Abrams, E. J., Mackay, M., & Mellins, C. A. (2011a). Mental health in youth infected with and affected by HIV: The role of caregiver HIV. *Journal of Paediatric Psychology, 36*(3), 360-373. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3062287/

Elkington, K., Bauermeister, J., Zimmerman, M. (2011b). Do parents and peers matter? A prospective socio-ecological examination of substance use and sexual risk among African American youth. *Journal of Adolescence, 34*(5), 1035-1047. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3123662/

Elliott-DeSorbo, D. K., Martin, S., & Wolters, P. (2009). Stressful life events and their relationship to psychological and medical functioning in children and adolescents with HIV infection. *Journal of Acquired Immune Deficiency Syndrome, 52*(3), 364-370. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2818082/

Envuladu, E. A., Kwaak, A. V.D., Zwanikken, P., & Zoakah, A. I. (2017). Exploring the factors influencing adolescent sexual behaviour in Plateau State Nigeria. *American Journal of Medicine and Medical Sciences, 7*(1), 1-6. http://article.sapub.org/10.5923.j.ajmms.20170701.01.html

Fair, C., & Albright, J. (2012). "Don't tell him you have HIV unless he's the one": Romantic relationships among adolescents and young adults with perinatal HIV infection. *AIDS Patient Care and STDs, 26*(12), 746-754. http://www.ncbi.nlm.nih.gov/pubmed/23199192

Fan, Y., Chen, J., Shirkey, G., John, R., Wu, S. R., Park, H., & Shao, C. (2016). Applications of structural equation modelling (SEM) in ecological studies: an updated review. *Ecological Processes, 5,* 19. https://ecologicalprocesses.springeropen.com/articles/10.1186/s13717-016-0063-3

Ferrando, P. J., & Lorenzo-Seva, U. (2016). A note on improving EAP trait estimation in oblique factor-analytic and item response theory models. *Psicológica, 37*, 235-247. https://www.uv.es/revispsi/articulos2.16/7Ferrando.pdf

Fielden, S. J., Sheckter, L., Chapman, G. E., Alimenti, A., Forbes, J. C., Sheps, S., Cadell, S., & Frankish, J. C. (2006). Growing up: Perspectives of children, families and service providers regarding the needs of older children with perinatally acquired HIV. *AIDS Care, 18*(8), 1050-1053. https://www.tandfonline.com/doi/abs/10.1080/09540120600581460?journalCode=caic20

Foster, S. B., Lu, M., Glaze, D. G., Reuben, J. M., Harris, L. L., Cohen, E. N., Lee, B. N., Zhao, E., Paul, M. E., Schwarzwald, H., McMullen-Jackson, C., Clark, C., Armstrong, F. D., Brouwers, P. Y., Miller, T. L., Colin, A. A., Scott, G. B., Shahzeidi, S. Willen, E. J., Asthana, D., Lipshultz, S. E., Thompson, B. & Shearer, W. T. (2012). Associations of cytokines, sleep patterns, and neurocognitive function in youth with HIV infection. *Clinical Immunology, 144*(1), 13-23. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3377781/pdf/nihms-374516.pdf

Friedrich, W. N., Lysne, M., Sim, L., & Shamos, S. (2004). Assessing sexual behaviour in high-risk adolescents

© University of Pretoria

with the Adolescent Clinical Sexual Behaviour Inventory. *Child Maltreatment, 9*(3), 239-250. http://journals.sagepub.com/doi/pdf/10.1177/1077559504266907 http://www.nctsnet.org/nctsn_assets/pdfs/measure/ACSBI-P.pdf

Frydenberg, E., & Lewis, R. (1993). The Adolescent Coping Scale, administrator's manual. Australian Council for Education Research.

Gadow, K. D., Chernoff, M., Williams, P. L., Browers, P., Morse, E., Heston, J., Hodge, J., Di Poalo, V., Deygoo, N. S., & Nachman, S. (2012a). Co-occurring psychiatric symptoms in children perinatally infected with HIV and peer comparisons sample. *Journal of Development Behaviour Paediatrics, 31*(2), 116-128. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2868331/pdf/nihms179504.pdf

Gadow, K. D., Angelidou, K., Chernoff, M., Williams, P. L., Heston, J., & Hodge, J. (2012b). Longitudinal study of emerging mental health concerns in youth perinatally infected with HIV and peer comparisons. *Journal of Development Behaviour Paediatrics, 33*(6), 456-468. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3520511/

Hair, J. F. Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis (Seventh edition)*. Pearson Prentice Hall. https://files.pearsoned.de/inf/ext/9781292035116

Hallman, K. (2004). Socioeconomic disadvantage and unsafe sexual behaviours among young women and men in South Africa, *Policy Research Division Working Paper, 190*. Population Council. https://knowledgecommons.popcouncil.org/cgi/viewcontent.cgi?article=1055&context=departments_sbsr-pgy

Harrison, A., Colvin, C. J., Kuo, C., Swartz, A., & Lurie, M. (2015). Sustained high HIV incidence in young women in southern Africa: social, behavioural, and structural factors and emerging intervention approaches. *Current HIV/AIDS Reports, 12*(2), 207-215. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4430426/

Hartup, W. W. (2005). Peer interactions: what causes what? *Journal of Abnormal Child Psychology, 33,* 387-394. https://link.springer.com/article/10.1007/s10802-005-3578-0

Hessler, D., & Katz, L. (2010). Associations between emotional competence and adolescent risky behaviour. *Journal of Adolescence, 33*(1), 241-246. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2822004/

Houck, C., Swenson, R., Donenberg, G. R., Papino, A., Emerson, E., & Brown, L. K. (2014). Adolescents' emotions prior to sexual activity and associations with sexual risk factors. *AIDS Behaviour, 18*(8), 1615-1623. C:\\Users\\Doctor Stephen\\AppData\\Roaming\\Users\\USER \\Downloads\\nihms-569369.pdf

Hu, L-T., & Bentler, P. M. (1998). Fit indices in covariance structural modelling: Sensitivity to under-parameterized model misspecification. *Psychological methods, 3*(4), 424-453. https://pdfs.semanticscholar.org/a92c/9726361d9c1d165dbf2ea781b6c48363a816.pdf

© University of Pretoria

Hu, L-T., & Bentler, P. M. (1999). Cut-off criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modelling, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118 https://www.tandfonline.com/doi/abs/10.1080/10705519909540118

Igulot, P. (2022). Sexual and gender-based violence and vulnerability to HIV infection in Uganda: evidence from multilevel modelling of population-level HIV/AIDS data. *Social Sciences, 11*(7), 301- https://www.mdpi.com/2076-0760/11/7/301. file:///C:/Users/Stephen%20Kiirya/Downloads/socsci-11-00301-v2%20(1).pdf

Jennings, L., Mathai, M., Linnemayr, S., Trujillo, A., Mak'anyengo, M., Montgomery, B. E. E., & Kerrigan, D. L. (2017). Economic context and HIV vulnerability in adolescents and young adults living in urban slums in Kenya: a qualitative analysis based on scarcity theory. *AIDS and behaviour*, *21*(9), 2784-2798. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5505815/

Jewkes, R. K., Dunkle, K., Nduna, M., Shai, N. (2010). Intimate partner violence, relationship power inequity, and incidence of HIV infection in young women in South Africa: a cohort study. *Lancet, 376*(9734), 41-48. https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(10)60548-X/fulltext

Kahn, K., Tollman, S., Garenne, M., & Gear, J. (2000). Validation and application of verbal autopsies in a rural area of South Africa. *Tropical Medicine and International Health, 5*(11), 824-831. https://onlinelibrary.wiley.com/doi/full/10.1046/j.1365-3156.2000.00638.x

Kalichman, S. C. (2023). Ending HIV hinges on reducing poverty. *AIDS and Behaviour,* 27, 1-3. https://doi.org/10.1007/s10461-022-03766-7

Kalichman, S. C., Simbayi, L. C., Jooste, S., Cherry, C., & Cain, D. (2005). Poverty-related stressors and HIV/AIDS transmission risks in two South African communities. *Journal of Urban Health, 82*(2), 237-249. https://europepmc.org/backend/ptpmcrender.fcgi?accid=PMC3456564&blobtype=pdf

Kalichman, S. C., Simbayi, L. C., Kagee, A., Toefy, Y., Jooste, S., Cain, D., & Cherry, C. (2006). Associations of poverty, substance use, and HIV transmission risk behaviours in three South African communities. *Journal of Social Science and Medicine, 62*(7), 1641-1649. https://www.ncbi.nlm.nih.gov/pubmed/16213078

Kalungwana, L., Malcolm-Smith, S., & Schrieff, L. (2022). Mental health and adaptive functioning among school-aged children living with HIV in Zambia. *Frontiers in Psychiatry,* 13:922944. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9489899/pdf/fpsyt-13-922944.pdf

Kang, E., Mellins, C. A., Dolezal, C., Elkington, K. S., & Abrams, E. J. (2011). Disadvantaged neighbourhood influences on depression and anxiety in youth with perinatally acquired human immune deficiency virus: How life stressors matter. *Journal of Community Psychology, 39*(8), 956-971.

© University of Pretoria

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3587679/

Kapadia, F., Frye, V., Bonner, S., Emmanuel, P., Samples, C., & Latka, M. (2012). Perceived peer safer sex norms and sexual risk behaviours among substance-using Latino adolescents. *AIDS Education Prevention, 24*(1), 27-40. https://www.ncbi.nlm.nih.gov/pubmed/22339143

Kapetanovic, S., Wiegand, R., Dominquez, K., Blumberg, D., Bohannon, B., Wheeling, J., & Rutstein, R. (2011). Associations of medically documented psychiatric diagnoses and risky health behaviours in highly active antiretroviral therapy-experienced perinatally HIV infected youth. *AIDS Patient Care and STDs, 25*(8), 493-501. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3155118/

Kato, E. I., & Omona, K. (2021). Peer influences to risky sexual behaviours among out of school adolescents in Kamuli municipality. *Health Policy and Development, 19*(1), 40-59. https://www.researchgate.net/publication/352648623_peer_influences_to_risky_sexual_behaviours_among_out-of-school_adolescents_in_kamuli_municipality

Keenan, K., Loeber, R., Zhang, Q., Stouthamer-Loeber, M., & Kammen, W. B. (1995). The influence of deviant peers on the development of boys' disruptive and delinquent behaviour: a temporal analysis. *Development and Psychopathology: Development Processes in Peer Relations and Psychopathology, 7*(4), 715-726. https://doi.org/10.1017/S0954579400006805

Kihumuro, R. B., Muganzi, D. J., Wandira, E. G., Alinaiswe, R., Nanyunja, J. J., Kugumisiriza, R., Alele, P. E., & Mubangizi, V. (2021). Influence of boarding secondary school environment on HIV positive students in South Western Uganda. *BMC Public Health, 21*(1), 327. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-021-10380-0

Kiirya, K. S. (1999). Are HIV unaware persons the hidden sub-population at high risk of HIV infection or re-infection in Uganda? *The African Population in the 21st Century: Third African Population Conference, Durban South Africa, 6 – 10 December 1999, 5,* 413-432. ISBN 2- 910 115 – 16 – x. http://books.google.co.ug/books?id=gUEEAQAAIAAJ&q=Stephen+K.+Kiirya&dq=Stephen+K.+Kiirya&hl=ach&sa=X&ei=dDyXU6TjMoPV0QW-7IDIDA&ved=0CCQQ6AewBA. http://dspace.mak.ac.ug/bitstream/handle/10570/1684/ Kiirya-MISR-res1.pdf?sequence=1. http://www.connecting-africa.net/query_2.php?F9=1&S0=Stephen+Kiirya&F0=0

Kiirya, K. S., Kibombo, R., Kyobe, S., Hua, H., Brunette, T., & Noyes, D. (2016). *Midterm trends in knowledge, attitudes and practices about HIV/AIDS among primary and post-primary school learners and teachers in 15 districts of Uganda.* USAID Uganda School Health and Reading Programme/Ministry of Education and Sports, Research Triangle International and World Education Inc.

Kimera, E., Vindevogel, S., Kintu, M. J., Rubaihayo, J., De Maeyer, J., Reynaert, D., Engelen, A., Nuwaha, F., & Bilsen, J. (2020). Experiences and perceptions of youth living with HIV in Western Uganda on school

© University of Pretoria

attendance: barriers and facilitators. *BMC Public Health 20*(1), 1-12. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-020-8198-7

Kish, L. (1995). Methods for Design Effects. *Journal of Official Statistics, 11*, 55-77.

Kline, R. B. (2016). *Principles and practice of structural equation modelling* (Fourth edition). The Guilford Press. https://dl.icdst.org/pdfs/files4/befc0f8521c770249dd18726a917cf90.pdf

Koenig, L. J., Nesheim, S., & Abramowitz, S. (2011). Adolescents with perinatally acquired HIV: Emerging behavioural and health needs for long-term survivors. *Current Opinions on Obstetric Gynaecology, 23*(5), 321-327. http://doi: 10.1097/GCO.0b013e32834a581b. https://www.ncbi.nlm.nih.gov/pubmed/21836510

Koenig L. J., Pals, S. L., Chandwani, S., (2010). Sexual transmission risk behaviour of adolescents with HIV acquired perinatally or through risky behaviours. *Journal Acquired Immune Deficiency Syndrome, 55*(3), 380-390. https://journals.lww.com/jaids/fulltext/2010/11010/sexual_transmission_risk_behavior_of_adolescents.16.aspx

Kotchick, B. A., Shaffer, A., Miller, K. S., & Forehand, R. (2001). Adolescent sexual risk behaviour: A multi-system perspective. *Clinical Psychology Review, 21*(4), 493–519. https://doi.org/10.1016/S0272-7358(99)00070-7. http://www.sciencedirect.com/science/article/pii/S0272735899000707

Labelle, R., Breton, J., Berthiaume, C., Royer, C., Raymond, S., Cournoyer, M., Balan, B., Zaloum, T. Bibaud, A., Gauvin, G., & Janelle, A. (2015). Psychometric properties of three measures of protective factors for depression and suicidal behaviour among adolescents. *Canadian Journal of Psychiatry, 60*(2 Supplement 1), S16-S26. http://www.ncbi.nlm.nih.gov/pmc/ articles/PMC4345844/pdf/cjp-2015-vol60-february-supplement-s16-s26.pdf

Latkin, C. A., Williams, C. T., Wang, J., & Curry, A. D. (2005). Neighbourhood social disorder as a determinant of drug injection behaviours: A structural equation modelling approach. *Health Psychology, 24*(1), 96-100. https://www.ncbi.nlm.nih.gov/pubmed/15631567

Latkin, C. A., German, D., Vlahov, D., & Galea, S. (2013). Neighbourhoods and HIV: a social ecological approach to prevention and care. *The American Psychologist*, *68*(4), 210-224. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3717355/

Lazarus, R. S., & Folkman, S. (1991). *The concept of coping.* http://userpage.fu-berlin.de/gesund/publicat/ehps_cd/health/stress.html

Leonard, A. D., Markham, C. M., Bui, T., Shegog, R., & Paul, M. E. (2010). Lowering the risk of secondary HIV transmission: Insights from HIV positive youth and health care providers. *Perspective on Sexual Reproductive Health, 42*(2), 110-116. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3151665/

© University of Pretoria

Lerner, R. M. & Benson, P. L. (Eds.). (2003). *Developmental assets and asset-building communities.* Kluwer Academic/Plenum Publishers.

Lopman, B., Barnabas, R., Boerma, T., Chawira, J., Gaitskell, K., Harrop, T., Mason, P., Donnelly, C. A., Garnett, G. P., Nyamukapa, C., & Gregson, S. (2006). Creating and validating an algorithm to measure AIDS mortality in the adult population using verbal autopsy. *Public Library of Science Medicine, 3*(8), 1273e1281. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1526767/pdf/pmed.0030312.pdf

Lorenzo-Seva, U. (1999). Promin: a method for oblique factor rotation. *Multivariate Behavioural Research, 34*(3), 347-365. https://www.tandfonline.com/doi/abs/10.1207/S15327906MBR3403_3

Lorenzo-Seva, U., & Ferrando, P. J. (2019). Robust Promin: a method for diagonally weighted factor rotation. *Liberabit, 25*(1), 99-106. https://www.redalyc.org/journal/686/68660129009/html/ http://www.scielo.org.pe/pdf/liber/v25n1/a08v25n1.pdf https://ojs3.revistaliberabit.com/index.php/Liberabit/article/view/236/177

Lorenzo-Seva, U., & Ferrando, P. J. (2020). Unrestricted factor analysis of multidimensional test items based on an objectively refined target matrix. *Behavioural Research Methods, 52*(1), 116-130. https://en.x-mol.com/paper/article/1213013129092599829 https://link.springer.com/content/pdf/10.3758/s13428-019-01209-1.pdf

Lorenzo-Seva, U., & Ferrando, P. J. (2021). MSA: The forgotten index for identifying inappropriate items before computing exploratory item factor analysis. *Methodology: European Journal of Research Methods for Behavioural and Social Sciences, 17*(4), 296-306. https://meth.psychopen.eu/index.php/meth/article/view/7185/7185.html

Louthrenoo, O., Oberdorfer, P., & Sirisanthana, V. (2013). Psychosocial functioning in adolescents with perinatal HIV infection receiving highly active antiretroviral therapy. *Journal of the International Association of Providers of AIDS Care*, 13(2), 178-183. https://pubmed.ncbi.nlm.nih.gov/23722084/

Louthrenoo, O., Aurpibul, L., Oberdorfer, P., & Sirisanthana, V. (2018). Family functioning in adolescents with perinatal HIV infection. *Journal of the International Association of Providers of AIDS Care*, 17, 1-6. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6748494/pdf/10.1177_2325958218774782.pdf

Lowenthal, E. D., Bakeera-Kitaka, S., Marukutira, T., Chapman, J., Goldrath, K., & Ferrand, R. A. (2014). Perinatally acquired HIV infection in adolescents from Sub-Saharan Africa: A review of emerging challenges. *Lancet Infectious Diseases, 14*(7), 627-639. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4074242/

Lowenthal, E. D., Lawler, K., Harari, N., Moamongwe, L., Masunge, J., Masedi, M., Matome, B., Seloilwe, E., & Gross, R. (2012). Rapid psychosocial function screening test identified treatment failure in HIV infected African youth. *AIDS Care, 24*(6), 722-727. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3345310/

© University of Pretoria

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3345310/pdf/nihms350038.pdf

Mabaso, M., Sokhela, Z., Mohlabane, N., Chibi, B., Zuma, K., Simbayi, L., (2018). Determinants of HIV infection among adolescent girls and young women aged 15–24 years in South Africa: a 2012 population-based national household survey. *BMC Public Health,* 18, 183. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-018-5051-3

MacCallum, R. C., & Austin, J. T. (2000). Applications of structural equation modelling in psychological research. *Annual Review of Psychology, 51*, 201-226. https://psychology.concordia.ca/fac/kline/sem/qicss/maccallum.pdf

MacCarthy, S., Saya, U., Samba, C., Birungi, J., Okoboi, S., Linnemayr, S. (2018). "How am I going to live?" exploring barriers to ART adherence among adolescents and young adults living with HIV in Uganda. *BMC Public Health, 18*(1), 1158. https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-018-6048-7

Machel, J. Z. (2001). Unsafe sexual behaviour among schoolgirls in Mozambique: a matter of gender and class. *Reproductive Health Matters*, *9*(17), 82-90. https://www.tandfonline.com/doi/epdf/10.1016/S0968-8080%2801%2990011-4?needAccess=true&role=button https://doi.org/10.1016/s0968-8080(01)90011-4

Magadi, M. A., & Uchudi, J. (2015). Onset of sexual activity among adolescents in HIV/AIDS affected households in sub-Saharan Africa. *Journal of Biosocial Science, 47*(2), 238 – 257. https://hull-repository.worktribe.com/preview/377318/Magadi%20%20Uchudi%20%282015%29%20JBS%20paper%20-%20Accepted%20version.pdf

Mahmood, W., & Shujja, S. (2013). Development and preliminary validation of peer pressure assessment scale (PPAS) for Pakistani adolescents. *Pakistani Journal of Social and Clinical Psychology, 11*(1), 36-41. https://www.researchgate.net/publication/274376118_Development_and_Preliminary_Validation_of_Peer_Pressure_Assessment_Scale_PPAS_for_Pakistani_Adolescents

Majumder, S. (2021). Socioeconomic status scales: revised Kuppuswamy, BG Prasad, and Udai Pareekh's scale updated for 2021. *Journal of Family Medicine and Primary Care, 10*(11), 3964-3967. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8797108/pdf/JFMPC-10-3964.pdf

Malee, M. K., Tassiopoulos, K., Huo, Y., Siberry, G., Williams, P. I., Hazra, R., Smith, R. A., Allison, S. M., Garvie, P. A., Kammerer, B.. Kapetanovic, S., Nichols, S., Van Dyke, R. V., Seage, G. R., & Mellins, C. A. (2011a). Mental health functioning among children and adolescents with perinatal HIV infection and perinatal HIV exposure. *AIDS Care, 23*(12), 1533-1544. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3387978/pdf/nihms347451.pdf

Malee, K. M., Williams, P., Montepledra, G., McCabe, M., Nicholas, S., Sirois, P. A., Storm, D., Farley, J., &

© University of Pretoria

Kammerer, S. (2011b). Medication adherence in children and adolescents with HIV infection: Associations with behavioural impairment. *AIDS Patient Care and STDs, 25*(3), 191-200. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3101948/pdf/apc.2010.0181.pdf https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3101948/

Martin-Storey, A., & Benner, A. (2019). Externalising behaviours exacerbate the link between discrimination and adolescent health risk behaviours. *Journal of Youth Adolescence, 48*(9), 1724-1735. https://www.ncbi.nlm.nih.gov/pubmed/31175511

MAXFACTA (2014). *Using the positive health, dignity and prevention framework to explore the lived experiences of young people living with HIV in Kenya.* MAXFACTA unpublished baseline survey report.

McBride, C. K., Paikoff, R. L., & Holmbeck, G. N. (2003). Individual and familial influences on the onset of sexual intercourse among urban African American adolescents. *Journal of Consult Clinical Psychology, 71(*1), 159-167. https://www.ncbi.nlm.nih.gov/pubmed/12602436

Meijer, S. A., Sinnema, G., Bijstra, J. O., Mellenbergh, G. J., & Wolters, W. H. (2002). Coping styles and locus of control as predictors for psychological adjustment of adolescents with a chronic illness. *Social Science and Medicine, 54*(9), 1453-1461. https://www.sciencedirect.com/science/article/pii/S0277953601001277

Meinck, F., Cluver, L. D., Boyes M. E., & Ndhlovu, L. D. (2015). Risk and protective factors for physical and emotional abuse victimisation amongst vulnerable children in South Africa. *Child Abuse Review, 24*(3), 182-197. http://onlinelibrary.wiley.com/enhanced/doi/10.1002/car.2283

Mellins C. A., Elkington, K. S., Bauermeister, J. A., Brackis-Cott, E., Dolezal, C., McKay, M., Wiznia, A., Bamji, M., & Abrams, E. J. (2009). Sexual and drug use behaviour in perinatally HIV infected youth: Mental health and family influences. *Journal of American Academy of Child and Adolescence Psychiatry, 48*(8), 810-819. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3033727/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3033727/pdf/nihms-258297.pdf

Mellins C. A., Elkington, K. S., Leu, C. S., Santamaria, E. K., Dolezal, C., Wiznia, A., Bamji, M., Mckay, M. M., & Abrams, E. J. (2012). Prevalence and change in psychiatric disorders among perinatally HIV-infected and HIV-exposed youth. *AIDS Care, 24*(8), 953-962. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3416047/

Mellins, C. A., & Malee, K. M. (2013). Understanding the mental health of youth living with perinatal HIV infection: lessons learned and current challenges. *Journal of the International AIDS Society, 16*(1), 25-43. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3687078/

Mellins, C. A., Tassiopoulos, K., Malee, K., Mosciciki, A. B., Patton, D., & Smith, R., Usitalo, A., Allison, S. M., Dyke, R. V., & Seage, G. R. (2011). Behavioural health risks in perinatally HIV exposed youth: Co-

© University of Pretoria

occurrence of sexual and drug use behaviour, mental health problems and non-adherence to antiretroviral treatment. *AIDS Patient Care and STDs, 25*(7), 413-422. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3125549/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3125549/pdf/apc.2011.0025.pdf

Meschke, L. L., Bartholomae, S., & Zentall, S. R. (2002). Adolescent sexuality and parent-adolescent processes: Promoting healthy teen choices. *Journal of Adolescent Health, 31*(6), 264-279. http://www.jahonline.org/article/S1054-139X(02)00499-8/fulltext

Minitab, LLC. (2023). Minitab 21 support: interpret the key results for fit general linear model. https://support.minitab.com/en-us/minitab/21/help-and-how-to/statistical-modeling/anova/how-to/fit-general-linear-model/interpret-the-results/key-results/

Mirowsky, J., & Ross, C. E. (2017). Social Causes of Psychological Distress (Second edition). Routledge Taylor and Francis Group. ISBN: 13-978-0-202-30709-1 (pbk). https://www.taylorfrancis.com/books/mono/10.4324/9781315129464/social-causes-psychological-distress-catherine-ross. file:///C:/Users/S-KIIRYA/Downloads/9781315129464_previewpdf.pdf

Mofenson, L. M., & Cotton, M. F. (2013). The challenges of success: Adolescents with perinatal HIV infection. *Journal of International AIDS Society, 16*(1), 18650. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3687076/

MOH (2017). *Uganda population-based HIV impact assessment 2016 –2017.* Ministry of Health. https://afro.who.int/sites/default/files/2017-08/UPHIA%20Uganda%20factsheet.pdf

MOH and ICF International Inc. (2011). *Uganda AIDS indicator survey.* Uganda Ministry of Health and ICF International. https://dhsprogram.com/pubs/pdf/AIS10/AIS10.pdf

MOH-ACP (2014a). *Adolescent sexual reproductive health in Uganda: Results of the AYA baseline survey.* Ministry of Health AIDS Control Programme. file:///C:/Users/USER/Downloads/ Adolescent%20 Sexual%20and%20Reproductive%20Health%20in% 20Uganda.pdf

MOH-ACP (2014b). *The status of adolescent HIV care and treatment services in Uganda.* Ministry of Health AIDS Control Programme.

MOH-STD/ACP (2010). *The status of HIV/AIDS in Uganda: Epidemiological surveillance report for 2010.* Ministry of Health STD/AIDS Control Programme. http://www.unaids.org/en/media/unaids/contentassets/documents/ data-and-analysis/tools/spectrum/Uganda2011report.pdf

MOH & ORC Macro (2006). Uganda HIV/AIDS sero-behavioural survey 2004-2005. Ministry of Health Uganda. https://dhsprogram.com/pubs/pdf/AIS2/AIS2.pdf

Mpofu, L. (2012). Perceptions on the role of peer pressure in increasing HIV related risky sexual behaviours in further education and training (FET) colleges: a case study of PC training and business college in

© University of Pretoria

Gauteng South Africa [Master's thesis, Stellenbosch University]. Theses and Dissertations Archive. Stellenbosch University. https://core.ac.uk/download/pdf/37348378.pdf

Mpofu, E., Flisher. A. J., Bility, K., Onya, H., Lombard, C. (2006) Sexual partners in a rural South African setting. *AIDS and Behaviour, 10*(4), 399-404. https://link.springer.com/article/10.1007%2Fs10461-005-9037-7

Mrug, S., & Windle, M. (2009). Moderators of negative peer influence on early adolescent externalizing behaviours: individual behaviour, parenting, and school connectedness. *The Journal of Early Adolescence*, *29*(4), 518-540. https://doi.org/10.1177/0272431608324473

Mukolo, A., & Wallston, K. A. (2012). The relationship between positive psychological attributes and psychological wellbeing in persons with HIV/AIDS. *AIDS and Behaviour, 16*(8), 2374-2381. https://www.ncbi.nlm.nih.gov/pubmed/21858673

Müller, C. M., Hofmann, V., & Arm, S. (2017). Susceptibility to classmates' influence on delinquency during early adolescence. *The Journal of Early Adolescence*, *37*(9), 1221-1253. https://doi.org/10.1177/0272431616653475

Murphy, D. A., Herbeck, D. M., Marelich, W. D., & Schuster, M. A. (2010). Predictors of sexual behaviour among early and middle adolescents affected by maternal HIV. International *Journal of Sexual Health, 22*, 195-204. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3190179/

Murphy, D. A., Moscicki, A. B., Vermund, S. H., & Muenz, L. R. (2000). Psychological distress among HIV+ adolescents in the REACH study: Effects of life stress, social support, and coping. *Journal of Adolescent Health, 27*(6), 391-398. https://www.sciencedirect.com/science/article/pii/S1054139X00001580

Murphy, D. A., Durako, S. J., Moscicki, A. B., Vermund, S. H., Ma, Y., Schwarz, D. F., & Muenz, L. R. (2001). No change in health risk behaviours over time among HIV infected adolescents in care: Role of psychological distress. *Journal of Adolescent Health, 29*(3), 57-63. https://www.ncbi.nlm.nih.gov/pubmed/11530304. http://www.jahonline.org/article/S1054-139X(01)00287-7/pdf

Musisi, S., & Kinyanda, E. (2009). Emotional and behavioural disorders in HIV sero-positive adolescents in urban Uganda. *East African Medical Journal, 86*(1), 16-24. https://www.ajol.info/index.php/eamj/article/view/46923/33310 file:///C:/Users/Stephen%20Kiirya/Downloads/46923-Article%20Text-56760-1-10-20091019.pdf

Musisi, S., Kinyanda, E., Nakasujja, N., & Nakigudde, J. (2007). A comparison of behavioural and emotional disorders of primary school-going orphans and non-orphans in Uganda. *African Health Sciences, 7*(4), 202-213. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3074371/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3074371/pdf/AFHS0704-0202.pdf

Mutumba, M. (2014). *Psychological distress and adherence to ART among HIV infected adolescents in Uganda*.

© University of Pretoria

[Doctoral dissertation, University of Michigan]. University of Michigan Deep Blue Library Repository. http://deepblue.lib.umich.edu/bitstream/handle/2027.42/107323/mmutumba1.pdf?sequence=1&isAllowed=y

Mutumba, M., Bauermeister, J. A., Elkington, K. S., Bucek, A., Dolezal, C., Leu, C. S., & Mellins, C. A. (2016). A prospective analysis of changes in mental health symptoms among perinatally HIV-infected and HIV-exposed but uninfected urban youths. *Journal of Adolescent Health. 58*(4), 460-466. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4808472/

Mutumba. M., Bauermeister, J. A., Musiime. V., Byaruhanga, J., Francis, K., Snow, R. C., Tsai, A. C. (2015). Psychosocial challenges and strategies for coping with HIV among adolescents in Uganda: a qualitative study. *AIDS Patient Care STDs, 29*(2), 86–94. https://deepblue.lib.umich.edu/bitstream/handle/2027.42/140199/apc.2014.0222.pdf?sequence=1

Mwine, P., Kwesiga, B., Mugisha, R., Kabwama, S., Cheptoris, J., Mudiope, P., Muramuzi, E., Kadobera, D., Bulage, L., & Ario, A. R. (2022). HIV positivity rate and recent HIV infections among adolescent girls and young women 10 – 24 years in Uganda 2017-2021. *Uganda National Institute of Public health (UNIPH) Quarterly Bulletin, 7*(2). https://uniph.go.ug/hiv-positivity-rate-and-recent-hiv-infections-among-adolescent-girls-and-young-women-10-24-years-uganda-2017-2021/

NAFOPHANU (2013). *The people living with HIV/AIDS stigma index in Uganda*. National Forum of People Living with HIV/AIDS Networks in Uganda/UNAIDS. https://ugandaharmreduction.files.wordpress.com/2013/10/uganda-plhiv-stigma-index-report-2013-final.pdf

NAFOPHANU (2017). *The people living with HIV/AIDS stigma index survey in central Uganda: Stigma experiences based on the 2017 updated PLHIV questionnaire.* National Forum of People Living with HIV/AIDS Networks in Uganda. https://www.stigmaindex.org/wp-content/uploads/2021/11/Uganda-SI-Report-2017_Pilot.pdf

NAFOPHANU (2019). *The people living with HIV/AIDS stigma index survey in Uganda: Uganda country assessment.* National Forum of People Living with HIV/AIDS Networks in Uganda. https://www.stigmaindex.org/wp-content/uploads/2021/11/PLHIV-Stigma-Index-Report-Uganda-2019.pdf

NCSS LLC. (2023). Statistical Software, pp212-225. https://www.ncss.com/wp-content/themes/ncss/pdf/Procedures/NCSS/General_Linear_Models-GLM.pdf

Nduna, M., Jewkes, R. K., Dunkle, K. L., Shai, N. P. J., & Colman, I. (2010). Associations between depressive symptoms, sexual behaviour and relationship characteristics: a prospective cohort study of young women and men in the Eastern Cape, South Africa. *Journal of the International AIDS Society, 13*(1), 44-

© University of Pretoria

44. https://onlinelibrary.wiley.com/doi/full/10.1186/1758-2652-13-44

Nestadt, D., Alicea, S., Petersen, I., & Mellins, C. (2013). HIV+ and HIV- youth living in group homes in South Africa need more psychosocial support. *Vulnerable Children and Youth Studies 8*(3), 195-205. https://www.researchgate.net/publication/256614012_HIV_and_HIV_youth_living_in_group_homes_in_South_Africa_need_more_psychosocial_support

Ngidi, N. D., Moyo, S., Zulu, T., Adam, J. K., Krishna, B. N. (2016). Qualitative evaluation of selected social factors that impact sexual risk-taking behaviour among African students in Kwazulu-Natal South Africa. *Journal of Social Aspects of HIV/AIDS, 13*(1), 96-105. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5642435/

Operario, D., Underhill, K., Chuong, C., & Cluver, L. (2011). HIV infection and sexual risk behaviour among youth who have experienced orphan-hood: Systematic review and meta-analysis. *Journal of the International AIDS Society,* 14-25. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3114697/

Palen, L. A., Smith, E. A., Flisher, A. J., Caldwell, L. L., & Mpofu, E. (2006). Substance use and sexual risk behaviour among South African eighth grade students. *Journal of Adolescent Health, 39*(5), 761-763. https://www.ncbi.nlm.nih.gov/pubmed/17046518

Park, Y. S., Konge, L., & Artino, A. R. Jr. (2020). The positivism paradigm of research. *Academic Medicine 95*(5), 690-694. https://journals.lww.com/academicmedicine/fulltext/2020/05000/the_positivism_paradigm_of_research.16.aspx

Peçi B. (2017). Peer influence and adolescent sexual behaviour trajectories: links to sexual initiation. *European Journal of Multidisciplinary Studies, 2*(3), 96-105. https://doi.org/10.26417/ejms.v4i3.p96-105

Pearlin, L. I. (1989). The sociological study of stress. *Journal of Health and Social Behaviour, 30*(3), 241-256. https://campus.fsu.edu/bbcswebdav/institution/academic/socialsciences/sociology/ Reading%20Lists/Mental%20Health%20Readings/Pearlin-HealthSocial-1989.pdf

Pellowski, J. A., Kalichman, S. C., Matthews, K. A., & Adler, N. (2013). A pandemic of the poor: social disadvantage and the U.S. HIV epidemic. *The American Psychologist*, *68*(4), 197-209. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3700367/#R127

Petersen, I., Bhana, A., Myeza, N., Alicea, S., John, S., Holst, H., McKay, M., & Mellins, C. (2010). Psychosocial challenges and protective influences for socio-emotional coping of HIV+ adolescents in South Africa: A qualitative investigation. *AIDS Care, 22*(8), 970-978. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3037257/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3037257/pdf/nihms264527.pdf

Pienaar, L., & Visser, M. J. (2012). An exploration of the experiences of adolescents living with HIV. *Vulnerable*

© University of Pretoria

Children and Youth Studies, 7(1), 66-74. http://www.tandf.co.uk/journals/titles/174501 28.asp

Puffer, E. S., Meade, C. S., Drabkin, A. S., Broverman, S. A., Ogwang-Odhiambo, R. A., Sikkema, K. J. (2011). Individual and family level psychosocial correlates of HIV risk behaviour among youth in rural Kenya. *AIDS Behaviour, 15*(6), 1262-1274. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3545696/pdf/nihms-426275.pdf

Putallaz, M., & Dunn, S. E. (1990). The importance of peer relations. In: Lewis, M., Miller, S. M. (Eds) Handbook of Developmental Psychopathology, 227-236. Springer, Boston, MA. https://doi.org/10.1007/978-1-4615-7142-1_18 https://link.springer.com/chapter/10.1007/978-1-4615-7142-1_18#preview

Puthanakit, T., Ananworanich, J., Vonthanak, S., Kosalaraksa, P., Hansudewechakul, R., van der Lugt, J., Kerr, S. J., Kanjanavanit, S., Ngampiyaskul, C., Wongsawat, J., Luesomboon, W., Vibol, U., Pruksakaew, K., Suwarnlerk, T., Apornpong, T., Ratanadilok, K., Paul, R., Mofenson, L. M., Fox, L., Valcour, V., Brouwers, P., & Ruxrungtham, K. (2013). Cognitive function and neuro-developmental outcomes in HIV infected children older than 1 year of age randomised to early versus deferred antiretroviral therapy: The PREDICT neurodevelopmental study. *Paediatric Infectious Diseases Journal, 32*(5), 501-508. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3664246/ https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3664246/pdf/nihms431708.pdf

Ramaiya, M. K., Sullivan, K. A., O' Donnell, K., Cunningham, C. K., Shayo, A. M., Mmbaga, B. T., Dow, D. E. (2016). A qualitative exploration of the mental health and psychosocial contexts of HIV-positive adolescents in Tanzania. *PLoS ONE 11*(11), e0165936. https://doi.org/10.1371/journal.pone.0165936

Ramirez-Valles, J., Zimmerman, M. A., & Juarez, L. (2002). Gender differences of neighbourhood and social control processes: A study of the timing of first intercourse among low-achieving, urban, African American youth. *Youth Society, 33*(3), 418-441. http://journals.sagepub.com/doi/abs/10.1177/0044118X02033003004

Rosengard, C., Adler, N. E., Millstein, S. G., Gurvey, J. E., & Ellen, J. M. (2004). Perceived STD risk, relationship, and health values in adolescents delaying sexual intercourse with new partners. *Sexually Transmitted Infections, 80*(2), 130-137. https://www.ncbi.nlm.nih.gov/pmc/articles/mid/NIHMS2431/

Santelli, J. S., Kaiser, J., Hirsch, L., Radosh, A., Simkin, L., & Middlestadt, S. (2004). Initiation of sexual intercourse among middle school adolescents: The influence of psychosocial factors. *Journal of Adolescent Health, 34*(3), 200-208. http://www.jahonline.org/article/S1054-139X(03)00273-8/fulltext

Santelli, J., Lowry, R., Brener, N., & Robin, L. (2000). The association of sexual behaviours with socioeconomic status, family structure, and ethnicity among US adolescents. *American Journal of Public Health, 90*(10), 1582-1588. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1446372/pdf/11029992. pdf

Santor, D. A., Messervey, D., & Kusumakar, V. (2000). Measuring peer pressure, popularity, and conformity in

© University of Pretoria

adolescent boys and girls: Predicting school performance, sexual attitudes, and substance abuse. *Journal of Youth and Adolescence, 29*(2), 163-182. http://kuhv.vscht.cz/files/uzel/0017002/n832024 konformita%20u%20adolescent%C5%AF.pdf?redirected

SAS Institute Inc. (2013). *SAS/STAT® 13.1 User's Guide*. Cary, NC: SAS Institute Inc. https://support.sas.com/documentation/onlinedoc/stat/131/calis.pdf

SAS Institute Inc. (2022). The CALIS Procedure. *SAS/STAT® 13.1 User's Guide*. Cary, NC: SAS Institute Inc. https://go.documentation.sas.com/api/collections/pgmsascdc/v_034/docsets/statug/content/calis.pdf

SAS Institute Inc. (2023). What's new in SAS 9.4 and SAS Viya 3.5. *SAS Documentation.* Cary, NC, USA. https://documentation.sas.com/doc/en/pgmsascdc/9.4_3.5/whatsnew/p0yboy27v7icphn164oaw57agk1l.html

Schwarzer, R., & Schulz, U. (2013). Berlin Social Support Scales (BSSS). *Measurement Instrument Database for the Social Science.* http://www.midss.org/sites/default/files/berlin_social_support_scales english_ items_ by_scale.pdf

Scott-Sheldon, L. A. J., Kalichman, S. C., Carey, M. P., & Fielder, R. L. (2008). Stress management interventions for HIV+ adults: A meta-analysis of randomized controlled trials, 1989 to 2006. *Health Psychology, 27*(2), 129-139. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2409585/

Selikow, T-A., Ahmed, N., Flisher, A. J. Mathew, C., & Mukoma, W. (2009). I am not "umqwayito": a qualitative study of peer pressure and sexual risk behaviour among young adolescents in Cape Town South Africa. *Scandinavian Journal of Public Health, 37*(2), 107-112. https://journals.sagepub.com/doi/pdf/10.1177/1403494809103903

Sengupta, S., Banks, B., Jonas, D., Miles, M. S., & Smith, G. C. (2011). HIV interventions to reduce HIV/AIDS stigma: A systematic review. *AIDS and Behaviour, 15*(6), 1075-1087. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3128169/

Sengupta, S., Strauss, R. P., Miles, M. S., Roman-Isler, M., Banks, B., & Corbie-Smith, G. A. (2010). A conceptual model exploring the relationship between HIV stigma and implementing HIV clinical trials in rural communities of North Carolina, *North Carolina Medical Journal, 71*(2), 113-122. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3037544/

Shanaube, K., Gachie, T., Hoddinott, G., Schaap, A., Floyd, S., Mainga. T., Bond, V., Hayes, R., Filder, S., & Ayles, H. (2022) Depressive symptoms and HIV risk behaviours among adolescents enrolled in the HPTN071 (PopART) trial in Zambia and South Africa. *PLoS ONE 17*(12), e0278291. https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0278291

© University of Pretoria

Simbayi, L. C., Kalichman, S. C., Cain, D., Cherry, C., Henda, N., & Cloete, A. (2009). Methamphetamine use and sexual risks for HIV infection in Cape Town, South Africa. *Journal of Substance Use, 11*(4), 291-300. https://www.tandfonline.com/doi/abs/10.1080/14659890600625767

Skinner, E. A., & Zimmer-Gembeck, M. J. (2007). The development of coping. *Annual Review of Psychology, 58,* 119-144. https://www.annualreviews.org/doi/abs/10.1146/annurev.psych.58.110405.085705

Snedecor, G. W., & Cochran, W. G. (1989). *Statistical Methods* (Eighth edition). Iowa State University Press.

Sneed, C. D., Tan, H. P., & Meywer, J. C. (2015). The influence of parental communication and perception of peers on adolescent sexual behaviour. *Journal of Health Communication; International Perspectives, 20*(8), 888-892. https://www.tandfonline.com/doi/abs/10.1080/10810730.2015.1018584

Snethen, J., Broome, M. E., Kelber, S., & Warady, B. A. (2004). Coping strategies utilized by adolescents with end stage renal disease. *Nephrology Nursing Journal, 31*(1), 41-52. https://pubmed.ncbi.nlm.nih.gov/15008073/

Snyder, J., Dishion, T. J., & Patterson, G. R. (1986). Determinants and consequences of associating with deviant peers during preadolescence and adolescence. *The Journal of Early Adolescence*, *6*(1), 29-43. https://doi.org/10.1177/0272431686061003

Spirito, A., Stark, L. J., Gil, K. M., & Tyc, V. L. (1995). Coping with every day and disease-related stressors by chronically ill children and adolescents. *Journal of the American Academy of Child and Adolescent Psychiatry, 34*(3), 283-290. https://www.jaacap.org/article/S0890-8567(09)63785-0/fulltext

Steiger, J. H. (1990). Structural model evaluation and modification: An internal estimation approach. *Multivariate Behavioural Research, 25*(2), 173-180. https://www.tandfonline.com/doi/abs/10.1207/s15327906mbr2502_4

Steinberg, L., & Silverberg, S. B. (1986). The vicissitudes of autonomy in early adolescence. *Child Development, 57*(4), 841-851. https://www.jstor.org/stable/1130361

Sturdevant, M. S., Belzer, M., Weissman, G., Friedman, L. B., Sarr, M., & Muenz, L. R. (2001). The relationship of unsafe sexual behaviour and the characteristics of sexual partners of HIV infected and uninfected adolescent females. *Journal of Adolescent Health, 29,* 64-71. http://www.sciencedirect.com/science/article/pii/S1054139X01002865

Sunday, N., Kemigisha, E., & Atwine, D. (2019). Prevalence and factors associated with risky sexual behaviour among adolescents living with HIV/AIDS in Mbarara in south-western Uganda. *Journal of Adolescent Health, 64*(2), S95-S140. https://www.jahonline.org/article/S1054-139X(18)30669-4/fulltext

Sveinbjornsdottir, S. & Thorsteinsson, E. B. (2008). Adolescent coping scales: a critical psychometric review. *Scandinavian Journal of Psychology, 49*,533-548. file:///C:/Users/S-KIIRYA/Downloads/Adolescent_coping_scales_A_critical_psyc.pdf

© University of Pretoria

Tangney, J. P., Baumeister, R. F., & Boone, A. L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality, 72*(2) 271-324. http://www.sas.upenn.edu/~duckwort/images/upperdarbypd/ 01092013briefscc.pdf

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53-55. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4205511/pdf/ijme-2-53.pdf

Tende, F. (2020). Socioeconomic determinants of risky sexual behaviour in sub-Saharan Africa. A dissertation in partial fulfilment of the requirements for the degree of Doctor of Public Health of the Walden University. https://scholarworks.waldenu.edu/dissertations/9275/ https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=10546&context=dissertations

Timmerman, M. E., & Lorenzo-Seva, U. (2011). Dimensionality assessment of ordered polytomous items with parallel analysis. *Psychological Methods, 16*(2), 209-220. https://psycnet.apa.org/doiLanding?doi=10.1037%2Fa0023353

Toska, E., Zhou, S., Laurenzi, C. A., Haghighat, R., Saal, W., Gulaid, L., & Cluver, L. (2022). Predictors of secondary HIV transmission risk in a cohort of adolescents living with HIV in South Africa. *AIDS (London, England)*, *36*(2), 267-276. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8702447/

Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*(1), 1-10. https://link.springer.com/article/10.1007%2FBF02291170

UAC (2004). *The lot quality assurance sampling (LQAS) monitoring report: The 2003 assessment of HIV/AIDS-related knowledge, practices and coverage in 19 districts of Uganda AIDS Control Project.* Uganda AIDS Commission.

UAC (2005). *The lot quality assurance sampling (LQAS) monitoring report: The 2004 assessment of HIV/AIDS-related knowledge, practices and coverage in 11 districts of Uganda AIDS Control Project.* Uganda AIDS Commission.

UAC (2006). *The lot quality assurance sampling (LQAS) monitoring report: Evaluation of the impact of interventions on HIV/AIDS-related knowledge, practices and coverage in 12 districts of Uganda AIDS Control Project.* Uganda AIDS Commission.

UAC (2009). *National HIV/AIDS stakeholders and services mapping report.* Uganda AIDS Commission. https://hivhealthclearinghouse.unesco.org/sites/default/files/resources/iiep_uacservicemappingreport2009.pdf

UAC (2015). *Uganda HIV and AIDS country progress report for 2014*. Uganda AIDS Commission. http://www.unaids.org/sites/default/files/country/documents/UGAnarrative_report_ 2015.pdf

UAC (2016). *Uganda HIV and AIDS country progress report for July 2015-June 2016.* Uganda AIDS Commission. http://library.health.go.ug/publications/service-delivery-diseases-control-prevention-communicable-

© University of Pretoria

diseases/hivaids/uganda-hiv

UAC (2017). *Uganda HIV and AIDS country progress report for July 2016-June 2017.* Uganda AIDS Commission. http://www.unaids.org/sites/default/files/country/documents/UGA_2018_countryreport.pdf

UAC (2018). *Uganda HIV and AIDS country progress report for July 2017-June 2018.* Uganda AIDS Commission.

UAC (2020). *Annual Joint AIDS Review Report for financial Year 2019 – 2020*. Uganda AIDS Commission. https://uac.go.ug/index.php?option=com_content&view=article&id=22:hiv-prevention-1121&catid=8&Itemid=101 file:///C:/Users/Stephen%20Kiirya/Downloads/JAR%20REPORT%202020%20mail%20(2)%20(2).pdf

UAC (2022). *Annual Joint AIDS Review Report Financial Year 2021 – 2022*. Uganda AIDS Commission. https://drive.google.com/file/d/1Zrw8GqEcVXhF40ZivcyuvdVOjAr61POs/view file:///C:/Users/Stephen%20Kiirya/Downloads/JAR%20Report%202021-22_Nov%2021-2022_Final.pdf

UBOS (2016). *The national population and housing census report 2014 main report.* Uganda Bureau of Statistics. https://www.ubos.org/wp-content/uploads/publications/03_20182014_National_Census_Main_Report.pdf

UBOS & ICF (2018). *Uganda demographic and health survey 2016.* Uganda Bureau of Statistics and ICF DHS Program Rockville Maryland USA. https://dhsprogram.com/pubs/pdf/FR333/FR333.pdf

UBOS (2020). *Statistical abstract 2020.* Uganda Bureau of Statistics. https://www.ubos.org/wp-content/uploads/publications/11_2020STATISTICAL__ABSTRACT_2020.pdf

UBOS (2018a). *Statistical abstract 2018.* Uganda Bureau of Statistics. https://www.ubos.org/wp-content/uploads/publications/01_2019STATISTICAL_ABSTRACT_2019.pdf

UBOS (2018b). *Population projections 2018.* Uganda Bureau of Statistics. https://www.google.com/search?q=UBOS+adolescents+10+-+19+years+in+2018&oq=UBOS+adolescents+10+-+19+years+in+2018&aqs=chrome..69i57.32639j0j7&sourceid=chrome&ie=UTF-8

Udell, W., Donenberg, G., & Emerson, E. (2011). Parents matter in HIV-risk among probation youth. *Journal of Family Psychology, 25*(5), 785-789. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3677743/

UNAIDS (2013). *Background note of the 33rd meeting of the UNAIDS programme coordinating board for the thematic segment on HIV adolescents and youth.* UNAIDS/PCB, (33)/13.12. https://files.unaids.org/en/media/unaids/contentassets/documents/pcb/2013/pcb33/agendaitems/20131121_Thematic-segment-HIV-%20youth-adolescents%20.pdf

UNAIDS (2015). *Analysis of the HIV burden, drivers and interventions of adolescents in Uganda*. UNAIDS.

UNAIDS (2016). *Prevention gap report.* UNAIDS. http://www.unaids.org/sites/default/files/media_asset/ 2016-prevention-gap-report_en.pdf

UNAIDS (2017). *Ending AIDS: Progress towards the 90-90-90 targets.* UNAIDS.

© University of Pretoria

http://www.unaids.org/sites/default/files/media_asset/Global_AIDS_update_2017_en.pdf

UNAIDS (2018). *AIDS info.* UNAIDS. http://aidsinfo.unaids.org/ & *UNAIDS data 2018*. Geneva: UNAIDS. http://www.unaids.org/sites/default/files/media_asset/unaids-data-2018_en.pdf

UNAIDS (2022a). *In Danger: UNAIDS Global AIDS Update 2022.* Joint United Nations Programme on HIV/AIDS. https://www.unaids.org/sites/default/files/media_asset/2022-global-aids-update_en.pdf

UNAIDS (2022b). *UNAIDS Data 2022*. Joint United Nations Programme on HIV/AIDS. https://www.unaids.org/sites/default/files/media_asset/data-book-2022_en.pdf

UNCST (2014). *National guidelines for research involving humans as research participants.* Uganda National Council for Science and Technology. https://iuea.ac.ug/sitepad-data/uploads/2021/03/Human-Subjects-Protection-Guidelines-July-2014.pdf

UNICEF (2015). *The state of the world's children 2015*. UNICEF. file:///C:/Users/Stephen%20Kiirya/Downloads/sowc2015summaryandtables-final214%20(1).pdf

UNICEF (2016). *Uganda annual report 2016.* UNICEF. https://www.unicef.org/uganda/resources_19953.html

UNICEF (2017). *Adolescent health risk behaviour in Uganda: A national cross-sectional study*. UNICEF/UNFPA/UN-Women/UNAIDS/MUSPH. https://www.health.go.ug/wp-content/uploads/2019/11/Final-Report-Collaborative-Adolescent-Health-Risk-Behaviour-Study-in-Uganda-September-2017_1.pdf

UNICEF (2022). *The state of the world's children 2022*. United Nations Children's Fund. https://data.unicef.org/topic/hivaids/orphan-hood/

UPHIA (2017). *Summary Sheet: Uganda Population Based HIV Impact Assessment 2016-2017.* https://www.afro.who.int/sites/default/files/2017-08/UPHIA%20Uganda%20factsheet.pdf

UPHIA (2022). *Summary Sheet: Uganda Population Based HIV Impact Assessment 2020-2021.* https://phia.icap.columbia.edu/wp-content/uploads/2022/08/UPHIA-Summary-Sheet-2020.pdf

UYP (2014). *Using the positive health, dignity and prevention framework to explore the lived experiences of young people living with HIV in Uganda:* Baseline survey report. Uganda Young Positives.

Vaz, L. M., Eng, E., Maman, S., Tshikandu, T., & Behets F. (2010). Telling children they have HIV: Lessons learned from findings of a qualitative study in sub-Saharan Africa. *AIDS Patient Care STDS, 24*(4), 247-56. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2864057/

Visser, M. J., Hecker H. E., & Jordaan, J. (2018). A comparative study of the psychological problems of HIV-infected and HIV-uninfected children in a South African sample. *AIDS Care Psychological and Socio-medical Aspects of AIDS/HIV, 30*(5), 596-603. https://www.tandfonline.com/doi/full/10.1080/09540121.2017.1417530?scroll=top&needAccess=true

© University of Pretoria

Visser, M. J., Kershaw, T., Makin, J. D., & Forsyth, B. W. C. (2008). Development of parallel scales to measure HIV related stigma. *AIDS Behaviour, 12*(5), 759-771. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4244074/

Visser, M. (2017). Rethinking HIV-prevention for school-going young people based on current behaviour patterns. *SAHARA-J: Journal of Social Aspects of HIV/AIDS, 14*(1), 64-76. https://www.tandfonline.com/doi/full/10.1080/17290376.2017.1376704

Vitaro, F., Brendgen, M., & Tremblay, R. (2000). Influence of deviant friends on delinquency: searching for moderator variables. *Journal of Abnormal Child Psychology, 28*, 313-325. https://link.springer.com/article/10.1023/A:1005188108461

Vliem, S. J. (2009). *Adolescent coping and family functioning in the family of a child with autism* [Doctoral Dissertation, University of Michigan]. University of Michigan Deep Blue Library Repository. https://deepblue.lib.umich.edu/bitstream/handle/2027.42/64809/sjvliem_1.pdf;sequence=1

Wang, B., Li, X., Barnett, D., Zhao, G., Zhao, J., & Stanton, B. (2012). Risk and protective factors for depression symptoms among children affected by HIV/AIDS in rural China: a structural equation modelling analysis. *Social Sciences and Medicine, 74*(9), 1435-1443. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3327289/

Wani, R. T. (2019). Socioeconomic status scales: modified Kuppuswamy and Udai Pareekh's scale updated for 2019. *Journal of Family Medicine and Primary Care, 8*(6), 1846-1849. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6618222/

Ward, C. L., Mertens, J. R., Flisher, A. J., Bresick, G. F., Sterling, S. A., Little, F., & Weisner, C. M. (2008). Prevalence and correlates of substance use among South African primary care clinic patients. *Substance Use and Misuse, 43*(10), 1395–1410. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2924913/

Wherry, J. N., Berres, A. K., Sim, L., & Friedrich, W. N. (2009). Factor structure of the adolescent clinical sexual behaviour inventory. *Journal of Child Sexual Abuse, 18*(3), 233-246. https://www.ncjrs.gov/App/Publications/abstract.aspx?ID=206731

Whitton, A., Swahn, M. H., Culbreth, R., & Kasirye, R. (2022). Attitudes and risky sexual behaviour among youth in Kampala Uganda: empirical analyses of risk factors by gender. *PEC Innovation, 1*, 100090. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9757820/

WHO (2014). *HIV/AIDS and psychosocial support*. World Health Organisation. psychosocial/support/en/

WHO (2016). *Adolescent development*. World Health Organisation. http://www.who.int/maternal_child_adolescent/topics/adolescence/dev/en/.

WHO (2022). Mental disorders. https://www.who.int/news-room/fact-sheets/detail/mental-disorders

© University of Pretoria

WHO (2023). *Adolescent Health.* World Health Organisation. https://www.who.int/health-topics/adolescent-health#tab=tab_1

Wilson, H. W., & Donenberg, G. (2004). Quality of parent communication about sex and its relationship to risky sexual behaviour among youth in psychiatric care: a pilot study. *Journal of Child Psychology and Psychiatry, 45*(2), 387-395. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1201419/

WONCA (2015). *International classification of primary care, second edition (ICPC-2).* World Health Organization's/World Organization of Family Doctors' (WONCA) International Classification Committee (WICC). http://www.kith.no/upload/2705/ICPC-2-English.pdf

Wong, F. Y., Huang, Z. J., DiGangi, J. A., Thompson, E. E., & Smith, B. D. (2008). Gender differences in intimate partner violence on substance abuse, sexual risks, and depression among a sample of South Africans in Cape Town, South Africa. *AIDS Education and Prevention, 20*(1), 56-64. https://www.ncbi.nlm.nih.gov/pubmed/?term=Gender+differences+in+intimate+partner+violence+on+substance+abuse%2C+sexual+risks%2C+and+depression+among+a+sample+of+South+Africans+in+Cape+Town%2C+South+Africa

Wood, K., Chase, E., & Aggleton, P. (2006). Telling the truth is the best thing: Teenage orphans' experiences of parental AIDS-related illness and bereavement in Zimbabwe. Social Science Medicine, 63(7), 1923-1933. https://www.ncbi.nlm.nih.gov/pubmed/16777307

World Bank (2023). World Development Indicators. https://tradingeconomics.com/uganda/children-orphaned-by-hiv-aids-wb-data.html

Zeidner, M. (1994). Personal and contextual determinants of coping and anxiety in an evaluative situation: A prospective study. *Personality and Individual Differences, 16*(6), 899-918. https://www.sciencedirect.com/science/article/pii/0191886994902348

Zhu, W. (1997). Making bootstrap statistical inferences: A tutorial. *Research Quarterly for Exercise and Sport, 68*(1), 44-55. https://www.ncbi.nlm.nih.gov/pubmed/9094762.https://www.tandfonline.com/doi/abs/10.1080/02701367.1997.10608865

© University of Pretoria

APPENDIX 1: DATA COLLECTION INSTRUMENTS

1.1 Informed Consent Form for Parents and Guardians

Greetings: Good morning/afternoon. My name is _____ working with *[Name of the organisation].* I am assisting the Principal Investigator Mr Stephen Kiirya who is a doctoral student in Psychology at the University of Pretoria in South Africa to carry-out a study about the personal, social, upsetting, sexual and coping situations of children in the ages 10 to 19 years living in homes affected by HIV/AIDS in Uganda.

Introduction: This is a study, rather than provision of care for any sickness, which is being undertaken in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Psychology. It will involve asking specific questions on the above topics to each selected child when seated in a place at home where no other person can read or listen to their answers.

Affiliation and approval of the study: This study is affiliated to the University of Pretoria in South Africa, and approved by the Faculty of Humanities Research Ethics Committee of University of Pretoria and the National AIDS Research Committee of Uganda National Council for Science and Technology.

Purpose of the study: This study will help us to understand the social and emotional and coping experiences of these children and how these experiences affect their sexual behaviour so that we advise stakeholders on the programs and services to put in place for them in future.

Procedure for selection of homes, participants and conducting the study: Your home is one of those selected by chance to participate in this study. We would therefore like your eligible children to participate in this study. However, you are free to allow or not to allow them to participate. In case you allow, the chosen children will also have to decide on their own whether to participate or not. The children who agree will be invited to a private place one at a time, seated face-to-face, briefed about the study, assisted to read and understand all issues in the consent form, asked to freely decide whether they will or will not participate in study, and requested to sign the consent form. Those who decline to participate will be humbly told to leave, while those who agree will be requested to stay and asked separately a few questions in a language they understand best about their personal, social, upsetting, sexual risk and coping situations for 60 minutes on a day to be communicated later.

Participation and withdraw in the study: You may at any stage change your mind and withdraw your children from this study. We wish to inform you that after allowing your children to participate, they will also be asked to personally decide on participating in the study. In case your children decide not to participate, nothing bad will happen. Every chosen child will be free to ask for the meaning of any question in a language they understand well during the interview before answering. Each of them will be asked to decide if the information given can be used for future research.

© University of Pretoria

Privacy and confidentiality: Your children who will agree to this study shall be interviewed in a place at home where no other family member can listen in. The chosen children will not be required to give their names. Their answers will not be told to anyone or linked to you and them.

Risks or discomforts: Some questions may awaken bad memories and lead to sadness and mental discomfort or danger or harm to your children. In case this occurs, I will send them to you or the counsellor or social worker for this area and if necessary, inform the other relevant people so that they are helped.

Compensation for participation: There is no pay in return for participating in this study. However, the selected children will be given a bottle of soda and packet of biscuits before or during the interview to ensure uninterrupted participation, as well as a certificate and a bar of soap worth 10,000 Shillings in appreciation and compensation for volunteering time and information for this study.

Feedback or dissemination of findings: Once this study is completed, the key findings and suggestions will be given to you and your children and to the relevant organisations by means of a factsheet and talks in local meetings and media so that necessary actions are taken to improve your children's wellbeing in future.

Any questions about the study and this consent form: If you have any question about this study and the information in this form, either ask me now or the Principal Investigator Mr Stephen Kiirya afterwards on telephone number 0772 439973 or 0704 942527 and e-mail address: stephenkiirya@gmail.com

Further clarification on your rights: In case you have concerns about the rights and safety of your children in this study, contact Dr E. K. Mbidde the Chairperson of the National AIDS Research Committee on telephone 0414 705527 and 0782 630863 or the HIV/AIDS Research Committee Secretariat at Uganda National Council for Science and Technology, Kimera Road, Ntinda on telephone 0414 705500.

Appeal: Lastly, you have to decide if your children can take part in this study by ticking against allow or refuse, and putting your name and signature or thumbprint and date in the right spaces below this section. You are required to return this consent form to me after indicating your decision, name, signature and date.

Consent: I have understood this consent form and hereby _____ **allow** or _____ **refuse** my children to participate in this study. I also understand that this decision does not take away any of my rights or benefits.

Name, signature/thumbprint and date:

Name of Parent/Guardian: _____, Sign/Thumbprint: _____Date: ____/____/_____

Name of person obtaining consent: _____, Sign/Thumbprint: _____Date: __/___/___

Name of Witness: _____, Sign/Thumbprint: _____Date: ____/____/_____

End of Consent Form

© University of Pretoria

1.2 Informed Consent Form for Adults (18 Years or Older)

Greetings: Good morning/afternoon/evening. My name is _____ working with [*Name of the organisation]*. I am assisting the Principal Investigator Mr Stephen Kiirya who is a doctoral student in Psychology at the University of Pretoria in South Africa to carry-out a study about the personal, social, upsetting, sexual and coping situations of people in the ages 10 to 19 years living in homes affected by HIV/AIDS in Uganda.

Introduction: This is a study, rather than provision of care for any sickness, which is being undertaken in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Psychology. It will involve asking you questions on the above topics when you are seated in a place at home where no other person can read or listen to your answers.

Affiliation and approval of the study: This study is affiliated to the University of Pretoria in South Africa, and approved by the Faculty of Humanities Research Ethics Committee of University of Pretoria and the National AIDS Research Committee of Uganda National Council for Science and Technology.

Purpose of the study: This study will help us to understand your social and emotional and coping experiences and how they affect your sexual behaviour so that we advise stakeholders about the suitable programmes and services to put in place for you in future.

Procedure for selection of participants and conducting the study: We contacted your caregivers and they allowed us to conduct this study in this home. Afterwards, you were chosen by chance among other children in this home to participate in this study. However, you will also have to decide yourself whether to participate or not. In case you decide to participate, you will be seated separately in a private place, guided how to respond to questions, and asked one question at a time in a language you understand best as you mark your own answers on the sheets before you. If you are not able to read or write, you will speak out answers for the interviewer to mark them on the sheets. The interview will take at least 60 minutes to complete.

Participation and withdrawal: The decision to participate in or withdraw from this study is yours and voluntary. Hence, you can agree to participate and withdraw at a later stage and nothing bad will happen. You can also seek explanation on any question which is unclear during the interview. The questions will be read to you by the interviewer while seated face-to-face. But if this set up is not liked, you will be free to read the question and write the answer yourself on the questionnaire provided.

Privacy and confidentiality: If you agree to participate, the interview will be conducted from a place at this home where no other family member can listen in. You will not be required to specify your name. The answers you give will not be given to anyone or linked to yourself.

Risks or discomforts: Some questions may awaken your bad memories and lead to sadness and mental discomfort or danger or injury. In case this occurs, I will refer you to the counsellor or social worker for this area and if necessary, inform the other relevant people to help you.

© University of Pretoria

Compensation for participation: There is no pay in return for participating in this study. However, you will be given a bottle of soda and a packet of biscuits before or during the interview to ensure uninterrupted participation, as well as a certificate and a bar of soap worth 10,000 Shillings in appreciation and compensation for volunteering time and information for this study.

Feedback or dissemination of findings: Once this study is completed, the key findings and suggestions will be given to you, your caregivers and to the relevant organisations by means of a factsheet and talks in local meetings and media so that the necessary actions are taken to improve your wellbeing in future.

Any questions about the study and this consent form: If you have any question about this study and the information in this form, either ask me now or your caregiver or the Principal Investigator Mr Stephen Kiirya afterwards on telephone number 0772 439973 or 0704 942527 and e-mail address: stephenkiirya@gmail.com

Further clarification on your rights: In case you have concerns about your rights and safety in this study, contact Dr E. K. Mbidde the Chairperson of the National AIDS Research Committee on telephone number 0414 705527 and 0782 630863 or the HIV/AIDS Research Committee Secretariat at Uganda National Council for Science and Technology, Kimera Road, Ntinda on telephone number 0414 705500.

Appeal: Lastly, you have to decide on your participation in this study by ticking against agree or disagree, and putting your name and signature or thumbprint and date in the right spaces set below this section. You are required to return this form to me after indicating your decision, name, signature and date.

Consent: I have read and understood all information in this consent form, and do hereby **agree** _____ or **disagree**_____ to participate in this study and to use the information given for future research. I also understand that this decision does not take away any of my rights or benefits.

Name, signature/thumbprint and date:

Name of the Child: _____, Sign/Thumbprint: _____Date: ____/____/_____

Name of person obtaining consent: _____, Sign/Thumbprint: _____Date: __/___/___

Name of Witness: _____, Sign/Thumbprint: _____Date: ____/____/_____

End of Consent Form

© University of Pretoria

1.3 Assent Form for Minors (Below 18 Years)

Greetings: Good morning/afternoon/evening. My name is _____ working with [*Name of the organisation]*. I am assisting the Principal Investigator Mr Stephen Kiirya who is a doctoral student in Psychology at the University of Pretoria in South Africa to carry-out a study about the personal, social, upsetting, sexual and coping situations of people in the ages 10 to 19 years living in homes affected by HIV/AIDS in Uganda.

Introduction: This is a study, rather than provision of care for any sickness, which is being undertaken in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Psychology. It will involve asking you specific questions on the above topics when you are seated in a place here at home where no other person can read or listen to your answers.

Affiliation and approval of the study: This study is affiliated to the University of Pretoria in South Africa, and approved by the Faculty of Humanities Research Ethics Committee of University of Pretoria and the National AIDS Research Committee of Uganda National Council for Science and Technology.

Purpose of the study: This study will help us to understand your social and emotional and coping experiences and how they affect your sexual behaviour so that we advise stakeholders about the suitable programmes and services to put in place for you in future.

Procedure for selection of participants and conducting the study: We contacted your caregivers and they allowed us to conduct this study in this home. Afterwards, you were chosen by chance among other children in this home to participate in this study. However, you will also have to decide yourself whether to participate or not. In case you decide to participate, you will be seated separately in a private place, guided how to respond to questions, and asked one question at a time in a language you understand best as you mark your own answers on the sheets before you. If you are not able to read or write, you will speak out answers for the interviewer to mark them on the sheets. The interview will take at least 60 minutes to complete.

Participation and withdrawal: The decision to participate in or withdraw from this study is yours and voluntary. Hence, you can agree to participate and withdraw at a later stage and nothing bad will happen. You can also seek explanation on any question which is unclear during the interview. The questions will be read to you by the interviewer while seated face-to-face. But if this set up is not liked, you will be free to read the question and write the answer yourself on the questionnaire provided.

Privacy and confidentiality: If you agree to participate, the interview will be conducted from a place at this home where no other family member can listen in. You will not be required to specify your name. The answers you give will not be given to anyone or linked to yourself.

© University of Pretoria

Risks or discomforts: Some questions may awaken your bad memories and lead to sadness and mental discomfort or danger or injury. In case this occurs, I will refer you to the counsellor or social worker for this area and if necessary, inform the other relevant people to help you.

Compensation for participation: There is no pay in return for participating in this study. However, you will be given a bottle of soda and a packet of biscuits before or during the interview to ensure uninterrupted participation, as well as a certificate and a bar of soap worth 10,000 Shillings in appreciation and compensation for volunteering time and information for this study.

Feedback or dissemination of findings: Once this study is completed, the key findings and suggestions will be given to you, your caregivers and to the relevant organisations by means of a factsheet and talks in local meetings and media so that the necessary actions are taken to improve your wellbeing in future.

Any questions about the study and this assent form: If you have any question about this study and the information in this form, either ask me now or your caregiver or the Principal Investigator Mr Stephen Kiirya afterwards on telephone number 0772 439973 or 0704 942527 and e-mail address: stephenkiirya@gmail.com

Further clarification on your rights: In case you have concerns about your rights and safety in this study, contact Dr E. K. Mbidde the Chairperson of the National AIDS Research Committee on telephone number 0414 705527 and 0782 630863 or the HIV/AIDS Research Committee Secretariat at Uganda National Council for Science and Technology, Kimera Road, Ntinda on telephone number 0414 705500.

Appeal: Lastly, you have to decide on your participation in this study by ticking against agree or disagree, and putting your name and signature or thumbprint and date in the right spaces set below this section. You are required to return this form to me after indicating your decision, name, signature and date.

Assent: I have read and understood all information in this form, and do hereby **agree** _____ or **disagree**_____ to participate in this study and to use the information given for future research. I also understand that this decision does not take away any of my rights or benefits.

Name, signature/thumbprint and date:

Name of the Child: _____, Sign/Thumbprint: _____Date: ____/____/_____

Name of person obtaining consent: _____, Sign/Thumbprint: _____Date: __/___/___

Name of Witness: _____, Sign/Thumbprint: _____Date: ____/____/_____

End of Assent Form

© University of Pretoria

1.4 Household Status Form

For Official Use Only [To be strictly filled by the Interviewer before the Interview with a Caregiver]

Identification Numbers: *[To be filled in onsite]*	**Region**	**District**	**Sub-county**	**Parish**	**Home No.**

Instructions to Interviewers

Interviewers should: 1) find out from the caregiver the number, age, gender and orphan-hood of the children in each chosen HIV-affected home; 2) summarise their responses in the sample selection form below with the assistance of the caregiver; 3) select only adolescents in the age range 10 – 19 years; 4) invite each adolescent in this age range to a private place for informed assent; 5) conduct face-on-face interviews with only those who will agree to participate in the study; and 6) find out from caregivers the HIV and care status of participants.

Introduction

Good morning/afternoon caregiver? Sometime back you were informed by the leader or social worker of the organisation known as _____ about research related to the social, psychological and sexual health risks faced by adolescents living in HIV-affected homes and you indicated that your children will be allowed to participate in this study. We have come to interview those in the age range 10 to 19 years who are present. But before talking with any of them, we would like to know if you still agree to their participation?

I agree _____ *[Sign or Thumbprint]*. **I do not agree** _____ *[Sign or Thumbprint]*

If the caregiver disagrees, thank him/her and go to next home. If the caregiver agrees, thank him/her and ask the following questions:

Questions

1. I would like to know the first names of the children in this home? *[List them in the worksheet below?*
2. What is the age and gender of each of these children? *[Write (F) if female, (M) if male, and (O) for any other gender]*
3. Who of the children aged 10 – 19 years (adolescents) are at home or nearby now? *[Put a sign against their names]*
4. Who of these adolescents have lost one or both parents? *[Show the parental death status of each of them in the form below using sign (B) if both parents are dead, (O) if only one parent is dead, (N) if none of them is dead, or DK if unsure of parental death]*

The interviewer should remember to do the following:

1. Indicate the adolescent's assent decision in the form below by writing (*Yes)* if the selected adolescent agreed to participate or (*No*) if the selected adolescent refused to participate and ultimately include only those who agree to participate.
2. After administering the questionnaire, check for errors in all sections of the filled questionnaires and rectify them, extract the corrected background data of each participant and indicate it in the last two columns below using symbols (+) if HIV infected or (–) if HIV uninfected or (DK) if unsure of HIV status, and (Yes) if in care or (No) if not in care or (DK) if unknown to be in HIV care.

Participants Selection Form

First name, age, gender, availability, parental death, selection, assent, HIV and care status of children in the home.

	First names of children in home	Age	Gender	Available	Parental death	Selection decision	Consent decision	HIV status	HIV/psych care
	[Write in Pencil]	*Years*	*F/M/O*	*Yes/No*	*B/O/N/DK*	*Yes/No*	*Yes/No*	*+/-/DK*	*Yes/No/DK*
1									
2									
3									
4									
5									
6									
7									
8									

Interviewer's and Supervisor's Notes:

1) Attach the filled form to the corresponding sets of completed questionnaires for each sampled HIV-affected home.

2) Erase the names after matching the information on this form with the background data in the questionnaire for each selected child.

3) Indicate with a tick or circle against the HIV status of the caregiver (1) Positive or (2) Negative or (99) Unknown.

Name and Signature of the: 1) Interviewer _____ **2) Supervisor** _____

End of the Household Status Form

© University of Pretoria

1.5 Questionnaire on Adolescents' Demographics, Stressors, Distresses, Coping and Sexual Risks

Part A: Social Demographic Situation

Since you have agreed to participate in this study, I would like to ask you a few questions about your background. Please listen carefully as I read each question and circle the number of the word which represents you and your usual condition. If the question is not applicable to you, circle **88**. If you do not know or have the answer, circle **99**. If you are not able to read and write, just speak the answer and I help you to indicate it on this sheet.

No	*Questions*	*Write/Circle your answer*
1.	What is your sex or gender?	1. Girl 2. Boy 3.____
2.	How old are you in complete years?	Years
3.	Are you currently attending school?	1. Yes 2. No
4.	What is your highest level of school?	0 [None], 1[P1], 2[P2], 3[P3], 4 [P4], 5 [P5], 6 [P6], 7 [P7], 8 [S1], 9 [S2], 10 [S3], 11 [S4], 12 [S5], 13 [S6], 14 [BTVET/Tailoring], 15 [PTC], 16 [_____]
5.	What is your ethnic group or tribe?	1. Ganda 2. Soga 3. Gishu 4. Munyankole 5. Mukiga 6. Nyoro 7. Toro 8. Acholi 8. Lango 9. Teso 10. Mululi 11. Mukenye 12. Murundi 13.Lugbara 14. Nyarwanda 15. Don't know 16. Tanzania 17. Sudanese 18. Japadhola 19. Munyole 20. Munyala 21. Musamia, 22. Others _____

No	*Questions*	*Write/Circle your answer*
13.	How many of you live in this home?	
14.	How many people are ill in this home?	
15.	Number of caregivers lived with	____
16.	Who is your usual caregiver?	1. Self, 2. Dad and Mum, 3. Dad, 4. Mum, 5. Uncle, 6. Aunt, 7. Grand Mother, 8. Grand Dad 9. Step Mum 10. Step Dad 11. Brother 12. Sister 13. Cousin/niece/ nephew /in-law, 14. House tender, 15. No relationship
17.	What is the job of your usual caregiver?	0. Non 1. Student 2. House tender 3. Farmer 4. Healthworker5. Teacher, 6. Trader, 7. Driver, 8. Policeman 9. Taxi/Boda, 10. Fisherman 11. Mason, 12. Tailor, 13. Hairdresser, 14. Alcohol brewer/seller, 15. Salesperson, 16. Hawker 17. Cleric, 18. Mechanic, 19. Waiter/waitress, 20. Food or beverage seller, 21. Parish chief, 22. Fish seller, 23. Herbalist, 24. Cloth seller, 25. Carpenter, 26. Commune worker, 27. Brick maker,

© University of Pretoria

6.	What is your religion?	1. Catholic, 2. Anglican, 3. Pentecost, 4. Muslim, 5.SDA, 6. Ortho, 7. None, 8. Other _
7.	Are any of your parents dead?	1. Yes 2. No 99
8.	If yes, who of the parents is dead?	1. Dad 2. Mum 3. Both
9.	Your age at death of the first parent?	_____ _____ 88 99
10.	Do you now live with your parent(s)?	1. Yes 2. No 88 99
11.	How many homes have you lived in?	_____ _____ 99
12.	How long have you lived in this home?	99

		28. Cobbler, 29. Caterer, 30. Herdsman, Others __
18.	What is your job or work?	0. Non 1. Student 2. House tender 3. Farm 4. H-work 5. Teach, 6. Trade, 7. Driver, 8. Other
19.	Does your caregiver drink alcohol?	1.Yes 2. No 99
20.	Caregiver talks to me health issues.	1.Yes 2. No
21.	i) Have you ever tested for HIV? ii) What was the result?	1.Yes 2. No 1.Yes 2. No 99
22.	At what age did you know?	_____ ____ 88 99
23.	Have you told anyone your status?	1.Yes 2. No 88 99
24.	Do you receive HIV or psychosocial care?	1.Yes 2. No 88 99

25.	Have you ever been influenced or pressed by friends to…		
. 1	Change your views/beliefs on anything?	1. No	2. Yes
. 2	Do anything not normal to your ways?	1. No	2. Yes
. 3	Engage in dating or sex, etc.?	1. No	2. Yes
. 4	Break any rule at home or school, etc.?	1. No	2. Yes

26.	Read or listen carefully to each of the following statements and circle what your situation is on each of them		
. 1	I live in cemented house.	1. No	2. Yes
. 2	I /we have land to farm from.	1. No	2. Yes
. 3	I eat at least 3 meals in a day.	1. No	2. Yes
. 4	I sleep on a mattress and in a blanket.	1. No	2. Yes
. 5	I get soap to wash or bath with each day.	1. No	2. Yes
. 6	I put on different clothes each day.	1. No	2. Yes
. 7	I have shoes/sandals to put on.	1. No	2. Yes
. 8	I/we have a radio/television at home.	1. No	2. Yes

27.	What is the HIV status of the caregiver for this respondent? *(Get data from caregivers' interview guide)*	1. Positive	2. Negative	3. Unknown

Part B: Community Stressors

1) Lack of basic needs, personal threats and interpersonal problems

Let me now ask you a few questions about things that might be happening to you in the home or school or community. Please listen carefully as I read each question below then circle 0 (No) if you have not experienced it in the last 12 months or circle 1 (Yes) if you experienced it in the same period.

	Have you experienced…	*No*	*Yes*
1.	Problems of getting food?	0	1
2.	Lack of or removal from your home?	0	1
3.	Lack of water at home?	0	1
12.	Illness of parent/sibling/partner/child/other family member?	0	1
13.	Death of parent/sibling/partner/child/other family member?	0	1
14.	Neglect by a parent/sibling/partner/other family member?	0	1

© University of Pretoria

4.	Lack of electricity or lighting at home?	0	1
5.	Lack of work by your home head?	0	1
6.	Housing that is bad/shack/tent/leaks?	0	1
7.	Situations of serious injury?	0	1
8.	Legal action?	0	1
9.	Problems with police/law enforcers?	0	1
10.	Lack of a job?	0	1
11.	Theft of your property?	0	1

15.	Relationship problems with parents/siblings/relatives?	0	1
16.	Relationship problems with your child/children?	0	1
17.	Relationship problems with a girl/boy-friend or partner?	0	1
18.	Relations problems with friends who are not part of family?	0	1
19.	Relationship problems with your neighbours?	0	1
20.	Relationship problems with your workmates or bosses?	0	1
21.	Your own sicknesses or illnesses?	0	1
22.	Own or a family member's unplanned pregnancy?	0	1

2) HIV-related stigma

I would like to ask you a few questions about your and other peoples' feelings about HIV/AIDS. Please listen carefully as I read each statement below then circle **1 if you disagree**, **2 if you somewhat disagree**, or **3 if you agree**.

	Statements	*Disagree*	*Somehow disagree*	*Agree*
1.	Getting HIV is a punishment for bad acts	1	2	3
2.	I feel scared among those with AIDS signs	1	2	3
3.	Those with HIV should blame themselves	1	2	3
4.	If you have HIV, you must have done something wrong to get it.	1	2	3
5.	People with HIV should be ashamed.	1	2	3
6.	I feel uneasy among people with AIDS signs	1	2	3

	Statements	*Disagree*	*Somehow disagree*	*Agree*
7.	If I was in class/public transport/gathering I wouldn't sit next to those with AIDS signs	1	2	3
8.	I feel less about people with HIV/AIDS.	1	2	3
9.	I wouldn't like those with AIDS next door	1	2	3
10.	I wouldn't like to be friends with someone who has HIV/AIDS.	1	2	3
11.	I wouldn't give work to those with AIDS	1	2	3
12.	I would not eat/drink from a plate or cup used by a person with HIV/AIDS.	1	2	3

Part C: Psychosocial Distresses

1) Internalising and Externalising Problems Checklist got from the Child Behaviour Checklist Youth Self-Report of Ages 11 – 18 Years

Listen as I read each statement and circle **0** if you never did/felt alike, circle **1** if you at times did/felt alike, or circle **2** if you always felt alike in last 6 months.

	Statements…	*Never*	*At times*	*Always*
	Anger/temper/mood swing/tantrum			
1.	I am jealous/bitter/resentful of others.	0	1	2
2.	I get teased/mocked/annoyed a lot.	0	1	2
3.	My feelings change suddenly.	0	1	2
4.	I have a hot temper.	0	1	2
5.	I'm unashamed doing things I shouldn't	0	1	2
6.	I feel too guilty.	0	1	2

	Statements…	*Never*	*At times*	*Always*
	Loneliness/withdrawal/unsociable			
30.	I feel that no one loves me.	0	1	2
31.	I feel lonely.	0	1	2
32.	I refuse to talk.	0	1	2
33.	I keep things to myself.	0	1	2
34.	I feel hurt without a reason.	0	1	2
	Sleep unrest and mental disorders			

© University of Pretoria

7.	I am easily embarrassed.	0	1	2
8.	I act without stopping to think.	0	1	2
	Attention problems			
9.	I fail to finish things that I start.	0	1	2
10.	I have difficulty in paying attention.	0	1	2
11.	I can't get my mind off some thoughts.	0	1	2
12.	I have difficulty sitting in one place.	0	1	2
13.	I feel confused or disorganised.	0	1	2
14.	I daydream a lot.	0	1	2
15.	I am easily distracted.	0	1	2
	Anxiety/worry			
16.	I am afraid of some situations/places.	0	1	2
17.	I am afraid I might do something bad.	0	1	2
18.	I feel that others are out to trap me.	0	1	2
19.	I am too shy or timid.	0	1	2
20.	I bite my fingernails.	0	1	2
21.	I am nervous or tense.	0	1	2
22.	Parts of my body shake.	0	1	2
23.	I am too fearful.	0	1	2
24.	I worry a lot.	0	1	2
	Depression			
25.	There is very little I enjoy.	0	1	2
26.	I do not eat as well as I should.	0	1	2
27.	I cry a lot.	0	1	2
28.	I feel overtired without good reason.	0	1	2
29.	I am unhappy, sad, or depressed.	0	1	2
54.	I am stubborn.	0	1	2
55.	I talk too much.	0	1	2
56.	I tease other people.	0	1	2
57.	I threaten to hurt people.	0	1	2
58.	I use dirty language.	0	1	2
59.	I brag or show off.	0	1	2
	Destructiveness			
60.	I destroy my own things.	0	1	2
61.	I destroy things of other people.	0	1	2
	Aggressiveness			

35.	I have nightmares.	0	1	2
36.	I sleep less than most kids.	0	1	2
37.	I sleep more than many kids' day/night	0	1	2
38.	I have difficulty in sleeping.	0	1	2
39.	I hear sounds others think aren't there.	0	1	2
40.	I pinch a lot my skin/body.	0	1	2
41.	I see things others think aren't there.	0	1	2
42.	I store up many things I don't need.	0	1	2
43.	I do things others think aren't normal.	0	1	2
44.	I have views others think are strange.	0	1	2
45.	I repeat certain acts over and over.	0	1	2
	Somatisation			
461	I get body pains.	0	1	2
462	I get headaches.	0	1	2
463	I get stomach-aches.	0	1	2
464	I get skin rashes.	0	1	2
465	I vomit a lot.	0	1	2
	Suicide ideation/tendency			
47.	I feel or have felt worthless	0	1	2
48.	I think or thought my life is a failure.	0	1	2
49.	I feel or felt like hurting myself.	0	1	2
50.	I feel or felt like ending my life.	0	1	2
	Disobedience			
51.	I disobey my parents.	0	1	2
52.	I disobey rules at home or school	0	1	2
53.	I run away from home.	0	1	2
62.	I partake in many fights.	0	1	2
63.	I interact with kids who get in trouble.	0	1	2
64.	I physically attack people.	0	1	2
	Delinquency			
65.	I drink alcohol.	0	1	2
66.	I smoke/chew/sniff cigarettes.	0	1	2
67.	I use drugs like marijuana, etc.	0	1	2
68.	I set fires.	0	1	2
69.	I lie to or cheat other people.	0	1	2
70.	I steal from different places.	0	1	2

© University of Pretoria

Part D: Sexual Risk Behaviours

Let me now ask you about your social and sexual behaviours. Carefully read or listen to each of the following statements and either circle **0 (untrue or no)** if is not related to your social and sexual practices or circle **1 (true or yes)** if it is related to your past experience.

	Statements	*Untrue/No*	*True/Yes*
1.	I have not tested for HIV personally.	0	1
2.	I have not told anyone my HIV status.	0	1
3.	I peep at sex organs of others.	0	1
4.	I show off my sexual organs.	0	1
5.	I allow/would agree to sexual advances.	0	1
6.	I have friends who have sexual partners.	0	1
7.	I have friends of opposite gender.	0	1

	Statements	*Untrue/No*	*True/Yes*
8.	I have been asked for sexual relationships.	0	1
9.	I have ever had sexual intercourse.	0	1
10.	I have been forced into sexual intercourse.	0	1
11.	I have been offered gifts or money for sex.	0	1
12.	The persons I've had sex with look older.	0	1
13.	I have had sex with more than one person.	0	1
14.	I have not used a condom with anybody.	0	1

Part E: Coping Mechanisms

1) Club Membership Scale

Read or listen as I read each statement and circle **1 if you never link** or circle **2 if you at times link** or circle **3 if you always link** with the following social clubs.

	I am linked to and or take part in…	*Never*	*At times*	*Always*
1.	A religious group.	1	2	3
2.	A peer groups.	1	2	3
3.	A clan club.	1	2	3

	I am linked to and or take part in …	*Never*	*At times*	*Always*
4.	A sports club or team.	1	2	3
5.	A community welfare club.	1	2	3
6.	A health or care club.	1	2	3

2) Social Support Scale

Listen as I read each statement then show how the person you are usually with (such as parent or usual caregiver, friend, sibling) acted when you met a serious problem. Circle **1** if you disagree with the statement, circle 2 if you somehow disagree, or circle 3 if you agree.

	This person…	*Disagree*	*Somehow disagree*	*Agree*
1.	Showed I am needed.	1	2	3
2.	Comforted me.	1	2	3
3.	*Left me alone.*	3	2	1
4.	*Didn't show kindness.*	3	2	1
5.	*Criticized/blamed me.*	3	2	1
6.	Made me feel loved.	1	2	3

	This person …	*Disagree*	*Somehow disagree*	*Agree*
7.	Assured me of reliance.	1	2	3
8.	Told me not to give up.	1	2	3
9.	Was there when needed.	1	2	3
10.	Helped me get positive.	1	2	3
11.	Took care of things I could not manage.	1	2	3
12.	Advised on what might disturb/distract me	1	2	3

© University of Pretoria

3) Self-Control Scale

Let me now ask you some questions about how you regulate or govern yourself when you experience stressful circumstances. Listen carefully as I read each statement then indicate whether it is like you, somewhat like you or not like you.

	Statements	*Not like me*	*Somewhat like me*	*Like me*
1.	I have hard time stopping bad acts.	3	2	1
2.	I get diverted quite easily.	3	2	1
3.	I say unsuitable things.	3	2	1
4.	I refuse things that are bad for me even if they are fun.	1	2	3
5.	I'm good at resisting temptation.	1	2	3
6.	People say I have high self-discipline.	1	2	3
7.	Excitement at times keeps me from getting work done.	3	2	1
8.	I do things that make me feel good in the moment and regret later on.	3	2	1
9.	At times I can't stop doing things even if I know they are wrong.	3	2	1
10.	I often act without thinking through all the alternatives.	3	2	1

4) Other Coping Strategies Scale

Listen as I read each statement then show how you usually dealt with a serious problem that came your way. Circle **1 for never**, **2 for at times, 3 for always**.

	In dealing with problems, I…	*Never*	*At times*	*Always*
1.	Focused on knowing/solving issues	1	2	3
2.	Spent most time working hard.	1	2	3
3.	Focused on what is positive to life.	1	2	3
4.	Spent time relaxing.	1	2	3
5.	Spent time sporting/exercising.	1	2	3
6.	Told someone my problem.	1	2	3
7.	Spent time interacting with peers.	1	2	3
8.	Took part in social activities.	1	2	3
9.	Turned to prayers/worship.	1	2	3
10.	Cried or kept to myself.	1	2	3
11.	Blamed self or someone else.	1	2	3
12.	Assumed the worst may have occurred	1	2	3
13.	Assumed there is no problem.	1	2	3
14.	Made jokes of the situation.	1	2	3

This is the End of the Questionnaire

© University of Pretoria

APPENDIX 2: DATA OF THE FACTOR ANALYSES ON ITEMS IN THE SCALES USED IN THIS STUDY

2.1 Part A: EFA and CFA on Items in the Peer Influence and Socioeconomic Status Scale

2.1.1 Part A: EFA results on items in the peer influence and socioeconomic status scale

xF A C T O R
Unrestricted Factor Analysis
Release Version 11.05.01 x64bits, July 2021
Rovira i Virgili University Tarragona, SPAIN
Programming: Urbano Lorenzo-Seva

Mathematical Specification: Urbano Lorenzo-Seva & Pere J. Ferrando
Date: Thursday, July 29, 2021
Time: 12:0:34

DETAILS OF ANALYSIS

Participants' scores data file:	D:\Factor\EFA\PartA.dat.txt
Variable labels file:	D:\Factor\EFA\Labels part A.txt
Number of participants:	1437
Number of variables:	12
Variables included in the analysis:	ALL
Variables excluded in the analysis:	NONE
Number of factors:	2
Number of second order factors:	0
Procedure for determining the number of dimensions:	Optimal implementation of Parallel Analysis (PA) (Timmerman, & Lorenzo-Seva, 2011)
Dispersion matrix:	Polychoric Correlations
Robust analyses based on bootstrap:	None
Method for factor extraction:	Un-weighted Least Squares (ULS)
Rotation to achieve factor simplicity:	Promin (Lorenzo-Seva, 1999)
Clever rotation start:	Weighted Varimax
Number of random starts:	100
Maximum number of iterations:	1000
Convergence value:	0.00001000
Factor scores estimate:	Estimates based on linear model

STANDARIZED VARIANCE/COVARIANCE MATRIX (POLYCHORIC CORRELATION) (Polychoric algorithm: Bayes modal estimation; Choi, Kim, Chen, & Dannels, 2011)

Variable	1	2	3	4	5	6	7	8	9	10	11	12
V1	1.000											
V2	0.850	1.000										
V3	0.691	0.694	1.000									
V4	0.756	0.845	0.715	1.000								
V5	0.226	0.151	0.238	0.195	1.000							
V6	-0.144	0.025	0.033	-0.008	0.289	1.000						
V7	0.064	0.131	0.059	0.132	0.479	0.404	1.000					
V8	0.278	0.248	0.221	0.282	0.634	0.338	0.680	1.000				
V9	-0.166	-0.212	0.017	-0.142	0.354	0.481	0.467	0.455	1.000			
V10	0.016	0.021	0.154	0.052	0.373	0.469	0.574	0.527	0.756	1.000		
V11	0.131	0.129	0.186	0.208	0.464	0.389	0.489	0.648	0.626	0.760	1.000	
V12	0.192	0.265	0.267	0.310	0.591	0.322	0.510	0.593	0.416	0.546	0.638	1.000

© University of Pretoria

ADEQUACY OF THE POLYCHORIC CORRELATION MATRIX

Determinant of the matrix = 0.000132595534547
Bartlett's statistic = 12777.8 (df = 66; P = 0.000010)
Kaiser-Meyer-Olkin (KMO) test = 0.80563 (good)

NORMED ITEM-MSA INDICES FOR THE 12 ITEMS USED TO ASSESS PEER INFLUENCE AND SOCIOECONOMIC STATUS

Items	Quartile of sum response scores	Relative difficulty	Normed MSA values
q253dating	1	0.18372	0.85926
q252not_norm	1	0.27975	0.69588
q254breakrule	1	0.28671	0.84244
q251belief	1	0.31524	0.72585
q261cement_hse	2	0.48713	0.81066
q268radio_tv	3	0.54558	0.87646
q263meals	3	0.54976	0.80550
q264mattress	3	0.64231	0.83978
q266clothes	3	0.64231	0.80128
q267shoes	4	0.71190	0.82923
q262land	4	0.72651	0.74667
q265soap	4	0.73417	0.84704

Number of items proposed to be removed: NONE

Values of MSA below .50 suggest that the item does not measure the same domain as the remaining items in the pool, and so that it should be removed. At the same time, for a normal-range test, an optimal pool of items should have a large spread of relative difficulty indices, and each quartile should have a similar number of items. When removing items from the pool, all these aspects should be taken into account. Sometimes, the conclusion is that new items should be added to the pool of items.

EXPLAINED VARIANCE BASED ON EIGENVALUES

Variable	Eigenvalue	Proportion of variance	Cumulative proportion of variance
1	4.89833	0.40819	0.40819
2	3.20561	0.26713	0.67533
3	0.87578	0.07298	
4	0.70333	0.05861	
5	0.57183	0.04765	
6	0.47041	0.03920	
7	0.36317	0.03026	
8	0.25941	0.02162	
9	0.22571	0.01881	
10	0.20277	0.01690	
11	0.13802	0.01150	
12	0.08564	0.00714	

*Advised number of dimensions: 2

UNROTATED LOADING MATRIX

Variable	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions	Communality
q251belief	0.427	-0.784	0.796
q252not_norm	0.461	-0.814	0.875

© University of Pretoria

q253dating	0.460	-0.600	0.571
q254breakrule	0.491	-0.748	0.800
q261cement_hse	0.631	0.091	0.406
q262land	0.435	0.318	0.290
q263meals	0.659	0.260	0.502
q264mattress	0.790	0.119	0.639
q265soap	0.572	0.552	0.632
q266clothes	0.728	0.405	0.694
q267shoes	0.780	0.270	0.681
q268radio_tv	0.742	0.094	0.559

ROTATED LOADING MATRIX

Variable	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions
q251belief	-0.068	0.901
q252not_norm	-0.055	0.943
q253dating	0.062	0.743
q254breakrule	0.007	0.893
q261cement_hse	0.588	0.168
q262land	0.546	-0.121
q263meals	0.704	0.023
q264mattress	0.739	0.206
q265soap	0.791	-0.285
q266clothes	0.843	-0.084
q267shoes	0.813	0.062
q268radio_tv	0.684	0.210

ROTATED LOADING MATRIX (loadings lower than absolute 0.300 omitted)

Variable	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions
q251belief		0.901
q252not_norm		0.943
q253dating		0.743
q254breakrule		0.893
q261cement_hse		0.588
q262land	0.546	
q263meals	0.704	
q264mattress	0.739	
q265soap	0.791	
q266clothes	0.843	
q267shoes	0.813	
q268radio_tv	0.684	

EXPLAINED VARIANCE OF ROTATED FACTORS AND RELIABILITY OF PHI-INFORMATION OBLIQUE EAP SCORES
Ferrando & Lorenzo-Seva (2016)

	Factor	Variance	ORION	Factor Determinacy Index
1	Risky sexual conditions	2.166	0.915	0.956
2	Risky sexual actions	3.280	0.944	0.972

© University of Pretoria

2.1.2 Part A: CFA results of on items in the peer influence and socioeconomic status scale

CFA round 1: First-order model

Lavaan 0.6-7 ended normally after 63 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	25
Number of observations	1437

Model Test User Model:

Test statistic	444.001
Degrees of freedom	53
P-value (Chi-square)	0.000

Model Test Baseline Model:

Test statistic	7396.972
Degrees of freedom	66
P-value	0.000

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.947
Tucker-Lewis Index (TLI)	0.934

Root Mean Square Error of Approximation:

RMSEA	0.072
90 Percent confidence interval – lower	0.066
90 Percent confidence interval – upper	0.078
P-value RMSEA <= 0.05	0.000

Standardized Root Mean Square Residual:

SRMR	0.063

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Peerpressure =~						
.q251belief	1.000				0.339	0.729
.q252not_norm	1.079	0.057	18.815	0.000	0.366	0.814
.q253dating	0.684	0.038	17.896	0.000	0.232	0.598
.q254breakrule	1.016	0.053	19.065	0.000	0.344	0.761
Socioeconomicstatus =~						
.q261cement_hse	1.000				0.259	0.519
.q262land	0.641	0.036	17.736	0.000	0.166	0.373
.q263meals	1.117	0.049	22.814	0.000	0.290	0.582
.q264mattress	1.247	0.054	23.286	0.000	0.323	0.674
.q265soap	0.881	0.042	20.974	0.000	0.228	0.517
.q266clothes	1.207	0.052	23.250	0.000	0.313	0.653
.q267shoes	1.163	0.050	23.111	0.000	0.302	0.666

© University of Pretoria

.q268radio_tv	1.174	0.051	23.064	0.000	0.304	0.611

Covariances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Peerpressure ~~						
Socioeconomicstatus	0.015	0.001	12.775	0.000	0.168	0.168

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.q251belief	0.101	0.009	11.274	0.000	0.101	0.468
.q252not_norm	0.068	0.010	6.635	0.000	0.068	0.337
.q253dating	0.096	0.008	12.339	0.000	0.096	0.642
.q254breakrule	0.086	0.009	9.092	0.000	0.086	0.420
.q261cement_hse	0.183	0.004	43.212	0.000	0.183	0.731
.q262land	0.171	0.006	29.043	0.000	0.171	0.861
.q263meals	0.164	0.005	32.528	0.000	0.164	0.661
.q264mattress	0.125	0.007	18.992	0.000	0.125	0.545
.q265soap	0.143	0.007	21.956	0.000	0.143	0.733
.q266clothes	0.132	0.006	20.412	0.000	0.132	0.574
.q267shoes	0.114	0.007	16.074	0.000	0.114	0.556
.q268radio_tv	0.155	0.005	29.374	0.000	0.155	0.627
Peerpressure	0.115	0.008	14.824	0.000	1.000	1.000
Socioeconomicstatus	0.067	0.004	15.958	0.000	1.000	1.000

Cronbach's reliability (FitA)

	Scales		
Test	Peerpressure	Socioeconomicstatus	Total
alpha	0.8151507	0.7979587	0.7727206

Conclusion

A good fit was achieved for the first-order model and was adopted for subsequent analyses.

© University of Pretoria

CFA round 1: Second-order model

[Warning message: In lav_model_vcov (lavmodel = lavmodel, lavsamplestats = lavsamplestats, lavaan could not compute standard errors! The information matrix could not be inverted. This may be a symptom that the model is not identified].

lavaan 0.6-7 ended normally after 56 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	26
Number of observations	1437

Model Test User Model:

Test statistic	444.001
Degrees of freedom	52
P-value (Chi-square)	0.000

Model Test Baseline Model:

Test statistic	7396.972
Degrees of freedom	66
P-value	0.000

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.947
Tucker-Lewis Index (TLI)	0.932

Root Mean Square Error of Approximation:

RMSEA	0.072
90 Percent confidence interval – lower	0.066
90 Percent confidence interval – upper	0.079
P-value RMSEA <= 0.05	0.000

Standardized Root Mean Square Residual:

SRMR	0.063

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Peerpressure =~						
q251belief	1.000				0.339	0.729
q252not_norm	1.079	NA			0.366	0.814
q253dating	0.684	NA			0.232	0.598
q254breakrule	1.016	NA			0.344	0.761
Socioeconomicstatus =~						
q261cement_hse	1.000				0.259	0.519
q262land	0.641	NA			0.166	0.373
q263meals	1.117	NA			0.290	0.582
q264mattress	1.247	NA			0.323	0.674

© University of Pretoria

q265soap	0.881	NA			0.228	0.517
q266clothes	1.207	NA			0.313	0.653
q267shoes	1.163	NA			0.302	0.666
q268radio_tv	1.174	NA			0.304	0.611
GRB =~						
Peerpressure	1.000				0.360	0.360
Socioeconomicstatus	0.994	NA			0.467	0.467

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.q251belief	0.101	NA			0.101	0.468
.q252not_norm	0.068	NA			0.068	0.337
.q253dating	0.096	NA			0.096	0.642
.q254breakrule	0.086	NA			0.086	0.420
.q261cement_hse	0.183	NA			0.171	0.731
.q262land	0.171	NA			0.183	0.861
.q263meals	0.164	NA			0.164	0.661
.q264mattress	0.125	NA			0.125	0.545
.q265soap	0.143	NA			0.143	0.733
.q266clothes	0.132	NA			0.132	0.574
.q267shoes	0.114	NA			0.114	0.556
.q268radio_tv	0.155	NA			0.155	0.627
.Peerpressure	0.100	NA			0.871	0.871
.Socioeconomicstatus	0.053	NA			0.782	0.782
GRB	0.015	NA			1.000	1.000

Conclusion

The second order model did not achieve a good fit. Hence, the first-order model was adopted.

© University of Pretoria

2.2 Part B: EFA and CFA on Items in the Community Stressors Scale

2.2.1 Part B: EFA results on items in the community stressors scale

xF A C T O R
Unrestricted Factor Analysis
Release Version 11.05.01 x64bits, July 2021
Rovira i Virgili University Tarragona, SPAIN
Programming: Urbano Lorenzo-Seva

Mathematical Specification: Urbano Lorenzo-Seva & Pere J. Ferrando
Date: Thursday, July 29, 2021
Time: 12:8:23

DETAILS OF ANALYSIS

Participants' scores data file:	D:\Factor\EFA\PartB.txt
Variable labels file:	D:\Factor\EFA\Labels part B.txt
Number of participants:	1437
Number of variables:	33
Variables included in the analysis:	All
Variables excluded in the analysis:	None
Number of factors:	4
Number of second order factors:	0
Procedure for determining the number of dimensions:	Optimal implementation of Parallel Analysis (PA) (Timmerman, & Lorenzo-Seva, 2011)
Dispersion matrix:	Polychoric Correlations
Robust analyses based on bootstrap:	None
Method for factor extraction:	Un-weighted Least Squares (ULS)
Rotation to achieve factor simplicity:	Promin (Lorenzo-Seva, 1999)
Clever rotation start:	Weighted Varimax
Number of random starts:	100
Maximum number of iterations:	1000
Convergence value:	0.00001000
Factor scores estimates:	Estimates based on linear model

SMOOTHING OF CORRELATION MATRIX (correlation matrix is not positive definite)

Smoothing algorithm applied:	Sweet Smoothing as proposed by Lorenzo-Seva & Ferrando (2020)
Number of negative eigenvalues:	2
Value of the largest negative eigenvalue =	-0.092
Variables smothered during the process =	V9; V11; V14; V21;
Number of smoothed elements in the correlation matrix =	122 (out of 528)
Percentage of covariance destroyed =	7.8% (good)

Correlation matrix before and after the smoothing procedure:

PCDi:	Percentage of covariance destroyed in each variable
Lower triangle:	non positive definite correlation matrix
Upper triangle:	smoothed correlation matrix

© University of Pretoria

Variable	PCDi	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14	V15	V16	V17	V18	V19	V20	V21	V22	V23	V24	V25	V26	V27	V28	V29	V30	V31	V32	V33
V1	3.7%	-- --	.598	.485	.484	.396	.570	.104	.336	.236	.240	.031	-.035	.016	-.041	.126	.218	.255	.181	.156	.182	.295	.184	-.190	-.142	-.151	-.147	-.138	-.131	-.107	-.014	-.024	-.049	-.103
V2	6.4%	.598	-- --	.706	.533	.519	.635	.252	.624	.565	.498	.190	.044	.294	.165	.187	.477	.601	.478	.408	.445	.473	.427	-.099	-.023	.084	.024	.053	.027	.047	.221	.212	.246	.178
V3	4.9%	.485	.706	-- --	.631	.500	.462	.120	.368	.397	.303	.028	.072	.158	.047	.179	.317	.443	.395	.276	.241	.345	.275	-.112	-.097	-.018	-.090	-.042	-.028	-.010	.131	.140	.139	.068
V4	2.9%	.484	.533	.631	-- --	.650	.445	.260	.228	.202	.297	.050	.261	.216	.137	.061	.250	.236	.190	.073	.072	.246	.080	-.041	-.116	-.047	-.125	-.075	-.028	.069	.082	.057	.098	-.029
V5	4.2%	.396	.519	.500	.650	-- --	.565	.372	.229	.200	.400	.217	.261	.162	.135	.050	.232	.147	.218	.156	.155	.283	.149	-.045	-.069	-.029	-.062	-.052	-.007	.113	.077	.073	.068	-.003
V6	6.9%	.570	.635	.462	.445	.565	-- --	.168	.425	.446	.501	.176	.049	.133	-.052	.236	.246	.323	.285	.191	.235	.397	.316	-.100	-.047	.009	-.038	-.063	-.043	.022	.070	.079	.038	-.030
V7	9.1%	.104	.252	.120	.260	.372	.168	-- --	.392	.351	.245	.455	.402	.393	.408	.157	.285	.347	.327	.427	.285	.182	.331	.232	.280	.279	.302	.330	.253	.252	.247	.244	.261	.196
V8	9.9%	.336	.624	.368	.228	.229	.425	.392	-- --	.728	.502	.311	-.006	.265	.326	.298	.527	.681	.646	.530	.630	.508	.564	-.172	.122	.150	.151	.151	.082	.091	.151	.167	.201	.121
V9	37.8%	.293	.702	.493	.250	.248	.553	.436	.904	-- --	.530	.315	.005	.181	.223	.293	.463	.583	.555	.480	.512	.433	.482	-.035	.223	.197	.175	.233	.150	.196	.195	.232	.240	.219
V10	8.5%	.240	.498	.303	.297	.400	.501	.245	.502	.658	-- --	.175	.281	.272	.174	.380	.291	.438	.545	.400	.373	.453	.432	-.028	.051	.108	.038	.103	.097	.136	.048	.085	.051	.103
V11	37.7%	.038	.236	.035	.062	.269	.219	.565	.386	.485	.218	-- --	.337	.240	.186	.216	.240	.328	.317	.355	.303	.103	.266	.206	.280	.239	.280	.260	.151	.110	.222	.225	.161	.159
V12	6.9%	-.035	.044	.072	.261	.261	.049	.402	-.006	.006	.281	.418	-- --	.725	.472	.457	.238	.152	.158	.253	.169	.055	.086	.325	.326	.319	.257	.297	.289	.259	.230	.239	.150	.244
V13	7.7%	.016	.294	.158	.216	.162	.133	.393	.265	.224	.272	.298	.725	-- --	.641	.503	.449	.439	.345	.432	.324	.206	.320	.217	.269	.269	.312	.302	.224	.254	.288	.264	.274	.311
V14	37.0%	-0.05	.204	.059	.170	.168	-.064	.506	.405	.344	.216	.287	.586	.796	-- --	.237	.471	.319	.372	.389	.315	.177	.269	.095	.173	.161	.192	.194	.118	.104	.069	.086	.090	.109
V15	6.3%	.126	.187	.179	.061	.050	.236	.157	.298	.364	.380	.268	.457	.503	.295	-- --	.372	.400	.407	.421	.458	.367	.490	.087	.188	.213	.205	.207	.155	.079	.184	.181	.164	.159
V16	8.4%	.218	.477	.317	.250	.232	.246	.285	.527	.575	.291	.297	.238	.449	.585	.372	-- --	.573	.655	.619	.614	.398	.452	-.051	.074	.074	.137	.119	.004	.044	.017	.032	.080	.025
V17	7.2%	.255	.601	.443	.236	.147	.323	.347	.681	.723	.438	.407	.152	.439	.396	.400	.573	-- --	.791	.690	.703	.508	.591	-.017	.194	.184	.247	.285	.162	.178	.266	.256	.304	.240
V18	8.2%	.181	.478	.395	.190	.218	.285	.327	.646	.690	.545	.394	.158	.345	.462	.407	.655	.791	-- --	.754	.772	.578	.650	-.143	.080	.092	.150	.184	.056	.113	.046	.017	.072	.053
V19	7.3%	.156	.408	.276	.073	.156	.191	.427	.530	.596	.400	.441	.253	.432	.483	.421	.619	.690	.754	-- --	.780	.477	.580	.135	.258	.234	.289	.331	.247	.155	.184	.181	.133	.184
V20	7.7%	.182	.445	.241	.072	.155	.235	.285	.630	.636	.373	.376	.169	.324	.391	.458	.614	.703	.772	.780	-- --	.520	.595	.023	.183	.167	.186	.231	.109	.101	.091	.105	.107	.079
V21	37.4%	.366	.588	.429	.305	.351	.493	.225	.631	.667	.562	.159	.069	.255	.273	.456	.494	.631	.718	.593	.646	-- --	.477	-.110	.045	.163	.076	.073	.137	.164	.235	.219	.238	.143
V22	7.9%	.184	.427	.275	.080	.149	.316	.331	.564	.598	.432	.330	.086	.320	.334	.490	.452	.591	.650	.580	.595	.592	-- --	.021	.145	.108	.115	.162	.042	.059	.154	.119	.145	.121
V23	0.6%	-.19	-.099	-.112	-.041	-.045	-.100	.232	-.172	-.043	-.028	.256	.325	.217	.118	.087	-.051	-.017	-.143	.135	.023	-.136	.021	-- --	.837	.767	.830	.829	.806	.663	.715	.709	.689	.712
V24	1.2%	-.142	-.023	-.097	-.116	-.069	-.047	.280	.122	.277	.051	.348	.326	.269	.214	.188	.074	.194	.080	.258	.183	.056	.145	.837	-- --	.855	.874	.853	.788	.705	.752	.747	.734	.753
V25	1.2%	-.151	.084	-.018	-.047	-.029	.009	.279	.150	.245	.108	.297	.319	.269	.200	.213	.074	.184	.092	.234	.167	.202	.108	.767	.855	-- --	.850	.809	.808	.699	.771	.765	.748	.723
V26	1.1%	-.147	.024	-.090	-.125	-.062	-.038	.302	.151	.217	.038	.347	.257	.312	.239	.205	.137	.247	.150	.289	.186	.094	.115	.830	.874	.850	-- --	.897	.814	.695	.768	.755	.782	.779
V27	1.2%	-.138	.053	-.042	-.075	-.052	-.063	.330	.151	.289	.103	.323	.297	.302	.241	.207	.119	.285	.184	.331	.231	.090	.162	.829	.853	.809	.897	-- --	.849	.712	.798	.797	.789	.841
V28	0.6%	-.131	.027	-.028	-.028	-.007	-.043	.253	.082	.187	.097	.188	.289	.224	.146	.155	.004	.162	.056	.247	.109	.170	.042	.806	.788	.808	.814	.849	-- --	.794	.826	.822	.794	.842
V29	0.8%	-.107	.047	-.010	.069	.113	.022	.252	.091	.243	.136	.136	.259	.254	.130	.079	.044	.178	.113	.155	.101	.204	.059	.663	.705	.699	.695	.712	.794	-- --	.752	.719	.761	.766
V30	1.1%	-.014	.221	.131	.082	.077	.070	.247	.151	.242	.048	.276	.230	.288	.086	.184	.017	.266	.046	.184	.091	.292	.154	.715	.752	.771	.768	.798	.826	.752	-- --	.936	.903	.865
V31	1.2%	-.024	.212	.140	.057	.073	.079	.244	.167	.288	.085	.279	.239	.264	.107	.181	.032	.256	.017	.181	.105	.272	.119	.709	.747	.765	.755	.797	.822	.719	.936	-- --	.920	.864
V32	1.1%	.049	.246	.139	.098	.068	.038	.261	.201	.298	.051	.200	.150	.274	.112	.164	.080	.304	.072	.133	.107	.295	.145	.689	.734	.748	.782	.789	.794	.761	.903	.920	-- --	.901
V33	0.8%	-.103	.178	.068	-.029	-.003	-.030	.196	.121	.272	.103	.197	.244	.311	.136	.159	.025	.240	.053	.184	.079	.178	.121	.712	.753	.723	.779	.841	.842	.766	.865	.864	.901	-- --

© University of Pretoria

ADEQUACY OF THE POLYCHORIC CORRELATION MATRIX

Determinant of the matrix =	< 0.000001
Bartlett's statistic =	16396.3 (df = 528; P = 0.000010)
Kaiser-Meyer-Olkin (KMO) test =	0.00000 (unacceptable)

NORMED ITEM-MSA INDICES

Items	Quartile of sum response scores	Relative difficulty index	Normed MSA
cs9police	1	0.03514	0.92299
cs8legal	1	0.03862	0.94304
cs16probm_child	1	0.04732	0.97825
cs17prob_relatnshp	1	0.04802	0.96557
cs20probm_workmat	1	0.05532	0.96244
cs19prob_nei	1	0.07933	0.96617
cs22pregnant	1	0.08107	0.97703
cs18probm_comm	1	0.08420	0.96696
cs2home	1	0.09047	0.96289
cs15probm_fam	2	0.09534	0.97190
st2scared	2	0.11100	0.97869
cs6badhous	2	0.14127	0.94272
cs10lackjob	2	0.14440	0.96571
cs3water	3	0.16458	0.94572
cs7injury	3	0.16806	0.94753
cs14neglect	3	0.18441	0.88363
cs11theftprop	3	0.21016	0.91918
cs21sickness	3	0.21677	0.94919
cs1food	3	0.24043	0.94441
cs5work	3	0.25331	0.91986
st11nowork	3	0.25400	0.95479
cs4lighting	3	0.26340	0.91439
st5ashamed	3	0.26827	0.96239
st3blame	3	0.27279	0.96723
st9nextdoor	3	0.27697	0.96178
st10nofriend	3	0.28079	0.95134
cs13Death	3	0.28532	0.91409
st6uneasy	4	0.29123	0.96957
st8feelless	4	0.29958	0.97470
st7sit	4	0.30028	0.97237
st4wrong	4	0.30132	0.97286
st12plate	4	0.30480	0.96611
cs12illness	4	0.34447	0.91705

Number of items proposed to be removed: NONE

Values of MSA below .50 suggest that the item does not measure the same domain as the remaining items in the pool, and so that it should be removed. At the same time, for a normal-range test, an optimal pool of items should have a large spread of Relative difficulty indices, and each quartile should have a similar number of items. When removing items from the pool, all these aspects should be taken into account. Sometimes, the conclusion is that new items should be added to the pool of items.

EXPLAINED VARIANCE BASED ON EIGENVALUES

Variable	Eigenvalue	Proportion of variance	Cumulative proportion of variance

© University of Pretoria

1	10.71443	0.32468	0.32468
2	7.23576	0.21927	0.54395
3	2.78235	0.08431	0.62826
4	2.09230	0.06340	0.69166
5	1.20598	0.03654	
6	1.08073	0.03275	
7	0.85103	0.02579	
8	0.77587	0.02351	
9	0.68029	0.02061	
10	0.63263	0.01917	
11	0.55312	0.01676	
12	0.47775	0.01448	
13	0.45965	0.01393	
14	0.39400	0.01194	
15	0.35513	0.01076	
16	0.33610	0.01018	
17	0.30570	0.00926	
18	0.29933	0.00907	
19	0.27480	0.00833	
20	0.24298	0.00736	
21	0.19843	0.00601	
22	0.16990	0.00515	
23	0.16211	0.00491	
24	0.15096	0.00457	
25	0.12869	0.00390	
26	0.11021	0.00334	
27	0.08483	0.00257	
28	0.06905	0.00209	
29	0.06498	0.00197	
30	0.05275	0.00160	
31	0.03697	0.00112	
32	0.02115	0.00064	
33	0.00001	0.00000	

PARALLEL ANALYSIS (PA) BASED ON MINIMUM RANK FACTOR ANALYSIS (TIMMERMAN & LORENZO-SEVA, 2011)

Implementation details:

Correlation matrices analysed	Polychoric correlation matrices
Number of random correlation matrices	500
Method to obtain random correlation matrices	Permutation of the raw data (Buja & Eyuboglu, 1992)

Variable	Real-data % of variance	Mean of random % of variance	95 percentile of random % of variance
1	32.6452*	6.0737	6.5869
2	22.0518*	5.7029	6.1360
3	8.4650*	5.4303	5.8400
4	6.2695*	5.2043	5.5654
5	3.6633	5.0073	5.3288
6	3.2824	4.8219	5.1297
7	2.5924	4.6477	4.9285
8	2.3400	4.4886	4.7521
9	2.0741	4.3251	4.5497
10	1.9240	4.1574	4.3607
11	1.6828	4.0007	4.1828

© University of Pretoria

12	1.4403	3.8416	4.0116
13	1.3905	3.6826	3.8530
14	1.1969	3.5303	3.6952
15	1.0630	3.3737	3.5322
16	1.0181	3.2191	3.3938
17	0.9310	3.0560	3.2324
18	0.9043	2.8899	3.0817
19	0.8248	2.7322	2.9344
20	0.7214	2.5706	2.7721
21	0.5901	2.4083	2.6344
22	0.4932	2.2413	2.4679
23	0.4708	2.0760	2.3191
24	0.3977	1.9098	2.1420
25	0.3865	1.7401	1.9810
26	0.3290	1.5595	1.8191
27	0.2378	1.3678	1.6268
28	0.2099	1.1914	1.4552
29	0.1950	0.9987	1.2523
30	0.1199	0.8012	1.0904
31	0.0888	0.5902	0.9043
32	0.0005	0.3601	0.6388

* Advised number of dimensions: 4

UN-ROTATED LOADING MATRIX

Variable	Factor 1 Poverty	Factor 2 Personal threats	Factor 3 Interpersonal problems	Factor 4 HIV-related stigma	Communality
cs1food	0.110	0.480	-0.448	0.008	0.444
cs2home	0.462	0.628	-0.437	-0.062	0.802
cs3water	0.284	0.513	-0.464	0.039	0.560
cs4lighting	0.204	0.418	-0.543	0.386	0.660
cs5work	0.237	0.415	-0.474	0.359	0.582
cs6badhous	0.265	0.514	-0.451	0.018	0.538
cs7injury	0.486	0.184	0.083	0.256	0.342
cs8legal	0.510	0.591	0.030	-0.262	0.679
cs9police	0.521	0.466	-0.037	-0.258	0.556
cs10lackjob	0.393	0.481	-0.071	0.041	0.392
cs11theftprop	0.390	0.139	0.147	0.113	0.206
cs12illness	0.431	0.017	0.225	0.798	0.874
cs13Death	0.536	0.192	0.276	0.510	0.660
cs14neglect	0.364	0.223	0.365	0.356	0.442
cs21sickness	0.424	0.277	0.240	0.119	0.328
cs15probm_fam	0.427	0.540	0.237	0.046	0.532
cs16probm_child	0.617	0.536	0.144	-0.193	0.726
cs17prob_relatnshp	0.513	0.653	0.301	-0.176	0.811
cs18probm_comm	0.596	0.456	0.367	-0.089	0.706
cs19prob_nei	0.522	0.534	0.349	-0.204	0.721
cs20probm_workmat	0.434	0.461	-0.067	-0.180	0.438
cs22pregnant	0.462	0.488	0.207	-0.171	0.524
st2scared	0.621	-0.621	-0.015	0.125	0.788
st3blame	0.751	-0.491	0.089	-0.029	0.814
st4wrong	0.754	-0.447	0.003	-0.022	0.769
st5ashamed	0.779	-0.479	0.098	-0.060	0.849

© University of Pretoria

st6uneasy	0.810	-0.458	0.082	-0.063	0.877
st7sit	0.751	-0.518	-0.070	-0.035	0.838
st8feelless	0.684	-0.414	-0.132	-0.002	0.656
st9nextdoor	0.789	-0.430	-0.247	-0.069	0.874
st10nofriend	0.785	-0.427	-0.245	-0.073	0.863
st11nowork	0.787	-0.413	-0.248	-0.125	0.868
st12plate	0.764	-0.468	-0.142	-0.081	0.830

ROTATED LOADING MATRIX

Variable	Factor 1 Poverty	Factor 2 Personal threats	Factor 3 Interpersonal problems	Factor 4 HIV-related stigma
cs1food	-0.126	0.626	0.062	-0.110
cs2home	-0.129	0.690	0.352	0.053
cs3water	-0.073	0.691	0.124	-0.011
cs4lighting	0.221	0.863	-0.246	-0.059
cs5work	0.227	0.789	-0.174	-0.050
cs6badhous	-0.092	0.668	0.138	-0.024
cs7injury	0.370	0.160	0.198	0.138
cs8legal	-0.135	0.152	0.770	0.015
cs9police	-0.164	0.173	0.652	0.127
cs10lackjob	0.100	0.316	0.391	-0.033
cs11theftprop	0.238	0.010	0.264	0.113
cs12illness	0.946	0.176	-0.197	0.041
cs13Death	0.708	0.088	0.176	0.048
cs14neglect	0.567	-0.074	0.281	-0.087
cs21sickness	0.294	-0.022	0.418	0.013
cs15probm_fam	0.237	0.047	0.630	-0.145
cs16probm_child	-0.009	0.065	0.805	0.078
cs17prob_relatnshp	0.063	-0.052	0.922	-0.128
cs18probm_comm	0.176	-0.141	0.817	0.024
cs19prob_nei	0.049	-0.152	0.900	-0.050
cs20probm_workmat	-0.112	0.220	0.543	0.061
cs22pregnant	0.012	-0.026	0.736	-0.025
st2scared	0.173	-0.076	-0.223	0.840
st3blame	0.089	-0.173	0.077	0.849
st4wrong	0.065	-0.071	0.048	0.845
st5ashamed	0.066	-0.186	0.122	0.864
st6uneasy	0.064	-0.160	0.140	0.878
st7sit	0.017	-0.032	-0.034	0.917
st8feelless	0.022	0.070	-0.057	0.810
st9nextdoor	-0.076	0.162	-0.052	0.947
st10nofriend	-0.080	0.159	-0.047	0.942
st11nowork	-0.131	0.147	-0.005	0.947
st12plate	-0.052	0.039	-0.013	0.926

ROTATED LOADING MATRIX (loadings lower than absolute 0.300 omitted)

Variable	Factor 1 Poverty	Factor 2 Personal threats	Factor 3 Interpersonal problems	Factor 4 HIV-related stigma
cs1food		0.626		
cs2home		0.690	0.352	

© University of Pretoria

cs3water		0.691			
cs4lighting		0.863			
cs5work		0.789			
cs6badhous		0.668			
cs7injury	0.370				
cs8legal			0.770		
cs9police			0.652		
cs10lackjob		0.316	0.391		
cs11theftprop					
cs12illness	0.946				
cs13Death	0.708				
cs14neglect	0.567				
cs21sickness			0.418		
cs15probm_fam			0.630		
cs16probm_child			0.805		
cs17prob_relatnshp			0.922		
cs18probm_comm			0.817		
cs19prob_nei			0.900		
cs20probm_workmat			0.543		
cs22pregnant			0.736		
st2scared					0.840
st3blame					0.849
st4wrong					0.845
st5ashamed					0.864
st6uneasy					0.878
st7sit					0.917
st8feelless					0.810
st9nextdoor					0.947
st10nofriend					0.942
st11nowork					0.947
st12plate					0.926

EXPLAINED VARIANCE OF ROTATED FACTORS AND RELIABILITY OF PHI-INFORMATION OBLIQUE EAP SCORES (Ferrando & Lorenzo-Seva, 2016)

	Factor	Variance	ORION	Factor Determinacy Index
1	Poverty	2.536	0.916	0.957
2	Personal threats	3.789	0.918	0.958
3	Interpersonal problems	6.375	0.953	0.976
4	HIV-related stigma	8.849	0.982	0.991

© University of Pretoria

2.2.2 Part B: CFA results on items in the community stressors scale

CFA round 1: First-order model on scale, excluding item st1punish removed due to MSA of less than 0.5

lavaan 0.6-7 ended normally after 140 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	72
Number of observations	1437

Model Test User Model:

Test statistic	3134.697
Degrees of freedom	489
P-value (Chi-square)	0.000

Model Test Baseline Model:

Test statistic	40670.442
Degrees of freedom	528
P-value	0.000

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.934
Tucker-Lewis Index (TLI)	0.929

Root Mean Square Error of Approximation:

RMSEA	0.061
90 Percent confidence interval – lower	0.059
90 Percent confidence interval – upper	0.063
P-value RMSEA <= 0.05	0.000

Standardized Root Mean Square Residual:

SRMR	0.073

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Poverty =~						
cs1food	1.000				0.245	0.490
cs2home	1.067	0.050	21.370	0.000	0.261	0.678
cs3water	1.187	0.055	21.473	0.000	0.290	0.618
cs4lighting	1.131	0.052	21.710	0.000	0.277	0.554
cs5work	1.154	0.053	21.746	0.000	0.282	0.564
cs6badhous	1.069	0.051	20.861	0.000	0.262	0.581
Personalthreats =~						
cs7injury	1.000				0.244	0.515
cs8legal	0.376	0.020	18.750	0.000	0.092	0.343
cs9police	0.446	0.021	21.118	0.000	0.109	0.425
cs10lackjob	0.782	0.035	22.319	0.000	0.190	0.420

© University of Pretoria

cs11theftprop	0.983	0.040	24.540	0.000	0.239	0.485
cs12illness	0.827	0.034	24.334	0.000	0.201	0.435
cs13Death	1.180	0.043	27.241	0.000	0.287	0.580
cs14neglect	1.067	0.041	25.834	0.000	0.260	0.538
cs21sickness	0.933	0.039	24.072	0.000	0.227	0.459
Interpersonalproblms =~						
cs15probm_fam	1.000				0.229	0.583
cs16probm_chld	0.801	0.037	21.834	0.000	0.184	0.627
cs17prb_rltnsh	0.771	0.036	21.327	0.000	0.177	0.599
cs18probm_comm	1.133	0.049	23.310	0.000	0.260	0.694
cs19prob_nei	1.007	0.045	22.393	0.000	0.231	0.631
cs20prbm_wrkmt	0.782	0.037	21.172	0.000	0.179	0.571
cs22pregnant	0.885	0.041	21.336	0.000	0.203	0.550
HIVrelatedstigma =~						
st2scared	1.000				0.282	0.678
st3blame	2.269	0.055	41.037	0.000	0.640	0.789
st4wrong	2.311	0.056	41.317	0.000	0.652	0.776
st5ashamed	2.331	0.056	41.389	0.000	0.657	0.814
st6uneasy	2.481	0.059	42.155	0.000	0.700	0.837
st7sit	2.432	0.058	41.826	0.000	0.686	0.807
st8feelless	2.020	0.051	39.375	0.000	0.570	0.688
st9nextdoor	2.414	0.058	41.470	0.000	0.681	0.813
st10nofriend	2.421	0.058	41.432	0.000	0.683	0.809
st11nowork	2.312	0.057	40.769	0.000	0.652	0.797
st12plate	2.450	0.059	41.814	0.000	0.691	0.802

Covariances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Poverty ~~						
Personalthrts1	0.024	0.001	18.631	0.000	0.399	0.399
IntrprsnlPrblm	0.022	0.001	18.451	0.000	0.395	0.395
HIVrelatedstgm	-0.001	0.000	-1.886	0.059	-0.013	-0.013
Personalthreats ~~						
IntrprsnlPrblm	0.035	0.002	22.458	0.000	0.633	0.633
HIVrelatedstgm	0.021	0.001	25.479	0.000	0.311	0.311
Interpersonalproblms ~~						
HIVrelatedstgm	0.008	0.000	16.390	0.000	0.121	0.121

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.cs1food	0.190	0.004	46.357	0.000	0.190	0.760
.cs2home	0.080	0.008	10.538	0.000	0.080	0.540
.cs3water	0.137	0.007	20.833	0.000	0.137	0.618
.cs4lighting	0.173	0.005	37.348	0.000	0.173	0.693
.cs5work	0.170	0.005	35.865	0.000	0.170	0.681
.cs6badhous	0.134	0.007	19.942	0.000	0.134	0.662
.cs7injury	0.164	0.005	31.062	0.000	0.164	0.734
.cs8legal	0.063	0.006	10.479	0.000	0.063	0.882
.cs9police	0.054	0.006	9.139	0.000	0.054	0.820
.cs10lackjob	0.169	0.006	30.001	0.000	0.169	0.823
.cs11theftprop	0.186	0.004	47.404	0.000	0.186	0.765
.cs12illness	0.174	0.005	33.400	0.000	0.174	0.811
.cs13Death	0.163	0.004	37.945	0.000	0.163	0.663

© University of Pretoria

.cs14neglect	0.165	0.005	33.948	0.000	0.165	0.710
.cs21sickness	0.194	0.004	54.062	0.000	0.194	0.790
.cs15probm_fam	0.102	0.007	14.137	0.000	0.102	0.660
.cs16probm_chld	0.052	0.007	7.833	0.000	0.052	0.607
.cs17prb_rltnsh	0.056	0.007	8.374	0.000	0.056	0.641
.cs18probm_comm	0.073	0.008	9.564	0.000	0.073	0.519
.cs19prob_nei	0.080	0.007	10.899	0.000	0.080	0.602
.cs20prbm_wrkmt	0.066	0.007	9.727	0.000	0.066	0.674
.cs22pregnant	0.095	0.007	13.289	0.000	0.095	0.698
.st2scared	0.093	0.007	13.786	0.000	0.093	0.540
.st3blame	0.248	0.023	10.702	0.000	0.248	0.378
.st4wrong	0.281	0.022	12.654	0.000	0.281	0.398
.st5ashamed	0.221	0.024	9.343	0.000	0.221	0.338
.st6uneasy	0.209	0.023	8.938	0.000	0.209	0.299
.st7sit	0.251	0.023	10.958	0.000	0.251	0.348
.st8feelless	0.360	0.021	17.040	0.000	0.360	0.526
.st9nextdoor	0.238	0.024	9.841	0.000	0.238	0.339
.st10nofriend	0.246	0.024	10.188	0.000	0.246	0.345
.st11nowork	0.244	0.025	9.803	0.000	0.244	0.365
.st12plate	0.265	0.023	11.540	0.000	0.265	0.357
Poverty	0.060	0.004	14.733	0.000	1.000	1.000
Personalthrets	0.059	0.003	17.741	0.000	1.000	1.000
Intrprsnlprblm	0.052	0.003	15.920	0.000	1.000	1.000
HIVrelatedstgm	0.080	0.003	27.091	0.000	1.000	1.000

Cronbach's reliability (FitB)

			Scales	
Test	Poverty	Personalthreats1	Interpersonalproblems	HIVrelatedstigma
alpha	0.7508134	0.7125054	0.8032801	0.9437712

© University of Pretoria

CFA round 1: Second-order model on scale, excluding item st1punish removed due to MSA of less than 0.5

[lavaan Warning message: In lav_object_post_check(object): some estimated lv variances are negative]

lavaan 0.6-7 ended normally after 137 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	70
Number of observations	1437
Model Test User Model:	
Test statistic	3581.015
Degrees of freedom	491
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	40670.442
Degrees of freedom	528
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.923
Tucker-Lewis Index (TLI)	0.917
Root Mean Square Error of Approximation:	
RMSEA	0.066
90 Percent confidence interval – lower	0.064
90 Percent confidence interval – upper	0.068
P-value RMSEA <= 0.05	0.000
Standardized Root Mean Square Residual:	
SRMR	0.076
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Poverty =~						
cs1food	1.000				0.234	0.469
cs2home	1.093	0.054	20.317	0.000	0.256	0.665
cs3water	1.222	0.060	20.287	0.000	0.286	0.609
cs4lighting	1.226	0.059	20.725	0.000	0.287	0.575
cs5work	1.256	0.060	20.780	0.000	0.294	0.588
cs6badhous	1.096	0.056	19.713	0.000	0.257	0.571
Personalthreats =~						
cs7injury	1.000				0.240	0.507
cs8legal	0.413	0.021	19.270	0.000	0.099	0.371
cs9police	0.477	0.022	21.300	0.000	0.114	0.447

© University of Pretoria

cs10lackjob	0.829	0.037	22.674	0.000	0.199	0.439
cs11theftprop	0.979	0.040	24.248	0.000	0.235	0.475
cs12illness	0.803	0.034	23.773	0.000	0.192	0.416
cs13Death	1.162	0.043	26.899	0.000	0.279	0.563
cs14neglect	1.080	0.042	25.645	0.000	0.259	0.536
cs21sickness	0.945	0.039	23.973	0.000	0.227	0.457
InterpersonalProblms =~						
cs15probm_fam	1.000				0.226	0.575
cs16probm_chld	0.810	0.038	21.473	0.000	0.183	0.626
cs17prb_rltnsh	0.776	0.037	20.927	0.000	0.175	0.595
cs18probm_comm	1.182	0.051	23.113	0.000	0.267	0.714
cs19prob_nei	1.034	0.047	22.137	0.000	0.234	0.640
cs20prbm_wrkmt	0.763	0.037	20.488	0.000	0.172	0.550
cs22pregnant	0.899	0.043	21.039	0.000	0.203	0.551
HIVrelatedstigma =~						
st2scared	1.000				0.280	0.674
st3blame	2.268	0.056	40.674	0.000	0.635	0.784
st4wrong	2.321	0.057	41.012	0.000	0.650	0.774
st5ashamed	2.334	0.057	41.042	0.000	0.654	0.809
st6uneasy	2.488	0.059	41.823	0.000	0.697	0.834
st7sit	2.445	0.059	41.531	0.000	0.685	0.806
st8feelless	2.038	0.052	39.161	0.000	0.571	0.690
st9nextdoor	2.447	0.059	41.278	0.000	0.686	0.819
st10nofriend	2.452	0.059	41.233	0.000	0.687	0.814
st11nowork	2.345	0.058	40.597	0.000	0.657	0.803
st12plate	2.471	0.059	41.557	0.000	0.692	0.803
Communitystressor =~						
Poverty	1.000				0.377	0.377
Personalthrets	3.113	0.187	16.611	0.000	1.149	1.149
Intrprsnlprblm	1.529	0.087	17.529	0.000	0.598	0.598
HIVrelatedstgm	0.728	0.039	18.867	0.000	0.230	0.230

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.cs1food	0.195	0.004	48.396	0.000	0.195	0.780
.cs2home	0.083	0.008	10.890	0.000	0.083	0.557
.cs3water	0.139	0.007	21.071	0.000	0.139	0.629
.cs4lighting	0.167	0.005	33.345	0.000	0.167	0.669
.cs5work	0.164	0.005	31.571	0.000	0.164	0.654
.cs6badhous	0.137	0.007	20.277	0.000	0.137	0.674
.cs7injury	0.166	0.005	31.650	0.000	0.166	0.743
.cs8legal	0.062	0.006	10.227	0.000	0.062	0.863
.cs9police	0.052	0.006	8.901	0.000	0.052	0.800
.cs10lackjob	0.166	0.006	29.120	0.000	0.166	0.808
.cs11theftprop	0.189	0.004	48.893	0.000	0.189	0.774
.cs12illness	0.177	0.005	34.457	0.000	0.177	0.827
.cs13Death	0.168	0.004	40.487	0.000	0.168	0.683
.cs14neglect	0.166	0.005	34.120	0.000	0.166	0.712
.cs21sickness	0.194	0.004	54.431	0.000	0.194	0.791
.cs15probm_fam	0.103	0.007	14.349	0.000	0.103	0.669
.cs16probm_chld	0.052	0.007	7.845	0.000	0.052	0.609
.cs17prb_rltnsh	0.056	0.007	8.441	0.000	0.056	0.646
.cs18probm_comm	0.069	0.008	8.934	0.000	0.069	0.491

© University of Pretoria

.cs19prob_nei	0.079	0.007	10.639	0.000	0.079	0.591
.cs20prbm_wrkmt	0.069	0.007	10.110	0.000	0.069	0.698
.cs22pregnant	0.095	0.007	13.223	0.000	0.095	0.696
.st2scared	0.094	0.007	13.950	0.000	0.094	0.546
.st3blame	0.254	0.023	10.960	0.000	0.254	0.386
.st4wrong	0.283	0.022	12.753	0.000	0.283	0.401
.st5ashamed	0.225	0.024	9.548	0.000	0.225	0.345
.st6uneasy	0.213	0.023	9.100	0.000	0.213	0.305
.st7sit	0.253	0.023	11.001	0.000	0.253	0.350
.st8feelless	0.359	0.021	16.947	0.000	0.359	0.524
.st9nextdoor	0.231	0.024	9.538	0.000	0.231	0.330
.st10nofriend	0.240	0.024	9.912	0.000	0.240	0.337
.st11nowork	0.238	0.025	9.516	0.000	0.238	0.355
.st12plate	0.263	0.023	11.443	0.000	0.263	0.355
.Poverty	0.047	0.003	13.475	0.000	0.858	0.858
.Personalthrets	-0.018	0.004	-5.198	0.000	-0.320	-0.320
.Intrprsnlprblm	0.033	0.002	13.569	0.000	0.642	0.642
.HIVrelatedstgm	0.074	0.003	26.718	0.000	0.947	0.947
Communtystrssr	0.008	0.001	11.125	0.000	1.000	1.000

Conclusion on the CFA first-order and second-order model run in the initial round

In the initial CFA above, a good fit was achieved for the first model after 140 iterations, while the good fit was not achieved in the second-order analysis after 137 iterations. The community stressors variable was highly correlated with the personal threat scale, which is unusual. Additionally, the personal threats construct had a negative variance. Hence, the EFA results for this model were further scrutinised to identify and exclude items with low loadings to the theorised factors/latent variables. Six items (i.e. five that had a low loading and one item that was mistakenly transferred to the personal threats factor) were removed from the personal threats scale leaving only three items (i.e. Illness, death and neglect) and additional first and second order CFA were run. The results of which are presented in the next subsections.

© University of Pretoria

CFA round 2: First-order model (with 3 items in personal threats and less cs21sickness in interpersonal problems

lavaan 0.6-7 ended normally after 121 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	58
Number of observations	1437
Model Test User Model:	
Test statistic	2025.951
Degrees of freedom	320
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	34183.412
Degrees of freedom	351
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.950
Tucker-Lewis Index (TLI)	0.945
Root Mean Square Error of Approximation:	
RMSEA	0.061
90 Percent confidence interval – lower	0.058
90 Percent confidence interval – upper	0.063
P-value RMSEA <= 0.05	0.000
Standardized Root Mean Square Residual:	
SRMR	0.065
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Poverty =~						
cs1food	1.000				0.242	0.484
cs2home	1.029	0.054	18.996	0.000	0.249	0.647
cs3water	1.221	0.063	19.237	0.000	0.296	0.629
cs4lighting	1.224	0.062	19.716	0.000	0.296	0.593
cs5work	1.192	0.061	19.503	0.000	0.289	0.577
cs6badhous	1.022	0.056	18.348	0.000	0.247	0.549
Personalthreats1 =~						
cs12illness	1.000				0.254	0.549
cs13Death	1.587	0.071	22.286	0.000	0.403	0.815
cs14neglect	1.272	0.060	21.214	0.000	0.323	0.670
Interpersonalproblms =~						
cs15probm_fam	1.000				0.225	0.573
cs16probm_chld	0.836	0.045	18.428	0.000	0.188	0.643

© University of Pretoria

cs17prb_rltnsh	0.774	0.044	17.725	0.000	0.174	0.591
cs18probm_comm	1.199	0.061	19.596	0.000	0.270	0.721
cs19prob_nei	1.047	0.056	18.822	0.000	0.236	0.645
cs20prbm_wrkmt	0.783	0.044	17.645	0.000	0.176	0.562
cs22pregnant	0.850	0.048	17.550	0.000	0.191	0.519
HIVrelatedstigma =~						
st2scared	1.000				0.283	0.682
st3blame	2.232	0.055	40.380	0.000	0.633	0.780
st4wrong	2.283	0.056	40.724	0.000	0.647	0.770
st5ashamed	2.301	0.056	40.764	0.000	0.652	0.807
st6uneasy	2.448	0.059	41.536	0.000	0.694	0.830
st7sit	2.428	0.059	41.351	0.000	0.688	0.810
st8feelless	2.017	0.052	38.944	0.000	0.572	0.691
st9nextdoor	2.421	0.059	41.054	0.000	0.686	0.819
st10nofriend	2.422	0.059	40.992	0.000	0.686	0.814
st11nowork	2.322	0.058	40.375	0.000	0.658	0.804
st12plate	2.448	0.059	41.360	0.000	0.694	0.805
Communitystressor =~						
Poverty	1.000				0.357	0.357
Personalthrts	2.127	0.149	14.267	0.000	0.722	0.722
IntrprsnlPrblm	1.598	0.117	13.699	0.000	0.612	0.612
HIVrelatedstgm	0.757	0.050	15.081	0.000	0.231	0.231

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.cs1food	0.191	0.004	42.875	0.000	0.191	0.766
.cs2home	0.086	0.008	11.268	0.000	0.086	0.581
.cs3water	0.134	0.007	18.922	0.000	0.134	0.605
.cs4lighting	0.162	0.006	28.992	0.000	0.162	0.648
.cs5work	0.167	0.005	30.780	0.000	0.167	0.667
.cs6badhous	0.142	0.007	20.839	0.000	0.142	0.699
.cs12illness	0.150	0.006	23.677	0.000	0.150	0.699
.cs13Death	0.082	0.009	8.945	0.000	0.082	0.336
.cs14neglect	0.128	0.007	18.289	0.000	0.128	0.551
.cs15probm_fam	0.104	0.007	13.974	0.000	0.104	0.672
.cs16probm_chld	0.050	0.007	7.390	0.000	0.050	0.587
.cs17prb_rltnsh	0.057	0.007	8.355	0.000	0.057	0.650
.cs18probm_comm	0.067	0.008	8.310	0.000	0.067	0.480
.cs19prob_nei	0.078	0.008	10.135	0.000	0.078	0.584
.cs20prbm_wrkmt	0.067	0.007	9.722	0.000	0.067	0.684
.cs22pregnant	0.099	0.007	13.724	0.000	0.099	0.730
.st2scared	0.093	0.007	13.617	0.000	0.093	0.535
.st3blame	0.257	0.023	11.088	0.000	0.257	0.391
.st4wrong	0.288	0.022	12.923	0.000	0.288	0.407
.st5ashamed	0.228	0.024	9.621	0.000	0.228	0.349
.st6uneasy	0.218	0.023	9.282	0.000	0.218	0.311
.st7sit	0.248	0.023	10.752	0.000	0.248	0.344
.st8feelless	0.358	0.021	16.861	0.000	0.358	0.523
.st9nextdoor	0.230	0.024	9.462	0.000	0.230	0.329
.st10nofriend	0.240	0.024	9.913	0.000	0.240	0.338
.st11nowork	0.236	0.025	9.428	0.000	0.236	0.353
.st12plate	0.261	0.023	11.287	0.000	0.261	0.351
.Poverty	0.051	0.004	12.947	0.000	0.873	0.873

© University of Pretoria

.Personalthrts1	0.031	0.003	9.373	0.000	0.479	0.479
.IntrprsnlPrblm	0.032	0.003	11.620	0.000	0.625	0.625
.HIVrelatedstgm	0.076	0.003	26.628	0.000	0.947	0.947
Communtystrssr	0.007	0.001	9.352	0.000	1.000	1.000

Cronbach's reliability (Community stressors)

			Scales	
Test	Poverty	Personalthreats1	Interpersonalproblems	HIVrelatedstigma
alpha	0.7508134	0.7171142	0.8032801	0.9437712

© University of Pretoria

CFA round 3: First-order model based on EFA results, less item cs21sickness in interpersonal problems subscale

lavaan 0.6-7 ended normally after 121 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	60
Number of observations	1437
Model Test User Model:	
Test statistic	1448.930
Degrees of freedom	318
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	34183.412
Degrees of freedom	351
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.967
Tucker-Lewis Index (TLI)	0.963
Root Mean Square Error of Approximation:	
RMSEA	0.050
90 Percent confidence interval – lower	0.047
90 Percent confidence interval – upper	0.052
P-value RMSEA <= 0.05	0.554
Standardized Root Mean Square Residual:	
SRMR	0.055
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Poverty =~						
cs1food	1.000				0.254	0.508
cs2home	1.013	0.050	20.189	0.000	0.257	0.668
cs3water	1.182	0.057	20.602	0.000	0.300	0.638
cs4lighting	1.098	0.053	20.828	0.000	0.279	0.558
cs5work	1.075	0.052	20.579	0.000	0.273	0.546
cs6badhous	1.009	0.051	19.715	0.000	0.256	0.569
Personalthreats1 =~						
cs12illness	1.000				0.268	0.580
cs13Death	1.530	0.066	23.207	0.000	0.410	0.829
cs14neglect	1.142	0.052	21.998	0.000	0.306	0.635
Interpersonalproblms =~						
cs15probm_fam	1.000				0.227	0.577
cs16probm_chld	0.834	0.044	18.895	0.000	0.189	0.646

© University of Pretoria

cs17prb_rltnsh	0.783	0.043	18.287	0.000	0.178	0.603
cs18probm_comm	1.134	0.057	19.861	0.000	0.257	0.687
cs19prob_nei	1.019	0.053	19.187	0.000	0.231	0.632
cs20prbm_wrkmt	0.826	0.045	18.518	0.000	0.187	0.597
cs22pregnant	0.848	0.047	18.008	0.000	0.192	0.522
HIVrelatedstigma =~						
st2scared	1.000				0.286	0.687
st3blame	2.230	0.055	40.804	0.000	0.637	0.786
st4wrong	2.271	0.055	41.089	0.000	0.649	0.772
st5ashamed	2.295	0.056	41.171	0.000	0.656	0.811
st6uneasy	2.437	0.058	41.928	0.000	0.696	0.833
st7sit	2.413	0.058	41.711	0.000	0.689	0.811
st8feelless	1.998	0.051	39.222	0.000	0.571	0.690
st9nextdoor	2.384	0.058	41.300	0.000	0.681	0.813
st10nofriend	2.386	0.058	41.240	0.000	0.682	0.808
st11nowork	2.284	0.056	40.594	0.000	0.653	0.798
st12plate	2.426	0.058	41.684	0.000	0.693	0.804

Covariances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Poverty ~~						
Personalthrts1	0.012	0.001	10.546	0.000	0.183	0.183
IntrprsnlPrblm	0.023	0.001	17.365	0.000	0.395	0.395
HIVrelatedstgm	-0.001	0.001	-2.026	0.043	-0.014	-0.014
Personalthreats1 ~~						
IntrprsnlPrblm	0.022	0.001	17.297	0.000	0.369	0.369
HIVrelatedstgm	0.020	0.001	21.864	0.000	0.263	0.263
Interpersonalroblems ~~						
HIVrelatedstgm	0.008	0.000	15.708	0.000	0.121	0.121

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.cs1food	0.185	0.005	41.015	0.000	0.185	0.742
.cs2home	0.082	0.008	10.656	0.000	0.082	0.554
.cs3water	0.131	0.007	18.742	0.000	0.131	0.593
.cs4lighting	0.172	0.005	34.772	0.000	0.172	0.688
.cs5work	0.176	0.005	36.377	0.000	0.176	0.702
.cs6badhous	0.137	0.007	20.075	0.000	0.137	0.676
.cs12illness	0.142	0.006	21.957	0.000	0.142	0.664
.cs13Death	0.077	0.009	8.255	0.000	0.077	0.313
.cs14neglect	0.139	0.006	21.453	0.000	0.139	0.597
.cs15probm_fam	0.103	0.007	13.913	0.000	0.103	0.667
.cs16probm_chld	0.050	0.007	7.353	0.000	0.050	0.583
.cs17prb_rltnsh	0.055	0.007	8.173	0.000	0.055	0.637
.cs18probm_comm	0.074	0.008	9.400	0.000	0.074	0.528
.cs19prob_nei	0.080	0.008	10.539	0.000	0.080	0.600
.cs20prbm_wrkmt	0.063	0.007	9.079	0.000	0.063	0.644
.cs22pregnant	0.099	0.007	13.710	0.000	0.099	0.728
.st2scared	0.091	0.007	13.419	0.000	0.091	0.528
.st3blame	0.252	0.023	10.832	0.000	0.252	0.383
.st4wrong	0.285	0.022	12.823	0.000	0.285	0.404
.st5ashamed	0.223	0.024	9.419	0.000	0.223	0.342
.st6uneasy	0.214	0.023	9.139	0.000	0.214	0.306

© University of Pretoria

.st7sit	0.247	0.023	10.692	0.000	0.247	0.342
.st8feelless	0.359	0.021	16.928	0.000	0.359	0.524
.st9nextdoor	0.237	0.024	9.790	0.000	0.237	0.339
.st10nofriend	0.247	0.024	10.227	0.000	0.247	0.347
.st11nowork	0.244	0.025	9.755	0.000	0.244	0.364
.st12plate	0.262	0.023	11.356	0.000	0.262	0.353
Poverty	0.064	0.004	14.355	0.000	1.000	1.000
Personalthrts1	0.072	0.005	15.803	0.000	1.000	1.000
IntrprsnlPrblm	0.051	0.004	13.901	0.000	1.000	1.000
HIVrelatedstgm	0.082	0.003	27.116	0.000	1.000	1.000

Cronbach's reliability (Community stressors)

			Scales	
Test	Poverty	Personalthreats1	Interpersonalproblems	HIVrelatedstigma
alpha	0.7508134	0.7171142	0.8032801	0.9437712
avevar	0.3318976	0.4823565	0.3715259	0.6261904

© University of Pretoria

CFA round 4: First-order model, including cs21sickness

lavaan 0.6-10 ended normally after 123 iteration

Estimator	DWLS
Optimization method	NLMINB
Number of model parameters	62
Number of observations	1437
Model Test User Model:	
Test statistic	1662.183
Degrees of freedom	344
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	35257.711
Degrees of freedom	378
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.962
Tucker-Lewis Index (TLI)	0.958
Root Mean Square Error of Approximation:	
RMSEA	0.052
90 Percent confidence interval – lower	0.049
90 Percent confidence interval – upper	0.054
P-value RMSEA <= 0.05	0.134
Standardized Root Mean Square Residual:	
SRMR	0.057
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Poverty =~						
cs1food	1.000				0.254	0.509
cs2home	1.010	0.050	20.331	0.000	0.257	0.667
cs3water	1.181	0.057	20.739	0.000	0.300	0.639
cs4lighting	1.090	0.052	20.901	0.000	0.277	0.555
cs5work	1.066	0.052	20.645	0.000	0.271	0.542
cs6badhous	1.018	0.051	19.904	0.000	0.259	0.575
Personalthreats1 =~						
cs12illness	1.000				0.268	0.580
cs13Death	1.526	0.063	24.139	0.000	0.409	0.827
cs14neglect	1.145	0.050	22.694	0.000	0.307	0.637
Interpersonalproblms =~						
cs15probm_fam	1.000				0.222	0.564
cs16probm_chld	0.799	0.040	19.720	0.000	0.177	0.605
cs17prb_rltnsh	0.742	0.039	18.975	0.000	0.165	0.558

© University of Pretoria

cs18probm_comm	1.116	0.053	20.894	0.000	0.248	0.661
cs19prob_nei	1.006	0.050	20.187	0.000	0.223	0.611
cs20prbm_wrkmt	0.812	0.042	19.442	0.000	0.180	0.574
cs21sickness	1.014	0.051	19.898	0.000	0.225	0.454
cs22pregnant	0.874	0.046	19.155	0.000	0.194	0.526
HIVrelatedstigma =~						
st2scared	1.000				0.285	0.686
st3blame	2.235	0.055	40.828	0.000	0.637	0.786
st4wrong	2.276	0.055	41.115	0.000	0.649	0.772
st5ashamed	2.300	0.056	41.198	0.000	0.656	0.812
st6uneasy	2.443	0.058	41.953	0.000	0.697	0.833
st7sit	2.416	0.058	41.722	0.000	0.689	0.811
st8feelless	2.000	0.051	39.229	0.000	0.570	0.689
st9nextdoor	2.389	0.058	41.320	0.000	0.681	0.813
st10nofriend	2.390	0.058	41.259	0.000	0.682	0.808
st11nowork	2.288	0.056	40.613	0.000	0.652	0.798
st12plate	2.430	0.058	41.698	0.000	0.693	0.804

Covariances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Poverty ~~						
Personalthrts1	0.012	0.001	10.562	0.000	0.183	0.183
IntrprsnlPrblm	0.023	0.001	17.888	0.000	0.403	0.403
HIVrelatedstgm	-0.001	0.001	-2.042	0.041	-0.014	-0.014
Personalthreats1 ~~						
IntrprsnlPrblm	0.025	0.001	18.758	0.000	0.424	0.424
HIVrelatedstgm	0.020	0.001	22.154	0.000	0.264	0.264
Interpersonalroblems ~~						
HIVrelatedstgm	0.009	0.001	17.205	0.000	0.137	0.137

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.cs1food	0.185	0.005	41.024	0.000	0.185	0.741
.cs2home	0.082	0.008	10.704	0.000	0.082	0.555
.cs3water	0.131	0.007	18.749	0.000	0.131	0.591
.cs4lighting	0.173	0.005	35.331	0.000	0.173	0.692
.cs5work	0.177	0.005	37.017	0.000	0.177	0.706
.cs6badhous	0.136	0.007	19.801	0.000	0.136	0.669
.cs12illness	0.142	0.006	22.237	0.000	0.142	0.664
.cs13Death	0.078	0.009	8.641	0.000	0.078	0.316
.cs14neglect	0.139	0.006	21.746	0.000	0.139	0.595
.cs15probm_fam	0.105	0.007	14.502	0.000	0.105	0.681
.cs16probm_chld	0.054	0.007	8.164	0.000	0.054	0.634
.cs17prb_rltnsh	0.060	0.007	9.018	0.000	0.060	0.688
.cs18probm_comm	0.079	0.008	10.351	0.000	0.079	0.563
.cs19prob_nei	0.084	0.007	11.303	0.000	0.084	0.627
.cs20prbm_wrkmt	0.066	0.007	9.604	0.000	0.066	0.670
.cs21sickness	0.195	0.004	49.859	0.000	0.195	0.794
.cs22pregnant	0.098	0.007	13.751	0.000	0.098	0.724
.st2scared	0.092	0.007	13.467	0.000	0.092	0.530
.st3blame	0.251	0.023	10.823	0.000	0.251	0.382
.st4wrong	0.285	0.022	12.797	0.000	0.285	0.403

© University of Pretoria

.st5ashamed	0.222	0.024	9.399	0.000	0.222	0.341
.st6uneasy	0.213	0.023	9.107	0.000	0.213	0.305
.st7sit	0.247	0.023	10.721	0.000	0.247	0.343
.st8feelless	0.359	0.021	16.963	0.000	0.359	0.525
.st9nextdoor	0.237	0.024	9.788	0.000	0.237	0.338
.st10nofriend	0.247	0.024	10.230	0.000	0.247	0.347
.st11nowork	0.244	0.025	9.761	0.000	0.244	0.364
.st12plate	0.262	0.023	11.375	0.000	0.262	0.353
Poverty	0.065	0.004	14.444	0.000	1.000	1.000
Personalthrts1	0.072	0.004	16.224	0.000	1.000	1.000
IntrprsnlPrblm	0.049	0.003	14.490	0.000	1.000	1.000
HIVrelatedstgm	0.081	0.003	27.110	0.000	1.000	1.000

SEM Tools: Cronbach's reliability (FitB1)

			Scales		
Test	Poverty	Personalthreats1	Interpersonalproblems	HIVrelatedstigma	Total
alpha	0.7508134	0.7171142	0.7864077	0.9437712	0.8841764
avevar	0.3318976	0.4823565	0.3139008	0.6262823	

© University of Pretoria

CFA round 5: Second-order model (including cs21sickness)

lavaan 0.6.15 ended normally after 122 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of model parameters	60
Number of observations	1437
Model Test User Model:	
Test statistic	2204.848
Degrees of freedom	346
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	35257.711
Degrees of freedom	378
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.947
Tucker-Lewis Index (TLI)	0.942
Root Mean Square Error of Approximation:	
RMSEA	0.061
90 Percent confidence interval – lower	0.059
90 Percent confidence interval – upper	0.064
P-value H_0: RMSEA <= 0.050	0.000
P-value H_0: RMSEA >= 0.080	0.000
Standardized Root Mean Square Residual:	
SRMR	0.065
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Poverty =~						
cs1food	1.000				0.242	0.484
cs2home	1.040	0.054	19.225	0.000	0.252	0.653
cs3water	1.227	0.063	19.457	0.000	0.297	0.632
cs4lighting	1.209	0.061	19.869	0.000	0.293	0.586
cs5work	1.180	0.060	19.653	0.000	0.285	0.571
cs6badhous	1.032	0.056	18.592	0.000	0.250	0.555
Personalthreats1 =~						
cs12illness	1.000				0.256	0.553
cs13Death	1.577	0.068	23.240	0.000	0.404	0.816
cs14neglect	1.256	0.057	21.976	0.000	0.322	0.666
Interpersonalproblms =~						

© University of Pretoria

cs15probm_fam	1.000				0.219	0.558
cs16probm_chld	0.796	0.041	19.307	0.000	0.174	0.596
cs17prb_rltnsh	0.728	0.039	18.453	0.000	0.160	0.542
cs18probm_comm	1.160	0.056	20.678	0.000	0.254	0.680
cs19prob_nei	1.023	0.051	19.862	0.000	0.224	0.613
cs20prbm_wrkmt	0.778	0.042	18.693	0.000	0.171	0.544
cs21sickness	1.065	0.054	19.796	0.000	0.234	0.471
cs22pregnant	0.877	0.047	18.765	0.000	0.192	0.521
HIVrelatedstigma =~						
st2scared	1.000				0.283	0.681
st3blame	2.237	0.055	40.400	0.000	0.633	0.780
st4wrong	2.288	0.056	40.749	0.000	0.647	0.770
st5ashamed	2.306	0.057	40.787	0.000	0.652	0.807
st6uneasy	2.454	0.059	41.559	0.000	0.694	0.830
st7sit	2.431	0.059	41.360	0.000	0.688	0.809
st8feelless	2.018	0.052	38.946	0.000	0.571	0.690
st9nextdoor	2.426	0.059	41.073	0.000	0.686	0.820
st10nofriend	2.426	0.059	41.010	0.000	0.686	0.814
st11nowork	2.326	0.058	40.393	0.000	0.658	0.804
st12plate	2.452	0.059	41.372	0.000	0.694	0.805
Communitystressor =~						
Poverty	1.000				0.362	0.362
Personalthrts1	2.093	0.139	15.075	0.000	0.715	0.715
IntrprsnlPrblm	1.729	0.121	14.243	0.000	0.690	0.690
HIVrelatedstgm	0.738	0.047	15.752	0.000	0.228	0.228

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.cs1food	0.191	0.004	43.283	0.000	0.191	0.766
.cs2home	0.085	0.008	11.090	0.000	0.085	0.573
.cs3water	0.133	0.007	18.856	0.000	0.133	0.601
.cs4lighting	0.164	0.005	30.120	0.000	0.164	0.657
.cs5work	0.169	0.005	31.848	0.000	0.169	0.674
.cs6badhous	0.140	0.007	20.612	0.000	0.140	0.692
.cs12illness	0.149	0.006	23.724	0.000	0.149	0.694
.cs13Death	0.082	0.009	9.183	0.000	0.082	0.335
.cs14neglect	0.130	0.007	19.035	0.000	0.130	0.556
.cs15probm_fam	0.106	0.007	14.659	0.000	0.106	0.689
.cs16probm_chld	0.055	0.007	8.313	0.000	0.055	0.645
.cs17prb_rltnsh	0.061	0.007	9.280	0.000	0.061	0.706
.cs18probm_comm	0.075	0.008	9.779	0.000	0.075	0.538
.cs19prob_nei	0.083	0.007	11.193	0.000	0.083	0.624
.cs20prbm_wrkmt	0.069	0.007	10.150	0.000	0.069	0.704
.cs21sickness	0.191	0.004	46.535	0.000	0.191	0.778
.cs22pregnant	0.099	0.007	13.826	0.000	0.099	0.728
.st2scared	0.093	0.007	13.665	0.000	0.093	0.537
.st3blame	0.257	0.023	11.080	0.000	0.257	0.391
.st4wrong	0.287	0.022	12.896	0.000	0.287	0.406
.st5ashamed	0.227	0.024	9.604	0.000	0.227	0.348
.st6uneasy	0.217	0.023	9.256	0.000	0.217	0.310
.st7sit	0.249	0.023	10.782	0.000	0.249	0.345
.st8feelless	0.359	0.021	16.903	0.000	0.359	0.524
.st9nextdoor	0.230	0.024	9.454	0.000	0.230	0.328

© University of Pretoria

.st10nofriend	0.240	0.024	9.911	0.000	0.240	0.338
.st11nowork	0.236	0.025	9.431	0.000	0.236	0.353
.st12plate	0.261	0.023	11.303	0.000	0.261	0.352
Poverty	0.051	0.004	13.071	0.000	0.869	0.869
Personalthrts1	0.032	0.003	9.876	0.000	0.488	0.488
IntrprsnlPrblm	0.025	0.002	10.728	0.000	0.524	0.524
HIVrelatedstgm	0.076	0.003	26.638	0.000	0.948	0.948
Communtystrssr	0.008	0.001	9.711	0.000	1.000	1.000

SEM Tools: Cronbach's reliability (FitB1)

			Scales		
Test	Poverty	Personalthreats1	Interpersonalproblems	HIVrelatedstigma	Total
alpha	0.7508134	0.7171142	0.7864077	0.9437712	0.8841764
omega	0.7480989	0.7276801	0.7815534	0.9470558	
omega2	0.7480989	0.7276801	0.7815534	0.9470558	
omega3	0.7419148	0.7259475	0.7652448	0.9479202	
avevar	0.3326101	0.4794806	0.3142261	0.6268823	

© University of Pretoria

2.3 PART C: EFA and CFA on Items in the Psychosocial Distresses Scale

2.3.1 Part C: EFA results on items in the psychosocial distresses scale

xF A C T O R
Unrestricted Factor Analysis
Release Version 11.05.01 x64bits, July 2021
Rovira i Virgili University Tarragona, SPAIN
Programming: Urbano Lorenzo-Seva

Mathematical Specification: Urbano Lorenzo-Seva & Pere J. Ferrando
Date: Thursday, July 29, 2021
Time: 12:26:15

DETAILS OF ANALYSIS

Participants' scores data file:	D:\Factor\EFA\PartC.dat.txt
Variable labels file:	D:\Factor\EFA\Labels part C.txt
Method to handle missing values:	Hot-Deck Multiple Imputation in Exploratory Factor Analysis (Lorenzo-Seva & Van Ginkel, 2016)
Missing code value:	999
Number of participants:	1437
Number of variables:	74
Variables included in the analysis:	All
Variables excluded in the analysis:	None
Number of factors:	2
Number of second order factors:	0
Procedure for determining the number of dimensions:	Optimal implementation of Parallel Analysis (PA) (Timmerman, & Lorenzo-Seva, 2011)
Dispersion matrix:	Polychoric Correlations
Robust analyses based on bootstrap:	None
Method for factor extraction:	Un-weighted Least Squares (ULS)
Rotation to achieve factor simplicity:	Promin (Lorenzo-Seva, 1999)
Clever rotation start:	Weighted Varimax
Number of random starts:	100
Maximum number of iterations:	1000
Convergence value:	0.00001000
Factor scores estimates:	Estimates based on linear model

SMOOTHING OF CORRELATION MATRIX (Correlation matrix is not positive definite)

Smoothing algorithm applied:	Sweet Smoothing as proposed by Lorenzo-Seva & Ferrando (2020)
Number of negative eigenvalues =	4
Value of the largest negative eigenvalue =	-0.296
Variables smothered during the process =	V1;V16;V35;V45;V55;V66;V70;V71;V74;
Number of smoothed elements in the correlation matrix =	621 (out of 2701)
Percentage of covariance destroyed =	19.0% (fair)

Correlation matrix before and after the smoothing procedure

ADEQUACY OF THE POLYCHORIC CORRELATION MATRIX

© University of Pretoria

Determinant of the matrix= < 0.000001
Bartlett's statistic = 16239.0 (df = 2701; P = 0.000010)
Kaiser-Meyer-Olkin (KMO) test = 0.00000 (unacceptable)

NORMED ITEM-MSA INDICES

Items	Quartile of sum response scores	Relative difficulty index	Normed MSA
del67marijun	1	0.03479	0.91118
del66smoke	1	0.03793	0.89947
del65alcohol	1	0.05532	0.98100
del70steal	1	0.05567	0.95142
agg64attack	2	0.06507	0.98521
del68fires	2	0.06889	0.98948
dis58obscene	2	0.07550	0.98789
sle41_illusn	2	0.08386	0.98954
sle43_notnom	2	0.08490	0.97513
su50iending	2	0.08733	0.97614
dis59brag	2	0.08733	0.98685
dis57threatn	2	0.09464	0.98975
des61otherprop	2	0.09534	0.98409
sle44_strange	2	0.09603	0.98406
som465vomit	2	0.09638	0.98747
sle40_pin	2	0.09812	0.98754
dis53runaway	2	0.09812	0.98718
sle39i_sound	2	0.09951	0.98905
del69cheat	2	0.10752	0.98528
att14daydream	2	0.11239	0.98695
su48failure	2	0.11552	0.98261
agg62figts	2	0.11935	0.88365
des60ownprop	2	0.12039	0.98491
su49hurting	2	0.12457	0.98298
sle45_repeat	2	0.12596	0.96199
su47worrthless	3	0.13048	0.98434
sle38_slepdific	3	0.13257	0.98594
dis51parent	3	0.13848	0.87239
dis56tease	3	0.14266	0.98681
sle42_storeup	3	0.14440	0.98499
tep1jealous	3	0.14823	0.94603
dep27_cry	3	0.15414	0.98581
anx20bitenail	3	0.15866	0.98968
som464skin	3	0.15936	0.98135
tep5unashamed	3	0.15971	0.99010
att15distract	3	0.16145	0.98771
sle36_sleepless	3	0.16319	0.98311
dis52rules	3	0.16493	0.95874
anx22sake	3	0.16527	0.98634
agg63troubl	3	0.16701	0.98276
lon34_hurt	3	0.17154	0.98945
lon30_nolove	3	0.17432	0.97996
dep29_unhapp	3	0.18198	0.98759
dis54sturbon	3	0.18476	0.97782
lon32_talk	3	0.18789	0.98719

© University of Pretoria

dis55talkmuch	3	0.18789	0.95858
att13confused	3	0.19346	0.98436
dep28_overtired	3	0.19763	0.98979
tep7embarras	3	0.20181	0.98736
tep8think	3	0.20216	0.98564
att10attention	3	0.20355	0.98436
sle35_nigtmare	3	0.20807	0.94486
anx21nervous	3	0.20877	0.98485
anx18trapme	3	0.21051	0.98423
lon31_lonely	3	0.21294	0.98338
att9fail_fin	3	0.21955	0.98849
sle37_slepmore	3	0.22060	0.98024
som461_pain	3	0.22199	0.98537
att11mind	3	0.22234	0.98666
att12sitting	3	0.22338	0.98883
tep6guilty	3	0.23939	0.98111
tep3sudden	4	0.26026	0.98052
tep2teased	4	0.26096	0.98862
tep4tempr	4	0.26827	0.98540
dep26_noteat	4	0.27488	0.97420
anx24worry	4	0.27731	0.98362
som463stomac	4	0.27801	0.97417
lon33_myself	4	0.29228	0.98112
anx23fearful	4	0.30063	0.98033
anx19timid	4	0.31037	0.98763
dep25no_joy	4	0.31872	0.98175
som462headach	4	0.33994	0.97192
anx17dobad	4	0.35108	0.95966
anx16afraid	4	0.43111	0.86655

Number of items proposed to be removed: NONE

Values of MSA below .50 suggest that the item does not measure the same domain as the remaining items in the pool, and so that it should be removed. At the same time, for a normal-range test, an optimal pool of items should have a large spread of relative difficulty indices, and each quartile should have a similar number of items. When removing items from the pool, all these aspects should be taken into account. Sometimes, the conclusion is that new items should be added to the pool of items.

EXPLAINED VARIANCE BASED ON EIGENVALUES

Variable	Eigenvalue	Proportion of variance	Cumulative proportion of variance
1	30.41895	0.41107	0.41107
2	4.44754	0.06010	0.47117
3	2.66733	0.03604	
4	2.26634	0.03063	
5	1.70328	0.02302	
6	1.53825	0.02079	
7	1.34898	0.01823	
8	1.23587	0.01670	
9	1.14388	0.01546	
10	1.01728	0.01375	
11	0.99035	0.01338	
12	0.93268	0.01260	
13	0.90528	0.01223	
14	0.88672	0.01198	

© University of Pretoria

15	0.85847	0.01160
16	0.84449	0.01141
17	0.83035	0.01122
18	0.81873	0.01106
19	0.78683	0.01063
20	0.75908	0.01026
21	0.74358	0.01005
22	0.71086	0.00961
23	0.70466	0.00952
24	0.68236	0.00922
25	0.66832	0.00903
26	0.64363	0.00870
27	0.63493	0.00858
28	0.59884	0.00809
29	0.58569	0.00791
30	0.58337	0.00788
31	0.53645	0.00725
32	0.53173	0.00719
33	0.51007	0.00689
34	0.48839	0.00660
35	0.46597	0.00630
36	0.44902	0.00607
37	0.43879	0.00593
38	0.42322	0.00572
39	0.40910	0.00553
40	0.40260	0.00544
41	0.37586	0.00508
42	0.37135	0.00502
43	0.35201	0.00476
44	0.32538	0.00440
45	0.31560	0.00426
46	0.31326	0.00423
47	0.29674	0.00401
48	0.28900	0.00391
49	0.27949	0.00378
50	0.26555	0.00359
51	0.25922	0.00350
52	0.23682	0.00320
53	0.23167	0.00313
54	0.22862	0.00309
55	0.21650	0.00293
56	0.21495	0.00290
57	0.19538	0.00264
58	0.18424	0.00249
59	0.17650	0.00239
60	0.16353	0.00221
61	0.14664	0.00198
62	0.13494	0.00182
63	0.12930	0.00175
64	0.12524	0.00169
65	0.10440	0.00141
66	0.10058	0.00136
67	0.08092	0.00109

© University of Pretoria

68	0.07471	0.00101
69	0.06279	0.00085
70	0.04663	0.00063
71	0.03914	0.00053
72	0.03112	0.00042
73	0.01963	0.00027
74	0.00000	0.00000

UNROTATED LOADING MATRIX

Variable	Factor 1 Internalising distresses	Factor 2 Externalising distresses	Communality
tep1jealous	0.305	-0.118	0.107
tep2teased	0.683	0.200	0.507
tep3sudden	0.627	0.069	0.398
tep4tempr	0.608	0.069	0.374
tep5unashamed	0.648	-0.054	0.423
tep6guilty	0.584	0.058	0.345
tep7embarras	0.684	0.148	0.489
tep8think	0.643	-0.142	0.434
att9fail_fin	0.641	0.032	0.412
att10attention	0.673	0.128	0.469
att11mind	0.665	0.227	0.493
att12sitting	0.667	0.150	0.468
att13confused	0.660	0.238	0.493
att14daydream	0.680	0.080	0.469
att15distract	0.703	0.084	0.501
anx16afraid	0.248	0.110	0.074
anx17dobad	0.513	0.274	0.338
anx18trapme	0.611	0.162	0.399
anx19timid	0.602	0.259	0.430
anx20bitenail	0.617	-0.027	0.381
anx21nervous	0.655	0.099	0.438
anx22sake	0.727	0.225	0.579
anx23fearful	0.628	0.280	0.473
anx24worry	0.648	0.331	0.529
dep25no_joy	0.560	0.304	0.407
dep26_noteat	0.506	0.253	0.320
dep27_cry	0.717	0.245	0.574
dep28_overtired	0.745	0.252	0.619
dep29_unhapp	0.690	0.271	0.549
lon30_nolove	0.616	0.264	0.450
lon31_lonely	0.629	0.393	0.550
lon32_talk	0.612	0.277	0.451
lon33_myself	0.607	0.187	0.404
lon34_hurt	0.737	0.221	0.592
sle35_nigtmare	0.344	0.047	0.121
sle36_sleepless	0.649	0.160	0.446
sle37_slepmore	0.552	0.016	0.305
sle38_slepdific	0.678	0.133	0.478
sle39i_sound	0.753	-0.033	0.568
sle40_pin	0.733	-0.074	0.542
sle41_illusn	0.784	-0.121	0.629

© University of Pretoria

sle42_storeup	0.709	-0.139	0.522
sle43_notnom	0.637	-0.087	0.413
sle44_strange	0.748	-0.222	0.609
sle45_repeat	0.366	-0.088	0.142
som461_pain	0.641	0.197	0.449
som462headach	0.546	0.293	0.384
som463stomac	0.540	0.295	0.378
som464skin	0.582	0.083	0.345
som465vomit	0.666	-0.123	0.459
su47worrthless	0.744	0.142	0.574
su48failure	0.696	0.036	0.486
su49hurting	0.683	0.144	0.487
su50iending	0.558	0.187	0.346
dis51parent	0.289	-0.229	0.136
dis52rules	0.551	-0.437	0.494
dis53runaway	0.681	-0.352	0.588
dis54sturbon	0.681	-0.231	0.517
dis55talkmuch	0.500	-0.027	0.250
dis56tease	0.715	-0.381	0.657
dis57threatn	0.748	-0.385	0.707
dis58obscene	0.808	-0.351	0.776
dis59brag	0.752	-0.362	0.697
des60ownprop	0.682	-0.279	0.543
des61otherprop	0.763	-0.362	0.713
agg62figts	0.275	-0.269	0.148
agg63troubl	0.623	-0.343	0.506
agg64attack	0.747	-0.442	0.753
del65alcohol	0.691	-0.398	0.636
del66smoke	0.411	-0.209	0.213
del67marijun	0.432	-0.197	0.225
del68fires	0.832	-0.377	0.834
del69cheat	0.768	-0.311	0.686
del70steal	0.416	-0.184	0.207

ROTATED LOADING MATRIX

Variable	Factor 1 Internalising distresses	Factor 2 Externalising distresses
tep1jealous	0.006	0.322
tep2teased	0.700	0.015
tep3sudden	0.474	0.188
tep4tempr	0.462	0.180
tep5unashamed	0.304	0.385
tep6guilty	0.432	0.185
tep7embarras	0.624	0.094
tep8think	0.172	0.516
att9fail_fin	0.427	0.251
att10attention	0.587	0.120
att11mind	0.728	-0.033
att12sitting	0.616	0.084
att13confused	0.743	-0.053
att14daydream	0.521	0.196

© University of Pretoria

att15distract	0.541	0.200
anx16afraid	0.310	-0.052
anx17dobad	0.708	-0.177
anx18trapme	0.600	0.040
anx19timid	0.739	-0.112
anx20bitenail	0.327	0.329
anx21nervous	0.534	0.155
anx22sake	0.763	-0.003
anx23fearful	0.785	-0.132
anx24worry	0.872	-0.200
dep25no_joy	0.781	-0.200
dep26_noteat	0.673	-0.148
dep27_cry	0.786	-0.036
dep28_overtired	0.814	-0.035
dep29_unhapp	0.809	-0.090
lon30_nolove	0.755	-0.114
lon31_lonely	0.952	-0.303
lon32_talk	0.771	-0.134
lon33_myself	0.636	-0.000
lon34_hurt	0.763	0.008
sle35_nigtmare	0.274	0.089
sle36_sleepless	0.621	0.060
sle37_slepmore	0.351	0.233
sle38_slepdific	0.598	0.115
sle39i_sound	0.398	0.402
sle40_pin	0.326	0.454
sle41_illusn	0.287	0.549
sle42_storeup	0.216	0.542
sle43_notnom	0.249	0.430
sle44_strange	0.116	0.687
sle45_repeat	0.088	0.304
som461_pain	0.670	0.000
som462headach	0.756	-0.190
som463stomac	0.755	-0.196
som464skin	0.467	0.146
som465vomit	0.214	0.498
su47worrthless	0.651	0.132
su48failure	0.466	0.271
su49hurting	0.617	0.100
su50iending	0.606	-0.023
dis51parent	-0.167	0.483
dis52rules	-0.318	0.921
dis53runaway	-0.115	0.853
dis54sturbon	0.063	0.669
dis55talkmuch	0.256	0.275
dis56tease	-0.138	0.913
dis57threatn	-0.124	0.934
dis58obscene	-0.039	0.910
dis59brag	-0.088	0.901
des60ownprop	-0.007	0.742
des61otherprop	-0.081	0.906
agg62figts	-0.233	0.536
agg63troubl	-0.137	0.813

© University of Pretoria

agg64attack	-0.208	1.020
del65alcohol	-0.176	0.927
del66smoke	-0.064	0.509
del67marijun	-0.034	0.500
del68fires	-0.063	0.961
del69cheat	-0.003	0.831
del70steal	-0.024	0.473

ROTATED LOADING MATRIX (loadings lower than absolute 0.300 omitted)

Variable	Factor 1 Internalising distresses	Factor 2 Externalising distresses
tep1jealous		0.322
tep2teased	0.700	
tep3sudden	0.474	
tep4tempr	0.462	
tep5unashamed	0.304	0.385
tep6guilty	0.432	
tep7embarras	0.624	
tep8think		0.516
att9fail_fin	0.427	
att10attention	0.587	
att11mind	0.728	
att12sitting	0.616	
att13confused	0.743	
att14daydream	0.521	
att15distract	0.541	
anx16afraid	0.310	
anx17dobad	0.708	
anx18trapme	0.600	
anx19timid	0.739	
anx20bitenail	0.327	0.329
anx21nervous	0.534	
anx22sake	0.763	
anx23fearful	0.785	
anx24worry	0.872	
dep25no_joy	0.781	
dep26_noteat	0.673	
dep27_cry	0.786	
dep28_overtired	0.814	
dep29_unhapp	0.809	
lon30_nolove	0.755	
lon31_lonely	0.952	-0.303
lon32_talk	0.771	
lon33_myself	0.636	
lon34_hurt	0.763	
sle35_nigtmare		
sle36_sleepless		0.621
sle37_slepmore		0.351
sle38_slepdific		0.598
sle39i_sound	0.398	0.402
sle40_pin	0.326	0.454

© University of Pretoria

sle41_illusn		0.549
sle42_storeup		0.542
sle43_notnom		0.430
sle44_strange		0.687
sle45_repeat		0.304
som461_pain	0.670	
som462headach	0.756	
som463stomac	0.755	
som464skin	0.467	
som465vomit		0.498
su47worrthless	0.651	
su48failure	0.466	
su49hurting	0.617	
su50iending	0.606	
dis51parent		0.483
dis52rules	-0.318	0.921
dis53runaway		0.853
dis54sturbon		0.669
dis55talkmuch		
dis56tease		0.913
dis57threatn		0.934
dis58obscene		0.910
dis59brag		0.901
des60ownprop		0.742
des61otherprop		0.906
agg62figts		0.536
agg63troubl		0.813
agg64attack		1.020
del65alcohol		0.927
del66smoke		0.509
del67marijun		0.500
del68fires		0.961
del69cheat		0.831
del70steal		0.473

EXPLAINED VARIANCE OF ROTATED FACTORS AND RELIABILITY OF PHI-INFORMATION OBLIQUE EAP SCORE (Ferrando & Lorenzo-Seva, 2016)

	Factor	Variance	ORION	Factor Determinacy Index
1	Internalizing distresses	18.685	0.975	0.987
2	Externalizing distresses	15.225	0.978	0.989

© University of Pretoria

2.3.2 PART C: CFA results on items in the psychosocial distress scale

In the CFA first and second order models, a good fit was achieved.

CFA round 1: First-order model

lavaan 0.6-7 ended normally after 329 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	239
Number of observations	1437
Model Test User Model:	
Test statistic	6227.267
Degrees of freedom	2536
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	203725.689
Degrees of freedom	2701
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.982
Tucker-Lewis Index (TLI)	0.980
Root Mean Square Error of Approximation:	
RMSEA	0.032
90 Percent confidence interval – lower	0.031
90 Percent confidence interval – upper	0.033
P-value RMSEA <= 0.05	1.000
Standardized Root Mean Square Residual:	
SRMR	0.051
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Anger =~						
tep1jealous	1.000				0.284	0.532
tep2teased	1.614	0.031	52.505	0.000	0.458	0.669
tep3sudden	1.419	0.028	51.002	0.000	0.403	0.606
tep4tempr	1.392	0.028	50.282	0.000	0.396	0.585
tep5unashamed	1.209	0.025	47.719	0.000	0.344	0.565
tep6guilty	1.271	0.026	48.965	0.000	0.361	0.563
tep7embarras	1.389	0.027	51.366	0.000	0.395	0.647
tep8think	1.317	0.027	49.500	0.000	0.374	0.611

© University of Pretoria

Inattentiveness =~						
att9fail_fin	1.000				0.371	0.604
att10attention	1.066	0.019	56.242	0.000	0.395	0.637
att11mind	1.124	0.020	56.755	0.000	0.417	0.633
att12sitting	1.141	0.020	56.346	0.000	0.423	0.626
att13confused	1.059	0.019	54.686	0.000	0.393	0.615
att14daydream	0.791	0.016	50.432	0.000	0.294	0.564
att15distract	0.973	0.017	55.784	0.000	0.361	0.635
Anxiety =~						
anx16afraid	1.000			0.000	0.380	0.509
anx17dobad	1.088	0.021	51.916	0.000	0.413	0.523
anx18trapme	1.023	0.020	51.825	0.000	0.388	0.582
anx19timid	1.157	0.021	54.522	0.000	0.440	0.618
anx20bitenail	0.892	0.018	48.295	0.000	0.339	0.546
anx21nervous	1.080	0.020	53.413	0.000	0.410	0.645
anx22sake	1.078	0.020	53.643	0.000	0.410	0.690
anx23fearful	1.185	0.021	55.242	0.000	0.450	0.651
anx24worry	1.220	0.022	55.359	0.000	0.463	0.659
Depression =~						
dep25no_joy	1.000				0.412	0.564
dep26_noteat	0.860	0.017	49.713	0.000	0.354	0.503
dep27_cry	0.968	0.018	53.955	0.000	0.398	0.684
dep28_overtird	1.143	0.020	56.756	0.000	0.470	0.740
dep29_unhapp	0.994	0.018	54.562	0.000	0.409	0.668
Loneliness =~						
lon30_nolove	1.000			0.000	0.347	0.574
lon31_lonely	1.159	0.022	52.056	0.000	0.403	0.614
lon32_talk	0.976	0.019	50.909	0.000	0.339	0.579
lon33_myself	1.205	0.023	52.736	0.000	0.418	0.586
lon34_hurt	1.171	0.022	54.132	0.000	0.407	0.714
Sleepunrest =~						
sle35_nigtmare	1.000				0.400	0.613
sle36_sleeplss	0.825	0.015	53.239	0.000	0.330	0.565
sle37_slepmore	0.834	0.016	50.657	0.000	0.334	0.473
sle38_slepdifc	0.746	0.014	52.749	0.000	0.299	0.567
Psychosis_ =~						
.sle39i_sound	1.000			0.000	0.317	0.652
.sle40_pin	0.945	0.020	47.735	0.000	0.299	0.616
.sle41_illusn	0.932	0.019	48.337	0.000	0.295	0.661
.sle42_storeup	1.161	0.023	50.032	0.000	0.368	0.627
.sle43_notnom	0.750	0.018	42.831	0.000	0.238	0.521
.sle44_strange	0.958	0.020	48.511	0.000	0.303	0.652
.sle45_repeat	1.058	0.021	50.325	0.000	0.335	0.665
Somatisation =~						
som461_pain	1.000				0.437	0.701
som462headach	0.919	0.017	54.161	0.000	0.402	0.614
som463stomac	0.864	0.016	53.145	0.000	0.378	0.597
som464skin	0.739	0.015	50.262	0.000	0.323	0.598
som465vomit	0.623	0.013	48.339	0.000	0.273	0.607
Suicide =~						
su47worrthless	1.000			0.000	0.413	0.775
su48failure	0.825	0.016	52.663	0.000	0.340	0.713
su49hurting	0.848	0.016	52.803	0.000	0.350	0.708

© University of Pretoria

su50iending	0.555	0.013	43.524	0.000	0.229	0.519
Disobedience =~						
dis51parent	1.000				0.347	0.687
dis52rules	1.058	0.024	44.221	0.000	0.366	0.680
dis53runaway	1.016	0.023	43.887	0.000	0.352	0.760
Disruptiveness =~						
.dis54sturbon	1.000				0.429	0.669
.dis55talkmuch	0.699	0.016	44.619	0.000	0.300	0.454
.dis56tease	0.913	0.017	52.816	0.000	0.392	0.710
.dis57threatn	0.744	0.015	50.982	0.000	0.319	0.703
.dis58obscene	0.714	0.014	50.350	0.000	0.307	0.732
.dis59brag	0.717	0.014	49.866	0.000	0.308	0.691
Destructiveness =~						
des60ownprop	1.000				0.379	0.732
des61otherprop	1.006	0.021	48.712	0.000	0.381	0.817
Aggressiveness =~						
agg62figts	1.000				0.293	0.607
agg63troubl	1.418	0.033	43.461	0.000	0.415	0.726
agg64attack	0.992	0.024	41.508	0.000	0.290	0.758
Delinquency =~						
del65alcohol	1.000				0.216	0.603
del66smoke	0.927	0.024	37.987	0.000	0.200	0.643
del67marijun	0.925	0.024	38.221	0.000	0.199	0.671
del68fires	1.522	0.036	42.508	0.000	0.328	0.815
del69cheat	1.888	0.043	43.534	0.000	0.407	0.826
del70steal	1.310	0.032	41.084	0.000	0.282	0.776

Covariances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Anger ~~						
Inattentivenss	0.082	0.002	42.759	0.000	0.774	0.774
Anxiety	0.089	0.002	43.955	0.000	0.824	0.824
Depression	0.090	0.002	40.259	0.000	0.773	0.773
Loneliness	0.075	0.002	39.093	0.000	0.765	0.765
Sleepunrest	0.086	0.002	35.544	0.000	0.757	0.757
Psychosis_	0.064	0.002	38.495	0.000	0.713	0.713
Somatisation	0.081	0.002	38.059	0.000	0.653	0.653
Suicide	0.079	0.002	36.946	0.000	0.671	0.671
Disobedience	0.062	0.002	32.460	0.000	0.631	0.631
Disruptiveness	0.085	0.002	39.384	0.000	0.699	0.699
Destructivenss	0.062	0.002	28.170	0.000	0.581	0.581
Aggressiveness	0.050	0.002	29.820	0.000	0.602	0.602
Delinquency	0.037	0.001	33.444	0.000	0.602	0.602
Inattentiveness ~~						
Anxiety	0.115	0.002	46.528	0.000	0.814	0.814
Depression	0.117	0.003	41.199	0.000	0.768	0.768
Loneliness	0.111	0.003	42.191	0.000	0.858	0.858
Sleepunrest	0.130	0.003	39.594	0.000	0.879	0.879
Psychosis_	0.087	0.002	40.221	0.000	0.736	0.736
Somatisation	0.106	0.003	38.821	0.000	0.652	0.652
Suicide	0.104	0.003	37.265	0.000	0.679	0.679
Disobedience	0.060	0.002	26.032	0.000	0.467	0.467
Disruptiveness	0.104	0.003	39.416	0.000	0.654	0.654

© University of Pretoria

Destructivenss	0.084	0.003	28.398	0.000	0.596	0.596
Aggressiveness	0.057	0.002	27.501	0.000	0.526	0.526
Delinquency	0.045	0.001	33.596	0.000	0.559	0.559
Anxiety ~~						
Depression	0.122	0.003	43.071	0.000	0.783	0.783
Loneliness	0.105	0.002	42.474	0.000	0.798	0.798
Sleepunrest	0.129	0.003	40.777	0.000	0.851	0.851
Psychosis_	0.079	0.002	40.479	0.000	0.652	0.652
Somatisation	0.120	0.003	42.575	0.000	0.722	0.722
Suicide	0.086	0.002	36.288	0.000	0.547	0.547
Disobedience	0.056	0.002	27.535	0.000	0.423	0.423
Disruptiveness	0.096	0.002	39.754	0.000	0.590	0.590
Destructivenss	0.073	0.003	28.403	0.000	0.506	0.506
Aggressiveness	0.044	0.002	25.526	0.000	0.397	0.397
Delinquency	0.037	0.001	33.103	0.000	0.456	0.456
Depression ~~						
Loneliness	0.125	0.003	39.265	0.000	0.873	0.873
Sleepunrest	0.139	0.004	35.175	0.000	0.841	0.841
Psychosis_	0.087	0.002	36.155	0.000	0.664	0.664
Somatisation	0.133	0.003	38.030	0.000	0.740	0.740
Suicide	0.126	0.004	36.035	0.000	0.743	0.743
Disobedience	0.057	0.003	21.710	0.000	0.399	0.399
Disruptiveness	0.094	0.003	32.599	0.000	0.529	0.529
Destructivenss	0.065	0.003	20.017	0.000	0.420	0.420
Aggressiveness	0.053	0.002	21.723	0.000	0.441	0.441
Delinquency	0.043	0.001	29.145	0.000	0.489	0.489
Loneliness ~~						
Sleepunrest	0.123	0.003	35.348	0.000	0.882	0.882
Psychosis_	0.072	0.002	35.214	0.000	0.657	0.657
Somatisation	0.108	0.003	36.311	0.000	0.710	0.710
Suicide	0.111	0.003	35.395	0.000	0.776	0.776
Disobedience	0.049	0.002	21.119	0.000	0.406	0.406
Disruptiveness	0.082	0.003	32.447	0.000	0.547	0.547
Destructivenss	0.065	0.003	22.249	0.000	0.497	0.497
Aggressiveness	0.043	0.002	21.007	0.000	0.420	0.420
Delinquency	0.034	0.001	27.219	0.000	0.448	0.448
Sleepunrest ~~						
Psychosis_	0.107	0.003	35.247	0.000	0.843	0.843
Somatisation	0.132	0.004	33.268	0.000	0.754	0.754
Suicide	0.106	0.004	27.849	0.000	0.644	0.644
Disobedience	0.064	0.003	18.472	0.000	0.459	0.459
Disruptiveness	0.122	0.004	32.612	0.000	0.712	0.712
Destructivenss	0.093	0.004	21.189	0.000	0.615	0.615
Aggressiveness	0.064	0.003	21.285	0.000	0.546	0.546
Delinquency	0.056	0.002	28.990	0.000	0.651	0.651
Psychosis_ ~~						
Somatisation	0.086	0.002	34.495	0.000	0.618	0.618
Suicide	0.084	0.003	33.006	0.000	0.640	0.640
Disobedience	0.071	0.002	28.918	0.000	0.644	0.644
Disruptiveness	0.102	0.003	38.659	0.000	0.750	0.750
Destructivenss	0.082	0.003	27.988	0.000	0.687	0.687
Aggressiveness	0.061	0.002	28.799	0.000	0.656	0.656
Delinquency	0.052	0.002	33.863	0.000	0.758	0.758

© University of Pretoria

Somatisation ~~						
Suicide	0.099	0.003	30.408	0.000	0.546	0.546
Disobedience	0.051	0.003	18.231	0.000	0.336	0.336
Disruptiveness	0.105	0.003	33.976	0.000	0.558	0.558
Destructivenss	0.072	0.003	20.957	0.000	0.438	0.438
Aggressiveness	0.054	0.003	21.628	0.000	0.423	0.423
Delinquency	0.047	0.002	29.745	0.000	0.502	0.502
Suicide ~~						
Disobedience	0.075	0.003	23.439	0.000	0.522	0.522
Disruptiveness	0.093	0.003	29.835	0.000	0.523	0.523
Destructivenss	0.075	0.004	19.850	0.000	0.479	0.479
Aggressiveness	0.059	0.003	22.036	0.000	0.488	0.488
Delinquency	0.044	0.002	27.242	0.000	0.498	0.498
Disobedience ~~						
Disruptiveness	0.109	0.003	31.332	0.000	0.735	0.735
Destructivenss	0.079	0.004	20.443	0.000	0.600	0.600
Aggressiveness	0.074	0.003	25.054	0.000	0.725	0.725
Delinquency	0.052	0.002	27.717	0.000	0.700	0.700
Disruptiveness ~~						
Destructivenss	0.127	0.004	29.218	0.000	0.782	0.782
Aggressiveness	0.094	0.003	30.003	0.000	0.752	0.752
Delinquency	0.072	0.002	34.259	0.000	0.780	0.780
Destructiveness ~~						
Aggressiveness	0.082	0.004	20.480	0.000	0.743	0.743
Delinquency	0.062	0.002	25.583	0.000	0.758	0.758
Aggressiveness ~~						
Delinquency	0.052	0.002	26.842	0.000	0.823	0.823

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.tep1jealous	0.205	0.015	13.900	0.000	0.205	0.717
.tep2teased	0.260	0.017	15.384	0.000	0.260	0.552
.tep3sudden	0.279	0.016	17.786	0.000	0.279	0.632
.tep4tempr	0.301	0.016	19.010	0.000	0.301	0.658
.tep5unashamed	0.251	0.019	13.046	0.000	0.251	0.680
.tep6guilty	0.281	0.015	18.232	0.000	0.281	0.683
.tep7embarras	0.216	0.016	13.546	0.000	0.216	0.581
.tep8think	0.235	0.016	14.639	0.000	0.235	0.626
.att9fail_fin	0.240	0.015	15.966	0.000	0.240	0.635
.att10attention	0.229	0.017	13.786	0.000	0.229	0.594
.att11mind	0.260	0.018	14.778	0.000	0.260	0.599
.att12sitting	0.278	0.018	15.058	0.000	0.278	0.608
.att13confused	0.253	0.018	13.731	0.000	0.253	0.621
.att14daydream	0.184	0.018	10.243	0.000	0.184	0.681
.att15distract	0.193	0.016	11.801	0.000	0.193	0.597
.anx16afraid	0.413	0.014	29.573	0.000	0.413	0.741
.anx17dobad	0.453	0.016	28.666	0.000	0.453	0.726
.anx18trapme	0.295	0.019	15.776	0.000	0.295	0.662
.anx19timid	0.312	0.016	19.900	0.000	0.312	0.618
.anx20bitenail	0.271	0.020	13.383	0.000	0.271	0.702
.anx21nervous	0.236	0.017	13.784	0.000	0.236	0.584
.anx22sake	0.185	0.018	10.288	0.000	0.185	0.524
.anx23fearful	0.275	0.015	17.806	0.000	0.275	0.576

© University of Pretoria

.anx24worry	0.280	0.017	16.697	0.000	0.280	0.566
.dep25no_joy	0.363	0.016	22.414	0.000	0.363	0.682
.dep26_noteat	0.370	0.017	22.198	0.000	0.370	0.747
.dep27_cry	0.180	0.018	9.743	0.000	0.180	0.532
.dep28_overtird	0.182	0.019	9.716	0.000	0.182	0.452
.dep29_unhapp	0.208	0.018	11.505	0.000	0.208	0.554
.lon30_nolove	0.246	0.018	13.747	0.000	0.246	0.671
.lon31_lonely	0.268	0.018	14.693	0.000	0.268	0.623
.lon32_talk	0.228	0.015	14.893	0.000	0.228	0.665
.lon33_myself	0.334	0.017	20.052	0.000	0.334	0.656
.lon34_hurt	0.159	0.016	9.976	0.000	0.159	0.490
.sle35_nigtmare	0.265	0.019	13.856	0.000	0.265	0.624
.sle36_sleeplss	0.232	0.018	13.089	0.000	0.232	0.681
.sle37_slepmore	0.386	0.020	19.144	0.000	0.386	0.776
.sle38_slepdifc	0.188	0.016	11.536	0.000	0.188	0.678
.sle39i_sound	0.136	0.017	7.960	0.000	0.136	0.575
.sle40_pin	0.146	0.017	8.519	0.000	0.146	0.620
.sle41_illusn	0.112	0.016	7.055	0.000	0.112	0.563
.sle42_storeup	0.209	0.020	10.660	0.000	0.209	0.607
.sle43_notnom	0.151	0.016	9.195	0.000	0.151	0.728
.sle44_strange	0.124	0.016	7.935	0.000	0.124	0.575
.sle45_repeat	0.142	0.015	9.435	0.000	0.142	0.558
.som461_pain	0.198	0.016	12.187	0.000	0.198	0.509
.som462headach	0.267	0.014	19.207	0.000	0.267	0.623
.som463stomac	0.257	0.014	18.590	0.000	0.257	0.643
.som464skin	0.188	0.014	13.078	0.000	0.188	0.643
.som465vomit	0.127	0.014	9.130	0.000	0.127	0.632
.su47worrthless	0.113	0.018	6.301	0.000	0.113	0.399
.su48failure	0.112	0.014	7.807	0.000	0.112	0.491
.su49hurting	0.122	0.015	8.246	0.000	0.122	0.499
.su50iending	0.142	0.015	9.681	0.000	0.142	0.730
.dis51parent	0.135	0.015	9.280	0.000	0.135	0.529
.dis52rules	0.157	0.015	10.417	0.000	0.157	0.538
.dis53runaway	0.091	0.016	5.584	0.000	0.091	0.423
.dis54sturbon	0.227	0.020	11.456	0.000	0.227	0.552
.dis55talkmuch	0.348	0.020	17.353	0.000	0.348	0.794
.dis56tease	0.151	0.017	8.639	0.000	0.151	0.495
.dis57threatn	0.105	0.015	6.980	0.000	0.105	0.506
.dis58obscene	0.082	0.015	5.481	0.000	0.082	0.464
.dis59brag	0.104	0.015	6.772	0.000	0.104	0.523
.des60ownprop	0.125	0.021	5.964	0.000	0.125	0.465
.des61otherprop	0.072	0.020	3.567	0.000	0.072	0.332
.agg62figts	0.146	0.014	10.199	0.000	0.146	0.631
.agg63troubl	0.155	0.019	8.250	0.000	0.155	0.474
.agg64attack	0.062	0.014	4.491	0.000	0.062	0.426
.del65alcohol	0.081	0.013	6.444	0.000	0.081	0.636
.del66smoke	0.057	0.012	4.650	0.000	0.057	0.587
.del67marijun	0.049	0.012	4.163	0.000	0.049	0.550
.del68fires	0.054	0.015	3.659	0.000	0.054	0.335
.del69cheat	0.077	0.017	4.417	0.000	0.077	0.318
.del70steal	0.053	0.014	3.901	0.000	0.053	0.398
Anger	0.081	0.003	29.910	0.000	1.000	1.000
Inattentivenss	0.138	0.004	33.750	0.000	1.000	1.000

© University of Pretoria

Anxiety	0.144	0.004	33.871	0.000	1.000	1.000
Depression	0.169	0.006	28.633	0.000	1.000	1.000
Loneliness	0.121	0.004	27.482	0.000	1.000	1.000
Sleepunrest	0.160	0.008	20.593	0.024	1.000	1.000
Psychosis_	0.100	0.004	27.724	0.000	1.000	1.000
Somatisation	0.191	0.006	29.496	0.000	1.000	1.000
Suicide	0.170	0.007	23.663	0.000	1.000	1.000
Disobedience	0.120	0.007	18.201	0.000	1.000	1.000
Disruptiveness	0.184	0.006	28.575	0.000	1.000	1.000
Destructivenss	0.143	0.013	11.162	0.000	1.000	1.000
Aggressiveness	0.086	0.005	15.733	0.000	1.000	1.000
Delinquency	0.046	0.002	20.597	0.000	1.000	1.000

Cronbach's reliability (FitC) for:

(i) Internalizing distress scales:

	Anger	Inattentiveness	Anxiety	Depression	Loneliness
alpha	0.8164989	0.8118963	0.8363336	0.7648584	0.7527557

	Sleepunrest	Psychosis	Somatisation	Suicide	Total
alpha	0.6375590	0.8276469	0.7617381	0.7811904	0.9560213

(ii) Externalising distress scales

	Disobedience	Disruptiveness	Destructiveness	Aggressiveness	Delinquency	Total
alpha	0.7531164	0.8123423	0.7457065	0.7299398	0.8807077	0.9243309

(iii) Entire psychosocial distress scale

	Grand total
alpha	0.964

© University of Pretoria

CFA round 1: Second-order model on psychosocial distress construct

lavaan 0.6-7 ended normally after 80 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	162
Number of observations	1437

Model Test User Model:

Test statistic	9970.638
Degrees of freedom	2613
P-value (Chi-square)	0.000

Model Test Baseline Model:

Test statistic	203725.689
Degrees of freedom	2701
P-value	0.000

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.963
Tucker-Lewis Index (TLI)	0.962

Root Mean Square Error of Approximation:

RMSEA	0.044
90 Percent confidence interval – lower	0.043
90 Percent confidence interval – upper	0.045
P-value RMSEA <= 0.05	1.000

Standardized Root Mean Square Residual:

SRMR	0.069

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Anger =~						
tep1jealous	1.000			0.000	0.284	0.531
tep2teased	1.615	0.031	52.407	0.000	0.459	0.669
tep3sudden	1.420	0.028	50.913	0.000	0.403	0.606
tep4tempr	1.392	0.028	50.173	0.000	0.395	0.584
tep5unashamed	1.213	0.025	47.677	0.000	0.344	0.566
tep6guilty	1.270	0.026	48.827	0.000	0.360	0.562
tep7embarras	1.392	0.027	51.278	0.000	0.395	0.648
tep8think	1.318	0.027	49.386	0.000	0.374	0.611
Inattentiveness =~						
att9fail_fin	1.000				0.374	0.608
att10attention	1.060	0.019	56.280	0.000	0.396	0.638
att11mind	1.108	0.020	56.650	0.000	0.414	0.628
att12sitting	1.129	0.020	56.304	0.000	0.422	0.623
att13confused	1.048	0.019	54.633	0.000	0.391	0.613

© University of Pretoria

att14daydream	0.789	0.016	50.520	0.000	0.295	0.567
att15distract	0.968	0.017	55.857	0.000	0.361	0.636
Anxiety =~						
anx16afraid	1.000			0.000	0.375	0.502
anx17dobad	1.087	0.021	51.275	0.000	0.407	0.515
anx18trapme	1.042	0.020	51.457	0.000	0.391	0.585
anx19timid	1.158	0.021	53.894	0.000	0.434	0.611
anx20bitenail	0.920	0.019	48.254	0.000	0.345	0.556
anx21nervous	1.107	0.021	53.135	0.000	0.415	0.652
anx22sake	1.102	0.021	53.245	0.000	0.413	0.696
anx23fearful	1.197	0.022	54.688	0.000	0.449	0.649
anx24worry	1.231	0.022	54.765	0.000	0.461	0.656
Depression =~						
dep25no_joy	1.000				0.405	0.555
dep26_noteat	0.868	0.018	49.011	0.000	0.352	0.499
dep27_cry	0.992	0.019	53.447	0.000	0.402	0.690
dep28_overtird	1.173	0.021	56.172	0.000	0.475	0.748
dep29_unhapp	1.010	0.019	53.922	0.000	0.409	0.668
Loneliness =~						
lon30_nolove	1.000				0.346	0.572
lon31_lonely	1.141	0.022	51.242	0.000	0.395	0.603
lon32_talk	0.978	0.019	50.366	0.000	0.339	0.578
lon33_myself	1.212	0.023	52.315	0.000	0.420	0.588
lon34_hurt	1.190	0.022	53.691	0.000	0.412	0.723
Sleepunrest =~						
sle35_nigtmare	1.000				0.401	0.614
sle36_sleeplss	0.825	0.016	53.138	0.000	0.330	0.566
sle37_slepmore	0.831	0.016	50.461	0.000	0.333	0.472
sle38_slepdifc	0.747	0.014	52.670	0.000	0.299	0.568
Psychosis =~						
sle39i_sound	1.000				0.320	0.658
sle40_pin	0.941	0.020	47.616	0.000	0.301	0.619
sle41_illusn	0.916	0.019	48.144	0.000	0.293	0.655
sle42_storeup	1.161	0.023	49.930	0.000	0.371	0.632
sle43_notnom	0.746	0.017	42.777	0.000	0.239	0.523
sle44_strange	0.937	0.019	48.239	0.000	0.299	0.643
sle45_repeat	1.044	0.021	50.134	0.000	0.334	0.662
Somatisation =~						
som461_pain	1.000				0.437	0.700
som462headach	0.910	0.017	53.785	0.000	0.398	0.608
som463stomac	0.853	0.016	52.741	0.000	0.373	0.589
som464skin	0.743	0.015	50.186	0.000	0.325	0.600
som465vomit	0.635	0.013	48.579	0.000	0.277	0.618
Suicide =~						
su47worrthless	1.000				0.413	0.775
su48failure	0.830	0.016	52.547	0.000	0.343	0.718
su49hurting	0.844	0.016	52.527	0.000	0.348	0.705
su50iending	0.554	0.013	43.231	0.000	0.228	0.518
Disobedience =~						
dis51parent	1.000				0.343	0.680
dis52rules	1.072	0.025	42.138	0.000	0.368	0.682
dis53runaway	1.030	0.024	42.358	0.000	0.353	0.762
Disruptiveness =~						

© University of Pretoria

dis54sturbon	1.000				0.440	0.685
dis55talkmuch	0.730	0.016	45.163	0.000	0.321	0.485
dis56tease	0.881	0.017	52.036	0.000	0.387	0.702
dis57threatn	0.709	0.014	50.153	0.000	0.312	0.686
dis58obscene	0.680	0.014	49.580	0.000	0.299	0.714
dis59brag	0.683	0.014	49.099	0.000	0.300	0.674
Destructiveness =~						
des60ownprop	1.000			0.000	0.384	0.741
des61otherprop	0.979	0.021	47.494	0.000	0.376	0.806
Aggressiveness =~						
agg62figts	1.000				0.285	0.592
agg63troubl	1.518	0.037	41.408	0.000	0.433	0.757
agg64attack	0.983	0.025	39.345	0.000	0.280	0.732
Delinquency =~						
del65alcohol	1.000				0.213	0.596
del66smoke	0.919	0.025	36.653	0.000	0.196	0.630
del67marijun	0.919	0.025	36.946	0.000	0.196	0.658
del68fires	1.530	0.037	41.120	0.000	0.326	0.809
del69cheat	1.956	0.046	42.272	0.000	0.417	0.846
del70steal	1.315	0.033	39.752	0.000	0.280	0.770
Psychosocialdistress =~						
Anger	1.000			0.000	0.895	0.895
Inattentivenss	1.310	0.027	49.338	0.000	0.892	0.892
Anxiety	1.232	0.026	47.391	0.000	0.836	0.836
Depression	1.346	0.028	48.137	0.000	0.845	0.845
Loneliness	1.173	0.025	46.775	0.000	0.861	0.861
Sleepunrest	1.492	0.030	49.659	0.024	0.947	0.947
Psychosis_	1.070	0.023	46.570	0.000	0.851	0.851
Somatisation	1.307	0.027	49.108	0.000	0.761	0.761
Suicide	1.210	0.025	49.049	0.000	0.745	0.745
Disobedience	0.845	0.020	43.056	0.000	0.626	0.626
Disruptiveness	1.348	0.028	48.308	0.000	0.779	0.779
Destructivenss	1.036	0.023	45.896	0.000	0.686	0.686
Aggressiveness	0.729	0.018	40.562	0.000	0.650	0.650
Delinquency	0.574	0.014	40.252	0.000	0.685	0.685

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.tep1jealous	0.205	0.015	13.910	0.000	0.205	0.718
.tep2teased	0.260	0.017	15.381	0.000	0.260	0.552
.tep3sudden	0.279	0.016	17.782	0.000	0.279	0.632
.tep4tempr	0.302	0.016	19.034	0.000	0.302	0.659
.tep5unashamed	0.251	0.019	13.023	0.000	0.251	0.679
.tep6guilty	0.281	0.015	18.268	0.000	0.281	0.684
.tep7embarras	0.216	0.016	13.519	0.000	0.216	0.580
.tep8think	0.235	0.016	14.637	0.000	0.235	0.626
.att9fail_fin	0.238	0.015	15.828	0.000	0.238	0.630
.att10attention	0.228	0.017	13.756	0.000	0.228	0.593
.att11mind	0.263	0.018	14.934	0.000	0.263	0.605
.att12sitting	0.280	0.018	15.137	0.000	0.280	0.611
.att13confused	0.254	0.018	13.797	0.000	0.254	0.624
.att14daydream	0.184	0.018	10.201	0.000	0.184	0.679
.att15distract	0.193	0.016	11.771	0.000	0.193	0.596

© University of Pretoria

.anx16afraid	0.417	0.014	29.893	0.000	0.417	0.748
.anx17dobad	0.458	0.016	29.039	0.000	0.458	0.734
.anx18trapme	0.293	0.019	15.674	0.000	0.293	0.658
.anx19timid	0.317	0.016	20.236	0.000	0.317	0.627
.anx20bitenail	0.266	0.020	13.158	0.000	0.266	0.691
.anx21nervous	0.233	0.017	13.555	0.000	0.233	0.575
.anx22sake	0.182	0.018	10.118	0.000	0.182	0.516
.anx23fearful	0.277	0.015	17.909	0.000	0.277	0.579
.anx24worry	0.282	0.017	16.816	0.000	0.282	0.570
.dep25no_joy	0.368	0.016	22.816	0.000	0.368	0.692
.dep26_noteat	0.372	0.017	22.299	0.000	0.372	0.751
.dep27_cry	0.177	0.019	9.579	0.000	0.177	0.524
.dep28_overtird	0.178	0.019	9.455	0.000	0.178	0.441
.dep29_unhapp	0.208	0.018	11.497	0.000	0.208	0.554
.lon30_nolove	0.247	0.018	13.789	0.000	0.247	0.673
.lon31_lonely	0.274	0.018	15.059	0.000	0.274	0.637
.lon32_talk	0.229	0.015	14.902	0.000	0.229	0.666
.lon33_myself	0.333	0.017	19.969	0.000	0.333	0.654
.lon34_hurt	0.155	0.016	9.671	0.000	0.155	0.477
.sle35_nigtmare	0.265	0.019	13.838	0.000	0.265	0.623
.sle36_sleeplss	0.232	0.018	13.077	0.000	0.232	0.680
.sle37_slepmore	0.387	0.020	19.192	0.000	0.387	0.777
.sle38_slepdifc	0.188	0.016	11.512	0.000	0.188	0.677
.sle39i_sound	0.134	0.017	7.851	0.000	0.134	0.567
.sle40_pin	0.145	0.017	8.468	0.000	0.145	0.617
.sle41_illusn	0.114	0.016	7.145	0.000	0.114	0.570
.sle42_storeup	0.207	0.020	10.531	0.000	0.207	0.601
.sle43_notnom	0.151	0.016	9.166	0.000	0.151	0.726
.sle44_strange	0.127	0.016	8.100	0.000	0.127	0.586
.sle45_repeat	0.143	0.015	9.504	0.000	0.143	0.562
.som461_pain	0.198	0.016	12.209	0.000	0.198	0.509
.som462headach	0.270	0.014	19.487	0.000	0.270	0.630
.som463stomac	0.261	0.014	18.915	0.000	0.261	0.653
.som464skin	0.187	0.014	13.009	0.000	0.187	0.640
.som465vomit	0.125	0.014	8.924	0.000	0.125	0.618
.su47worrthless	0.113	0.018	6.308	0.000	0.113	0.399
.su48failure	0.111	0.014	7.695	0.000	0.111	0.485
.su49hurting	0.123	0.015	8.328	0.000	0.123	0.503
.su50iending	0.142	0.015	9.697	0.000	0.142	0.731
.dis51parent	0.137	0.014	9.446	0.000	0.137	0.537
.dis52rules	0.155	0.015	10.303	0.000	0.155	0.535
.dis53runaway	0.090	0.016	5.513	0.000	0.090	0.419
.dis54sturbon	0.218	0.020	10.949	0.000	0.218	0.530
.dis55talkmuch	0.335	0.020	16.640	0.000	0.335	0.765
.dis56tease	0.154	0.017	8.856	0.000	0.154	0.507
.dis57threatn	0.109	0.015	7.315	0.000	0.109	0.530
.dis58obscene	0.086	0.015	5.803	0.000	0.086	0.491
.dis59brag	0.108	0.015	7.085	0.000	0.108	0.546
.des60ownprop	0.121	0.021	5.717	0.000	0.121	0.450
.des61otherprop	0.076	0.020	3.794	0.000	0.076	0.350
.agg62figts	0.151	0.014	10.549	0.000	0.151	0.649
.agg63troubl	0.140	0.019	7.224	0.000	0.140	0.427
.agg64attack	0.068	0.014	4.935	0.000	0.068	0.464

© University of Pretoria

.del65alcohol	0.082	0.013	6.533	0.000	0.082	0.645
.del66smoke	0.058	0.012	4.784	0.000	0.058	0.604
.del67marijun	0.050	0.012	4.292	0.000	0.050	0.567
.del68fires	0.056	0.015	3.762	0.000	0.056	0.345
.del69cheat	0.069	0.018	3.928	0.000	0.069	0.285
.del70steal	0.054	0.014	3.998	0.000	0.054	0.408
.Anger	0.016	0.002	10.327	0.000	0.198	0.198
.Inattentivenss	0.029	0.003	9.806	0.000	0.205	0.205
.Anxiety	0.042	0.002	17.580	0.000	0.302	0.302
.Depression	0.047	0.005	10.171	0.000	0.286	0.286
.Loneliness	0.031	0.003	9.232	0.000	0.258	0.258
.Sleepunrest	0.017	0.007	2.265	0.024	0.103	0.103
.Psychosis_	0.028	0.003	10.306	0.000	0.276	0.276
.Somatisation	0.080	0.005	14.887	0.000	0.422	0.422
.Suicide	0.076	0.007	11.513	0.000	0.444	0.444
.Disobedience	0.072	0.006	11.794	0.000	0.608	0.608
.Disruptiveness	0.076	0.006	13.716	0.000	0.393	0.393
.Destructivenss	0.078	0.013	5.980	0.000	0.529	0.529
.Aggressiveness	0.047	0.005	9.688	0.000	0.578	0.578
.Delinquency	0.024	0.002	13.332	0.000	0.531	0.531
Psychscldstrss	0.065	0.002	32.224	0.000	1.000	1.000

© University of Pretoria

2.4 Part D: EFA and CFA on Items in the Coping Methods Scale

2.4.1 Part D: EFA results on items in the coping methods scale

EFA round 1: Results of the EFA on all initial Items

xF A C T O R
Unrestricted Factor Analysis
Release Version 11.05.01 x64bits, July 2021
Rovira i Virgili University Tarragona, SPAIN
Programming: Urbano Lorenzo-Seva

Mathematical Specification: Urbano Lorenzo-Seva & Pere J. Ferrando
Date: Thursday, July 29, 2021
Time: 14:29:35

DETAILS OF ANALYSIS

Participants' scores data file:	D:\Factor\EFA\PartD.dat.txt
Variable labels file:	D:\Factor\EFA\Labels part D.txt
Number of participants:	1437
Number of variables:	42
Variables included in the analysis:	All
Variables excluded in the analysis:	None
Number of factors:	4
Number of second order factors:	0
Procedure for determining the number of dimensions:	Optimal implementation of Parallel Analysis (PA) (Timmerman, & Lorenzo-Seva, 2011)
Dispersion matrix:	Polychoric Correlations
Robust analyses based on bootstrap:	None
Method for factor extraction:	Un-weighted Least Squares (ULS)
Rotation to achieve factor simplicity:	Promin (Lorenzo-Seva, 1999; Lorenzo-Seva, & Ferrando, 2019)
Clever rotation start:	Weighted Varimax
Number of random starts:	100
Maximum number of iterations:	1000
Convergence value:	0.00001000
Factor scores estimates:	Estimates based on linear model

STANDARIZED VARIANCE/COVARIANCE MATRIX (POLYCHORIC CORRELATION)
(Polychoric algorithm: Bayes modal estimation; Choi, Kim, Chen, & Dannels, 2011)

© University of Pretoria

Items	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
1	1.00																																									
2	.410	1.00																																								
3	.478	.451	1.00																																							
4	.356	.470	.278	1.00																																						
5	.261	.290	.641	.435	1.00																																					
6	.478	.403	.551	.413	.587	1.00																																				
7	-.287	-.208	-.331	-.199	-.236	-.409	1.00																																			
8	-.374	-.233	-.231	-.233	-.193	-.488	.863	1.00																																		
9	-.410	-.209	-.396	-.266	-.353	-.388	.591	.490	1.00																																	
10	-.433	-.256	-.329	-.276	-.293	-.453	.665	.598	.845	1.00																																
11	-.372	-.259	-.284	-.238	-.310	-.418	.567	.530	.760	.806	1.00																															
12	-.393	-.196	-.199	-.178	-.138	-.448	.740	.790	.461	.547	.437	1.00																														
13	-.399	-.216	-.263	-.103	-.163	-.313	.741	.646	.510	.610	.579	.694	1.00																													
14	-.369	-.228	-.191	-.247	-.147	-.507	.710	.789	.517	.601	.540	.764	.757	1.00																												
15	-.314	-.179	-.285	-.212	-.211	-.405	.713	.755	.500	.575	.514	.728	.719	.823	1.00																											
16	-.325	-.221	-.240	-.203	-.182	-.473	.688	.773	.486	.561	.497	.718	.612	.842	.801	1.00																										
17	-.236	-.093	-.137	-.090	-.140	-.356	.577	.660	.398	.445	.354	.625	.530	.698	.704	.780	1.00																									
18	-.273	-.110	-.183	-.085	-.085	-.331	.582	.667	.391	.450	.415	.630	.555	.707	.647	.731	.811	1.00																								
19	-.159	-.031	-.225	-.198	-.297	-.075	.187	.175	.230	.304	.333	.132	.262	.165	.261	.198	.253	.172	1.00																							
20	-.281	-.238	-.366	-.135	-.353	-.286	.349	.351	.407	.443	.422	.334	.363	.397	.388	.422	.435	.445	.589	1.00																						
21	-.112	-.129	-.404	-.118	-.435	-.216	.289	.262	.392	.383	.407	.188	.250	.242	.252	.266	.284	.250	.542	.654	1.00																					
22	-.421	-.020	-.026	-.039	-.027	-.133	.281	.307	.270	.310	.268	.363	.356	.303	.225	.327	.432	.467	.281	.393	.199	1.00																			
23	-.248	-.132	-.190	-.001	-.179	.025	.240	.163	.275	.219	.291	.240	.422	.137	.119	.120	.210	.264	.119	.314	.284	.652	1.00																	
24	-.019	.034	-.116	.120	-.201	.084	.131	.083	.201	.126	.159	.157	.219	.115	.106	.048	.003	.043	-.032	.101	.173	.234	.488	1.00																	
25	-.288	-.132	-.251	-.115	-.224	-.251	.460	.400	.355	.371	.418	.368	.482	.405	.414	.385	.378	.369	.475	.541	.517	.383	.319	.137	1.00															
26	-.313	-.215	-.293	-.183	-.276	-.278	.408	.352	.333	.382	.365	.338	.436	.384	.349	.334	.288	.268	.406	.542	.556	.274	.318	.230	.704	1.00														
27	-.275	-.217	-.223	-.171	-.247	-.298	.340	.334	.376	.404	.389	.340	.357	.386	.336	.342	.297	.292	.326	.457	.531	.233	.230	.192	.550	.653	1.00													
28	-.262	-.197	-.243	-.213	-.246	-.362	.361	.383	.401	.438	.407	.349	.354	.437	.350	.444	.380	.344	.398	.488	.541	.234	.161	.158	.519	.555	.739	1.00												
29	-.149	-.079	.088	-.100	.166	-.175	.339	.398	.218	.274	.187	.316	.259	.387	.272	.347	.130	.152	-.227	-.015	-.064	.118	.116	.129	-.016	.126	.029	.041	1.00											
30	-.143	-.031	.103	-.159	.097	-.074	.206	.229	.230	.217	.096	.219	.112	.240	.178	.223	.052	.086	-.079	-.012	-.021	.091	.101	.120	.085	.158	.127	.098	.728	1.00										
31	-.098	-.013	.056	-.106	-.004	-.112	.193	.202	.262	.193	.082	.233	.080	.226	.213	.243	.138	.135	-.072	.067	.016	.116	.067	.078	.052	.115	.078	.059	.650	.779	1.00									
32	.012	-.024	.116	-.038	.151	.105	.044	-.007	.070	.035	.072	.075	.052	.003	.028	.024	-.023	-.049	-.032	-.028	-.078	.074	.078	.090	.013	.010	-.028	-.056	.353	.405	.502	1.00								
33	-.033	.005	.071	-.001	.104	.084	-.078	-.031	.039	-.021	.018	-.002	-.071	-.069	.022	-.038	.048	.021	-.033	-.015	-.096	.054	-.015	-.068	-.090	-.074	-.064	-.043	.160	.293	.333	.528	1.00							
34	.199	.086	.109	.115	.131	.050	.032	.034	-.049	-.022	.022	.012	.033	.024	.049	.083	.162	.129	-.018	.040	.043	.071	.039	-.088	.020	-.080	-.138	-.066	.242	.148	.194	.306	.246	1.00						
35	-.057	.136	.184	-.029	.202	.022	.028	.105	-.025	-.020	-.025	.118	.043	.115	.110	.129	.181	.205	.097	.078	-.066	.297	.014	-.143	.011	-.034	-.141	-.056	.339	.368	.363	.328	.432	.486	1.00					
36	-.086	-.020	-.028	-.117	.073	.000	.238	.144	.116	.111	.052	.211	.147	.163	.111	.057	-.052	.047	-.131	.018	-.010	-.090	.069	.185	.068	.148	.092	.077	.448	.598	.480	.324	.313	.119	.302	1.00				
37	.211	.042	-.029	-.012	-.024	.038	.151	.118	.134	.068	.013	.078	.047	.074	.092	.066	-.037	-.056	-.091	-.018	.081	-.115	.084	.243	.021	.126	.057	.001	.515	.589	.543	.359	.135	.195	.147	.550	1.00			
38	-.119	-.049	.112	.013	.187	-.024	.013	.111	-.030	-.057	-.036	.111	.057	.075	.063	.028	-.027	.008	-.148	-.157	-.289	.064	-.011	.067	-.073	-.133	-.134	-.126	.336	.298	.229	.410	.322	.187	.280	.297	.313	1.00		
39	-.018	.114	.148	.139	.261	.130	-.088	-.068	-.160	-.154	-.172	-.037	-.032	-.089	-.023	-.073	-.035	-.084	-.122	-.130	-.276	.199	.042	.007	-.063	-.125	-.237	-.186	.328	.225	.248	.421	.329	.318	.397	.280	.245	.633	1.00		
40	.075	.107	.291	.066	.283	.197	.016	-.002	-.065	-.087	-.119	.042	.039	-.006	.001	.017	.106	.036	.052	-.090	-.241	.186	.041	.016	.070	.001	-.112	-.068	.243	.357	.371	.434	.407	.291	.446	.374	.302	.468	.588	1.00	
41	-.074	.095	.255	.038	.275	.137	.066	.058	-.086	-.095	-.051	.053	.076	-.006	.031	.030	.119	.111	.038	-.025	-.135	.279	.096	-.065	.061	.061	-.077	-.087	.285	.334	.284	.304	.336	.309	.516	.277	.225	.310	.459	.616	1.00	
42	-.118	.122	.154	.071	.229	.060	.086	.112	-.015	-.015	-.026	.093	.135	.064	.030	.056	.135	.166	.011	.015	-.051	.300	.100	-.059	.064	.064	-.090	-.124	.382	.406	.368	.361	.331	.385	.566	.312	.343	.372	.519	.551	.698	1.00

Notes: In this scale, 1 = clu1religiousgp; V2 = clu2peergp; V3 = clu3clan; V4 = clu4sports; V5 = clu5community; V6 = clu6health; V7 = soc1needed; V8 = soc2comfort; V9 = soc3leftalone; V10 = soc4kindness; V11 = soc5blamed; V12 = soc6loved; V13 = soc7reliance; V14 = soc8nogivup; V15 = soc9available; V16 = soc10helped; V17 = soc11tookcare; V18 = soc12addeddistr; V19 = sc1hardstopping; V20 = sc2diverted; V21 = sc3isayunsuitab; V22 = sc4refuse; V23 = sc5resist; V24 = sc6discipl; V25 = sc7excitemnt; V26 = sc8regret; V27 = sc9notstop; V28 = sc10nothinking; V29 = ocs1knowing; V30 = ocs2workinghard; V31 = ocs3positiv; V32 = ocs4relaxing; V33 = ocs5exercise; V34 = ocs6tellprobl; V35 = ocs7peers; V36 = ocs8social; V37 = ocs9prayers; V38 = ocs10cried; V39 = ocs11blamed; V40 = ocs12worstoccr; V41 = ocs13noproble; and V42 = ocs14jokes. Items 1 – 6 assessed coping by membership to social clubs' variable; items 7 – 18 assessed coping by seeking social support variable; items 19 – 28 assessed coping by self-control; and items 29 – 42 assessed coping using other coping methods. The yellow shading show the items or variables which correlated poorly or yielded item to item loadings of less than .3. The green shading indicates the items which correlated most and least.

© University of Pretoria

ADEQUACY OF THE POLYCHORIC CORRELATION MATRIX

Determinant of the matrix=	< 0.000001
Bartlett's statistic =	16361.8 (df = 861; P = 0.000010)
Kaiser-Meyer-Olkin (KMO) test =	0.73050 (fair)

NORMED ITEM-MSA INDICES

Items	Quartile of sum response scores	Relative difficulty index	Normed MSA
clu3clan	1	0.07342	0.45606*
clu5communty	1	0.08768	0.65347
clu6health	1	0.12944	0.60972
clu2peergp	1	0.27244	0.71575
ocs12worstoccr	1	0.29749	0.83455
clu1religiousgp	1	0.31802	0.48000*
clu4sports	1	0.32324	0.61315
ocs11blamed	1	0.33125	0.64974
ocs13noproble	1	0.33577	0.78891
ocs10cried	1	0.35003	0.65744
ocs14jokes	1	0.38309	0.83927
ocs5exercise	1	0.43493	0.50550
ocs7peers	1	0.43737	0.78656
ocs8social	1	0.44398	0.51472
ocs4relaxing	1	0.46451	0.73378
ocs6tellprobl	2	0.53340	0.80168
ocs2workinghard	2	0.55498	0.76685
ocs3positiv	2	0.56611	0.80013
ocs1knowing	2	0.57690	0.78229
sc4refuse	3	0.62352	0.46667*
ocs9prayers	3	0.65344	0.50761
sc7excitemnt	4	0.72686	0.88345
sc8regret	4	0.74287	0.85443
sc6discipl	4	0.75470	0.39843*
sc10nothinking	4	0.76444	0.85239
soc12addeddistr	4	0.76653	0.75230
sc5resist	4	0.78288	0.42529*
sc1hardstopping	4	0.78566	0.53271
soc10helped	4	0.78880	0.89913
soc11tookcare	4	0.79019	0.76185
sc9notstop	4	0.79436	0.89309
soc7reliance	4	0.79576	0.73261
soc6loved	4	0.81106	0.93673
soc5blamed	4	0.81489	0.76271
soc8nogivup	4	0.81942	0.87208
sc2diverted	4	0.82081	0.87777
soc9available	4	0.82429	0.89582
soc4kindness	4	0.83159	0.87850
soc3leftalone	4	0.83368	0.83850
soc2comfort	4	0.83507	0.73907
soc1needed	4	0.84029	0.66811
sc3isayunsuitab	4	0.87857	0.83250

Notes: *Items proposed to be removed is 5. Values of MSA below .50 suggest that the item does not measure the same domain as the remaining items in the pool, and so that it should be removed. At the same time, for a normal-range test, an optimal pool of items should have

© University of Pretoria

a large spread of relative difficulty indices, and each quartile should have a similar number of items. When removing items from the pool, all these aspects should be taken into account. Sometimes, the conclusion is that new items should be added to the pool of items.

EXPLAINED VARIANCE BASED ON EIGENVALUES

Variable	Eigenvalue	Proportion of variance	Cumulative proportion of variance
1	11.43221	0.27220	0.27220
2	6.31258	0.15030	0.42250
3	2.75028	0.06548	0.48798
4	2.68102	0.06383	0.55181
5	2.03021	0.04834	
6	1.73197	0.04124	
7	1.33528	0.03179	
8	1.20049	0.02858	
9	1.14756	0.02732	
10	0.97680	0.02326	
11	0.85420	0.02034	
12	0.81607	0.01943	
13	0.77331	0.01841	
14	0.67672	0.01611	
15	0.63088	0.01502	
16	0.59973	0.01428	
17	0.49846	0.01187	
18	0.46601	0.01110	
19	0.41044	0.00977	
20	0.40442	0.00963	
21	0.37840	0.00901	
22	0.37322	0.00889	
23	0.35280	0.00840	
24	0.30245	0.00720	
25	0.29355	0.00699	
26	0.27630	0.00658	
27	0.25742	0.00613	
28	0.23776	0.00566	
29	0.23018	0.00548	
30	0.21600	0.00514	
31	0.18226	0.00434	
32	0.17575	0.00418	
33	0.16861	0.00401	
34	0.15587	0.00371	
35	0.14105	0.00336	
36	0.11885	0.00283	
37	0.11486	0.00273	
38	0.09861	0.00235	
39	0.06695	0.00159	
40	0.06118	0.00146	
41	0.04947	0.00118	
42	0.01980	0.00047	

UNROTATED LOADING MATRIX

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Communality

© University of Pretoria

	Club membership	Social support	Self-control	Other coping strategies	
clu1religiousgp	0.500	-0.045	-0.046	-0.096	0.263
clu2peergp	0.321	-0.154	-0.063	-0.281	0.209
clu3clan	0.422	-0.337	-0.191	-0.267	0.400
clu4sports	0.313	-0.092	-0.085	-0.311	0.210
clu5communty	0.373	-0.396	-0.257	-0.270	0.435
clu6health	0.561	-0.179	0.089	-0.303	0.446
soc1needed	-0.807	-0.058	-0.210	0.075	0.704
soc2comfort	-0.819	-0.091	-0.337	0.047	0.795
soc3leftalone	-0.703	0.060	0.087	0.208	0.548
soc4kindness	-0.770	0.076	0.000	0.166	0.626
soc5blamed	-0.700	0.113	0.058	0.084	0.513
soc6loved	-0.771	-0.120	-0.304	0.008	0.702
soc7reliance	-0.765	-0.041	-0.147	-0.093	0.618
soc8nogivup	-0.841	-0.071	-0.355	0.033	0.840
soc9available	-0.795	-0.058	-0.311	-0.009	0.732
soc10helped	-0.811	-0.066	-0.347	-0.038	0.784
soc11tookcare	-0.707	-0.056	-0.313	-0.338	0.715
soc12addeddistr	-0.705	-0.063	-0.315	-0.300	0.690
sc1hardstopping	-0.383	0.205	0.360	-0.336	0.431
sc2diverted	-0.617	0.188	0.340	-0.254	0.596
sc3isayunsuitab	-0.511	0.311	0.486	-0.128	0.609
sc4refuse	-0.455	-0.152	0.113	-0.450	0.445
sc5resist	-0.356	-0.035	0.271	-0.188	0.236
sc6discipl	-0.190	-0.019	0.220	0.059	0.088
sc7excitemnt	-0.614	0.103	0.330	-0.269	0.570
sc8regret	-0.600	0.110	0.442	-0.091	0.575
sc9notstop	-0.566	0.209	0.347	-0.024	0.485
sc10nothinking	-0.594	0.201	0.274	-0.059	0.472
ocs1knowing	-0.323	-0.629	-0.068	0.357	0.632
ocs2workinghard	-0.265	-0.662	0.186	0.380	0.688
ocs3positiv	-0.265	-0.624	0.158	0.320	0.587
ocs4relaxing	-0.053	-0.590	0.200	0.090	0.399
ocs5exercise	0.009	-0.488	0.131	-0.017	0.256
ocs6tellprobl	-0.028	-0.418	0.007	-0.194	0.213
ocs7peers	-0.098	-0.619	0.020	-0.247	0.454
ocs8social	-0.178	-0.538	0.201	0.316	0.461
ocs9prayers	-0.117	-0.510	0.250	0.346	0.455
ocs10cried	-0.005	-0.568	-0.050	0.077	0.331
ocs11blamed	0.108	-0.655	0.048	-0.135	0.461
ocs12worstoccr	0.009	-0.710	0.114	-0.226	0.569
ocs13noproble	-0.040	-0.650	0.098	-0.308	0.529
ocs14jokes	-0.098	-0.706	0.112	-0.241	0.578

ROTATED LOADING MATRIX

Variable	Factor 1 Club membership	Factor 2 Social support	Factor 3 Self-control	Factor 4 Other coping strategies
clu1religiousgp	-0.055	-0.219	-0.150	0.263
clu2peergp	-0.003	-0.028	-0.014	0.440
clu3clan	0.105	0.065	-0.207	0.564
clu4sports	-0.078	0.003	-0.004	0.443
clu5communty	0.135	0.173	-0.262	0.593

© University of Pretoria

clu6health	0.054	-0.328	0.067	0.510
soc1needed	0.064	0.699	-0.003	-0.231
soc2comfort	0.033	0.855	-0.109	-0.167
soc3leftalone	0.112	0.263	0.188	-0.442
soc4kindness	0.055	0.408	0.153	-0.410
soc5blamed	0.013	0.323	0.243	-0.341
soc6loved	0.057	0.806	-0.073	-0.110
soc7reliance	0.019	0.652	0.151	-0.080
soc8nogivup	0.005	0.891	-0.108	-0.165
soc9available	-0.006	0.826	-0.053	-0.127
soc10helped	-0.021	0.884	-0.066	-0.094
soc11tookcare	-0.118	0.870	0.120	0.210
soc12addeddistr	-0.100	0.860	0.094	0.178
sc1hardstopping	-0.103	-0.083	0.706	0.045
sc2diverted	-0.050	0.058	0.709	-0.087
sc3isayunsuitab	-0.071	-0.214	0.757	-0.263
sc4refuse	0.090	0.298	0.505	0.344
sc5resist	0.121	-0.020	0.484	0.039
sc6discipl	0.145	-0.139	0.234	-0.146
sc7excitemnt	0.020	0.080	0.695	-0.032
sc8regret	0.114	-0.102	0.689	-0.223
sc9notstop	0.001	-0.049	0.561	-0.302
sc10nothinking	-0.030	0.057	0.520	-0.259
ocs1knowing	0.686	0.230	-0.281	-0.134
ocs2workinghard	0.82	-0.082	-0.074	-0.177
ocs3positiv	0.759	-0.039	-0.058	-0.131
ocs4relaxing	0.655	-0.150	0.062	0.124
ocs5exercise	0.494	-0.091	0.058	0.212
ocs6tellprobl	0.327	0.109	0.069	0.363
ocs7peers	0.505	0.174	0.105	0.481
ocs8social	0.689	-0.146	-0.029	-0.151
ocs9prayers	0.687	-0.247	-0.015	-0.184
ocs10cried	0.521	0.094	-0.183	0.191
ocs11blamed	0.565	-0.010	-0.008	0.444
ocs12worstoccr	0.625	0.010	0.135	0.514
ocs13noproble	0.543	0.075	0.194	0.554
ocs14jokes	0.625	0.081	0.176	0.496

ROTATED LOADING MATRIX (loadings lower than absolute 0.300 omitted)

Variable	Factor 1 Club membership	Factor 2 Social support	Factor 3 Self-control	Factor 4 Other coping strategies
clu1religiousgp				
clu2peergp				0.440
clu3clan				0.564
clu4sports				0.443
clu5communty				0.593
clu6health		-0.328		0.510
soc1needed		0.699		
soc2comfort		0.855		
soc3leftalone				-0.442
soc4kindness		0.408		-0.410

© University of Pretoria

soc5blamed		0.323		-0.341
soc6loved		0.806		
soc7reliance		0.652		
soc8nogivup		0.891		
soc9available		0.826		
soc10helped		0.884		
soc11tookcare		0.870		
soc12addeddistr		0.860		
sc1hardstopping			0.706	
sc2diverted			0.709	
sc3isayunsuitab			0.757	
sc4refuse			0.505	0.344
sc5resist			0.484	
sc6discipl				
sc7excitemnt			0.695	
sc8regret			0.689	
sc9notstop			0.561	-0.302
sc10nothinking			0.520	
ocs1knowing	0.686			
ocs2workinghard	0.824			
ocs3positiv	0.759			
ocs4relaxing	0.655			
ocs5exercise	0.494			
ocs6tellprobl	0.327			0.363
ocs7peers	0.505			0.481
ocs8social	0.689			
ocs9prayers	0.687			
ocs10cried	0.521			
ocs11blamed	0.565			0.444
ocs12worstoccr	0.625			0.514
ocs13noproble	0.543			0.554
ocs14jokes	0.625			0.496

EXPLAINED VARIANCE OF ROTATED FACTORS AND RELIABILITY OF PHI-INFORMATION OBLIQUE EAP SCORES (Ferrando & Lorenzo-Seva, 2016)

	Factor	Variance	ORION	Factor Determinacy Index
1	Club membership	5.379	0.921	0.960
2	Social support	7.166	0.964	0.982
3	Self-control	4.422	0.904	0.951
4	Other coping strategies	4.386	0.889	0.943

© University of Pretoria

EFA round 2: Results of the EFA less the 5 items with low MSA and cut-off values in the rotated matrix

xF A C T O R
Unrestricted Factor Analysis
Release Version 11.05.01 x64bits, July 2021
Rovira i Virgili University Tarragona, SPAIN
Programming: Urbano Lorenzo-Seva

Mathematical Specification: Urbano Lorenzo-Seva & Pere J. Ferrando
Date: Tuesday, August 10, 2021
Time: 16:50:48

DETAILS OF ANALYSIS

Participants' scores data file:	D:\EFA\PartD.dat.txt
Variable labels file:	D:\EFA\Labels part D.txt
Number of participants:	1437
Number of variables:	42
Variables included in the analysis:	V2, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16, V17, V18, V19, V20, V21, V25, V26, V27, V28, V29, V30, V31, V32, V33, V34, V35, V36, V37, V38, V39, V40, V41, V42
Variables excluded in the analysis:	V1, V3, V22, V23, V24
Number of factors:	4
Number of second order factors:	0
Procedure for determining the number of dimensions:	Optimal implementation of Parallel Analysis (PA) (Timmerman, & Lorenzo-Seva, 2011)
Dispersion matrix:	Polychoric Correlations
Robust analyses based on bootstrap:	None
Method for factor extraction:	Un-weighted Least Squares (ULS)
Rotation to achieve factor simplicity:	Promin (Lorenzo-Seva, 1999)
Clever rotation start:	Weighted Varimax
Number of random starts:	100
Maximum number of iterations:	1000
Convergence value:	0.00001000
Factor scores estimates:	Estimates based on linear model

STANDARIZED VARIANCE/COVARIANCE MATRIX (POLYCHORIC CORRELATION)
(Polychoric algorithm: Bayes modal estimation; Choi, Kim, Chen, & Dannels, 2011)

V	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
2	1.000																																				
4	0.470	1.000																																			
5	0.290	0.435	1.000																																		
6	0.403	0.413	0.587	1.000																																	
7	-0.208	-0.199	-0.236	-0.409	1.000																																
8	-0.233	-0.233	-0.193	-0.488	0.863	1.000																															
9	-0.209	-0.266	-0.353	-0.388	0.591	0.490	1.000																														
10	-0.256	-0.276	-0.293	-0.453	0.665	0.598	0.845	1.000																													
11	-0.259	-0.238	-0.310	-0.418	0.567	0.530	0.760	0.806	1.000																												
12	-0.196	-0.178	-0.138	-0.448	0.740	0.790	0.461	0.547	0.437	1.000																											
13	-0.216	-0.103	-0.163	-0.313	0.741	0.646	0.510	0.610	0.579	0.694	1.000																										
14	-0.228	-0.247	-0.147	-0.507	0.710	0.789	0.517	0.601	0.540	0.764	0.757	1.000																									
15	-0.179	-0.212	-0.211	-0.405	0.713	0.755	0.500	0.575	0.514	0.728	0.719	0.823	1.000																								
16	-0.221	-0.203	-0.182	-0.473	0.688	0.773	0.486	0.561	0.497	0.718	0.612	0.842	0.801	1.000																							
17	-0.093	-0.090	-0.140	-0.356	0.577	0.660	0.398	0.445	0.354	0.625	0.530	0.698	0.704	0.780	1.000																						
18	-0.110	-0.085	-0.085	-0.331	0.582	0.667	0.391	0.450	0.415	0.630	0.555	0.707	0.647	0.731	0.811	1.000																					
19	-0.031	-0.198	-0.297	-0.075	0.187	0.175	0.230	0.304	0.333	0.132	0.262	0.165	0.261	0.198	0.253	0.172	1.000																				
20	-0.238	-0.135	-0.353	-0.286	0.349	0.351	0.407	0.443	0.422	0.334	0.363	0.397	0.388	0.422	0.435	0.445	0.589	1.000																			
21	-0.129	-0.118	-0.435	-0.216	0.289	0.262	0.392	0.383	0.407	0.188	0.250	0.242	0.252	0.266	0.284	0.250	0.542	0.654	1.000																		
25	-0.132	-0.115	-0.224	-0.251	0.460	0.400	0.355	0.371	0.418	0.368	0.482	0.405	0.414	0.385	0.378	0.369	0.475	0.541	0.517	1.000																	
26	-0.215	-0.183	-0.276	-0.278	0.408	0.352	0.333	0.382	0.365	0.338	0.436	0.384	0.349	0.334	0.288	0.268	0.406	0.542	0.556	0.704	1.000																
27	-0.217	-0.171	-0.247	-0.298	0.340	0.334	0.376	0.404	0.389	0.340	0.357	0.386	0.336	0.342	0.297	0.292	0.326	0.457	0.531	0.550	0.653	1.000															
28	-0.197	-0.213	-0.246	-0.362	0.361	0.383	0.401	0.438	0.407	0.349	0.354	0.437	0.350	0.444	0.380	0.344	0.398	0.488	0.541	0.519	0.555	0.739	1.000														
29	-0.079	-0.100	0.166	-0.175	0.339	0.398	0.218	0.274	0.187	0.316	0.259	0.387	0.272	0.347	0.130	0.152	-0.227	-0.015	-0.064	-0.016	0.126	0.029	0.041	1.000													
30	-0.031	-0.159	0.097	-0.074	0.206	0.229	0.230	0.217	0.096	0.219	0.112	0.240	0.178	0.223	0.052	0.086	-0.079	-0.012	-0.021	0.085	0.158	0.127	0.098	0.728	1.000												
31	-0.013	-0.106	-0.004	-0.112	0.193	0.202	0.262	0.193	0.082	0.233	0.080	0.226	0.213	0.243	0.138	0.135	-0.072	0.067	0.016	0.052	0.115	0.078	0.059	0.650	0.779	1.000											
32	-0.024	-0.038	0.151	0.105	0.044	-0.007	0.070	0.035	0.072	0.075	0.052	0.003	0.028	0.024	-0.023	-0.049	-0.032	-0.028	-0.078	0.013	0.010	-0.028	-0.056	0.353	0.405	0.502	1.000										
33	0.005	-0.001	0.104	0.084	-0.078	-0.031	0.039	-0.021	0.018	-0.002	-0.071	-0.069	0.022	-0.038	0.048	0.021	-0.033	-0.015	-0.096	-0.090	-0.074	-0.064	-0.043	0.160	0.293	0.333	0.528	1.000									
34	0.086	0.115	0.131	0.050	0.032	0.034	-0.049	-0.022	0.022	0.012	0.033	0.024	0.049	0.083	0.162	0.129	-0.018	0.040	0.043	0.020	-0.080	-0.138	-0.066	0.242	0.148	0.194	0.306	0.246	1.000								
35	0.136	-0.029	0.202	0.022	0.028	0.105	-0.025	-0.020	-0.025	0.118	0.043	0.115	0.110	0.129	0.181	0.205	0.097	0.078	-0.066	0.011	-0.034	-0.141	-0.056	0.339	0.368	0.363	0.328	0.432	0.486	1.000							
36	-0.020	-0.117	0.073	-0.000	0.238	0.144	0.116	0.111	0.052	0.211	0.147	0.163	0.111	0.057	-0.052	0.047	-0.131	0.018	-0.010	0.068	0.148	0.092	0.077	0.448	0.598	0.480	0.324	0.313	0.119	0.302	1.000						
37	0.042	-0.012	-0.024	0.038	0.151	0.118	0.134	0.068	0.013	0.078	0.047	0.074	0.092	0.066	-0.037	-0.056	-0.091	-0.018	0.081	0.021	0.126	0.057	0.001	0.515	0.589	0.543	0.359	0.135	0.195	0.147	0.550	1.000					
38	-0.049	0.013	0.187	-0.024	0.013	0.111	-0.030	-0.057	-0.036	0.111	0.057	0.075	0.063	0.028	-0.027	0.008	-0.148	-0.157	-0.289	-0.073	-0.133	-0.134	-0.126	0.336	0.298	0.229	0.410	0.322	0.187	0.280	0.297	0.313	1.000				
39	0.114	0.139	0.261	0.130	-0.088	-0.068	-0.160	-0.154	-0.172	-0.037	-0.032	-0.089	-0.023	-0.073	-0.035	-0.084	-0.122	-0.130	-0.276	-0.063	-0.125	-0.237	-0.186	0.328	0.225	0.248	0.421	0.329	0.318	0.397	0.280	0.245	0.633	1.000			
40	0.107	0.066	0.283	0.197	0.016	-0.002	-0.065	-0.087	-0.119	0.042	0.039	-0.006	0.001	0.017	0.106	0.036	0.052	-0.090	-0.241	0.070	0.001	-0.112	-0.068	0.243	0.357	0.371	0.434	0.407	0.291	0.446	0.374	0.302	0.468	0.588	1.000		
41	0.095	0.038	0.275	0.137	0.066	0.058	-0.086	-0.095	-0.051	0.053	0.076	-0.006	0.031	0.030	0.119	0.111	0.038	-0.025	-0.135	0.061	0.061	-0.077	-0.087	0.285	0.334	0.284	0.304	0.336	0.309	0.516	0.277	0.225	0.310	0.459	0.616	1.000	
42	0.122	0.071	0.229	0.060	0.086	0.112	-0.015	-0.015	-0.026	0.093	0.135	0.064	0.030	0.056	0.135	0.166	0.011	0.015	-0.051	0.064	0.064	-0.090	-0.124	0.382	0.406	0.368	0.361	0.331	0.385	0.566	0.312	0.343	0.372	0.519	0.551	0.698	1.000

Notes: V = variable

© University of Pretoria

V	2	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	25	26	27	28	29	30	31	32	33
V2	1.000																											
V4	0.470	1.000																										
V5	0.290	0.435	1.000																									
V6	0.403	0.413	0.587	1.000																								
V7	-0.208	-0.199	-0.236	-0.409	1.000																							
V8	-0.233	-0.233	-0.193	-0.488	0.863	1.000																						
V9	-0.209	-0.266	-0.353	-0.388	0.591	0.490	1.000																					
V10	-0.256	-0.276	-0.293	-0.453	0.665	0.598	0.845	1.000																				
V11	-0.259	-0.238	-0.310	-0.418	0.567	0.530	0.760	0.806	1.000																			
V12	-0.196	-0.178	-0.138	-0.448	0.740	0.790	0.461	0.547	0.437	1.000																		
V13	-0.216	-0.103	-0.163	-0.313	0.741	0.646	0.510	0.610	0.579	0.694	1.000																	
V14	-0.228	-0.247	-0.147	-0.507	0.710	0.789	0.517	0.601	0.540	0.764	0.757	1.000																
V15	-0.179	-0.212	-0.211	-0.405	0.713	0.755	0.500	0.575	0.514	0.728	0.719	0.823	1.000															
V16	-0.221	-0.203	-0.182	-0.473	0.688	0.773	0.486	0.561	0.497	0.718	0.612	0.842	0.801	1.000														
V17	-0.093	-0.090	-0.140	-0.356	0.577	0.660	0.398	0.445	0.354	0.625	0.530	0.698	0.704	0.780	1.000													
V18	-0.110	-0.085	-0.085	-0.331	0.582	0.667	0.391	0.450	0.415	0.630	0.555	0.707	0.647	0.731	0.811	1.000												
V19	-0.031	-0.198	-0.297	-0.075	0.187	0.175	0.230	0.304	0.333	0.132	0.262	0.165	0.261	0.198	0.253	0.172	1.000											
V20	-0.238	-0.135	-0.353	-0.286	0.349	0.351	0.407	0.443	0.422	0.334	0.363	0.397	0.388	0.422	0.435	0.445	0.589	1.000										
V21	-0.129	-0.118	-0.435	-0.216	0.289	0.262	0.392	0.383	0.407	0.188	0.250	0.242	0.252	0.266	0.284	0.250	0.542	0.654	1.000									
V25	-0.132	-0.115	-0.224	-0.251	0.460	0.400	0.355	0.371	0.418	0.368	0.482	0.405	0.414	0.385	0.378	0.369	0.475	0.541	0.517	1.000								
V26	-0.215	-0.183	-0.276	-0.278	0.408	0.352	0.333	0.382	0.365	0.338	0.436	0.384	0.349	0.334	0.288	0.268	0.406	0.542	0.556	0.704	1.000							
V27	-0.217	-0.171	-0.247	-0.298	0.340	0.334	0.376	0.404	0.389	0.340	0.357	0.386	0.336	0.342	0.297	0.292	0.326	0.457	0.531	0.550	0.653	1.000						
V28	-0.197	-0.213	-0.246	-0.362	0.361	0.383	0.401	0.438	0.407	0.349	0.354	0.437	0.350	0.444	0.380	0.344	0.398	0.488	0.541	0.519	0.555	0.739	1.000					
V29	-0.079	-0.100	0.166	-0.175	0.339	0.398	0.218	0.274	0.187	0.316	0.259	0.387	0.272	0.347	0.130	0.152	-0.227	-0.015	-0.064	-0.016	0.126	0.029	0.041	1.000				
V30	-0.031	-0.159	0.097	-0.074	0.206	0.229	0.230	0.217	0.096	0.219	0.112	0.240	0.178	0.223	0.052	0.086	-0.079	-0.012	-0.021	0.085	0.158	0.127	0.098	0.728	1.000			
V31	-0.013	-0.106	-0.004	-0.112	0.193	0.202	0.262	0.193	0.082	0.233	0.080	0.226	0.213	0.243	0.138	0.135	-0.072	0.067	0.016	0.052	0.115	0.078	0.059	0.650	0.779	1.000		
V32	-0.024	-0.038	0.151	0.105	0.044	-0.007	0.070	0.035	0.072	0.075	0.052	0.003	0.028	0.024	-0.023	-0.049	-0.032	-0.028	-0.078	0.013	0.010	-0.028	-0.056	0.353	0.405	0.502	1.000	
V33	0.005	-0.001	0.104	0.084	-0.078	-0.031	0.039	-0.021	0.018	-0.002	-0.071	-0.069	0.022	-0.038	0.048	0.021	-0.033	-0.015	-0.096	-0.090	-0.074	-0.064	-0.043	0.160	0.293	0.333	0.528	1.000
V34	0.086	0.115	0.131	0.050	0.032	0.034	-0.049	-0.022	0.022	0.012	0.033	0.024	0.049	0.083	0.162	0.129	-0.018	0.040	0.043	0.020	-0.080	-0.138	-0.066	0.242	0.148	0.194	0.306	0.246
V35	0.136	-0.029	0.202	0.022	0.028	0.105	-0.025	-0.020	-0.025	0.118	0.043	0.115	0.110	0.129	0.181	0.205	0.097	0.078	-0.066	0.011	-0.034	-0.141	-0.056	0.339	0.368	0.363	0.328	0.432
V36	-0.020	-0.117	0.073	0.000	0.238	0.144	0.116	0.111	0.052	0.211	0.147	0.163	0.111	0.057	-0.052	0.047	-0.131	0.018	-0.010	0.068	0.148	0.092	0.077	0.448	0.598	0.480	0.324	0.313
V37	0.042	-0.012	-0.024	0.038	0.151	0.118	0.134	0.068	0.013	0.078	0.047	0.074	0.092	0.066	-0.037	-0.056	-0.091	-0.018	0.081	0.021	0.126	0.057	0.001	0.515	0.589	0.543	0.359	0.135
V38	-0.049	0.013	0.187	-0.024	0.013	0.111	-0.030	-0.057	-0.036	0.111	0.057	0.075	0.063	0.028	-0.027	0.008	-0.148	-0.157	-0.289	-0.073	-0.133	-0.134	-0.126	0.336	0.298	0.229	0.410	0.322
V39	0.114	0.139	0.261	0.130	-0.088	-0.068	-0.160	-0.154	-0.172	-0.037	-0.032	-0.089	-0.023	-0.073	-0.035	-0.084	-0.122	-0.130	-0.276	-0.063	-0.125	-0.237	-0.186	0.328	0.225	0.248	0.421	0.329
V40	0.107	0.066	0.283	0.197	0.016	-0.002	-0.065	-0.087	-0.119	0.042	0.039	-0.006	0.001	0.017	0.106	0.036	0.052	-0.090	-0.241	0.070	0.001	-0.112	-0.068	0.243	0.357	0.371	0.434	0.407
V41	0.095	0.038	0.275	0.137	0.066	0.058	-0.086	-0.095	-0.051	0.053	0.076	-0.006	0.031	0.030	0.119	0.111	0.038	-0.025	-0.135	0.061	0.061	-0.077	-0.087	0.285	0.334	0.284	0.304	0.336
V42	0.122	0.071	0.229	0.060	0.086	0.112	-0.015	-0.015	-0.026	0.093	0.135	0.064	0.030	0.056	0.135	0.166	0.011	0.015	-0.051	0.064	0.064	-0.090	-0.124	0.382	0.406	0.368	0.361	0.331

Notes: V = Variables

© University of Pretoria

ADEQUACY OF THE POLYCHORIC CORRELATION MATRIX

Determinant of the matrix = < 0.000001
Bartlett's statistic = 16381.0 (df = 666; P = 0.000010)
Kaiser-Meyer-Olkin (KMO) test = 0.85021 (good)

NORMED ITEM-MSA INDICES

Items	Quartile of sum response scores	Relative difficulty index	Normed MSA
clu5communty	1	0.08768	0.67200
clu6health	1	0.12944	0.78652
clu2peergp	1	0.27244	0.70068
ocs12worstoccr	1	0.29749	0.83958
clu4sports	1	0.32324	0.64345
ocs11blamed	1	0.33125	0.79329
ocs13noproble	1	0.33577	0.83795
ocs10cried	1	0.35003	0.78031
ocs14jokes	1	0.38309	0.81958
ocs5exercise	1	0.43493	0.74406
ocs7peers	1	0.43737	0.85568
ocs8social	1	0.44398	0.72970
ocs4relaxing	1	0.46451	0.78107
ocs6tellprobl	2	0.53340	0.77797
ocs2workinghard	2	0.55498	0.81864
ocs3positiv	2	0.56611	0.83732
ocs1knowing	2	0.57690	0.78437
ocs9prayers	3	0.65344	0.79312
sc7excitemnt	4	0.72686	0.87076
sc8regret	4	0.74287	0.90289
sc10nothinking	4	0.76444	0.87182
soc12addeddistr	4	0.76653	0.90771
sc1hardstopping	4	0.78566	0.72516
soc10helped	4	0.78880	0.93325
soc11tookcare	4	0.79019	0.90498
sc9notstop	4	0.79436	0.89433
soc7reliance	4	0.79576	0.82630
soc6loved	4	0.81106	0.93850
soc5blamed	4	0.81489	0.87934
soc8nogivup	4	0.81942	0.89446
sc2diverted	4	0.82081	0.87358
soc9available	4	0.82429	0.91956
soc4kindness	4	0.83159	0.89699
soc3leftalone	4	0.83368	0.85255
soc2comfort	4	0.83507	0.85892
soc1needed	4	0.84029	0.86315
sc3isayunsuitab	4	0.87857	0.87776

Notes: Number of items proposed to be removed is NONE. Values of MSA below .50 suggest that the item does not measure the same domain as the remaining items in the pool, and so that it should be removed. At the same time, for a normal-range test, an optimal pool of items should have a large spread of relative difficulty indices, and each quartile should have a similar number of items. When removing items from the pool, all these aspects should be taken into account. Sometimes, the conclusion is that new items should be added to the pool of items.

EXPLAINED VARIANCE BASED ON EIGENVALUES

© University of Pretoria

Variable	Eigenvalue	Proportion of variance	Cumulative proportion of variance
1	10.66298	0.28819	0.28819
2	6.17944	0.16701	0.45520
3	2.60740	0.07047	0.52567
4	2.36038	0.06379	0.58947
5	1.60047	0.04326	
6	1.28242	0.03466	
7	1.21104	0.03273	
8	0.99617	0.02692	
9	0.91336	0.02469	
10	0.83038	0.02244	
11	0.73294	0.01981	
12	0.68888	0.01862	
13	0.63683	0.01721	
14	0.60056	0.01623	
15	0.57344	0.01550	
16	0.48515	0.01311	
17	0.40631	0.01098	
18	0.38914	0.01052	
19	0.38377	0.01037	
20	0.37460	0.01012	
21	0.30654	0.00828	
22	0.28232	0.00763	
23	0.27776	0.00751	
24	0.26443	0.00715	
25	0.24547	0.00663	
26	0.23060	0.00623	
27	0.21917	0.00592	
28	0.19398	0.00524	
29	0.18271	0.00494	
30	0.16745	0.00453	
31	0.16259	0.00439	
32	0.12321	0.00333	
33	0.10547	0.00285	
34	0.10047	0.00272	
35	0.09205	0.00249	
36	0.07939	0.00215	
37	0.05073	0.00137	

Notes: *Advised number of dimensions = 4

UNROTATED LOADING MATRIX

Variable	Factor 1 Club membership	Factor 2 Social support	Factor 3 Self-control	Factor 4 Other coping strategies	Communality
clu2peergp	0.297	-0.131	-0.042	0.237	0.164
clu4sports	0.305	-0.077	-0.104	0.283	0.189
clu5communty	0.342	-0.366	-0.216	0.223	0.348
clu6health	0.548	-0.160	0.071	0.238	0.388
soc1needed	-0.819	-0.045	-0.201	-0.060	0.717
soc2comfort	-0.834	-0.072	-0.306	-0.022	0.795
soc3leftalone	-0.693	0.064	0.079	-0.230	0.543
soc4kindness	-0.769	0.087	0.016	-0.195	0.637

© University of Pretoria

soc5blamed	-0.696	0.126	0.066	-0.108	0.516
soc6loved	-0.777	-0.100	-0.298	0.001	0.703
soc7reliance	-0.759	-0.021	-0.166	0.092	0.612
soc8nogivup	-0.861	-0.048	-0.314	-0.012	0.841
soc9available	-0.814	-0.044	-0.275	0.069	0.745
soc10helped	-0.829	-0.045	-0.299	0.069	0.783
soc11tookcare	-0.718	-0.025	-0.269	0.360	0.718
soc12addeddistr	-0.708	-0.035	-0.291	0.305	0.680
sc1hardstopping	-0.377	0.220	0.428	0.348	0.494
sc2diverted	-0.600	0.202	0.369	0.244	0.597
sc3isayunsuitab	-0.501	0.318	0.522	0.111	0.637
sc7excitemnt	-0.603	0.122	0.360	0.248	0.570
sc8regret	-0.587	0.121	0.465	0.069	0.580
sc9notstop	-0.563	0.225	0.392	-0.019	0.522
sc10nothinking	-0.596	0.218	0.335	0.040	0.516
ocs1knowing	-0.340	-0.632	-0.081	-0.371	0.659
ocs2workinghard	-0.281	-0.671	0.195	-0.404	0.730
ocs3positiv	-0.280	-0.631	0.169	-0.327	0.612
ocs4relaxing	-0.059	-0.595	0.187	-0.062	0.396
ocs5exercise	0.005	-0.497	0.138	0.072	0.271
ocs6tellprobl	-0.045	-0.416	0.024	0.242	0.234
ocs7peers	-0.105	-0.611	0.049	0.286	0.469
ocs8social	-0.189	-0.551	0.187	-0.266	0.444
ocs9prayers	-0.137	-0.523	0.229	-0.320	0.448
ocs10cried	-0.006	-0.576	-0.083	-0.016	0.339
ocs11blamed	0.116	-0.661	0.008	0.185	0.485
ocs12worstoccr	-0.001	-0.703	0.119	0.269	0.580
ocs13noproble	-0.040	-0.639	0.105	0.337	0.534
ocs14jokes	-0.096	-0.702	0.110	0.281	0.593

ROTATED LOADING MATRIX

Variable	Factor 1 Club membership	Factor 2 Social support	Factor 3 Self-control	Factor 4 Other coping strategies
clu2peergp	-0.051	0.334	-0.079	-0.066
clu4sports	0.024	0.346	-0.176	-0.104
clu5communty	0.114	0.438	0.045	-0.328
clu6health	-0.334	0.394	-0.039	-0.030
soc1needed	0.736	-0.164	0.084	0.013
soc2comfort	0.873	-0.123	0.044	-0.086
soc3leftalone	0.282	-0.346	0.192	0.225
soc4kindness	0.411	-0.339	0.136	0.202
soc5blamed	0.341	-0.263	0.067	0.279
soc6loved	0.838	-0.078	0.049	-0.092
soc7reliance	0.717	-0.021	-0.015	0.105
soc8nogivup	0.901	-0.131	0.019	-0.076
soc9available	0.861	-0.046	-0.021	-0.012
soc10helped	0.896	-0.049	-0.028	-0.033
soc11tookcare	0.905	0.236	-0.211	0.097
soc12addeddistr	0.900	0.189	-0.182	0.044
sc1hardstopping	-0.077	0.194	-0.160	0.795
sc2diverted	0.093	0.069	-0.084	0.754
sc3isayunsuitab	-0.195	-0.094	-0.052	0.854

© University of Pretoria

sc7excitemnt	0.111	0.113	-0.024	0.730
sc8regret	-0.080	-0.048	0.120	0.759
sc9notstop	-0.062	-0.188	0.052	0.655
sc10nothinking	0.044	-0.137	0.005	0.627
ocs1knowing	0.209	-0.080	0.739	-0.279
ocs2workinghard	-0.131	-0.063	0.896	-0.020
ocs3positiv	-0.076	-0.011	0.809	-0.006
ocs4relaxing	-0.140	0.255	0.609	0.068
ocs5exercise	-0.085	0.338	0.425	0.075
ocs6tellprobl	0.130	0.443	0.220	0.060
ocs7peers	0.175	0.581	0.372	0.085
ocs8social	-0.137	0.019	0.704	0.029
ocs9prayers	-0.240	-0.037	0.724	0.040
ocs10cried	0.125	0.278	0.450	-0.220
ocs11blamed	0.035	0.539	0.429	-0.089
ocs12worstoccr	0.032	0.632	0.474	0.100
ocs13noproble	0.095	0.657	0.382	0.142
ocs14jokes	0.109	0.629	0.474	0.127

ROTATED LOADING MATRIX (loadings lower than absolute 0.300 omitted)

Variable	Factor 1 Club membership	Factor 2 Social support	Factor 3 Self-control	Factor 4 Other coping strategies
clu2peergp		0.334		
clu4sports		0.346		
clu5communty		0.438		-0.328
clu6health	-0.334	0.394		
soc1needed	0.736			
soc2comfort	0.873			
soc3leftalone		-0.346		
soc4kindness	0.411	-0.339		
soc5blamed	0.341			
soc6loved	0.838			
soc7reliance	0.717			
soc8nogivup	0.901			
soc9available	0.861			
soc10helped	0.896			
soc11tookcare	0.905			
soc12addeddistr	0.900			
sc1hardstopping				0.795
sc2diverted				0.754
sc3isayunsuitab				0.854
sc7excitemnt				0.730
sc8regret				0.759
sc9notstop				0.655
sc10nothinking				0.627
ocs1knowing			0.739	
ocs2workinghard			0.896	
ocs3positiv			0.809	
ocs4relaxing			0.609	
ocs5exercise		0.338	0.425	
ocs6tellprobl		0.443		

© University of Pretoria

ocs7peers	0.581	0.372
ocs8social		0.704
ocs9prayers		0.724
ocs10cried		0.450
ocs11blamed	0.539	0.429
ocs12worstoccr	0.632	0.474
ocs13noproble	0.657	0.382
ocs14jokes	0.629	0.474

EXPLAINED VARIANCE OF ROTATED FACTORS AND RELIABILITY OF PHI-INFORMATION OBLIQUE EAP SCORES (Ferrando & Lorenzo-Seva, 2016)

	Factor	Variance	ORION	Factor Determinacy Index
1	Club membership	7.282	0.966	0.983
2	Social support	3.559	0.875	0.935
3	Self-control	4.827	0.920	0.959
4	Other coping strategies	4.420	0.914	0.956

© University of Pretoria

2.4.2 Part D: CFA results of on items in the coping methods scale

CFA round 1: First order model on adopted scale

lavaan 0.6-7 ended normally after 86 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	90
Number of observations	1437

Model Test User Model:

Test statistic	6265.297
Degrees of freedom	813
P-value (Chi-square)	0.000

Model Test Baseline Model:

Test statistic	42781.558
Degrees of freedom	861
P-value	0.000

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.870
Tucker-Lewis Index (TLI)	0.862

Root Mean Square Error of Approximation:

RMSEA	0.068
90 Percent confidence interval – lower	0.067
90 Percent confidence interval – upper	0.070
P-value RMSEA <= 0.05	0.000

Standardized Root Mean Square Residual:

SRMR	0.074

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Membershiptoclub =~						
clu1religiosgp	1.000				0.495	0.620
clu2peergp	0.583	0.027	21.320	0.000	0.289	0.422
clu3clan	0.369	0.019	19.807	0.000	0.183	0.433
clu4sports	0.608	0.029	20.919	0.000	0.301	0.402
clu5communty	0.348	0.019	18.331	0.000	0.172	0.376
clu6health	0.685	0.028	24.362	0.000	0.339	0.655
Socialsupport =~						
soc1needed	1.000			0.000	0.446	0.702
soc2comfort	1.033	0.030	34.670	0.000	0.461	0.720
soc3leftalone	0.803	0.026	30.959	0.000	0.358	0.558
soc4kindness	0.905	0.028	32.781	0.000	0.404	0.618

© University of Pretoria

soc5blamed	0.806	0.026	31.589	0.000	0.360	0.552
soc6loved	1.007	0.029	34.508	0.000	0.450	0.694
soc7reliance	1.073	0.031	34.390	0.000	0.479	0.681
soc8nogivup	1.129	0.032	35.280	0.000	0.504	0.765
soc9available	1.013	0.029	34.731	0.000	0.452	0.731
soc10helped	1.152	0.032	35.776	0.000	0.514	0.752
soc11tookcare	0.924	0.027	33.984	0.000	0.413	0.645
soc12addeddstr	0.979	0.029	33.805	0.000	0.437	0.614
Selfcontrol =~						
sc1hardstoppng	1.000				0.277	0.384
sc2diverted	1.392	0.060	23.054	0.000	0.385	0.651
sc3isayunsuitb	0.903	0.044	20.687	0.000	0.250	0.480
sc4refuse	1.255	0.058	21.486	0.000	0.347	0.428
sc5resist	0.790	0.043	18.207	0.000	0.218	0.312
sc6discipl	0.370	0.035	10.453	0.000	0.102	0.135
sc7excitemnt	1.676	0.071	23.511	0.000	0.464	0.701
sc8regret	1.651	0.071	23.178	0.000	0.457	0.662
sc9notstop	1.397	0.062	22.544	0.000	0.386	0.608
sc10nothinking	1.519	0.066	23.051	0.000	0.420	0.627
Othercopingtactics =~						
ocs1knowing	1.000			0.000	0.525	0.621
ocs2workinghrd	1.100	0.033	33.380	0.000	0.578	0.690
ocs3positiv	1.025	0.031	32.881	0.000	0.538	0.656
ocs4relaxing	0.760	0.026	29.574	0.000	0.399	0.538
ocs5exercise	0.600	0.023	25.962	0.000	0.316	0.432
ocs6tellprobl	0.534	0.023	23.349	0.000	0.280	0.366
ocs7peers	0.797	0.027	29.815	0.000	0.419	0.546
ocs8social	0.822	0.027	30.031	0.000	0.432	0.545
ocs9prayers	0.753	0.026	29.338	0.000	0.396	0.501
ocs10cried	0.696	0.026	27.100	0.000	0.366	0.461
ocs11blamed	0.702	0.025	27.889	0.000	0.369	0.490
ocs12worstoccr	0.752	0.025	30.035	0.000	0.395	0.554
ocs13noproble	0.752	0.026	29.423	0.000	0.395	0.531
ocs14jokes	0.923	0.029	31.509	0.000	0.485	0.610

Covariances:

Membershiptclb~~						
Socialsupport	-0.104	0.004	-26.811	0.000	-0.468	-0.468
Selfcontrol	-0.061	0.003	-19.027	0.000	-0.449	-0.449
Othercpngtctcs	0.019	0.003	6.793	0.000	0.072	0.072
Socialsupport ~~						
Selfcontrol	0.067	0.003	23.405	0.000	0.546	0.546
Othercpngtctcs	0.035	0.002	21.632	0.000	0.148	0.148
Selfcontrol ~~						
Othercpngtctcs	0.001	0.001	0.506	0.613	0.004	0.004

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.clu1religiosgp	0.393	0.022	18.242	0.000	0.393	0.616
.clu2peergp	0.384	0.017	23.127	0.000	0.384	0.822
.clu3clan	0.145	0.015	9.380	0.000	0.145	0.812
.clu4sports	0.470	0.017	27.693	0.000	0.470	0.838
.clu5communty	0.181	0.016	11.078	0.000	0.181	0.859

© University of Pretoria

.clu6health	0.154	0.017	9.121	0.000	0.154	0.572
.soc1needed	0.205	0.022	9.184	0.000	0.205	0.507
.soc2comfort	0.198	0.022	8.909	0.000	0.198	0.482
.soc3leftalone	0.285	0.021	13.269	0.000	0.285	0.689
.soc4kindness	0.265	0.022	11.923	0.000	0.265	0.619
.soc5blamed	0.296	0.020	14.582	0.000	0.296	0.695
.soc6loved	0.217	0.020	10.642	0.000	0.217	0.518
.soc7reliance	0.266	0.022	11.811	0.000	0.266	0.537
.soc8nogivup	0.180	0.022	8.071	0.000	0.180	0.415
.soc9available	0.178	0.020	8.997	0.000	0.178	0.465
.soc10helped	0.204	0.021	9.560	0.000	0.204	0.435
.soc11tookcare	0.239	0.018	13.258	0.000	0.239	0.584
.soc12addeddstr	0.316	0.020	15.551	0.000	0.316	0.623
.sc1hardstoppng	0.442	0.021	20.778	0.000	0.442	0.852
.sc2diverted	0.202	0.017	11.582	0.000	0.202	0.576
.sc3isayunsuitb	0.208	0.017	12.234	0.000	0.208	0.769
.sc4refuse	0.538	0.016	33.814	0.000	0.538	0.817
.sc5resist	0.442	0.020	22.409	0.000	0.442	0.903
.sc6discipl	0.561	0.020	28.350	0.000	0.561	0.982
.sc7excitemnt	0.223	0.017	13.029	0.000	0.223	0.509
.sc8regret	0.267	0.019	14.157	0.000	0.267	0.561
.sc9notstop	0.255	0.018	13.919	0.000	0.255	0.631
.sc10nothinking	0.272	0.019	14.661	0.000	0.272	0.607
.ocs1knowing	0.440	0.017	25.346	0.000	0.440	0.615
.ocs2workinghrd	0.367	0.018	20.312	0.000	0.367	0.524
.ocs3positiv	0.383	0.018	21.860	0.000	0.383	0.569
.ocs4relaxing	0.391	0.015	25.311	0.000	0.391	0.710
.ocs5exercise	0.433	0.015	29.498	0.000	0.433	0.813
.ocs6tellprobl	0.507	0.014	35.540	0.000	0.507	0.866
.ocs7peers	0.412	0.016	25.946	0.000	0.412	0.702
.ocs8social	0.441	0.016	27.636	0.000	0.441	0.703
.ocs9prayers	0.467	0.017	27.124	0.000	0.467	0.749
.ocs10cried	0.497	0.017	29.173	0.000	0.497	0.788
.ocs11blamed	0.429	0.017	25.343	0.000	0.429	0.759
.ocs12worstoccr	0.352	0.017	20.517	0.000	0.352	0.693
.ocs13noproble	0.398	0.017	23.592	0.000	0.398	0.718
.ocs14jokes	0.397	0.018	22.565	0.000	0.397	0.628
Membershiptclb	0.245	0.014	17.790	0.000	1.000	1.000
Socialsupport	0.199	0.008	24.217	0.000	1.000	1.000
Selfcontrol	0.076	0.006	13.726	0.000	1.000	1.000
Othercpngtctcs	0.276	0.012	23.515	0.000	1.000	1.000

Cronbach's reliability (FitD) for:

	Membershiptoclub	Socialsupport	Selfcontrol	Othercopingtactics
alpha	0.6670633	0.9094665	0.7693460	0.8522751

© University of Pretoria

CFA round 1: Second order model (on adopted scale for coping methods)

lavaan 0.6-7 did NOT end normally after 6,400 iterations
[lavaan WARNING message: Fit measures are not available if the model does not converge. Considering that a few fit measures are available, the model did not converge and estimates below are most likely unreliable].

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	88
Number of observations	1437

Model Test User Model:

Test statistic	NA
Degrees of freedom	NA

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Membershiptoclub =~						
clu1religiosgp	1.000				0.487	0.610
clu2peergp	0.595	NA			0.290	0.424
clu3clan	0.346	NA			0.168	0.399
clu4sports	0.639	NA			0.311	0.416
clu5communty	0.297	NA			0.145	0.316
clu6health	0.738	NA			0.359	0.694
Socialsupport =~						
soc1needed	1.000				0.446	0.702
soc2comfort	1.035	NA			0.462	0.721
soc3leftalone	0.802	NA			0.358	0.557
soc4kindness	0.905	NA			0.404	0.617
soc5blamed	0.806	NA			0.360	0.552
soc6loved	1.009	NA			0.450	0.695
soc7reliance	1.074	NA			0.479	0.681
soc8nogivup	1.132	NA			0.505	0.766
soc9available	1.014	NA			0.452	0.731
soc10helped	1.153	NA			0.515	0.752
soc11tookcare	0.925	NA			0.413	0.645
soc12addeddstr	0.981	NA			0.437	0.614
Selfcontrol =~						
sc1hardstoppng	1.000				0.279	0.388
sc2diverted	1.366	NA			0.381	0.645
sc3isayunsuitb	0.894	NA			0.250	0.480
sc4refuse	1.256	NA			0.351	0.432
sc5resist	0.792	NA			0.221	0.316
sc6discipl	0.405	NA			0.113	0.150
sc7excitemnt	1.681	NA			0.469	0.710
sc8regret	1.615	NA			0.451	0.654
sc9notstop	1.371	NA			0.383	0.602
sc10nothinking	1.490	NA			0.416	0.621

© University of Pretoria

Othercopingtactics =~						
ocs1knowing	1.000				0.529	0.625
ocs2workinghrd	1.098	NA			0.581	0.694
ocs3positiv	1.024	NA			0.542	0.660
ocs4relaxing	0.753	NA			0.398	0.537
ocs5exercise	0.595	NA			0.315	0.432
ocs6tellprobl	0.524	NA			0.277	0.362
ocs7peers	0.788	NA			0.417	0.545
ocs8social	0.820	NA			0.434	0.548
ocs9prayers	0.747	NA			0.395	0.501
ocs10cried	0.693	NA			0.367	0.462
ocs11blamed	0.691	NA			0.366	0.487
ocs12worstoccr	0.740	NA			0.392	0.549
ocs13noproble	0.742	NA			0.393	0.528
ocs14jokes	0.913	NA			0.483	0.608
Copingmethods =~						
Membershiptclb	1.000				NA	NA
Socialsupport	1819.782	NA			NA	NA
Selfcontrol	-0.658	NA			NA	NA
Othercpngtctcs	-0.341	NA			NA	NA

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.clu1religiosgp	0.401	NA			0.401	0.628
.clu2peergp	0.383	NA			0.383	0.820
.clu3clan	0.150	NA			0.150	0.841
.clu4sports	0.463	NA			0.463	0.827
.clu5communty	0.189	NA			0.189	0.900
.clu6health	0.139	NA			0.139	0.519
.soc1needed	0.205	NA			0.205	0.508
.soc2comfort	0.197	NA			0.197	0.481
.soc3leftalone	0.285	NA			0.285	0.690
.soc4kindness	0.265	NA			0.265	0.619
.soc5blamed	0.296	NA			0.296	0.696
.soc6loved	0.217	NA			0.217	0.517
.soc7reliance	0.266	NA			0.266	0.537
.soc8nogivup	0.179	NA			0.179	0.413
.soc9available	0.178	NA			0.178	0.466
.soc10helped	0.204	NA			0.204	0.435
.soc11tookcare	0.239	NA			0.239	0.584
.soc12addeddstr	0.315	NA			0.315	0.622
.sc1hardstoppng	0.440	NA			0.440	0.849
.sc2diverted	0.204	NA			0.204	0.584
.sc3isayunsuitb	0.208	NA			0.208	0.770
.sc4refuse	0.535	NA			0.535	0.813
.sc5resist	0.441	NA			0.441	0.900
.sc6discipl	0.559	NA			0.559	0.978
.sc7excitemnt	0.217	NA			0.217	0.496
.sc8regret	0.272	NA			0.272	0.572
.sc9notstop	0.257	NA			0.257	0.637
.sc10nothinking	0.275	NA			0.275	0.614
.ocs1knowing	0.436	NA			0.436	0.609
.ocs2workinghrd	0.363	NA			0.363	0.518

© University of Pretoria

.ocs3positiv	0.380	NA	0.380	0.564
.ocs4relaxing	0.392	NA	0.392	0.712
.ocs5exercise	0.433	NA	0.433	0.814
.ocs6tellprobl	0.509	NA	0.509	0.869
.ocs7peers	0.413	NA	0.413	0.703
.ocs8social	0.439	NA	0.439	0.700
.ocs9prayers	0.467	NA	0.467	0.749
.ocs10cried	0.496	NA	0.496	0.787
.ocs11blamed	0.431	NA	0.431	0.763
.ocs12worstoccr	0.355	NA	0.355	0.699
.ocs13noproble	0.400	NA	0.400	0.722
.ocs14jokes	0.398	NA	0.398	0.630
.Membershiptclb	0.237		1.000	1.000
.Socialsupport	188.335	NA	946.417	946.417
.Selfcontrol	0.078	NA	1.000	1.000
.Othercpngtctcs	0.280	NA	1.000	1.000
Copingmethods	-0.000	NA	NA	NA

Conclusion for CFA on the adopted coping methods scale

In the first and second order CFA models, which considered all items in the adopted scale, a good fit was not achieved. To improve the model, items with loadings <.40 and eventually those with loadings that are less than .50 were removed.

However, the exclusion of items with loadings that are less than the above two cut-off values merely reduced the constructs without improving fitness of the model. For those reasons, the results from EFA were used to: (i) remove some items with cross-loading namely *soc4kindness, soc5blamed, ocs6tellprobl*, and *ocs13noproble*.

© University of Pretoria

CFA round 2: First-order model (less clu1religiousgp, soc4kindness, soc5blamed, sc6discipl, ocs6tellprobl, and ocs13noproble)

lavaan 0.6-7 ended normally after 97 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	78
Number of observations	1437
Model Test User Model:	
Test statistic	4386.225
Degrees of freedom	588
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	33256.308
Degrees of freedom	630
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.884
Tucker-Lewis Index (TLI)	0.875
Root Mean Square Error of Approximation:	
RMSEA	0.067
90 Percent confidence interval – lower	0.065
90 Percent confidence interval – upper	0.069
P-value RMSEA <= 0.05	0.000
Standardized Root Mean Square Residual:	
SRMR	0.072
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
F1=Othercopestrategies~						
ocs1knowing	1.000				0.551	0.651
ocs2workinghrd	1.111	0.034	32.587	0.000	0.612	0.731
ocs3positiv	1.034	0.032	32.162	0.000	0.570	0.694
ocs4relaxing	0.718	0.025	28.220	0.000	0.396	0.533
ocs5exercise	0.549	0.023	24.214	0.000	0.303	0.415
ocs7peers	0.697	0.026	27.253	0.000	0.384	0.501
ocs8social	0.818	0.028	29.456	0.000	0.450	0.569
ocs9prayers	0.750	0.026	28.716	0.000	0.413	0.523
ocs10cried	0.665	0.026	25.962	0.000	0.366	0.461
ocs11blamed	0.631	0.024	25.856	0.000	0.348	0.463
ocs12worstoccr	0.667	0.024	27.860	0.000	0.368	0.515
ocs14jokes	0.794	0.028	28.777	0.000	0.438	0.551

© University of Pretoria

F2 Social support~						
soc1needed	1.000				0.452	0.711
soc2comfort	1.068	0.033	32.421	0.000	0.483	0.754
soc6loved	1.038	0.032	32.307	0.000	0.469	0.725
soc7reliance	1.044	0.033	31.638	0.000	0.472	0.671
soc8nogivup	1.168	0.035	32.899	0.000	0.528	0.801
soc9available	1.045	0.032	32.482	0.000	0.473	0.764
soc10helped	1.205	0.036	33.470	0.000	0.545	0.796
soc11tookcare	0.977	0.030	32.102	0.000	0.442	0.690
soc12addeddstr	1.027	0.032	31.751	0.000	0.465	0.653
F3=Selfcontrol ~						
sc1hardstoppng	1.000				0.281	0.391
sc2diverted	1.376	0.062	22.030	0.000	0.387	0.655
sc3isayunsuitb	0.906	0.046	19.834	0.000	0.255	0.490
sc4refuse	1.172	0.058	20.206	0.000	0.330	0.407
sc5resist	0.729	0.043	16.870	0.000	0.205	0.293
sc7excitemnt	1.660	0.074	22.465	0.000	0.467	0.706
sc8regret	1.629	0.074	22.134	0.000	0.459	0.665
sc9notstop	1.379	0.064	21.514	0.000	0.388	0.611
sc10nothinking	1.506	0.068	22.042	0.000	0.424	0.633
F4 Club membership~						
clu2peergp	1.000				0.234	0.342
clu3clan	0.647	0.043	14.935	0.000	0.151	0.359
clu4sports	1.097	0.070	15.705	0.000	0.257	0.343
clu5communty	0.634	0.045	14.225	0.000	0.148	0.323
clu6health	1.305	0.073	17.784	0.000	0.305	0.589
soc3leftalone [a]	-1.857	0.103	-18.036	0.000	-0.434	-0.676

Cronbach's reliability (Coping methods)

	F1=Othercopestrat	F2=Socialsupport	F3=Selfcontrol	F4=Club membership
alpha	0.8422500	0.9108843	0.7872848	0.4205523
avevar	0.3202525	0.5320122	0.2971883	0.2133774

[(a)] This is supposed to be analysed together with items in the social support factor i.e. F2 above

Conclusion

The low loadings item validity was not achieved, the correlations of two items used to assess self-control *(i.e. sc1hardstoppng and sc5resist)* and all items used to measure membership to club were very low (i.e. ranging from .293 to .589) even though they significantly correlated at p = 0.000. The Cronbach's alpha for the membership to club factor reduced to from 0.667 to 0.420 indicating a low internal consistency of the items. Hence, all items for the membership to club factor and self-control factor with low correlations warrant total exclusion from the coping methods construct to further improve the model.

© University of Pretoria

CFA round 3: First-order model on scale, less items in club membership factor, sc1hardstoppng and sc5resist

lavaan 0.6-7 ended normally after 69 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of free parameters	61
Number of observations	1437

Model Test User Model:

Test statistic	2975.521
Degrees of freedom	374
P-value (Chi-square)	0.000

Model Test Baseline Model:

Test statistic	28325.056
Degrees of freedom	406
P-value	0.000

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.907
Tucker-Lewis Index (TLI)	0.899

Root Mean Square Error of Approximation:

RMSEA	0.070
90 Percent confidence interval – lower	0.067
90 Percent confidence interval – upper	0.072
P-value RMSEA <= 0.05	0.000

Standardized Root Mean Square Residual:

SRMR	0.072

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
F1=Othercopingstrateg~						
ocs1knowing	1.000				0.555	0.655
ocs2workinghrd	1.110	0.034	32.776	0.000	0.616	0.736
ocs3positiv	1.035	0.032	32.365	0.000	0.574	0.700
ocs4relaxing	0.711	0.025	28.269	0.000	0.395	0.532
ocs5exercise	0.543	0.022	24.200	0.000	0.301	0.413
ocs7peers	0.688	0.025	27.236	0.000	0.382	0.498
ocs8social	0.815	0.028	29.614	0.000	0.452	0.571
ocs9prayers	0.748	0.026	28.857	0.000	0.415	0.525
ocs10cried	0.654	0.025	25.902	0.000	0.363	0.457
ocs11blamed	0.616	0.024	25.668	0.000	0.342	0.455
ocs12worstoccr	0.655	0.024	27.798	0.000	0.364	0.510
ocs14jokes	0.784	0.027	28.783	0.000	0.435	0.547
F2=Socialsupport=~						

© University of Pretoria

soc1needed	1.000				0.447	0.702
soc2comfort	1.069	0.034	31.259	0.000	0.478	0.745
soc3leftalone	0.687	0.026	26.080	0.000	0.307	0.478
soc6loved	1.042	0.033	31.235	0.000	0.465	0.719
soc7reliance	1.047	0.034	30.583	0.000	0.467	0.664
soc8nogivup	1.179	0.037	31.786	0.000	0.527	0.799
soc9available	1.048	0.033	31.348	0.000	0.468	0.756
soc10helped	1.210	0.037	32.320	0.000	0.540	0.789
soc11tookcare	0.990	0.032	31.140	0.000	0.442	0.691
soc12addeddstr	1.045	0.034	30.869	0.000	0.467	0.655
F3=Selfcontrol~						
sc2diverted	1.000				0.370	0.625
sc3isayunsuitb	0.639	0.030	21.559	0.000	0.236	0.454
sc4refuse	0.887	0.039	22.592	0.000	0.328	0.404
sc7excitemnt	1.270	0.048	26.633	0.000	0.469	0.710
sc8regret	1.218	0.047	25.908	0.000	0.450	0.653
sc9notstop	1.045	0.042	24.985	0.000	0.386	0.608
sc10nothinking	1.143	0.044	25.823	0.000	0.422	0.631

Covariances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
F1 Othercopingstrateg~~						
F2 Socialsupport	0.041	0.002	21.286	0.000	0.166	0.166
F3 Selfcontrol	0.002	0.002	0.939	0.348	0.008	0.008
F2 Socialsupport~~						
F3 Selfcontrol	0.087	0.003	26.861	0.000	0.526	0.526

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
ocs1knowing	0.409	0.018	22.190	0.000	0.409	0.570
ocs2workinghrd	0.322	0.019	16.540	0.000	0.322	0.459
ocs3positiv	0.344	0.019	18.378	0.000	0.344	0.510
ocs4relaxing	0.395	0.016	25.286	0.000	0.395	0.717
ocs5exercise	0.442	0.015	30.106	0.000	0.442	0.830
ocs7peers	0.442	0.016	28.199	0.000	0.442	0.752
ocs8social	0.423	0.017	25.588	0.000	0.423	0.674
ocs9prayers	0.452	0.018	25.569	0.000	0.452	0.724
ocs10cried	0.499	0.017	29.046	0.000	0.499	0.791
ocs11blamed	0.448	0.017	26.646	0.000	0.448	0.793
ocs12worstoccr	0.376	0.017	22.116	0.000	0.376	0.740
ocs14jokes	0.443	0.017	25.777	0.000	0.443	0.701
soc1needed	0.205	0.023	9.035	0.000	0.205	0.507
soc2comfort	0.183	0.023	8.005	0.000	0.183	0.445
soc3leftalone	0.319	0.021	14.975	0.000	0.319	0.772
soc6loved	0.203	0.021	9.673	0.000	0.203	0.483
soc7reliance	0.277	0.023	12.150	0.000	0.277	0.559
soc8nogivup	0.157	0.023	6.784	0.000	0.157	0.361
soc9available	0.164	0.020	8.048	0.000	0.164	0.428
soc10helped	0.177	0.022	7.953	0.000	0.177	0.377
soc11tookcare	0.214	0.019	11.475	0.000	0.214	0.523
soc12addeddstr	0.289	0.021	13.775	0.000	0.289	0.570
sc2diverted	0.213	0.018	12.098	0.000	0.213	0.609
sc3isayunsuitb	0.215	0.017	12.578	0.000	0.215	0.794

© University of Pretoria

sc4refuse	0.551	0.016	34.353	0.000	0.551	0.837
sc7excitemnt	0.217	0.018	12.126	0.000	0.217	0.497
sc8regret	0.273	0.019	14.048	0.000	0.273	0.574
sc9notstop	0.255	0.019	13.594	0.000	0.255	0.630
sc10nothinking	0.270	0.019	14.135	0.000	0.270	0.602
F1 Othercopingstrateg	0.308	0.013	23.247	0.000	1.000	1.000
F2 Socialsupport	0.199	0.009	21.783	0.000	1.000	1.000
F3 Selfcontrol	0.137	0.008	18.107	0.000	1.000	1.000

Cronbach's reliability for coping methods

	F1=Other coping strategies	F2=Socialsupport	F3=Selfcontrol
alpha	0.8422500	0.9053900	0.7780993
avevar	0.3204327	0.4967613	0.3451113

Conclusion

A good fit was achieved. Hence this measurement structure was adopted.

© University of Pretoria

CFA round 3: The second-order model is not identifiable

lavaan 0.6-10 did NOT end normally after 417 iterations
[lavaan WARNING message: Fit measures are not available if the model does not converge. Since few fit measures are available, the model did not converge and estimates below are most likely unreliable].

Estimator	DWLS
Optimization method	NLMINB
Number of model parameters	61
Number of observations	1437

Model Test User Model:

Test statistic	NA
Degrees of freedom	NA

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
F1 = othercopingstrateg~						
ocs1knowing	1.000		NA		0.555	0.655
ocs2workinghrd	1.110		NA		0.616	0.736
ocs3positiv	1.035		NA		0.574	0.700
ocs4relaxing	0.711		NA		0.395	0.532
ocs5exercise	0.543		NA		0.301	0.413
ocs7peers	0.688		NA		0.382	0.498
ocs8social	0.815		NA		0.452	0.571
ocs9prayers	0.748		NA		0.415	0.525
ocs10cried	0.654		NA		0.363	0.457
ocs11blamed	0.616		NA		0.342	0.455
ocs12worstoccr	0.655		NA		0.364	0.510
ocs14jokes	0.784		NA		0.435	0.547
F2 = social support~						
soc1needed	1.000		NA		0.447	0.702
soc2comfort	1.069		NA		0.478	0.745
soc3leftalone	0.687		NA		0.307	0.478
soc6loved	1.042		NA		0.465	0.719
soc7reliance	1.047		NA		0.467	0.664
soc8nogivup	1.179		NA		0.527	0.799
soc9available	1.048		NA		0.468	0.756
soc10helped	1.210		NA		0.540	0.789
soc11tookcare	0.990		NA		0.442	0.691
soc12addeddstr	1.045		NA		0.467	0.655
F3 = self-control ~						
sc2diverted	1.000		NA		0.370	0.625
sc3isayunsuitb	0.639		NA		0.236	0.454
sc4refuse	0.887		NA		0.328	0.404
sc7excitemnt	1.270		NA		0.469	0.710
sc8regret	1.218		NA		0.450	0.653
sc9notstop	1.045		NA		0.386	0.608

© University of Pretoria

sc10nothinking	1.143		NA		0.422	0.631
Coping =~						
F1 othercopingstrateg	1.000		NA		0.051	0.051
F2 socialsupport	51.464		NA		3.260	3.260
F3 self-control	2.107		NA		0.161	0.161

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.ocs1knowing	0.409		NA		0.409	0.570
.ocs2workinghrd	0.322		NA		0.322	0.459
.ocs3positiv	0.344		NA		0.344	0.510
.ocs4relaxing	0.395		NA		0.395	0.717
.ocs5exercise	0.442		NA		0.442	0.830
.ocs7peers	0.442		NA		0.442	0.752
.ocs8social	0.423		NA		0.423	0.674
.ocs9prayers	0.452		NA		0.452	0.724
.ocs10cried	0.499		NA		0.499	0.791
.ocs11blamed	0.448		NA		0.448	0.793
.ocs12worstoccr	0.376		NA		0.376	0.740
.ocs14jokes	0.443		NA		0.443	0.701
.soc1needed	0.205		NA		0.205	0.507
.soc2comfort	0.183		NA		0.183	0.445
.soc3leftalone	0.319		NA		0.319	0.772
.soc6loved	0.203		NA		0.203	0.483
.soc7reliance	0.277		NA		0.277	0.559
.soc8nogivup	0.157		NA		0.157	0.361
.soc9available	0.164		NA		0.164	0.428
.soc10helped	0.177		NA		0.177	0.377
.soc11tookcare	0.214		NA		0.214	0.523
.soc12addeddstr	0.289		NA		0.289	0.570
.sc2diverted	0.213		NA		0.213	0.609
.sc3isayunsuitb	0.215		NA		0.215	0.794
.sc4refuse	0.551		NA		0.551	0.837
.sc7excitemnt	0.217		NA		0.217	0.497
.sc8regret	0.273		NA		0.273	0.574
.sc9notstop	0.255		NA		0.255	0.630
.sc10nothinking	0.270		NA		0.270	0.602
.F1 othercopingstrateg	0.307		NA		0.997	0.997
.F2 socialsupport	-1.920		NA		-9.631	-9.631
.F3 self-control	0.133		NA		0.974	0.974
Coping	0.001		NA		1.000	1.000

Conclusion

The second order model did not achieve a good fit. Hence, the first order model was adopted.

© University of Pretoria

CFA round 4: First order model for coping mechanism (four factors)

lavaan 0.6-10 ended normally after 74 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of model parameters	64
Number of observations	1437
Model Test User Model:	
Test statistic	2903.097
Degrees of freedom	371
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	28325.056
Degrees of freedom	406
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.909
Tucker-Lewis Index (TLI)	0.901
Root Mean Square Error of Approximation:	
RMSEA	0.069
90 Percent confidence interval – lower	0.067
90 Percent confidence interval – upper	0.071
P-value RMSEA <= 0.05	0.000
Standardized Root Mean Square Residual:	
SRMR	0.071
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Socialization =~						
ocs4relaxing	1.000				0.408	0.550
ocs5exercise	0.768	0.034	22.774	0.000	0.314	0.430
ocs7peers	0.944	0.038	24.828	0.000	0.386	0.503
ocs8social	1.121	0.042	26.650	0.000	0.458	0.578
ocs9prayers	1.040	0.040	26.154	0.000	0.425	0.538
ocs10cried	0.914	0.038	24.014	0.000	0.373	0.470
Deflection =~						
ocs1knowing	1.000			0.000	0.559	0.660
ocs2workinghrd	1.100	0.033	33.087	0.000	0.615	0.734
ocs3positiv	1.027	0.031	32.682	0.000	0.574	0.699
ocs11blamed	0.590	0.023	25.381	0.000	0.330	0.439
ocs12worstoccr	0.638	0.023	27.784	0.000	0.356	0.500
ocs14jokes	0.769	0.027	28.905	0.000	0.429	0.540

© University of Pretoria

Socialsuppport =~						
soc1needed	1.000				0.446	0.702
soc2comfort	1.070	0.034	31.305	0.000	0.478	0.745
soc3leftalone	0.688	0.026	26.109	0.000	0.307	0.478
soc6loved	1.041	0.033	31.261	0.000	0.465	0.718
soc7reliance	1.047	0.034	30.614	0.000	0.467	0.664
soc8nogivup	1.181	0.037	31.838	0.000	0.527	0.800
soc9available	1.047	0.033	31.377	0.000	0.467	0.755
soc10helped	1.213	0.037	32.382	0.000	0.541	0.791
soc11tookcare	0.992	0.032	31.188	0.000	0.442	0.691
soc12addeddstr	1.046	0.034	30.909	0.000	0.467	0.656
Selfcontrol =~						
sc2diverted	1.000				0.369	0.624
sc3isayunsuitb	0.639	0.030	21.543	0.000	0.236	0.453
sc4refuse	0.892	0.039	22.642	0.000	0.329	0.406
sc7excitemnt	1.271	0.048	26.636	0.000	0.469	0.709
sc8regret	1.220	0.047	25.917	0.000	0.450	0.653
sc9notstop	1.046	0.042	24.985	0.000	0.386	0.608
sc10nothinking	1.144	0.044	25.822	0.000	0.422	0.630

Covariances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Socialization ~~						
Deflection	0.223	0.008	28.886	0.000	0.976	0.976
Socialsuppport	0.020	0.002	11.397	0.000	0.110	0.110
SelfControl	-0.004	0.002	-2.135	0.033	-0.029	-0.029
Deflection ~~						
Socialsuppport	0.051	0.002	20.758	0.000	0.206	0.206
SelfControl	0.007	0.002	3.016	0.003	0.034	0.034
Socialsuppport ~~						
SelfControl	0.087	0.003	26.861	0.000	0.526	0.526

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.ocs4relaxing	0.384	0.016	23.772	0.000	0.384	0.697
.ocs5exercise	0.434	0.015	29.077	0.000	0.434	0.815
.ocs7peers	0.439	0.016	27.421	0.000	0.439	0.747
.ocs8social	0.418	0.017	24.367	0.000	0.418	0.666
.ocs9prayers	0.443	0.018	24.453	0.000	0.443	0.711
.ocs10cried	0.491	0.018	28.028	0.000	0.491	0.779
.ocs1knowing	0.404	0.019	21.735	0.000	0.404	0.564
.ocs2workinghrd	0.323	0.020	16.487	0.000	0.323	0.461
.ocs3positiv	0.344	0.019	18.280	0.000	0.344	0.511
.ocs11blamed	0.456	0.017	27.323	0.000	0.456	0.807
.ocs12worstoccr	0.381	0.017	22.504	0.000	0.381	0.750
.ocs14jokes	0.447	0.017	26.134	0.000	0.447	0.708
.soc1needed	0.205	0.023	9.053	0.000	0.205	0.507
.soc2comfort	0.183	0.023	8.005	0.000	0.183	0.445
.soc3leftalone	0.319	0.021	14.976	0.000	0.319	0.772
.soc6loved	0.203	0.021	9.706	0.000	0.203	0.485
.soc7reliance	0.277	0.023	12.165	0.000	0.277	0.559
.soc8nogivup	0.156	0.023	6.765	0.000	0.156	0.360
.soc9available	0.164	0.020	8.084	0.000	0.164	0.430

© University of Pretoria

.soc10helped	0.176	0.022	7.905	0.000	0.176	0.375
.soc11tookcare	0.214	0.019	11.462	0.000	0.214	0.522
.soc12addeddstr	0.289	0.021	13.778	0.000	0.289	0.570
.sc2diverted	0.214	0.018	12.131	0.000	0.214	0.611
.sc3isayunsuitb	0.215	0.017	12.593	0.000	0.215	0.794
.sc4refuse	0.550	0.016	34.271	0.000	0.550	0.835
.sc7excitemnt	0.217	0.018	12.135	0.000	0.217	0.497
.sc8regret	0.273	0.019	14.042	0.000	0.273	0.574
.sc9notstop	0.255	0.019	13.610	0.000	0.255	0.631
.sc10nothinking	0.270	0.019	14.152	0.000	0.270	0.603
Socialization	0.167	0.009	17.853	0.000	1.000	1.000
Deflection	0.312	0.013	23.151	0.000	1.000	1.000
Socialsuppport	0.199	0.009	21.803	0.000	1.000	1.000
SelfControl	0.136	0.008	18.096	0.000	1.000	1.000

SEM Tools: Cronbach's reliability (FitD) of:

	Socialization	Deflection	Socialsuppport	SelfControl	Total
alpha	0.6798420	0.7676798	0.9053900	0.7780993	0.8583605
avevar	0.2656134	0.3792324	0.4967884	0.3450482	-

© University of Pretoria

CFA round 4: Second order model for coping mechanisms (with four factors)

lavaan 0.6-10 ended normally after 84 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of model parameters	62
Number of observations	1437
Model Test User Model:	
Test statistic	7337.275
Degrees of freedom	373
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	28325.056
Degrees of freedom	406
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.751
Tucker-Lewis Index (TLI)	0.728
Root Mean Square Error of Approximation:	
RMSEA	0.114
90 Percent confidence interval – lower	0.112
90 Percent confidence interval – upper	0.116
P-value RMSEA <= 0.05	0.000
Standardized Root Mean Square Residual:	
SRMR	0.111
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Socialization =~						
.ocs4relaxing	1.000				0.403	0.543
.ocs5exercise	0.809	0.054	15.029	0.000	0.326	0.447
.ocs7peers	0.936	0.060	15.524	0.000	0.377	0.492
.ocs8social	1.279	0.076	16.853	0.000	0.515	0.651
.ocs9prayers	0.970	0.060	16.038	0.000	0.391	0.495
.ocs10cried	0.861	0.058	14.918	0.000	0.347	0.437
Deflection =~						
ocs1knowing	1.000				0.637	0.753
ocs2workinghrd	1.038	0.040	26.047	0.000	0.662	0.790
ocs3positiv	0.967	0.037	26.245	0.000	0.616	0.751
ocs11blamed	0.337	0.022	15.462	0.000	0.215	0.285
ocs12worstoccr	0.428	0.022	19.414	0.000	0.273	0.383
ocs14jokes	0.581	0.027	21.745	0.000	0.370	0.466

© University of Pretoria

Socialsuppport =~						
soc1needed	1.000				0.448	0.704
soc2comfort	1.072	0.034	31.439	0.000	0.480	0.749
soc3leftalone	0.684	0.026	26.140	0.000	0.306	0.476
soc6loved	1.047	0.033	31.416	0.000	0.469	0.724
soc7reliance	1.038	0.034	30.605	0.000	0.465	0.660
soc8nogivup	1.180	0.037	31.936	0.000	0.528	0.801
soc9available	1.043	0.033	31.455	0.000	0.467	0.755
soc10helped	1.211	0.037	32.450	0.000	0.542	0.792
soc11tookcare	0.980	0.031	31.131	0.000	0.439	0.686
soc12addeddstr	1.038	0.034	30.878	0.000	0.465	0.653
SelfControl =~						
sc2diverted	1.000				0.361	0.610
sc3isayunsuitb	0.619	0.030	20.408	0.000	0.223	0.429
sc4refuse	0.953	0.042	22.526	0.000	0.344	0.423
sc7excitemnt	1.304	0.050	25.926	0.000	0.470	0.711
sc8regret	1.278	0.050	25.417	0.000	0.461	0.668
sc9notstop	1.059	0.044	24.246	0.000	0.382	0.601
sc10nothinking	1.154	0.046	24.992	0.000	0.416	0.621
CopingMethods =~						
Socialization	1.000				0.243	0.243
Deflection	2.073	0.139	14.948	0.000	0.319	0.319
Socialsuppport	3.684	0.278	13.242	0.000	0.807	0.807
Selfcontrol	2.199	0.143	15.332	0.000	0.598	0.598

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
.ocs4relaxing	0.388	0.019	20.552	0.000	0.388	0.705
.ocs5exercise	0.426	0.017	25.317	0.000	0.426	0.800
.ocs7peers	0.445	0.019	24.013	0.000	0.445	0.758
.ocs8social	0.362	0.024	15.370	0.000	0.362	0.577
.ocs9prayers	0.471	0.020	23.440	0.000	0.471	0.755
.ocs10cried	0.510	0.019	26.544	0.000	0.510	0.809
.ocs1knowing	0.310	0.024	12.929	0.000	0.310	0.433
.ocs2workinghrd	0.263	0.025	10.666	0.000	0.263	0.375
.ocs3positiv	0.294	0.023	12.803	0.000	0.294	0.436
.ocs11blamed	0.519	0.016	32.313	0.000	0.519	0.919
.ocs12worstoccr	0.434	0.017	26.044	0.000	0.434	0.854
.ocs14jokes	0.495	0.017	28.606	0.000	0.495	0.783
.soc1needed	0.204	0.023	8.991	0.000	0.204	0.504
.soc2comfort	0.180	0.023	7.898	0.000	0.180	0.439
.soc3leftalone	0.319	0.021	15.007	0.000	0.319	0.773
.soc6loved	0.199	0.021	9.498	0.000	0.199	0.475
.soc7reliance	0.280	0.023	12.287	0.000	0.280	0.564
.soc8nogivup	0.155	0.023	6.722	0.000	0.155	0.358
.soc9available	0.165	0.020	8.094	0.000	0.165	0.430
.soc10helped	0.175	0.022	7.850	0.000	0.175	0.373
.soc11tookcare	0.217	0.019	11.660	0.000	0.217	0.530
.soc12addeddstr	0.291	0.021	13.874	0.000	0.291	0.574
.sc2diverted	0.220	0.018	12.510	0.000	0.220	0.628
.sc3isayunsuitb	0.221	0.017	12.963	0.000	0.221	0.816
.sc4refuse	0.540	0.016	33.189	0.000	0.540	0.821
.sc7excitemnt	0.216	0.018	11.993	0.000	0.216	0.495

© University of Pretoria

.sc8regret	0.263	0.020	13.371	0.000	0.263	0.554
.sc9notstop	0.258	0.019	13.782	0.000	0.258	0.639
.sc10nothinking	0.275	0.019	14.421	0.000	0.275	0.614
.Socialization	0.153	0.013	11.877	0.000	0.941	0.941
.Deflection	0.365	0.019	19.513	0.000	0.898	0.898
.Socialsuppport	0.070	0.008	8.293	0.000	0.348	0.348
.SelfControl	0.083	0.006	14.301	0.000	0.642	0.642
CopingMethods	0.010	0.001	8.544	0.000	1.000	1.000

© University of Pretoria

2.5 Part E: EFA and CFA Results on Items in the Sexual Risk Behaviour Scale

2.5.1 Part E: EFA results on items in the sexual risk behaviour scale

EFA round 1: Results of the EFA on 14 items in the sexual risk behaviour scale

xF A C T O R
Unrestricted Factor Analysis
Release Version 11.05.01 x64bits, July 2021
Rovira i Virgili University Tarragona, SPAIN
Programming: Urbano Lorenzo-Seva
Mathematical Specification: Urbano Lorenzo-Seva & Pere J. Ferrando
Date: Friday, August 20, 2021

DETAILS OF ANALYSIS

Participants' scores data file:	G:\My Drive\Projects\2021\T21026 Mr S K KIIRYA\New data\Final data\EFA\Factor\EFA\PartE.dat.txt
Variable labels file:	G:\My Drive\Projects\2021\T21026 Mr S K KIIRYA\New data\Final data\EFA\Factor\EFA\Labels part E.txt
Method to handle missing values:	Hot-Deck Multiple Imputation in Exploratory Factor Analysis (Lorenzo-Seva & Van Ginkel, 2016)
Missing code value:	999
Number of participants:	1437
Number of variables:	14
Variables included in the analysis:	All
Variables excluded in the analysis:	None
Number of factors:	2
Number of second order factors:	0
Procedure for determining the number of dimensions:	Optimal implementation of Parallel Analysis (PA) (Timmerman & Lorenzo-Seva, 2011)
Dispersion matrix:	Polychoric Correlations
Robust analyses:	Bias-corrected and accelerated (BCa; Lambert, Wildt & Durand, 1991)
Number of bootstrap samples:	500
Asymptotic Covariance/Variance matrix:	estimated using bootstrap sampling
Bootstrap confidence intervals:	95%
Method for factor extraction:	Robust Un-weighted Least Squares (RULS)
Correction for robust Chi square:	Robust Mean and Variance-scaled (Asparouhov & Muthen, 2010)
Rotation to achieve factor simplicity:	Robust Promin (Lorenzo-Seva & Ferrando, 2019b)
Clever rotation start:	Weighted Varimax
Number of random starts:	100
Maximum number of iterations:	1000
Convergence value:	0.00001000
Factor scores estimates:	Estimates based on linear model

STANDARIZED VARIANCE/COVARIANCE MATRIX (POLYCHORIC CORRELATION)
(Polychoric algorithm: Bayes modal estimation; Choi, Kim, Chen, & Dannels, 2011)

V	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1.000													
2	0.714	1.000												
3	0.336	0.351	1.000											

© University of Pretoria

4	0.328	0.279	0.940	1.000										
5	0.204	0.305	0.832	0.806	1.000									
6	0.083	0.293	0.630	0.701	0.852	1.000								
7	0.162	0.246	0.451	0.509	0.645	0.800	1.000							
8	0.002	0.215	0.568	0.648	0.765	0.769	0.564	1.000						
9	0.069	0.266	0.692	0.736	0.864	0.813	0.623	0.904	1.000					
10	0.245	0.354	0.736	0.754	0.767	0.709	0.542	0.739	0.817	1.000				
11	0.110	0.218	0.671	0.713	0.770	0.797	0.609	0.808	0.805	0.861	1.000			
12	0.255	0.303	0.795	0.820	0.829	0.757	0.582	0.787	0.878	0.877	0.853	1.000		
13	0.150	0.266	0.785	0.774	0.860	0.815	0.602	0.802	0.916	0.836	0.817	0.912	1.000	
14	0.203	0.246	0.492	0.536	0.522	0.474	0.255	0.383	0.488	0.553	0.508	0.586	0.589	1.000

Notes: V = Variables

ADEQUACY OF THE POLYCHORIC CORRELATION MATRIX

Determinant of the matrix =	< 0.000001
Bartlett's statistic =	16469.2 (df = 91; P = 0.000010)
Kaiser-Meyer-Olkin (KMO) test=	0.55162 (bad)
Bootstrap 95% confidence interval of KMO=	(0.258 0.795)

NORMED ITEM-MSA INDICES

Items	Quartile of sum response scores	Relative difficulty index	Normed MSA	Bootstrap 95% CI	
sex3peepsexorgns	2	0.07516	**0.45869	(0.216	0.813)
sex4showsexorgns	2	0.07864	**0.47733	(0.287	0.833)
sex12sexolder	2	0.08212	**0.97789	(0.334	0.922)
sex10forcedsex	2	0.10090	**0.88518	(0.308	0.943)
sex13sexmore1	2	0.12387	**0.55147	(0.333	0.927)
sex5sexadvanc	2	0.13292	**0.52755	(0.319	0.925)
sex11gifts	2	0.13709	**0.73581	(0.299	0.913)
sex9hadsex	3	0.19276	**0.59111	(0.282	0.876)
sex8askedsex	3	0.23452	**0.72781	(0.286	0.935)
sex14nocondom	3	0.27836	**0.43441	(0.096	0.914)
sex6friends	4	0.32289	**0.49348	(0.227	0.856)
sex1nottesthiv	4	0.34934	**0.14485	(0.036	0.425)
sex2disclosure	4	0.41893	**0.18730	(0.056	0.611)
sex7oppsex	4	0.49896	**0.66612	(0.190	0.836)

Notes: ** Number of items proposed to be removed = 14. Values of MSA below .50 suggest that the item does not measure the same domain as the remaining items in the pool, and so that it should be removed. At the same time, for a normal-range test, an optimal pool of items should have a large spread of Relative difficulty indices, and each quartile should have a similar number of items. When removing items from the pool, all these aspects should be taken into account. Sometimes, the conclusion is that new items should be added to the pool of items.

EXPLAINED VARIANCE BASED ON EIGENVALUES

Variable	Eigenvalue	Proportion of variance	Cumulative proportion of variance
1	9.10601	0.65043	0.65043
2	1.67004	0.11929	0.76972
3	0.87978	0.06284	
4	0.60385	0.04313	
5	0.52669	0.03762	
6	0.34284	0.02449	
7	0.22935	0.01638	
8	0.18642	0.01332	
9	0.14465	0.01033	
10	0.11206	0.00800	
11	0.08559	0.00611	
12	0.06605	0.00472	

© University of Pretoria

13	0.04423	0.00316
14	0.00244	0.00017

PARALLEL ANALYSIS (PA) BASED ON MINIMUM RANK FACTOR ANALYSIS (Timmerman & Lorenzo-Seva, 2011)

Implementation details:

Correlation matrices analysed:	Polychoric correlation matrices
Number of random correlation matrices:	500
Method to obtain random correlation matrices:	Permutation of the raw data (Buja & Eyuboglu, 1992)

Variable	Real-data % of variance	Mean of random % of variance	95 percentile of random % of variance
1	65.4217*	14.3527	16.5207
2	12.0111	12.9277	14.5545
3	6.3207	11.8165	13.2479
4	4.3439	10.7373	11.7928
5	3.7809	9.6970	10.6481
6	2.4442	8.6622	9.5336
7	1.6278	7.6296	8.5144
8	1.2947	6.6266	7.5736
9	1.0384	5.5768	6.7012
10	0.7312	4.5736	5.7092
11	0.6126	3.5674	4.7128
12	0.3202	2.4527	3.8147
13	0.0527	1.3798	2.6614

Notes: *Advised number of dimensions = 1

EIGENVALUES OF THE REDUCED CORRELATION MATRIX

Variable	Eigenvalue
1	8.880100769
2	1.481097783
3	0.456684252
4	0.261297804
5	0.117101223
6	0.072019322
7	0.006271920
8	-0.050284522
9	-0.055825590
10	-0.069992665
11	-0.091418996
12	-0.136146253
13	-0.249184667
14	-0.267984659

UNROTATED LOADING MATRIX

Variable	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions	Communality
sex1nottesthiv	0.261	0.965	1.000
sex2disclosure	0.360	0.591	0.479
sex3peepsexorgns	0.828	0.167	0.713
sex4showsexorgns	0.859	0.116	0.751
sex5sexadvanc	0.921	-0.030	0.849
sex6friends	0.869	-0.141	0.775

© University of Pretoria

sex7oppsex	0.658	-0.054	0.436
sex8askedsex	0.833	-0.239	0.751
sex9hadsex	0.925	-0.185	0.890
sex10forcedsex	0.889	0.026	0.791
sex11gifts	0.882	-0.142	0.798
sex12sexolder	0.943	0.000	0.890
sex13sexmore1	0.942	-0.098	0.898
sex14nocondom	0.572	0.082	0.334

WEIGHTS OF ROBUST ROTATION (Lorenzo-Seva, U. & Ferrando, P.J., 2019b)

Variable	Average of diagonal value of each variable (h)	Robust weight value each variable (w)
V1	4.2820	0.2360
V2	4.6584	0.1689
V3	5.6047	0.0000
V4	4.0960	0.2692
V5	3.2259	0.4244
V6	5.1464	0.0818
V7	3.6041	0.3570
V8	3.5050	0.3746
V9	3.9835	0.2893
V10	3.7067	0.3387
V11	3.6802	0.3434
V12	3.3365	0.4047
V13	3.2538	0.4195
V14	4.4840	0.2000

Interpretation notes: *h* is average of the diagonal values in the asymptotic variance/covariance matrix for each variable, and *w* is the robust weight value for each variable. The variable with the less stable set of correlations i.e. a large value of *h* will have a weight value *(w)* close to zero. In the other hand, a variable with a set of perfectly stable correlations will have a weight value of one. The largest the value in *w*, the most important the variable is order to define the simple structure of the factor solution.

SEMI-SPECIFIED TARGET LOADING MATRIX (obtained from pre-rotation of the loading matrix)

Variable	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions
sex1nottesthiv	---	0.000
sex2disclosure	---	0.000
sex3peepsexorgns	0.000	0.000
sex4showsexorgns	0.000	---
sex5sexadvanc	0.000	---
sex6friends	0.000	---
sex7oppsex	0.000	---
sex8askedsex	0.000	---
sex9hadsex	0.000	---
sex10forcedsex	0.000	---
sex11gifts	0.000	---
sex12sexolder	0.000	---
sex13sexmore1	0.000	---
sex14nocondom	0.000	---

ROTATED LOADING MATRIX

Variable	Factor 1	Factor 2

© University of Pretoria

	Risky sexual conditions	Risky sexual actions
sex1nottesthiv	1.295	-0.666
sex2disclosure	0.816	-0.224
sex3peepsexorgns	0.315	0.605
sex4showsexorgns	0.253	0.681
sex5sexadvanc	0.069	0.875
sex6friends	-0.082	0.931
sex7oppsex	0.007	0.656
sex8askedsex	-0.215	0.991
sex9hadsex	-0.133	1.024
sex10forcedsex	0.138	0.793
sex11gifts	-0.082	0.944
sex12sexolder	0.111	0.868
sex13sexmore1	-0.018	0.959
sex14nocondom	0.174	0.449

ROTATED LOADING MATRIX (loadings lower than absolute 0.300 omitted)

Variable	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions
sex1nottesthiv	1.295	-0.666
sex2disclosure	0.816	
sex3peepsexorgns	0.315	0.605
sex4showsexorgns		0.681
sex5sexadvanc		0.875
sex6friends		0.931
sex7oppsex		0.656
sex8askedsex		0.991
sex9hadsex		1.024
sex10forcedsex		0.793
sex11gifts		0.944
sex12sexolder		0.868
sex13sexmore1		0.959
sex14nocondom		0.449

EXPLAINED VARIANCE OF ROTATED FACTORS AND RELIABILITY OF PHI-INFORMATION OBLIQUE EAP SCORES (Ferrando & Lorenzo-Seva, 2016)

	Factor	Variance	ORION	Factor Determinacy Index
1	Risky sexual conditions	2.094	0.995	0.997
2	Risky sexual actions	8.260	0.981	0.990

Notes: The appropriate implementation of EAP score estimation in factor model involves to obtain point estimates that make use of the full prior information (in particular the inter-factor correlation matrix), and to complement the point estimates with measures of the reliability of these estimates. In order to achieve it, FACTOR computes (1) the EAP score estimation named 'Fully-Informative Prior Oblique EAP scores', and (2) the reliability estimates named Overall Reliability of fully-Informative prior Oblique N-EAP scores(ORION) as explained in Ferrando & Lorenzo-Seva (2016).

© University of Pretoria

EFA round 2: Results of the EFA excluding Items with low MSA values

xF A C T O R
Unrestricted Factor Analysis
Release Version 11.05.01 x64bits, July 2021
Rovira i Virgili University Tarragona, SPAIN
Programming: Urbano Lorenzo-Seva
Mathematical Specification: Urbano Lorenzo-Seva & Pere J. Ferrando
Date: Friday, August 20, 2021
Time: 9:3:28

DETAILS OF ANALYSIS

Participants' scores data file:	G:\My Drive\Projects\2021\T21026 Mr S K KIIRYA\New data\Final data\EFA\Factor\EFA\PartE.dat.txt
Variable labels file:	G:\My Drive\Projects\2021\T21026 Mr S K KIIRYA\New data\Final data\EFA\Factor\EFA\Labels part E.txt
Method to handle missing values:	Hot-Deck Multiple Imputation in Exploratory Factor Analysis (Lorenzo-Seva & Van Ginkel, 2016)
Missing code value:	999
Number of participants:	1437
Number of variables:	14
Variables included in the analysis:	V5, V6, V7, V8, V9, V10, V11, V12, V13
Variables excluded in the analysis:	V1, V2, V3, V4, V14
Number of factors:	2
Number of second order factors:	0
Procedure for determining the number of dimensions:	Optimal implementation of Parallel Analysis (PA) (Timmerman, & Lorenzo-Seva, 2011)
Dispersion matrix:	Polychoric Correlations
Robust analyses:	Bias-corrected and accelerated (BCa; Lambert, Wildt & Durand, 1991)
Number of bootstrap samples:	500
Asymptotic Covariance/Variance matrix:	estimated using bootstrap sampling
Bootstrap confidence intervals:	95%
Method for factor extraction:	Robust Un-weighted Least Squares (RULS)
Correction for robust Chi square:	Robust Mean and Variance-scaled (Asparouhov & Muthen, 2010)
Rotation to achieve factor simplicity:	Robust Promin (Lorenzo-Seva & Ferrando, 2019b)
Clever rotation start:	Weighted Varimax
Number of random starts:	100
Maximum number of iterations:	1000
Convergence value:	0.00001000
Factor scores estimates:	Estimates based on linear model

ADEQUACY OF THE POLYCHORIC CORRELATION MATRIX

Determinant of the matrix =	0.000002485373179
Bartlett's statistic =	16488.4 (df = 36; P = 0.000010)
Kaiser-Meyer-Olkin (KMO) test=	0.89883 (good)
Bootstrap 95% confidence interval of KMO=	(0.711 0.919)

NORMED ITEM-MSA INDICES

© University of Pretoria

Items	Quartile of sum response scores	Relative difficulty index	Normed MSA	Bootstrap 95% CI
sex12sexolder	2	0.08212	0.92962	(0.708 0.953)
sex10forcedsex	2	0.10090	0.93054	(0.725 0.957)
sex13sexmore1	3	0.12387	0.91488	(0.684 0.955)
sex5sexadvanc	3	0.13292	0.94514	(0.728 0.971)
sex11gifts	3	0.13709	0.89671	(0.662 0.946)
sex9hadsex	3	0.19276	0.86641	(0.686 0.952)
sex8askedsex	3	0.23452	0.86557	(0.659 0.942)
sex6friends	3	0.32289	0.86557	(0.626 0.933)
sex7oppsex	4	0.49896	0.87367	(0.607 0.941)

Notes: Number of items proposed to be removed is none. Values of MSA below .50 suggest that the item does not measure the same domain as the remaining items in the pool, and so that it should be removed. At the same time, for a normal-range test, an optimal pool of items should have a large spread of relative difficulty indices, and each quartile should have a similar number of items. When removing items from the pool, all these aspects should be taken into account. Sometimes, the conclusion is that new items should be added to the pool of items.

EXPLAINED VARIANCE BASED ON EIGENVALUES

Variable	Eigenvalue	Proportion of variance	Cumulative proportion of variance
1	7.24319	0.80480	0.80480
2	0.65300	0.07256	0.87735
3	0.32475	0.03608	
4	0.26854	0.02984	
5	0.18285	0.02032	
6	0.12340	0.01371	
7	0.09724	0.01080	
8	0.06438	0.00715	
9	0.04266	0.00474	

PARALLEL ANALYSIS (PA) BASED ON MINIMUM RANK FACTOR ANALYSIS (Timmerman & Lorenzo-Seva, 2011)

Implementation details:

Correlation matrices analysed: Polychoric correlation matrices

Number of random correlation matrices: 500

Method to obtain random correlation matrices: Permutation of the raw data (Buja & Eyuboglu, 1992)

Variable	Real-data % of variance	Mean of random % of variance	95 percentile of random % of variance
1	83.0751*	22.4578	26.9398
2	7.3049	19.4228	22.5372
3	3.4907	16.4657	18.8191
4	2.4339	13.6984	15.8230
5	1.8953	10.9523	13.1250
6	1.2392	8.3650	10.8852
7	0.5164	5.6590	8.4571
8	0.0444	2.9790	5.3603

Notes: *Advised number of dimensions: 1

EIGENVALUES OF THE REDUCED CORRELATION MATRIX

Variable	Eigenvalue
1	7.090352532
2	0.437109481
3	0.139412396
4	0.080349012
5	0.001150152
6	-0.018746940

© University of Pretoria

7	-0.032044321
8	-0.058462367
9	-0.116993801

UNROTATED LOADING MATRIX

Variable	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions	Communality
sex5sexadvanc	0.900	-0.059	0.813
sex6friends	0.912	-0.410	1.000
sex7oppsex	0.699	-0.377	0.631
sex8askedsex	0.868	0.060	0.756
sex9hadsex	0.945	0.085	0.901
sex10forcedsex	0.876	0.215	0.814
sex11gifts	0.895	0.078	0.807
sex12sexolder	0.929	0.209	0.907
sex13sexmore1	0.938	0.113	0.892

SEMI-SPECIFIED TARGET LOADING MATRIX (obtained from pre-rotation of the loading matrix

Variable	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions
sex5sexadvanc	0.000	0.000
sex6friends	0.000	---
sex7oppsex	0.000	---
sex8askedsex	---	0.000
sex9hadsex	---	0.000
sex10forcedsex	---	0.000
sex11gifts	---	0.000
sex12sexolder	---	0.000
sex13sexmore1	---	0.000

ROTATED LOADING MATRIX

Variable	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions
sex5sexadvanc	0.604	0.336
sex6friends	0.053	0.955
sex7oppsex	-0.060	0.843
sex8askedsex	0.769	0.119
sex9hadsex	0.869	0.095
sex10forcedsex	1.024	-0.152
sex11gifts	0.819	0.094
sex12sexolder	1.055	-0.128
sex13sexmore1	0.909	0.043

ROTATED LOADING MATRIX (loadings lower than absolute 0.300 omitted)

	Factor 1 Risky sexual conditions	Factor 2 Risky sexual actions
sex5sexadvanc	0.604	0.336

© University of Pretoria

sex6friends		0.955
sex7oppsex		0.843
sex8askedsex	0.769	
sex9hadsex	0.869	
sex10forcedsex	1.024	
sex11gifts	0.819	
sex12sexolder	1.055	
sex13sexmore1	0.909	

EXPLAINED VARIANCE OF ROTATED FACTORS AND RELIABILITY OF PHI-INFORMATION OBLIQUE EAP SCORES (Ferrando & Lorenzo-Seva, 2016)

	Factor	Variance	ORION	Factor Determinacy Index
1	Risky sexual conditions	5.544	0.977	0.989
2	Risky sexual actions	1.978	1.000	1.000

Notes: The appropriate implementation of EAP score estimation in factor model involves to obtain point estimates that make use of the full prior information (in particular the inter-factor correlation matrix), and to complement the point estimates with measures of the reliability of these estimates. In order to achieve it, FACTOR computes (1) the EAP score estimation named 'Fully-Informative Prior Oblique EAP scores', and (2) the reliability estimates named Overall Reliability of fully-Informative prior Oblique N-EAP scores (ORION) as explained in Ferrando & Lorenzo-Seva (2016).

INTER-FACTORS CORRELATION MATRIX

		F1	F2
	Factor	Risky sexual conditions	Risky sexual actions
1	Risky sexual conditions	1.000	
2	Risky sexual actions	0.827	1.000

© University of Pretoria

2.5.2 Part E: CFA results on items in the sexual risk behaviour scale

CFA round 1: First order model (inclusive of all items in the adopted construct)

Warning message: In lavaan (model = SectionE, data = Data, estimator = "DWLS": lavaan WARNING: the optimizer (NLMINB) claimed the model converged, but not all elements of the gradient are (near) zero; the optimizer may not have found a local solution use check.gradient = FALSE to skip this check.

lavaan 0.6-10 did NOT end normally after 869 iterations
Hence, the estimates below are most likely unreliable

Estimator	DWLS
Optimization method	NLMINB
Number of model parameters	29
Number of observations	1437

Model Test User Model:

Test statistic	NA
Degrees of freedom	NA

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Riskysexualconditions =~						
sex1nottesthiv [a]	1.000				0.075	0.156
sex2disclosure [a]	1.617		NA		0.121	0.244
.sex3peepsxrgns	1.926		NA		0.144	0.544
.sex4showsxrgns	2.112		NA		0.157	0.585
.sex5sexadvanc	3.440		NA		0.256	0.755
.sex6friends	4.523		NA		0.337	0.721
.sex7oppsex	3.136		NA		0.234	0.467
.sex8askedsex	3.992		NA		0.298	0.702
Riskysexualdeeds =~						
.sex9hadsex	1.000		NA		0.323	0.819
.sex10forcedsex	0.640		NA		0.207	0.686
.sex11gifts	0.775		NA		0.250	0.728
.sex12sexolder	0.598		NA		0.193	0.704
.sex13sexmore1	0.801		NA		0.259	0.786
.sex14nocondom	0.576		NA		0.186	0.415
.Riskysxlcndtns	0.020		NA		1.000	1.000
.Riskysexualdds	0.106		NA		1.000	1.000

[a] These parameters yielded low loadings and were thus excluded to improve the model.

Covariances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Riskysexualconditions~~						
Riskysexualdds	0.022		NA		0.909	0.909

Variances:

© University of Pretoria

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
sex1nottesthiv	0.222		NA		0.222	0.976
sex2disclosure	0.229		NA		0.229	0.940
sex3peepsxrgns	0.049		NA		0.049	0.704
sex4showsxrgns	0.048		NA		0.048	0.658
sex5sexadvanc	0.050		NA		0.050	0.430
sex6friends	0.105		NA		0.105	0.480
sex7oppsex	0.196		NA		0.196	0.782
sex8askedsex	0.091		NA		0.091	0.507
sex9hadsex	0.051		NA		0.051	0.330
sex10forcedsex	0.048		NA		0.048	0.529
sex11gifts	0.056		NA		0.056	0.470
sex12sexolder	0.038		NA		0.038	0.505
sex13sexmore1	0.042		NA		0.042	0.383
sex14nocondom	0.166		NA		0.166	0.827
Riskysxlcndtns	0.006		NA		1.000	1.000
Riskysexualdds	0.104		NA		1.000	1.000

Conclusion

A good fit was not achieved with all items in the sexual risk behaviour construct

© University of Pretoria

CFA round 2: First order model (after removing items sex1nottesthiv & sex2disclosure due to low loadings)

lavaan 0.6-10 ended normally after 127 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of model parameters	25
Number of observations	1437

Model Test User Model:

Test statistic	258.264
Degrees of freedom	53
P-value (Chi-square)	0.000

Model Test Baseline Model:

Test statistic	8422.958
Degrees of freedom	66
P-value	0.000

User Model versus Baseline Model:

Comparative Fit Index (CFI)	0.975
Tucker-Lewis Index (TLI)	0.969

Root Mean Square Error of Approximation:

RMSEA	0.052
90 Percent confidence interval – lower	0.046
90 Percent confidence interval – upper	0.058
P-value RMSEA <= 0.05	0.297

Standardized Root Mean Square Residual:

SRMR	0.077

Parameter Estimates:

Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Riskysexualconditions =~						
sex3peepsxrgns	1.000				0.141	0.534
sex4showsxrgns	1.109	0.059	18.891	0.000	0.156	0.580
sex5sexadvanc	1.824	0.087	20.994	0.000	0.257	0.757
sex6friends	2.387	0.109	21.822	0.000	0.336	0.719
sex7oppsex	1.639	0.078	20.956	0.000	0.231	0.462
sex8askedsex	2.143	0.101	21.229	0.000	0.302	0.713
Riskysexualdeeds =~						
sex9hadsex	1.000				0.326	0.826
sex10forcedsex	0.628	0.025	24.851	0.000	0.204	0.679
sex11gifts	0.775	0.029	26.595	0.000	0.253	0.734
sex12sexolder	0.591	0.024	24.583	0.000	0.193	0.701
sex13sexmore1	0.799	0.030	27.028	0.000	0.260	0.790
sex14nocondom	0.559	0.025	22.558	0.000	0.182	0.407

© University of Pretoria

Covariances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Riskysexualconditions~~						
Riskysexualdds	0.042	0.002	21.683	0.000	0.918	0.918

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Riskysexualconditions =~						
sex3peepsxrgns	0.050	0.006	8.133	0.000	0.050	0.714
sex4showsxrgns	0.048	0.006	7.704	0.000	0.048	0.663
sex5sexadvanc	0.049	0.008	6.566	0.000	0.049	0.427
sex6friends	0.106	0.007	15.665	0.000	0.106	0.483
sex7oppsex	0.197	0.003	70.262	0.000	0.197	0.787
sex8askedsex	0.088	0.007	11.796	0.000	0.088	0.492
sex9hadsex	0.050	0.008	6.013	0.000	0.050	0.319
sex10forcedsex	0.049	0.007	7.117	0.000	0.049	0.539
sex11gifts	0.055	0.008	7.264	0.000	0.055	0.461
sex12sexolder	0.038	0.007	5.882	0.000	0.038	0.508
sex13sexmore1	0.041	0.008	5.409	0.000	0.041	0.376
sex14nocondom	0.168	0.006	29.061	0.000	0.168	0.835
.Riskysxlcndtns	0.020	0.002	12.843	0.000	1.000	1.000
.Riskysexualdds	0.106	0.005	20.374	0.000	1.000	1.000

Cronbach's alpha reliability

	Riskysexualconditions	Riskysexualdeeds	Total
alpha	0.7841074	0.8298985	0.8863176
avevar	0.4062528	0.4665040	--

Conclusion

The first-order model achieved a good fit after excluding the two variables i.e. *sex1nottesthiv, sex2disclosure*.

© University of Pretoria

CFA round 2: Second order model (after removing items sex1nottesthiv & sex2disclosure due to low loadings)

[Warning messages: 1. In lav_model_vcov (lavmodel = lavmodel, lavsamplestats = lavsamplestats: lavaan could not compute standard errors! The information matrix could not be inverted. This may be a symptom that the model is not identified. 2. In lav_object_post_check (object) some estimated lv variances are negative].

lavaan 0.6-10 ended normally after 126 iterations

Estimator	DWLS
Optimization method	NLMINB
Number of model parameters	26
Number of observations	1437
Model Test User Model:	
Test statistic	258.264
Degrees of freedom	52
P-value (Chi-square)	0.000
Model Test Baseline Model:	
Test statistic	8422.958
Degrees of freedom	66
P-value	0.000
User Model versus Baseline Model:	
Comparative Fit Index (CFI)	0.975
Tucker-Lewis Index (TLI)	0.969
Root Mean Square Error of Approximation:	
RMSEA	0.053
90 Percent confidence interval – lower	0.046
90 Percent confidence interval – upper	0.059
P-value RMSEA <= 0.05	0.245
Standardized Root Mean Square Residual:	
SRMR	0.077
Parameter Estimates:	
Standard errors	Standard
Information	Expected
Information saturated (h1) model	Unstructured

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
Riskysexualconditions =~						
sex3peepsxrgns	1.000				0.141	0.534
sex4showsxrgns	1.109		NA		0.156	0.580
sex5sexadvanc	1.824		NA		0.257	0.757
sex6friends	2.387		NA		0.336	0.719
sex7oppsex	1.639		NA		0.231	0.462
sex8askedsex	2.143		NA		0.302	0.713
Riskysexualdeeds =~						

© University of Pretoria

sex9hadsex	1.000				0.326	0.826
sex10forcedsex	0.628		NA		0.204	0.679
sex11gifts	0.775		NA		0.253	0.734
sex12sexolder	0.591		NA		0.193	0.701
sex13sexmore1	0.799		NA		0.260	0.790
sex14nocondom	0.559		NA		0.182	0.407
Sexualriskbehaviour=~						
.Riskysxlcndtns	1.000		NA		2.093	2.093
.Riskysexualdds	0.484		NA		0.438	0.438

Variances:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
sex3peepsxrgns	0.050		NA		0.050	0.714
sex4showsxrgns	0.048		NA		0.048	0.663
sex5sexadvanc	0.049		NA		0.049	0.427
sex6friends	0.106		NA		0.106	0.483
sex7oppsex	0.197		NA		0.197	0.787
sex8askedsex	0.088		NA		0.088	0.492
sex9hadsex	0.050		NA		0.050	0.319
sex10forcedsex	0.049		NA		0.049	0.539
sex11gifts	0.055		NA		0.055	0.461
sex12sexolder	0.038		NA		0.038	0.508
sex13sexmore1	0.041		NA		0.041	0.376
sex14nocondom	0.168		NA		0.168	0.835
.Riskysxlcndtns	-0.067		NA		-3.382	-3.382
.Riskysexualdds	0.086		NA		0.808	0.808
Sexualriskbhvr	0.087		NA		1.000	1.000

Conclusion

Second order model did not achieve a good fit. Hence, the first order model was adopted for subsequent analyses.

© University of Pretoria

APPENDIX 3: GLM TEST RESULTS AND VARIABLES SELECTED FROM EACH MODEL FOR PATH ANALYSIS

Table 22. Correlations between variables of each exogenous construct in the model and sexual risk behaviour of all 1,437 adolescents

Observed Variables	Sexual risk behaviour against				
	SD only *β(t)*	PISS only *β(t)*	CS only *β(t)*	PD only *β(t)*	CM only *β(t)*
Socio-Demographic					
Personal attributes					
HIV status					
Infected	1.025(3.678)****				
Uninfected	.397(2.127)***				
Unaware(ref)	0[a]				
Gender					
Female	.279(1.974)***				
Male (ref)	0[a]	.			
Age group					
10-14 years	.235(5.056)****				
15-19 years (ref)	0[a]				
Highest education level					
≤ Primary 4	-.530(-1.876)**				
Primary 5 - 7	-.351(-1.731)**				
> Primary 7 (ref)	0[a]	.			
Religion *(%)*					
Catholic	-.421(-1.534)*				
Anglican	-.735(-2.690)***				
Pentecostal, SDA, Orthodox,	-.472(-1.467)*				
Muslim (ref)	0[a]				
Adolescents' occupation					
None	.835(1.348)				
Student	1.589(2.579)***				
House-bar tender/trader/driver	1.972(2.679)***				
Farmer	1.449 (2.297)***				
Public/civic worker (ref)	0[a]				
Parental death					
Yes	-.174(-.512)				
No (ref)	0[a]				
Age at orphan-hood					
Orphaned at ≤ 5 years	.232(.671)				
Orphaned at >5-9 years	.155(.515)				
Orphaned at > 9 years (ref)	0[a]			.	
Span of orphan-hood					

© University of Pretoria

Observed Variables	Sexual risk behaviour against				
	SD only *β(t)*	PISS only *β(t)*	CS only *β(t)*	PD only *β(t)*	CM only *β(t)*
≤ 2 years (%)	-.687(-1.558)*				
>2 – 4 years	-.482(-1.536)*				
> 4 years (ref)	0[a]	.			
Family attributes					
Homes stability/lived in					
1 home	-.182(-.578)				
2 homes	-.384(-1.519)*				
>2 homes (ref)	0[a]	.			
Span in HIV-affected home					
≤ 4 years	-.284(-.775)				
> 4 – 8 years	.405(1.015)				
> 8 – 12 years	.010(.030)				
> 12 - 16 years	-.155(-.596)				
> 16 years (ref)	0[a]				
Number of home residents					
1 - 3 residents	-.357(-1.171)				
4 - 6 residents	.157(1.020)				
> 6 residents (ref)	0[a]				
Number of ill people in home					
None	-.579(-2.088)***				
1 resident	-.617 (-2.520)***				
2 residents	-.314(-1.254)				
>2 residents (ref)	0[a]				
Caregivers' stability/lived with					
1 caregiver	-.664(-2.163)***				
2 caregivers	-.725(-2.525)***	-			
>2 caregivers (ref)	0[a]				
Type of usual caregiver					
Both parents	-.301(-.960)				
Dad/step dad/brother only	-.364(-1.056)				
Mum/step mum/sister only	.253(.911)				
Grandparents	.012(.041)				
Other, uncle/aunt/tender (ref)	0[a]				
Work of usual caregiver					
None/student	-1.305(-2.640)***				
Farming	-.686(-1.978)***				
Trading	-1.155(-2.994)***				
Civic work (cleric/teacher)	-.917(-2.253)***				
Tender/driver/repairer (ref)	0[a]				

© University of Pretoria

Observed Variables	Sexual risk behaviour against				
	SD only *β(t)*	PISS only *β(t)*	CS only *β(t)*	PD only *β(t)*	CM only *β(t)*
Alcohol use by usual caregiver					
Drinks alcohol	.246(.411)				
Does not drink alcohol	-.777(-1.320)				
Unaware of alcohol use (ref)	0[a]				
Sexual talks from caregivers					
Received talks	.034(154)				
Not received talks (ref)	0[a]				
Caregivers' HIV status					
Positive	.633(2.511)***				
Negative	.174(.626)				
Unknown (ref)	0[a]				
Environmental attributes					
Home locality					
Lira	-2.805(-4.713)****				
Rukungiri	-2.741(-4.111)****				
Kayunga (ref)	0[a]				
Ethnicity or tribe					
Muganda	.654(1.921)**				
Musoga	-.118(-.327)				
Munyankole	.753(1.084)				
Mukiga	.412(.586)				
Lango and Acholi	1.300(2.346)***				
Gishu, Iteso, Nyoro, etc. (ref)	0[a]				
School attendance					
Attending school	-.788(-3.343)****				
Not attending school (ref)	0[a]				
HIV/psychosocial care					
Received	.774(3.733)****				
Not received (ref)	0[a]				
Peer-Socioeconomic Influence					
Peer influence					
Not been peer-influenced		-2.374(-15.015)****			
Ever been peer-influenced (ref)		0[a]			
Socioeconomic status					
1st quartile($\bar{x}$ of ≤ 2)		-1.007(-4.758)****			
2nd quartile($\dot{x}$ of > 2 - 4)		-.348(-1.726)**			
3rd quartile ($\dot{x}$ of >4 - 6)		-.568(-3.065)***			
4th quartile ($\dot{x}$ of >6 – 8) (ref)		0[a]			
Community Stressors					

© University of Pretoria

Observed Variables	Sexual risk behaviour against				
	SD only *β(t)*	PISS only *β(t)*	CS only *β(t)*	PD only *β(t)*	CM only *β(t)*
Poverty			-.315(-8.859)****		
Personal threats			.330(9.478)****		
Interpersonal problems			.942(21.080)****		
HIV-related stigma					
Blame/judgmental attitudes			.011(.336)		
Social distancing attitudes			-.057(-2.443)***		
Psychosocial Distress					
Internalizing signs					
Anger				.070(2.387)***	
Inattentiveness				-.080(-2.418)***	
Anxiety				.061(2.487)***	
Depression				-.199(-4.976)****	
Loneliness				-.002(-.052)	
Sleep unrest				.055(1.047)	
Psychosis				.141(3.640)****	
Somatisation				.041(1.060)	
Suicide ideation				.192(3.483)****	
Externalizing signs					
Disobedience				.244(3.698)****	
Disruptiveness				.112(2.773)***	
Destructiveness				.387(4.102)****	
Aggressiveness				-.100(-1.363)	
Delinquency				.528(9.689)****	
Coping Methods					
Social support					-.077(-4.628)****
Self-control					-.307(-11.649)****
Socialisation					-.156(-4.322)****
Deflection					.305(9.505)****
R^2	**.318**	**.158**	**.401**	**.426**	**.191**
Adjusted R^2	**.290**	**.155**	**.399**	**.421**	**.188**

Notes:
The coefficient is highly significant at a *probability value* of <.001**** or <.05*** or <.10**, marginally significant at a *probability* of >.10 to ≤ .14*, and not significant at a *probability* value of > .14. All variables with asterisks or a *probability* value of ≤ .14 are marginally to highly significant. Therefore, each of them was selected and included in the subsequent SEM path analysis.
SD = socio-demographics, PISS = peer influence and socioeconomic status, CS = community stressors, PD = psychosocial distresses, CM = coping methods, and R^2 = the total variance explained by the combined variables in the model.

© University of Pretoria

Table 29. Coefficients of coping-mediated links among variables in various mixes of exogenous constructs and sexual risk behaviour

Observed Variables	Various combinations of exogenous constructs evaluated against sexual risk behaviour					
	SD and CM *β(t)*	PISS and CM *β(t)*	CS and CM *β(t)*	PD and CM *β(t)*	PISS, CS, PD and CM *β(t)*	SD, PISS, CS, PD and CM *β(t)*
Personal attributes						
HIV status						
Infected	.879(3.353)****					.339(1.577)*
Uninfected	.335(1.877)**					.276(1.910)**
Unaware(ref)	0[a]					0[a]
Gender						
Female	.279(2.101)***					.347(3.216)***
Male (ref)	0[a]					0[a]
Age group						
10-14 years	.229(5.253)****					.195(5.462)****
15-19 years (ref)	0[a]					0[a]
Highest education level						
≤ Primary 4	-.509(-1.919)**					-.441(-2.038)***
Primary 5 - 7	-.358(-1.879)**					-.414(-2.660)***
> Primary 7 (ref)	0[a]					0[a]
Religion *(%)*						
Catholic	-.573(-2.221)***					-.266(-1.282)
Anglican	-.646(-2.516)***					-.294(-1.417)
Pentecostal, SDA, orthodox,	-.466(-1.538)*					-.558(-2.301)***
Muslim (ref)	0[a]					0[a]
Adolescents' occupation						
None	.391(.670)					.455(.969)
Student	1.023(1.760)**					.406(.870)
House-bar tender/trader/driver	1.297(1.869)**					.665(1.196)
Farmer	.970(1.632)*					.800(1.677)**
Public/civic worker (ref)	0[a]					0a
Parental death						
Yes	-.159(-.499)					-.390(-1.510)*
No (ref)	0[a]					0[a]
Age at orphan-hood						
Orphaned at ≤ 5 years	.306(.941)					.342(1.302)
Orphaned at >5-9 years	.206(.731)					.329(1.444)
Orphaned at > 9 years (ref)	0[a]					0[a]
Span of orphan-hood						
≤ 2 years (%)	-.712(-1.713)**					-.312(-.930)
>2 – 4 years	-.479(-1.626)*					-.139(-.583)
> 4 years (ref)	0[a]					0[a]

© University of Pretoria

Family attributes		
Homes stability/lived in		
1 home	.112(.376)	.471(1.958)***
2 homes	-.148(-.618)	.169(.880)
>2 homes (ref)	0[a]	0[a]
Span in HIV-affected home		
≤ 4 years	.059(.171)	.249(.895)
> 4 – 8 years	.529(1.409)	.394(1.304)
> 8 – 12 years	.120(.397)	.124(.507)
> 12 - 16 years	-.140(-.570)	-.099(-.506)
> 16 years (ref)	0[a]	0[a]
Number of home residents		
1 - 3 residents	-.519(-1.808)**	-.202(-.866)
4 - 6 residents	.066(.454)	.088(.751)
> 6 residents (ref)	0[a]	0[a]
No. of ill people in the home		
None	-.195(-.740)	-.254(-1.179)
1 resident	-.354(-1.533)*	-.069(-.368)
2 residents	-.196(-.831)	-.202(-1.057)
>2 residents (ref)	0[a]	0[a]
Caregivers lived with		
1 caregiver	-.198(-.677)	.368(1.557)*
2 caregivers	-.459(-1.694)**	.265(1.200)
>2 caregivers (ref)	0[a]	0[a]
Type of usual caregiver		
Both parents	-.040(-.134)	-.003(-.013)
Dad/step dad/brother	-.214(-.662)	-.108(-.415)
Mum/step mum/sister	.366(1.396)	.246(1.155)
Grandparents	.101(.355)	-.087(-.379)
Other, uncle/aunt/tender (ref)	0[a]	0[a]
Work of usual caregiver		
None/student	-1.212(-2.607)***	-.322(-.854)
Farming	-.589(-1.806)**	.047(.178)
Trading	-.915(-2.516)***	-.140(-.475)
Civic work (cleric/teacher)	-.943(-2.464)***	-.155(-.502)
Tender/driver/repairer (ref)	0[a]	0[a]
Alcohol use by caregiver		
Drinks alcohol	.376(.666)	-.280(-.614)
Does not drink alcohol	-.487(-.878)	-.522(-1.167)
Unaware of intake (ref)	0[a]	0[a]
Sexuality talks from caregivers		
Received	.136(.658)	.232(1.391)

© University of Pretoria

Not received (ref)	0[a]				0[a]
Caregivers' HIV status					
Positive	.685(2.873)***				.469(2.419)***
Negative	.384(1.460)				.716(3.362)****
Unknown (ref)	0[a]				0[a]
Environmental attributes					
Home locality					
Lira	-2.602(-4.637)****				-1.518(-3.222)***
Rukungiri	-1.958(-3.095)***				-.863(-1.648)**
Kayunga (ref)	0[a]				0[a]
Ethnicity or tribe					
Muganda	.770(2.408)***				.858(3.300)****
Musoga	.058(.171)				.315(1.135)
Munyankole	.515(.783)				.408(.772)
Mukiga	.566(.855)				.459(.863)
Lango and Acholi	1.417(2.717)***				1.008(2.384)***
Gishu/Iteso/Nyoro, … (ref)	0[a]				0[a]
School attendance					
Attending school	-.797				-.563(-3.133)***
Not attending school (ref)	0[a]				0[a]
HIV/psychosocial care					
Received	.606(3.086)***				-.033(-.204)
Not received (ref)	0[a]				0[a]
Peer-socioeconomic influence					
Peer influence					
Not been peer-influenced		-1.710(-10.366)****			-.743(-4.919)****
Ever been peer-influenced (ref)		0[a]		.981(6.631)****	0[a]
Socioeconomic status				.070(1.208)	
1st quartile($\bar{x}$ of ≤ 2)		-.837(-4.103)****			-.123(-.672)
2nd quartile($\dot{x}$ of > 2 - 4)		-.454(-2.385)***			-.096(-.586)
3rd quartile ($\dot{x}$ of >4 - 6)		-.571(-3.286)***			-.284(-1.927)**
4th quartile ($\dot{x}$ of >6 – 8)		0[a]			0[a]
Community stressors					
Poverty			-.302(-8.447)****	-.190(-4.860)****	-.181(-4.491)****
Personal threats			.255(6.937)****	.172(4.681)****	.094(2.427)***
Interpersonal problems			.867(19.321)****	.462(9.587)****	.425(8.834)****
HIV-related stigma					
Blame/judgmental attitudes			-.028(-.882)	-.060(-2.040)***	-.047(-1.553)*
Social distancing attitudes			-.025(-1.094)	-.035(-1.617)*	.008(.383)
Psychosocial distress					
Internalizing signs					
Anger			.075(2.553)***	.029(1.053)	.018(.653)

© University of Pretoria

Inattentiveness				-.092(-2.806)***	-.062(-2.046)***	-.055(-1.778)**
Anxiety				.049(2.046)***	.014(.625)	-.018(-.748)
Depression				-.167(-4.184)****	-.137(-3.637)****	-.074(-1.939)**
Loneliness				.001(.012)	-.003(-.077)	-.034(-.867)
Sleep unrest				.029(.560)	.074(1.538)*	.085(1.707)**
Psychosis				.106(2.755)***	.085(2.385)***	.095(2.692)***
Somatisation				.050(1.319)	.064(1.805)**	.074(2.047)***
Suicide ideation				.202(3.712)****	.146(2.835)***	.129(2.435)***
Externalizing signs						
Disobedience				.252(3.744)****	.026(.412)	.060(.942)
Disruptiveness				.106(2.633)***	.054(1.454)	.030(.794)
Destructiveness				.361(3.854)****	.345(3.982)****	.381(4.382)****
Aggressiveness				-.086(-1.157)	-.161(-2.340)***	-.082(-1.198)
Delinquency				.529(9.823)****	.447(8.688)****	.458(8.883)***
Coping Methods						
Social support	-.082(-4.975)****	-.025(-1.475)	-.023(-1.609)**	-.013(-.886)	.010(.720)	-.005(-.314)
Self-control	-.220(-8.275)****	-.264(-10.264)****	-.114(-4.517)****	-.007(-.257)	.004(.164)	.000(-.020)
Socialisation	-.059(-1.678)**	-.141(-4.096)****	-.123(-4.028)****	-.103(-3.345)****	-.083(-2.949)***	-.040(-1.384)
Deflection	.168(5.131)****	.264(8.493)****	.195(7.004)****	.185(6.647)****	.130(4.982)****	.081(3.005)***
R^2	**.400**	**.265**	**.430**	**.446**	**538**	**.627**
Adjusted R^2	**.374**	**.261**	**.427**	**.439**	**530**	**.603**

Notes:

The coefficient is highly significant at a *probability value* of <.001**** or <.05*** or <.10**, marginally significant at a *probability* of >.10 to ≤ .14*, and not significant at a *probability* value of > .14. All variables with asterisks or a *probability* value of ≤ .14 are marginally to highly significant. Therefore, each of them was selected and included in the subsequent SEM path analysis.

SD = socio-demographics, PISS = peer influence and socioeconomic status, CS = community stressors, PD = psychosocial distresses, CM = coping methods, and R^2 = the total variance explained by the combined variables in the model.

© University of Pretoria

Table 36. Coefficients of associations among factors in other pairs of exogenous constructs and sexual risks without controlling for coping

Observed Variables	Other combinations of exogenous constructs evaluated against sexual risk behaviour					
	SD and PISS *β(t)*	SD and CS *β(t)*	SD and PD *β(t)*	CS and PISS *β(t)*	PD and PISS *β(t)*	CS and PD *β(t)*
Socio-demographics						
Personal attributes						
HIV status						
Infected	.903(3.415)****	.536(2.229)***	.544(2.423)***			
Uninfected	.346(1.958)**	.321(2.009)***	.467(3.115)***			
Unaware(ref)	0[a]	0[a]	0[a]			
Gender						
Female	.337(2.521)***	.242(2.015)***	.376(3.298)***			
Male (ref)	0[a]	0[a]	0[a]			
Age group			.			
10-14 years	.167(3.782)****	.214(5.383)****	.240(6.455)****			
15-19 years (ref)	0[a]	0[a]	0[a]			
Highest education level						
≤ Primary 4	-.298(-1.106)	-.321(-1.333)	-.687(-3.037)***			
Primary 5 - 7	-.181(-.939)	-.277(-1.593)*	-.576(-3.556)****			
> Primary 7 (ref)	0[a]	0[a]	0[a]			
Religion *(%)*						
Catholic	-.325(-1.253)	-.361(-1.549)*	-.379(-1.729)**			
Anglican	-.501(-1.936)**	-.447(-1.923)**	-.389(-1.776)**			
Pentecostal, SDA, Orthodox	-.418(-1.373)	-.639(-2.336)***	-.572(-2.230)***			
Muslim (ref)	0[a]	0[a]	0[a]			
Adolescents' occupation						
None	.757(1.292)	.385(.731)	.488(.982)			
Student	1.228(2.105)***	.722(1.377)	.597(1.209)			
House-bar tender/trader/driver	1.769(2.541)***	.915(1.460)	.806(1.369)			
Farmer	1.503(2.519)***	.843(1.570)*	.803(1.591)*			
Public/civic worker (ref)	0[a]	0[a]	0[a]			
Parental death						
Yes	-.143(-.446)	-.399(-1.380)	-.195(-.715)			
No (ref)	0[a]	0[a]	0[a]			
Age at orphan-hood						
Orphaned at ≤ 5 years	.096(.293)	.488(1.655)**	.112(.407)			
Orphaned at >5-9 years	.029(.103)	.407(1.588)*	.239(.997)			
Orphaned at > 9 years (ref)	0[a]	0[a]	0[a]			
Span of orphan-hood						
≤ 2 years (%)	-.555(-1.333)	-.561(-1.490)*	-.476(-1.345)			
>2 – 4 years	-.471(-1.589)*	-.159(-.592)	-.325(-1.298)			

© University of Pretoria

Observed Variables	Other combinations of exogenous constructs evaluated against sexual risk behaviour					
	SD and PISS *β(t)*	SD and CS *β(t)*	SD and PD *β(t)*	CS and PISS *β(t)*	PD and PISS *β(t)*	CS and PD *β(t)*
> 4 years (ref)	0[a]	0[a]	0[a]			
Family attributes						
Homes stability/lived in						
1 home	-.110(-.371)	.195(.728)	.526(2.076)***			
2 homes	-.300(-1.253)	-.141(-.656)	.150(.739)			
>2 homes (ref)	0[a]	0[a]	0[a]			
Span in HIV-affected home						
≤ 4 years	-.426(-1.227)	.049(.157)	.288(.984)			
> 4 – 8 years	.136(.361)	.258(.760)	.603(1.893)**			
> 8 – 12 years	-.212(-.698)	.140(.512)	.229(.892)			
> 12 - 16 years	-.270(-1.097)	-.073(-.331)	-.116(-.561)			
> 16 years (ref)	0[a]	0[a]	0[a]			
Number of home residents						
1 - 3 residents	-.271(-.936)	-.136(-.521)	-.277(-1.132)			
4 - 6 residents	.104(.710)	.273(2.079)***	.030(.244)			
> 6 residents (ref)	0[a]	0[a]	0[a]			
Number of sick people in home						
None	-.604(-2.302)***	-.356(-1.489)*	-.336(-1.503)*			
1 resident	-.492(-2.122)***	-.288(-1.373)	-.029(-.148)			
2 residents	-.228(-.961)	-.265(-1.241)	-.167(-.831)			
>2 residents (ref)	0[a]	0[a]	0[a]			
Caregivers' stability/lived with						
1 caregiver	-.218(-.743)	.058(.219)	.096(.385)			
2 caregivers	-.524(-1.924)**	-.042(-.171)	.122(.521)			
>2 caregivers (ref)	0[a]	0[a]	0[a]			
Type of usual caregiver						
Both parents	-.199(-.671)	.017(.064)	-.149(-.592)			
Dad/step dad/brother only	-.275(-.843)	-.192(-.654)	-.223(-.810)			
Mum/step mum/sister only	.417(1.581)*	.224(.943)	.177(.794)			
Grandparents	.019(.068)	.023(.090)	-.146(-.597)			
Other, uncle/aunt/tender (ref)	0[a]	0[a]	0[a]			
Work of usual caregiver						
None/student	-.726(-1.543)*	-.820(-1.940)**	-.660(-1.667)**			
Farming	-.388(-1.178)	-.245(-.827)	-.080(-.287)			
Trading	-.855(-2.340)***	-.592(-1.799)**	-.315(-1.017)			
Civic work (clerics/teachers)	-.798(-2.071)***	-.556(-1.604)*	-.253-.777			
Tender/driver/repair (ref)	0[a]	0[a]	0[a]			
Usual caregivers' alcohol use						
Drinks alcohol	.490(.863)	-.065(-.127)	-.333(-.694)			

© University of Pretoria

Observed Variables	Other combinations of exogenous constructs evaluated against sexual risk behaviour					
	SD and PISS *β(t)*	SD and CS *β(t)*	SD and PD *β(t)*	CS and PISS *β(t)*	PD and PISS *β(t)*	CS and PD *β(t)*
Does not drink alcohol	-.431(-.773)	-.510(-1.016)	-.644(-1.367)			
Unaware of alcohol use (ref)	0[a]	0[a]	0[a]			
Sexuality talks from caregiver						
Received talks	.069(.331)	.181(.969)	.256(1.462)			
Not received talks (ref)	0[a]	0[a]	0[a]			
Caregivers' HIV status						
Positive	.484(2.030)***	.690(3.221)***	.460(2.257)***			
Negative	.086(.327)	.614(2.588)***	.737(3.297)***			
Unknown (ref)	0[a]	0[a]	0[a]			
Environmental attributes						
Home locality						
Lira	-1.740(-3.056)***	-1.731(-3.359)****	-2.261(-4.642)****			
Rukungiri	-2.649(-4.196)****	-1.885(-3.313)****	-.909(-1.654)**			
Kayunga (ref)	0[a]	0[a]	0[a]			
Ethnicity or tribe						
Muganda	.800(2.481)***	.761(2.611)***	.790(2.900)***			
Musoga	.034(.099)	.186(.604)	.300(1.029)			
Munyankole	.398(.605)	.682(1.153)	.403(.726)			
Mukiga	.460(.691)	.872(1.460)	.127(.227)			
Lango and Acholi	.769(1.462)	.942(2.000)***	1.377(3.097)***			
Gishu, Iteso, Nyoro, etc. (ref)	0[a]	0[a]	0[a]			
School attendance						
Attending school	-.696(-3.116)***	-.519(-2.587)***	-.709(-3.753)****			
Not attending school (ref)	0[a]	0[a]	0[a]			
HIV/psychosocial care						
Received	.595(2.999)***	.254(1.426)	.177(1.061)			
Not received (ref)	0[a]	0[a]	0[a]			
Peer influence-socioeconomic						
Peer influence						
Not been peer-influenced	-1.961(-12.088)****			-.999(-6.903)***	-1.319(-8.822)****	
Ever been peer-influenced (ref)	0[a]			0[a]	0[a]	
Socioeconomic status						
1st quartile($\bar{x}$ of ≤ 2)	-.564(-2.718)***			-.621(-3.111)***	-.731(-4.215)****	
2nd quartile($\dot{x}$ of > 2 - 4)	-.345(-1.741)**			-.347(-1.952)**	-.522(-3.158)***	
3rd quartile ($\dot{x}$ of >4 - 6)	-.582(-3.251)***			-.520(-3.241)***	-.614(-4.026)****	
4th quartile ($\dot{x}$ of >6 – 8)	0[a]			0[a]	0[a]	
Community stressors						
Poverty		-.248(-6.255)****		-.215(-5.326)****		-.263(-7.538)****
Personal threats		.214(5.470)****		.243(6.782)****		.227(6.385)****

© University of Pretoria

Observed Variables	Other combinations of exogenous constructs evaluated against sexual risk behaviour					
	SD and PISS *β(t)*	SD and CS *β(t)*	SD and PD *β(t)*	CS and PISS *β(t)*	PD and PISS *β(t)*	CS and PD *β(t)*
Interpersonal problems		.837(17.659)****		.884(19.816)****		.503(10.297)****
HIV-related stigma						
Blame/judgmental attitudes		.023(.687)		.003(.086)		-.060(-1.980)***
Social distancing attitudes		-.013(-.533)		-.051(-2.219)***		-.052(-2.392)***
Psychosocial distress						
Internalizing signs						
Anger			.045(1.576)*		.019(.652)	.053(1.915)**
Inattentiveness			-.059(-1.804)**		-.060(-1.867)**	-.056(-1.826)**
Anxiety			.009(.359)		.042(1.791)**	.021(.889)
Depression			-.096(-2.418)***		-.139(-3.522)****	-.180(-4.720)****
Loneliness			-.055(-1.327)		.017(.412)	-.013(-.311)
Sleep unrest			.078(1.489)*		.096(1.879)**	.058(1.189)
Psychosis			.152(4.147)****		.116(3.074)***	.110(3.039)***
Somatisation			.055(1.463)		.092(2.466)***	.027(.744)
Suicide ideation			.114(2.075)***		.143(2.663)***	.179(3.454)****
Externalizing signs						
Disobedience			.196(3.074)***		.086(1.301)	.084(1.349)
Disruptiveness			.080(2.015)***		.100(2.547)***	.059(1.559)*
Destructiveness			.406(4.469)****		.346(3.791)****	.355(4.040)****
Aggressiveness			-.014(-.205)		-.180(-2.503)***	-.132(-1.925)**
Delinquency			.535(10.088)****		566(10.731)****	.425(8.104)****
Coping Methods						
Social support						
Self-control						
Socialisation						
Deflection						
R^2	**.392**	**.511**	**.575**	**.427**	**.468**	**.513**
Adjusted R^2	**.366**	**.489**	**.553**	**.423**	**.461**	**.506**

Notes:
The coefficient is highly significant at a *probability value* of <.001**** or <.05*** or <.10**, marginally significant at a *probability* of >.10 to ≤ .14*, and not significant at a *probability* value of > .14. All variables with asterisks or a *probability* value of ≤ .14 are marginally to highly significant. Therefore, each of them was selected and included in the subsequent SEM path analysis.
SD = socio-demographics, PISS = peer influence and socioeconomic status, CS = community stressors, PD = psychosocial distresses, CM = coping methods, and R^2 = the amount of variance explained by the combined variables in the model.

© University of Pretoria

Table 40. Coefficients for effects of socio-demographics on coping-mediated links among peer-influence, socioeconomic status, stressors, distresses, sexual risk behaviour

	Combinations of exogenous constructs in the structural model compared with				Combinations of exogenous constructs in the structural model evaluated			
Observed Variables	PISS, CM *β(t)*	CS, CM *β(t)*	PD, CM *β(t)*	PISS, CS, PD, CM *β(t)*	SD, PISS, CM *β(t)*	SD,CS, CM *β(t)*	SD, PD, CM *β(t)*	SD, PISS, CS, PD, CM *β(t)*
Socio-demographics								
Personal attributes								
HIV status								
Infected					.830(3.244)***	.518(2.193)***	.507(2.263)***	.339(1.577)*
Uninfected					.306(1.760)**	.244(1.530)*	.378(2.496)***	.276(1.910)**
Unaware(ref)					0[a]	0[a]	0[a]	0[a]
Gender								
Female					.306(2.361)***	.247(2.102)***	.366(3.224)***	.347(3.216)***
Male (ref)					0[a]	0[a]	0[a]	0[a]
Age group*)*								
10-14 years					.185(4.308)****	.211(5.415)****	.237(6.387)****	.195(5.462)****
15-19 years (ref)					0[a]	0[a]	0[a]	0[a]
Highest education level								
≤ Primary 4					-.310(-1.191)	-.347(-1.468)	-.684(-3.035)***	-.441(-2.038)***
Primary 5 - 7					-.229 (-1.227)	-.317(-1.853)**	-.586(-3.629)****	-.414(-2.660)***
> Primary 7 (ref)					0[a]	0[a]	0[a]	0[a]
Religion *(%)*								
Catholic					-.481(-1.910)**	-.424(-1.853)**	-.378(-1.730)**	-.266(-1.282)
Anglican					-.512(-2.039)***	-.443(-1.943)**	-.379(-1.739)**	-.294(-1.417)
Pentecostal/SDA/Ortho					-.416(-1.409)	-.594(-2.210)***	-.534(-2.090)***	-.558(-2.301)***
Muslim (ref)					0[a]	0[a]	0[a]	0[a]
Adolescents' occupation								
None					.460(.809)	.251(.485)	.463(.936)	.455(.969)
Student					.922(1.627)*	.540(1.048)	.567(1.152)	.406(.870)
Tender/trader/driver					1.316(1.947)**	.734(1.192)	.743(1.268)	.665(1.196)
Farmer					1.140(1.967)***	.722(1.371)	.787(1.566)*	.800(1.677)**
Public/civic worker (ref)					0[a]	0[a]	0[a]	0a
Parental death								
Yes					-.150(-.481)	-.401(-1.414)	-.228(-.840)	-.390(-1.510)*
No (ref)					0[a]	0[a]	0[a]	0[a]
Age at orphan-hood								
Orphaned at ≤ 5 years					.213(.672)	.570(1.971)***	.177(.643)	.342(1.302)
Orphaned at >5-9 years					.114(.415)	.434(1.729)**	.230(.960)	.329(1.444)
Orphaned >9 years (ref)					0[a]	0[a]	0[a]	0[a]
Span of orphan-hood								
≤ 2 years (%)					-.624(-1.542)*	-.529(-1.428)	-.470(-1.329)	-.312(-.930)
>2 – 4 years					-.472(-1.643)*	-.185(-.702)	-.303(-1.217)	-.139(-.583)
> 4 years (ref)					0[a]	0[a]	0[a]	0[a]
Family attributes								
Homes stability/lived in								
1 home					.092(.317)	.243(.919)	.498(1.967)***	.471(1.958)***
2 homes					-.136(-.587)	-.066(-.311)	.164(.810)	.169(.880)
>2 homes (ref)					0[a]	0[a]	0[a]	0[a]

© University of Pretoria

	Combinations of exogenous constructs in the structural model compared with				Combinations of exogenous constructs in the structural model evaluated			
Observed Variables	PISS, CM *β(t)*	CS, CM *β(t)*	PD, CM *β(t)*	PISS, CS, PD, CM *β(t)*	SD, PISS, CM *β(t)*	SD,CS, CM *β(t)*	SD, PD, CM *β(t)*	SD, PISS, CS, PD, CM *β(t)*
Span in HIV-affected home								
≤ 4 years					-.070(-.208)	.203(.662)	.390(1.332)	.249(.895)
> 4 – 8 years					.344(.940)	.333(1.001)	.654(2.061)***	.394(1.304)
> 8 – 12 years					-.045(-.152)	.184(.684)	.271(1.060)	.124(.507)
> 12 - 16 years					-.201(-.841)	-.052(-.240)	-.065(-.316)	-.099(-.506)
> 16 years (ref)					0[a]	0[a]	0[a]	0[a]
Number of home residents								
1 - 3 residents					-.382(-1.363)	-.221(-.860)	-.298(-1.223)	-.202(-.866)
4 - 6 residents					.075(.528)	.226(1.748)**	.014(.117)	.088(.751)
> 6 residents (ref)					0[a]	0[a]	0[a]	0[a]
Sick people in the home								
None					-.299(-1.165)	-.210(-.886)	-.210(-.933)	-.254(-1.179)
1 resident					-.327(-1.453)	-.246(-1.196)	-.032(-.161)	-.069(-.368)
2 residents					-.146(-.635)	-.239(-1.140)	-.171(-.855)	-.202(-1.057)
>2 residents (ref)					0[a]	0[a]	0[a]	0[a]
Caregivers lived with								
1 caregiver					.020(.070)	.212(.814)	.171(.686)	.368(1.557)*
2 caregivers					-.379(-1.435)	.019(.078)	.146(.628)	.265(1.200)
>2 caregivers (ref)					0[a]	0[a]	0[a]	0[a]
Type of usual caregiver								
Both parents					-.030(-.105)	.082(.311)	-.115(-.457)	-.003(-.013)
Dad/step dad/brother					-.193(-.611)	-.131(-.457)	-.197(-.719)	-.108(-.415)
Mum/step mum/sister					.453(1.776)**	.269(1.154)	.194(.872)	.246(1.155)
Grandparents					.078(.280)	.068(.267)	-.117(-.482)	-.087(-.379)
Uncle/aunt/tender (ref)					0[a]	0[a]	0[a]	0[a]
Work of usual caregiver								
None/student					-.771(-1.690)**	-.801(-1.932)**	-.642(-1.628)*	-.322(-.854)
Farming					-.380(-1.193)	-.248(-.853)	-.096(-.347)	.047(.178)
Trading					-.756(-2.131)***	-.493(-1.522)*	-.278(-.898)	-.140(-.475)
Civic (teaching etc.)					-.872(-2.337)***	-.597(-1.753)**	-.229(-.705)	-.155(-.502)
Tender/driver, etc. (ref)					0[a]	0[a]	0[a]	0[a]
Alcohol use by caregiver								
Drinks alcohol					.487(.886)	-.043(-.085)	-.318(-.664)	-.280(-.614)
Does not drink alcohol					-.352(-.652)	-.490(-.995)	-.644(-1.371)	-.522(-1.167)
Unaware of use (ref)					0[a]	0[a]	0[a]	0[a]
Sexuality talk from caregiver								
Received talks					.124(.616)	.202(1.095)	.229(1.308)	.232(1.391)
Not received talks (ref)					0[a]	0[a]	0[a]	0[a]
Caregivers' HIV status								
Positive					.595(2.559)***	.712(3.368)****	.475(2.327)***	.469(2.419)***
Negative					.289(1.128)	.664(2.838)***	.728(3.253)***	.716(3.362)****
Unknown (ref)					0[a]	0[a]	0[a]	0[a]
Environmental attributes								
Home locality								

© University of Pretoria

	Combinations of exogenous constructs in the structural model compared with				Combinations of exogenous constructs in the structural model evaluated			
Observed Variables	PISS, CM *β(t)*	CS, CM *β(t)*	PD, CM *β(t)*	PISS, CS, PD, CM *β(t)*	SD, PISS, CM *β(t)*	SD,CS, CM *β(t)*	SD, PD, CM *β(t)*	SD, PISS, CS, PD, CM *β(t)*
Lira					-1.890(-3.419)****	-1.714(-3.375)****	-2.163(-4.442)****	-1.518(-3.222)***
Rukungiri					-2.014(-3.265)***	-1.561(-2.771)^{j***}	-.792(-1.441)	-.863(-1.648)**
Kayunga (ref)					0^{a}	0^{a}	0^{a}	0^{a}
Ethnicity or tribe								
Muganda					.817(2.618)***	.852(2.977)***	.808(2.981)***	.858(3.300)****
Musoga					.124(.376)	.261(.863)	.265(.913)	.315(1.135)
Munyankole					.359(.560)	.677(1.159)	.533(.959)	.408(.772)
Mukiga					.603(.934)	.956(1.628)*	.277(.494)	.459(.863)
Lango and Acholi					1.010(1.979)***	1.044(2.256)***	1.382(3.117)^{j***}	1.008(2.384)***
Gishu/Iteso/Nyoro (ref)					0^{a}	0^{a}	0^{a}	0^{a}
School attendance								
Attending school					-.743(-3.437)****	-.545(-2.767)***	-.731(-3.884)****	-.563(-3.133)***
Not in school (ref)					0^{a}	0^{a}	0^{a}	0^{a}
HIV/psychosocial care								
Received					.493(2.556)***	.196(1.117)	.126(.753)	-.033(-.204)
Not received (ref)					0^{a}	0^{a}	0^{a}	0^{a}
Peer-economic influence								
Peer influence								
Not peer-influenced	-1.710(-10.366)****				.			-.743(-4.919)****
Been peer-influenced(ref)	0^{a}			.981(6.631)****	1.336(7.762)****			0^{a}
Socioeconomic status				.070(1.208)	.195(3.023)***			
1st quartile(x̄ of ≤ 2)	-.837(-4.103)****							-.123(-.672)
2nd quartile(x̄ of > 2 - 4)	-.454(-2.385)***							-.096(-.586)
3rd quartile (x̄ of >4 - 6)	-.571(-3.286)***							-.284(-1.927)**
4th quartile (x̄ of >6 – 8)	0^{a}							0^{a}
Community Stressors								
Poverty		-.302(-8.447)****		-.190(-4.860)****		-.256(-6.465)****		-.181(-4.491)****
Personal threats		.255(6.937)****		.172(4.681)****		.135(3.289)***		.094(2.427)***
Interpersonal problems		.867(19.321)****		.462(9.587)****		.780(16.537)****		.425(8.834)****
HIV-related stigma								
Blame/judgmental		-.028(-.882)		-.060(-2.040)***		-.013(-.411)		-.047(-1.553)*
Social distancing		-.025(-1.094)		-.035(-1.617)*		.011(.472)		.008(.383)
Psychosocial Distress								
Internalizing signs								
Anger			.075(2.553)***	.029(1.053)			.040(1.423)	.018(.653)
Inattentiveness			-.092(-2.806)***	-.062(-2.046)***			-.062(-1.896)**	-.055(-1.778)**
Anxiety			.049(2.046)***	.014(.625)			.006(.241)	-.018(-.748)
Depression			-.167(-4.184)****	-.137(-3.637)****			-.087(-2.191)***	-.074(-1.939)**
Loneliness			.001(.012)	-.003(-.077)			-.047(-1.148)	-.034(-.867)
Sleep unrest			.029(.560)	.074(1.538)*			.077(1.478)^{j*}	.085(1.707)**
Psychosis			.106(2.755)***	.085(2.385)***			.134(3.644)****	.095(2.692)***
Somatisation			.050(1.319)	.064(1.805)**			.067(1.764)**	.074(2.047)***
Suicide ideation			.202(3.712)****	.146(2.835)***			.121(2.216)***	.129(2.435)***
Externalizing signs								

© University of Pretoria

	Combinations of exogenous constructs in the structural model compared with				Combinations of exogenous constructs in the structural model evaluated			
Observed Variables	PISS, CM *β(t)*	CS, CM *β(t)*	PD, CM *β(t)*	PISS, CS, PD, CM *β(t)*	SD, PISS, CM *β(t)*	SD,CS, CM *β(t)*	SD, PD, CM *β(t)*	SD, PISS, CS, PD, CM *β(t)*
Disobedience			.252(3.744)****	.026(.412)			.190(2.896)***	.060(.942)
Disruptiveness			.106(2.633)***	.054(1.454)			.081(2.034)***	.030(.794)
Destructiveness			.361(3.854)****	.345(3.982)****			.395(4.342)****	.381(4.382)****
Aggressiveness			-.086(-1.157)	-.161(-2.340)***			-.031(-.431)	-.082(-1.198)
Delinquency			.529(9.823)****	.447(8.688)****			.533(10.095)****	.458(8.883)***
Coping Methods								
Social support	-.025(-1.475)	-.023(-1.609)**	-.013(-.886)	.010(.720)	-.050(-3.036)***	-.044(-2.910)***	-.017(-1.177)	-.005(-.314)
Self-control	-.264(-10.264)****	-.114(-4.517)****	-.007(-.257)	.004(.164)	-.186(-7.005)****	-.115(-4.493)****	-.005(-.200)	.000(-.020)
Socialisation	-.141(-4.096)****	-.123(-4.028)****	-.103(-3.345)****	-.083(-2.949)***	-.053(-1.540)*	-.057(-1.813)**	-.045(-1.519)*	-.040(-1.384)
Deflection	.264(8.493)****	.195(7.004)****	.185(6.647)****	.130(4.982)****	.138(4.281)****	.128(4.349)****	.104(3.701)****	.081(3.005)***
R^2	**.265**	**.430**	**.446**	**538**	**.432**	**.531**	**.581**	**.627**
Adjusted R^2	**.261**	**.427**	**.439**	**530**	**.406**	**.509**	**.558**	**.603**

Notes:
The coefficient is highly significant at a *probability value* of <.001**** or <.05*** or <.10**, marginally significant at a *probability* of >.10 to ≤ .14*, and not significant at a *probability* value of > .14.
All variables with asterisks or a *probability* value of ≤ .14 are marginally to highly significant. Therefore, each of them was selected and included in the subsequent SEM path analysis.
SD = socio-demographics, PISS = peer influence and socioeconomic status, CS = community stressors, PD = psychosocial distresses, CM = coping methods, and R^2 = the total variance explained by the combined variables in the model.

Table 41. Summary of variables in the structural model which were selected for path analysis

Click here [Table 41. Variables for SEM Path.xlsx]

© University of Pretoria

APPENDIX 4: DATA OF PATHWAYS FOR PREDICTORS OF SEXUAL RISK BEHAVIOUR AMONG ADOLESCENTS

4.1 SEM Path Results for Predictors of Sexual Risks among all 1,437 Adolescents

Table 43. Standardised SEM path co-efficients for predictors of sexual risk behaviour among all 1,437 adolescents in sample

Path list			Parameter	Coefficient	Standard Error	*t* value	*P* value
Community stressors	===>	Poverty of basic needs		0.15967**	0.02917	5.4732	<.0001
Community stressors	===>	Personal threats	_Parm01	0.64401**	0.02067	31.1597	<.0001
Community stressors	===>	Interpersonal problem	_Parm02	0.43087**	0.02527	17.0486	<.0001
Community stressors	===>	Internal HIV stigma	_Parm03	0.31313**	0.02737	11.4388	<.0001
Internalising distress	===>	Anger		0.79828**	0.01116	71.5436	<.0001
Internalising distress	===>	Attention problem	_Parm04	0.80854**	0.01073	75.3426	<.0001
Internalising distress	===>	Anxiety	_Parm05	0.79074**	0.01147	68.9433	<.0001
Internalising distress	===>	Depression	_Parm06	0.75453**	0.01294	58.3292	<.0001
Internalising distress	===>	Sleep unrest	_Parm07	0.76539**	0.01250	61.2227	<.0001
Internalising distress	===>	Psychosis	_Parm08	0.75680**	0.01285	58.9164	<.0001
Internalising distress	===>	Somatisation	_Parm09	0.67432**	0.01598	42.2015	<.0001
Internalising distress	===>	Suicide ideation	_Parm10	0.66685**	0.01625	41.0459	<.0001
Externalising distress	===>	Disobedience		0.67624**	0.01628	41.5356	<.0001
Externalising distress	===>	Disruptiveness	_Parm11	0.81403**	0.01102	73.8532	<.0001
Externalising distress	===>	Destructiveness	_Parm12	0.72703**	0.01442	50.4319	<.0001
Externalising distress	===>	Aggressiveness	_Parm13	0.75048**	0.01352	55.5094	<.0001
Externalising distress	===>	Delinquency	_Parm14	0.83516**	0.01019	81.9607	<.0001
Psychosocial distress	===>	Internalising distress		0.82782**	0.01305	63.4399	<.0001
Psychosocial distress	===>	Externalising distress	_Parm15	0.92353**	0.01108	83.3338	<.0001
Sexual risk behaviour	===>	Risky sexual conditions		0.92239**	0.00996	92.6112	<.0001
Sexual risk behaviour	===>	Risky sexual actions	_Parm16	0.81356**	0.01217	66.8573	<.0001
Coping methods	===>	Socialization		0.72859**	0.01286	56.6636	<.0001
Coping methods	===>	Deflection	_Parm17	0.99536**	0.0001783	5582.5	<.0001
Coping methods	===>	Social support	_Parm18	0.17534**	0.02644	6.6328	<.0001
Coping methods	===>	Self-control [a]	_Parm19	0.02713	0.02725	0.9955	0.3195
Psychosocial distress	===>	Sexual risk behaviour	_Parm20	0.73498	0.02517	29.1986	<.0001
HIV uninfected	===>	Sexual risk behaviour	_Parm21	0.08476	0.02306	3.6752	0.0002
Female	===>	Sexual risk behaviour	_Parm22	0.04549	0.01979	2.2983	0.0215
Age range 10 – 14 years	===>	Sexual risk behaviour	_Parm23	-0.17545	0.02593	-6.7657	<.0001
Educated to ≤ primary 4 level	===>	Sexual risk behaviour	_Parm24	-0.13571	0.02910	-4.6632	<.0001
Educated to primary 5-7 level	===>	Sexual risk behaviour	_Parm25	-0.11002	0.02870	-3.8334	0.0001
Pentecost/SDA/Ortho religions	===>	Sexual risk behaviour	_Parm26	-0.04577	0.02011	-2.2757	0.0229
Caregiver talks	===>	Sexual risk behaviour	_Parm27	0.04439	0.02062	2.1529	0.0313
HIV+ caregiver	===>	Sexual risk behaviour	_Parm28	0.08461	0.03258	2.5969	0.0094
HIV- caregiver	===>	Sexual risk behaviour	_Parm29	0.10940**	0.03294	3.3210	0.0009
Lira district	===>	Sexual risk behaviour	_Parm30	-0.34387**	0.07722	-4.4529	<.0001
Muganda by ethnicity	===>	Sexual risk behaviour	_Parm31	0.07106**	0.02156	3.2966	0.0010
Lango/Acholi by ethnicity	===>	Sexual risk behaviour	_Parm32	0.19627**	0.07554	2.5981	0.0094
Attending school	===>	Sexual risk behaviour	_Parm33	-0.13179**	0.02226	-5.9205	<.0001
Peer-influence	===>	Sexual risk behaviour	_Parm34	0.07071**	0.02517	2.8092	0.0050
1-3rd socioeconomic quartile	===>	Sexual risk behaviour	_Parm35	0.09458**	0.02124	4.4530	<.0001
Community stressors	===>	Coping methods	_Parm36	-0.85543**	0.07405	-11.5524	<.0001
Psychosocial distress	===>	Coping methods	_Parm37	0.22558**	0.03712	6.0777	<.0001
HIV infected	===>	Psychosocial distresses	_Parm38	0.09253**	0.03443	2.6875	0.0072
HIV uninfected	===>	Psychosocial distresses	_Parm39	-0.10639**	0.02875	-3.7001	0.0002
Educated to ≤ primary 4 level	===>	Psychosocial distresses	_Parm40	0.07270**	0.02804	2.5926	0.0095
Educated to primary 5-7 level	===>	Psychosocial distresses	_Parm41	0.08478**	0.02752	3.0810	0.0021
Anglican	===>	Psychosocial distresses	_Parm42	-0.10268**	0.02276	-4.5116	<.0001
No job	===>	Psychosocial distresses	_Parm43	0.27218**	0.08129	3.3482	0.0008
Student	===>	Psychosocial distresses	_Parm44	0.35968**	0.09271	3.8799	0.0001
Tender/driver/hawker	===>	Psychosocial distresses	_Parm45	0.16682**	0.03757	4.4408	<.0001
Farmer	===>	Psychosocial distresses	_Parm46	0.23941**	0.06359	3.7651	0.0002
No sick person in home	===>	Psychosocial distresses	_Parm47	-0.05267**	0.02468	-2.1337	0.0329
One sick person in home	===>	Psychosocial distresses	_Parm48	-0.11190**	0.02481	-4.5108	<.0001
Lived with 1 caregiver	===>	Psychosocial distresses	_Parm49	-0.19406**	0.04225	-4.5936	<.0001

© University of Pretoria

Path list			Parameter	Coefficient	Standard Error	*t* value	*P* value
Lived with 2 caregivers	===>	Psychosocial distresses	_Parm50	-0.26731**	0.04134	-6.4667	<.0001
Caregiver engaged in trade	===>	Psychosocial distresses	_Parm51	-0.06928**	0.02308	-3.0016	0.0027
HIV- caregiver	===>	Psychosocial distresses	_Parm52	-0.12392**	0.02461	-5.0363	<.0001
Rukungiri district	===>	Psychosocial distresses	_Parm53	-0.44648**	0.02487	-17.9520	<.0001
Psychosocial care	===>	Psychosocial distresses	_Parm54	0.14269**	0.03063	4.6579	<.0001
Peer-influence	===>	Psychosocial distresses	_Parm55	0.37515**	0.02424	15.4775	<.0001
1-3rd socioeconomic quartile	===>	Psychosocial distresses	_Parm56	-0.04704**	0.02403	-1.9572	0.0503
Tender/driver/hawker	===>	Coping methods	_Parm57	0.10933**	0.03195	3.4221	0.0006
Farmer	===>	Coping methods	_Parm58	0.12732**	0.03387	3.7591	0.0002
No sick person in home	===>	Coping methods	_Parm59	-0.32037**	0.03281	-9.7639	<.0001
Lived with 1 caregiver	===>	Coping methods	_Parm60	-0.23530**	0.06294	-3.7384	0.0002
Lived with 2 caregivers	===>	Coping methods	_Parm61	-0.20383**	0.06331	-3.2194	0.0013
Lira district	===>	Coping methods	_Parm62	-0.54426**	0.05816	-9.3583	<.0001
Rukungiri district	===>	Coping methods	_Parm63	-0.62916**	0.05595	-11.2443	<.0001
Psychosocial care	===>	Coping methods	_Parm64	0.15859**	0.03478	4.5596	<.0001
Peer-influence	===>	Coping methods	_Parm65	0.37070**	0.05556	6.6717	<.0001

Notes:

(a) This variable is maintained in the final path model, even though it is not statistically significant, because it is significant in the final path models for the HIV uninfected and unaware adolescents.

Coefficients with (**) (*) labels show that the effect of the source variable on the outcome variable in the path list is significant at .05 or .10 significance level.

© University of Pretoria

Table 44. Standardised SEM path variances for predictors of sexual risk behaviour among all 1,437 adolescents

		Variance parameters			
Variables	Parameter	Estimate	Standard Error	*t* value	*P* value
Deflection		0.10000			
Peer-influence	_Add001	0.21264**	0.00816	26.0480	<.0001
No job	_Add002	0.17790**	0.00683	26.0480	<.0001
Student	_Add003	0.23797**	0.00914	26.0480	<.0001
Tender/driver/hawker	_Add004	0.02652**	0.00102	26.0480	<.0001
Farming	_Add005	0.10345**	0.00397	26.0480	<.0001
Female	_Add006	0.24798**	0.00952	26.0480	<.0001
Caregiver talks	_Add007	0.12306**	0.00472	26.0480	<.0001
HIV+ caregiver	_Add008	0.21998**	0.00845	26.0480	<.0001
HIV- caregiver	_Add009	0.17470**	0.00671	26.0480	<.0001
1-3rd socioeconomic quartile	_Add010	1.22559**	0.04705	26.0480	<.0001
HIV infected	_Add011	0.16722**	0.00642	26.0480	<.0001
HIV uninfected	_Add012	0.24877**	0.00955	26.0480	<.0001
Age range 10 – 14 years	_Add013	0.24663**	0.00947	26.0480	<.0001
Educated up to ≤ primary 4 level	_Add014	0.15168**	0.00582	26.0480	<.0001
Educated up to primary 5-7 level	_Add015	0.24820**	0.00953	26.0480	<.0001
Anglican	_Add016	0.23578**	0.00905	26.0480	<.0001
Pentecost/SDA/Orthodox religions	_Add017	0.10119**	0.00388	26.0480	<.0001
No sick person in home	_Add018	0.14513**	0.00557	26.0480	<.0001
One sick person in home	_Add019	0.24419**	0.00937	26.0480	<.0001
Lived with 1 caregiver	_Add020	0.23999**	0.00921	26.0480	<.0001
Lived with 2 caregivers	_Add021	0.25000**	0.00960	26.0480	<.0001
Caregiver engaged in trade	_Add022	0.11397**	0.00438	26.0480	<.0001
Lira district	_Add023	0.24236**	0.00930	26.0480	<.0001
Rukungiri district	_Add024	0.21867**	0.00839	26.0480	<.0001
Muganda by ethnicity	_Add025	0.09311**	0.00357	26.0480	<.0001
Lango/Acholi by ethnicity	_Add026	0.23999**	0.00921	26.0480	<.0001
Attending school	_Add027	0.13931**	0.00535	26.0480	<.0001
Psychosocial care	_Add028	0.21814**	0.00837	26.0480	<.0001
Community stressors	_Add029	0.09091**	0.03376	2.6931	0.0071
Poverty of basic needs	_Add030	3.47478**	0.13413	25.9057	<.0001
Personal threats	_Add031	0.77479**	0.03732	20.7604	<.0001
Interpersonal problems	_Add032	2.24458**	0.09095	24.6796	<.0001
Internal HIV stigma	_Add033	9.21893**	0.36249	25.4320	<.0001
Anger	_Add034	4.03598**	0.18082	22.3208	<.0001
Attention problem	_Add035	3.06790**	0.13919	22.0405	<.0001
Anxiety	_Add036	6.13609**	0.27260	22.5091	<.0001
Depression	_Add037	2.42511**	0.10431	23.2489	<.0001
Sleep unrest	_Add038	1.23012**	0.05336	23.0517	<.0001
Psychosis	_Add039	2.55834**	0.11023	23.2092	<.0001
Somatisation	_Add040	2.42594**	0.09989	24.2870	<.0001
Suicide ideation	_Add041	1.28663**	0.05282	24.3573	<.0001
Disobedience	_Add042	0.82866**	0.03488	23.7550	<.0001
Disruptiveness	_Add043	1.81724**	0.08810	20.6278	<.0001
Destructiveness	_Add044	0.36744**	0.01599	22.9852	<.0001
Aggressiveness	_Add045	0.61065**	0.02712	22.5173	<.0001
Delinquency	_Add046	1.00415**	0.05104	19.6747	<.0001
Socialisation	_Add047	3.86722**	0.15003	25.7765	<.0001
Social support	_Add048	22.78793**	0.87510	26.0404	<.0001
Self-control	_Add049	9.16879**	0.35200	26.0479	<.0001
Risky sexual conditions	_Add050	0.39699**	0.04724	8.4031	<.0001
Risky sexual actions	_Add051	0.84232**	0.04589	18.3534	<.0001
Internalising distress	_Add052	2.23135**	0.17401	12.8229	<.0001
Externalising distress	_Add053	0.10271**	0.01542	6.6601	<.0001
Sexual risk behaviour	_Add054	0.70577**	0.05734	12.3091	<.0001
Coping methods	_Add055	2.50687**	0.21242	11.8014	<.0001
Psychosocial distresses	_Add056	2.37572**	0.18395	12.9151	<.0001

Notes: Estimates with labels (**) or (*) show that the variance of the variable is significant at .05 or .10 significance level.

© University of Pretoria

4.2 SEM Path Results of the Predictors for Sexual Risks among HIV-infected Adolescents

Table 45. Standardised SEM path coefficients of predictors for sexual risk behaviour among 289 HIV-infected adolescents

Path list			Parameter	Coefficient	Standard Error	*t* value	*P* value
Community stressors	===>	Poverty of basic needs		0.52014**	0.05052	10.2953	<.0001
Community stressors	===>	Personal threats	_Parm01	0.29664**	0.06037	4.9135	<.0001
Community stressors	===>	Interpersonal problem	_Parm02	0.84281**	0.03668	22.9746	<.0001
Community stressors	===>	Inner HIV stigma	_Parm03	0.52812**	0.05009	10.5434	<.0001
Internalising distresses	===>	Anger		0.83265**	0.02110	39.4597	<.0001
Internalising distresses	===>	Attention problems	_Parm04	0.77511**	0.02630	29.4713	<.0001
Internalising distresses	===>	Anxiety	_Parm05	0.80636**	0.02350	34.3115	<.0001
Internalising distresses	===>	Depression	_Parm06	0.71353**	0.03157	22.6047	<.0001
Internalising distresses	===>	Sleep unrest	_Parm07	0.76861**	0.02687	28.6018	<.0001
Internalising distresses	===>	Psychosis	_Parm08	0.77296**	0.02649	29.1790	<.0001
Internalising distresses	===>	Somatisation	_Parm09	0.67770**	0.03445	19.6694	<.0001
Internalising distresses	===>	Suicide ideation	_Parm10	0.64491**	0.03698	17.4417	<.0001
Externalising distresses	===>	Disobedience		0.73411**	0.02927	25.0814	<.0001
Externalising distresses	===>	Disruptiveness	_Parm11	0.85882**	0.01791	47.9505	<.0001
Externalising distresses	===>	Destructiveness	_Parm12	0.80702**	0.02278	35.4261	<.0001
Externalising distresses	===>	Aggressiveness	_Parm13	0.86521**	0.01730	50.0053	<.0001
Externalising distresses	===>	Delinquency	_Parm14	0.87838**	0.01605	54.7146	<.0001
Psychosocial distresses	===>	Internalising distress		0.79575**	0.02819	28.2252	<.0001
Psychosocial distresses	===>	Externalising distress	_Parm15	0.97390**	0.01712	56.8746	<.0001
Sexual risk behaviour	===>	Risky sexual conditions		0.87267**	0.01886	46.2699	<.0001
Sexual risk behaviour	===>	Risky sexual actions	_Parm16	0.91423**	0.01639	55.7916	<.0001
Coping methods	===>	Socialization		0.66996**	0.03287	20.3846	<.0001
Coping methods	===>	Deflection	_Parm17	0.99435**	0.0004726	2103.9	<.0001
Coping methods	===>	Social support	_Parm18	0.17541**	0.05754	3.0483	0.0023
Coping methods	===>	Self-control [a]	_Parm19	0.06994	0.05907	1.1840	0.2364
Psychosocial distress	===>	Sexual risk behaviour	_Parm20	0.82834**	0.04388	18.8772	<.0001
Female	===>	Sexual risk behaviour	_Parm21	0.06559*	0.03770	1.7397	0.0819
Age range 10 – 14 years	===>	Sexual risk behaviour	_Parm22	-0.15449**	0.05001	-3.0894	0.0020
Educated to ≤ primary 4 level	===>	Sexual risk behaviour	_Parm23	-0.00124	0.05066	-0.0244	0.9805
Educated to primary 5-7 level	===>	Sexual risk behaviour	_Parm24	0.00197	0.05251	0.0375	0.9701
Pentecost/SDA/Orthodox	===>	Sexual risk behaviour	_Parm25	-0.06595*	0.03835	-1.7196	0.0855
Caregiver talks	===>	Sexual risk behaviour	_Parm26	-0.00455	0.03866	-0.1176	0.9064
HIV+ caregiver	===>	Sexual risk behaviour	_Parm27	0.12048*	0.06927	1.7392	0.0820
HIV- caregiver	===>	Sexual risk behaviour	_Parm28	0.16122**	0.07221	2.2328	0.0256
Lira district	===>	Sexual risk behaviour	_Parm29	-0.46603**	0.12452	-3.7425	0.0002
Muganda by ethnicity	===>	Sexual risk behaviour	_Parm30	0.04474	0.04141	1.0805	0.2799
Lango/Acholi by ethnicity	===>	Sexual risk behaviour	_Parm31	0.41889**	0.12084	3.4664	0.0005
Attending school	===>	Sexual risk behaviour	_Parm32	-0.12281**	0.04062	-3.0231	0.0025
Peer-influence	===>	Sexual risk behaviour	_Parm33	0.06020	0.04598	1.3093	0.1904
1-3rd socioeconomic quartile	===>	Sexual risk behaviour	_Parm34	0.11013**	0.03793	2.9031	0.0037
Community stressors	===>	Coping methods	_Parm35	-0.11434	0.07651	-1.4944	0.1351
Psychosocial distresses	===>	Coping methods	_Parm36	0.13401**	0.06822	1.9644	0.0495
Educated to ≤ primary 4 level	===>	Psychosocial distresses	_Parm37	0.08454	0.05673	1.4902	0.1362
Educated to primary 5-7 level	===>	Psychosocial distresses	_Parm38	0.15109**	0.05513	2.7406	0.0061
Anglican	===>	Psychosocial distresses	_Parm39	-0.17126**	0.04939	-3.4674	0.0005
No job	===>	Psychosocial distresses	_Parm40	0.15912	0.14802	1.0750	0.2824
Student	===>	Psychosocial distresses	_Parm41	0.35492**	0.16908	2.0991	0.0358
Tender/driver/hawker	===>	Psychosocial distresses	_Parm42	0.18918**	0.08422	2.2462	0.0247
Farmer	===>	Psychosocial distresses	_Parm43	0.19296*	0.10655	1.8110	0.0701
No sick person in home	===>	Psychosocial distresses	_Parm44	-0.15797**	0.05226	-3.0230	0.0025
One sick person in home	===>	Psychosocial distresses	_Parm45	-0.22286**	0.04957	-4.4962	<.0001
Lived with 1 caregiver	===>	Psychosocial distresses	_Parm46	0.00560	0.08106	0.0690	0.9450
Lived with 2 caregivers	===>	Psychosocial distresses	_Parm47	-0.16524**	0.07878	-2.0975	0.0360
Caregiver engaged in trade	===>	Psychosocial distresses	_Parm48	-0.06441	0.04762	-1.3525	0.1762
HIV- caregiver	===>	Psychosocial distresses	_Parm49	-0.23361**	0.04928	-4.7408	<.0001
Rukungiri district	===>	Psychosocial distresses	_Parm50	-0.32350**	0.04958	-6.5242	<.0001
Psychosocial care	===>	Psychosocial distresses	_Parm51	0.04188	0.04655	0.8995	0.3684

© University of Pretoria

	Path list		Parameter	Coefficient	Standard Error	*t* value	*P* value
Peer-influence	===>	Psychosocial distresses	_Parm52	0.33936**	0.04952	6.8536	<.0001
Tender/driver/hawker	===>	Coping methods	_Parm53	0.06115	0.05139	1.1897	0.2341
Farmer	===>	Coping methods	_Parm54	0.05882	0.05039	1.1672	0.2431
No sick person in home	===>	Coping methods	_Parm55	-0.37491**	0.05220	-7.1823	<.0001
Lived with 1 caregiver	===>	Coping methods	_Parm56	-0.13330	0.09292	-1.4345	0.1514
Lived with 2 caregivers	===>	Coping methods	_Parm57	-0.12637	0.08898	-1.4202	0.1555
Lira district	===>	Coping methods	_Parm58	-0.17601**	0.07631	-2.3066	0.0211
Rukungiri district	===>	Coping methods	_Parm59	-0.42645**	0.06823	-6.2503	<.0001
Psychosocial care	===>	Coping methods	_Parm60	-0.02112	0.05212	-0.4053	0.6852
Peer-influence	===>	Coping methods	_Parm61	0.04174	0.06021	0.6933	0.4881

Notes:

Correlation coefficients with labels (**) (*) show that the effect of the source variable on the outcome variable in the path list is significant at .05 or .10 significance level.

([a]) This variable is maintained in the final path model, even though it is not statistically significant, because it is significant in the final path models for the HIV uninfected and unaware adolescents.

© University of Pretoria

Table 46. Standardised SEM path variances for predictors of sexual risk behaviour among HIV-infected adolescents

		Variance parameters			
Variable	Parameter	Estimate	Standard Error	*t* value	*P* value
Deflection		0.10000			
Peer-influence	_Add001	0.24331**	0.02031	11.9791	<.0001
No job	_Add002	0.15930**	0.01330	11.9791	<.0001
Student	_Add003	0.22415**	0.01871	11.9791	<.0001
Tender/driver/hawker	_Add004	0.04007**	0.00334	11.9791	<.0001
Farming	_Add005	0.07374**	0.00616	11.9791	<.0001
Female	_Add006	0.24737**	0.02065	11.9791	<.0001
Caregiver talks	_Add007	0.08808**	0.00735	11.9791	<.0001
HIV+ caregiver	_Add008	0.25087**	0.02094	11.9791	<.0001
HIV- caregiver	_Add009	0.23998**	0.02003	11.9791	<.0001
1-3rd socioeconomic quartile	_Add010	1.09310**	0.09125	11.9791	<.0001
Age range 10 – 14 years	_Add011	0.25028**	0.02089	11.9791	<.0001
Educated up to ≤ primary 4 level	_Add012	0.11236**	0.00938	11.9791	<.0001
Educated up to primary 5-7 level	_Add013	0.24139**	0.02015	11.9791	<.0001
Anglican	_Add014	0.22850**	0.01907	11.9791	<.0001
Pentecost/SDA/Orthodox religions	_Add015	0.10448**	0.00872	11.9791	<.0001
No sick person in home	_Add016	0.11236**	0.00938	11.9791	<.0001
One sick person in home	_Add017	0.22850**	0.01907	11.9791	<.0001
Lived with 1 caregiver	_Add018	0.25044**	0.02091	11.9791	<.0001
Lived with 2 caregivers	_Add019	0.24331**	0.02031	11.9791	<.0001
Caregiver engaged in trade	_Add020	0.11749**	0.00981	11.9791	<.0001
Lira district	_Add021	0.24650**	0.02058	11.9791	<.0001
Rukungiri district	_Add022	0.18462**	0.01541	11.9791	<.0001
Muganda by ethnicity	_Add023	0.08241**	0.00688	11.9791	<.0001
Lango/Acholi by ethnicity	_Add024	0.24777**	0.02068	11.9791	<.0001
Attending school	_Add025	0.12500**	0.01043	11.9791	<.0001
Psychosocial care	_Add026	0.07080**	0.00591	11.9791	<.0001
Community stressors	_Add027	1.15382**	0.27028	4.2689	<.0001
Poverty of basic needs	_Add028	3.11097**	0.28494	10.9179	<.0001
Personal threats	_Add029	1.12452**	0.09598	11.7165	<.0001
Interpersonal problems	_Add030	1.57167**	0.32455	4.8427	<.0001
Internal HIV stigma	_Add031	4.48315**	0.41247	10.8691	<.0001
Anger	_Add032	4.18429**	0.42739	9.7904	<.0001
Attention problem	_Add033	4.75192**	0.45145	10.5259	<.0001
Anxiety	_Add034	6.00343**	0.58966	10.1812	<.0001
Depression	_Add035	3.78699**	0.34489	10.9802	<.0001
Sleep unrest	_Add036	1.43127**	0.13521	10.5857	<.0001
Psychosis	_Add037	3.76131**	0.35666	10.5461	<.0001
Somatisation	_Add038	3.18762**	0.28558	11.1621	<.0001
Suicide ideation	_Add039	2.03776**	0.18042	11.2947	<.0001
Disobedience	_Add040	0.99137**	0.08947	11.0809	<.0001
Disruptiveness	_Add041	2.53856**	0.25926	9.7916	<.0001
Destructiveness	_Add042	0.41199**	0.03911	10.5356	<.0001
Aggressiveness	_Add043	0.60169**	0.06229	9.6591	<.0001
Delinquency	_Add044	1.87194**	0.20036	9.3427	<.0001
Socialisation	_Add045	3.73078**	0.31431	11.8696	<.0001
Social support	_Add046	27.67749**	2.31130	11.9749	<.0001
Self-control	_Add047	10.83828**	0.90481	11.9785	<.0001
Risky sexual conditions	_Add048	0.94856**	0.11833	8.0160	<.0001
Risky sexual actions	_Add049	0.71097**	0.12067	5.8921	<.0001
Internalising distress	_Add050	3.46923**	0.49325	7.0334	<.0001
Externalising distress	_Add051	0.05970	0.03903	1.5297	0.1261
Sexual risk behaviour	_Add052	0.59467**	0.11738	5.0664	<.0001
Coping methods	_Add053	2.12921**	0.33297	6.3947	<.0001
Psychosocial distresses	_Add054	2.95668**	0.47086	6.2793	<.0001

Notes:
Estimates with labels (**) (*) show that the variance of the variable is significant at .05 or .10 significance level.

© University of Pretoria

4.3 SEM Path Results for Predictors of Sexual Risks among HIV-uninfected Adolescents

Table 47. Standardised SEM path coefficients for predictors of sexual risk behaviour among 756 HIV-uninfected adolescents

	Path list		Parameter	Coefficient	Standard Error	*t* value	*P* value
Community stressors	===>	Poverty of basic needs		0.21528**	0.03837	5.6103	<.0001
Community stressors	===>	Personal threats	_Parm01	0.73309**	0.02339	31.3442	<.0001
Community stressors	===>	Interpersonal problem	_Parm02	0.42074**	0.03382	12.4407	<.0001
Community stressors	===>	Inner HIV stigma	_Parm03	0.29708**	0.03690	8.0511	<.0001
Internalising distresses	===>	Anger		0.74248**	0.01849	40.1580	<.0001
Internalising distresses	===>	Attention problems	_Parm04	0.78580**	0.01613	48.7035	<.0001
Internalising distresses	===>	Anxiety	_Parm05	0.79562**	0.01559	51.0378	<.0001
Internalising distresses	===>	Depression	_Parm06	0.73977**	0.01863	39.7023	<.0001
Internalising distresses	===>	Sleep unrest	_Parm07	0.76772**	0.01713	44.8209	<.0001
Internalising distresses	===>	Psychosis	_Parm08	0.71735**	0.01981	36.2147	<.0001
Internalising distresses	===>	Somatisation	_Parm09	0.65991**	0.02267	29.1057	<.0001
Internalising distresses	===>	Suicide ideation	_Parm10	0.64497**	0.02338	27.5847	<.0001
Externalising distresses	===>	Disobedience		0.58381**	0.02748	21.2459	<.0001
Externalising distresses	===>	Disruptiveness	_Parm11	0.79329**	0.01788	44.3710	<.0001
Externalising distresses	===>	Destructiveness	_Parm12	0.63216**	0.02541	24.8784	<.0001
Externalising distresses	===>	Aggressiveness	_Parm13	0.55402**	0.02868	19.3162	<.0001
Externalising distresses	===>	Delinquency	_Parm14	0.76639**	0.01914	40.0463	<.0001
Psychosocial distresses	===>	Internalising distress		0.87905**	0.01793	49.0371	<.0001
Psychosocial distresses	===>	Externalising distress	_Parm15	0.89768**	0.01913	46.9239	<.0001
Sexual risk behaviour	===>	Risky sexual conditions		0.98185**	0.01672	58.7373	<.0001
Sexual risk behaviour	===>	Risky sexual actions	_Parm16	0.73275**	0.02116	34.6262	<.0001
Coping methods	===>	Socialisation		0.76671**	0.01542	49.7076	<.0001
Coping methods	===>	Deflection	_Parm17	0.99570**	0.0002255	4416.5	<.0001
Coping methods	===>	Social support	_Parm18	0.25240**	0.03483	7.2455	<.0001
Coping methods	===>	Self-control	_Parm19	0.08691**	0.03691	2.3545	0.0185
Psychosocial distress	===>	Sexual risk behaviour	_Parm20	0.47937**	0.03430	13.9749	<.0001
Female	===>	Sexual risk behaviour	_Parm21	0.02415	0.02665	0.9065	0.3647
Age range 10 – 14 years	===>	Sexual risk behaviour	_Parm22	-0.18750**	0.03519	-5.3277	<.0001
Educated to ≤ primary 4 level	===>	Sexual risk behaviour	_Parm23	-0.14175**	0.04031	-3.5163	0.0004
Educated to primary 5-7 level	===>	Sexual risk behaviour	_Parm24	-0.11130**	0.03788	-2.9379	0.0033
Pentecost/SDA/Orthodox	===>	Sexual risk behaviour	_Parm25	-0.03951	0.02719	-1.4527	0.1463
Caregiver talks	===>	Sexual risk behaviour	_Parm26	-0.01554	0.02737	-0.5679	0.5701
HIV+ caregiver	===>	Sexual risk behaviour	_Parm27	0.01328	0.04021	0.3302	0.7412
HIV- caregiver	===>	Sexual risk behaviour	_Parm28	0.03519	0.04033	0.8727	0.3828
Lira district	===>	Sexual risk behaviour	_Parm29	-0.27248**	0.10825	-2.5171	0.0118
Muganda by ethnicity	===>	Sexual risk behaviour	_Parm30	0.09345**	0.02961	3.1564	0.0016
Lango/Acholi by ethnicity	===>	Sexual risk behaviour	_Parm31	0.10031**	0.10573	0.9488	0.3427
Attending school	===>	Sexual risk behaviour	_Parm32	-0.12910**	0.03034	-4.2544	<.0001
Peer-influence	===>	Sexual risk behaviour	_Parm33	0.16878**	0.03313	5.0943	<.0001
1-3rd socioeconomic quartile	===>	Sexual risk behaviour	_Parm34	0.06219**	0.02838	2.1909	0.0285
Community stressors	===>	Coping methods	_Parm35	-0.91014**	0.10094	-9.0168	<.0001
Psychosocial distresses	===>	Coping methods	_Parm36	-0.03089	0.05298	-0.5830	0.5599
Educated to ≤ primary 4 level	===>	Psychosocial distresses	_Parm37	-0.01125	0.03829	-0.2937	0.7690
Educated to primary 5-7 level	===>	Psychosocial distresses	_Parm38	0.01944	0.03770	0.5156	0.6061
Anglican	===>	Psychosocial distresses	_Parm39	-0.05077	0.03184	-1.5943	0.1109
No job	===>	Psychosocial distresses	_Parm40	0.25924**	0.10457	2.4790	0.0132
Student	===>	Psychosocial distresses	_Parm41	0.21734*	0.12337	1.7617	0.0781
Tender/driver/hawker	===>	Psychosocial distresses	_Parm42	0.12780**	0.04940	2.5872	0.0097
Farmer	===>	Psychosocial distresses	_Parm43	0.23747**	0.09317	2.5488	0.0108
No sick person in home	===>	Psychosocial distresses	_Parm44	0.06518*	0.03469	1.8790	0.0602
One sick person in home	===>	Psychosocial distresses	_Parm45	-0.04252	0.03506	-1.2128	0.2252
Lived with 1 caregiver	===>	Psychosocial distresses	_Parm46	-0.55921**	0.07109	-7.8662	<.0001
Lived with 2 caregivers	===>	Psychosocial distresses	_Parm47	-0.57378**	0.06955	-8.2500	<.0001
Caregiver engaged in trade	===>	Psychosocial distresses	_Parm48	-0.05537*	0.03235	-1.7119	0.0869
HIV- caregiver	===>	Psychosocial distresses	_Parm49	0.00124	0.03428	0.0361	0.9712
Rukungiri district	===>	Psychosocial distresses	_Parm50	-0.50125**	0.03547	-14.1301	<.0001
Psychosocial care	===>	Psychosocial distresses	_Parm51	0.17162**	0.03219	5.3309	<.0001

© University of Pretoria

	Path list		Parameter	Coefficient	Standard Error	*t* value	*P* value
Peer-influence	===>	Psychosocial distresses	_Parm52	0.39292**	0.03415	11.5050	<.0001
Tender/driver/hawker	===>	Coping methods	_Parm53	0.08717**	0.04052	2.1512	0.0315
Farmer	===>	Coping methods	_Parm54	0.17660**	0.05318	3.3210	0.0009
No sick person in home	===>	Coping methods	_Parm55	-0.23129**	0.04037	-5.7297	<.0001
Lived with 1 caregiver	===>	Coping methods	_Parm56	-0.31593**	0.10157	-3.1104	0.0019
Lived with 2 caregivers	===>	Coping methods	_Parm57	-0.25236**	0.10003	-2.5229	0.0116
Lira district	===>	Coping methods	_Parm58	-0.54343**	0.08208	-6.6207	<.0001
Rukungiri district	===>	Coping methods	_Parm59	-0.80579**	0.08269	-9.7446	<.0001
Psychosocial care	===>	Coping methods	_Parm60	0.15333**	0.04153	3.6918	0.0002
Peer-influence	===>	Coping methods	_Parm61	0.49537**	0.08298	5.9701	<.0001

Notes:
Correlation coefficients with labels (**) (*) show that the effect of the source variable on the outcome variable in the path list is significant at .05 or .10 significance level.

© University of Pretoria

Table 48. Standardised SEM path variances for predictors of sexual risk behaviour among HIV uninfected adolescents

		Variance parameters			
Variable	Parameter	Estimate	Standard Error	*t* value	*P* value
Deflection		0.10000			
Peer-influence	_Add001	0.20578**	0.01078	19.0919	<.0001
No job	_Add002	0.17060**	0.00894	19.0919	<.0001
Student	_Add003	0.24312**	0.01273	19.0919	<.0001
Tender/driver/hawker	_Add004	0.02408**	0.00126	19.0919	<.0001
Farming	_Add005	0.13196**	0.00691	19.0919	<.0001
Female	_Add006	0.24854**	0.01302	19.0919	<.0001
Caregiver talks	_Add007	0.07896**	0.00414	19.0919	<.0001
HIV+ caregiver	_Add008	0.17291**	0.00906	19.0919	<.0001
HIV- caregiver	_Add009	0.11437**	0.00599	19.0919	<.0001
1-3rd socioeconomic quartile	_Add010	1.29166**	0.06766	19.0919	<.0001
Age range 10 – 14 years	_Add011	0.25028**	0.01311	19.0919	<.0001
Educated up to ≤ primary 4 level	_Add012	0.16022**	0.00839	19.0919	<.0001
Educated up to primary 5-7 level	_Add013	0.25028**	0.01311	19.0919	<.0001
Anglican	_Add014	0.23920**	0.01253	19.0919	<.0001
Pentecost/SDA/Orthodox religions	_Add015	0.09340**	0.00489	19.0919	<.0001
No sick person in home	_Add016	0.13006**	0.00681	19.0919	<.0001
One sick person in home	_Add017	0.24966**	0.01308	19.0919	<.0001
Lived with 1 caregiver	_Add018	0.24005**	0.01257	19.0919	<.0001
Lived with 2 caregivers	_Add019	0.24830**	0.01301	19.0919	<.0001
Caregiver engaged in trade	_Add020	0.07782**	0.00408	19.0919	<.0001
Lira district	_Add021	0.23266**	0.01219	19.0919	<.0001
Rukungiri district	_Add022	0.24506**	0.01284	19.0919	<.0001
Muganda by ethnicity	_Add023	0.08347**	0.00437	19.0919	<.0001
Lango/Acholi by ethnicity	_Add024	0.22843**	0.01196	19.0919	<.0001
Attending school	_Add025	0.15939**	0.00835	19.0919	<.0001
Psychosocial care	_Add026	0.14480**	0.00758	19.0919	<.0001
Community stressors	_Add027	0.16099**	0.05917	2.7210	0.0065
Poverty of basic needs	_Add028	3.31287**	0.17497	18.9344	<.0001
Personal threats	_Add029	0.68385**	0.04974	13.7489	<.0001
Interpersonal problems	_Add030	1.54336**	0.08408	18.3557	<.0001
Internal HIV stigma	_Add031	9.12314**	0.48597	18.7732	<.0001
Anger	_Add032	3.62065**	0.21305	16.9944	<.0001
Attention problem	_Add033	2.47665**	0.15166	16.3306	<.0001
Anxiety	_Add034	5.01082**	0.31045	16.1403	<.0001
Depression	_Add035	1.83809**	0.10794	17.0284	<.0001
Sleep unrest	_Add036	0.95447**	0.05736	16.6385	<.0001
Psychosis	_Add037	1.88945**	0.10932	17.2839	<.0001
Somatisation	_Add038	2.05214**	0.11543	17.7786	<.0001
Suicide ideation	_Add039	0.71917**	0.04022	17.8797	<.0001
Disobedience	_Add040	0.79305**	0.04516	17.5615	<.0001
Disruptiveness	_Add041	1.29236**	0.09271	13.9400	<.0001
Destructiveness	_Add042	0.28874**	0.01687	17.1143	<.0001
Aggressiveness	_Add043	0.58224**	0.03274	17.7835	<.0001
Delinquency	_Add044	0.68344**	0.04622	14.7859	<.0001
Socialisation	_Add045	3.98502**	0.21129	18.8603	<.0001
Social support	_Add046	21.11419**	1.10657	19.0808	<.0001
Self-control	_Add047	8.09206**	0.42388	19.0906	<.0001
Risky sexual conditions	_Add048	0.08505	0.07751	1.0973	0.2725
Risky sexual actions	_Add049	0.96433**	0.06318	15.2637	<.0001
Internalising distress	_Add050	1.01100**	0.15298	6.6088	<.0001
Externalising distress	_Add051	0.07962**	0.01653	4.8182	<.0001
Sexual risk behaviour	_Add052	0.99636**	0.09649	10.3259	<.0001
Coping methods	_Add053	3.19110**	0.34005	9.3841	<.0001
Psychosocial distresses	_Add054	1.67377**	0.18844	8.8823	<.0001

Notes:
Estimates or coefficients with labels (**) (*) show that the variance of the variable is significant at .05 or .10 significance level.

© University of Pretoria

4.4 SEM Path Results for Predictors of Sexual Risks among HIV-unaware Adolescents

Table 49. Standardised SEM path co-efficients for predictors of sexual risk behaviour among 392 HIV-unaware adolescents

	Path list		Parameter	Coefficient	Standard Error	*t* value	*P* value
Community stressors	===>	Poverty of basic needs		7.0771E-7**	2.71794E-8	26.0384	<.0001
Community stressors	===>	Personal threats	_Parm01	0.56057**	0.01518	36.9174	<.0001
Community stressors	===>	Interpersonal problem	_Parm02	0.36893**	0.01228	30.0368	<.0001
Community stressors	===>	Inner HIV stigma	_Parm03	0.42748**	0.01430	29.8886	<.0001
Internalising distresses	===>	Anger		0.76687**	0.02570	29.8351	<.0001
Internalising distresses	===>	Attention problems	_Parm04	0.82690**	0.02092	39.5314	<.0001
Internalising distresses	===>	Anxiety	_Parm05	0.74409**	0.02748	27.0800	<.0001
Internalising distresses	===>	Depression	_Parm06	0.68173**	0.03213	21.2180	<.0001
Internalising distresses	===>	Sleep unrest	_Parm07	0.72248**	0.02913	24.8048	<.0001
Internalising distresses	===>	Psychosis	_Parm08	0.73296**	0.02833	25.8708	<.0001
Internalising distresses	===>	Somatisation	_Parm09	0.53910**	0.04139	13.0248	<.0001
Internalising distresses	===>	Suicide ideation	_Parm10	0.54264**	0.04119	13.1754	<.0001
Externalising distresses	===>	Disobedience		0.66159**	0.03467	19.0824	<.0001
Externalising distresses	===>	Disruptiveness	_Parm11	0.74493**	0.02874	25.9223	<.0001
Externalising distresses	===>	Destructiveness	_Parm12	0.70261**	0.03180	22.0916	<.0001
Externalising distresses	===>	Aggressiveness	_Parm13	0.72964**	0.02985	24.4397	<.0001
Externalising distresses	===>	Delinquency	_Parm14	0.80419**	0.02438	32.9872	<.0001
Psychosocial distresses	===>	Internalising distress		0.78569**	0.03146	24.9739	<.0001
Psychosocial distresses	===>	Externalising distress	_Parm15	0.85898**	0.02876	29.8650	<.0001
Sexual risk behaviour	===>	Risky sexual conditions		0.87821**	0.02678	32.7993	<.0001
Sexual risk behaviour	===>	Risky sexual actions	_Parm16	0.77930**	0.02992	26.0435	<.0001
Coping methods	===>	Socialisation		0.61914**	0.02534	24.4313	<.0001
Coping methods	===>	Deflection	_Parm17	0.99432	.	.	.
Coping methods	===>	Social support	_Parm18	-0.00436	0.05462	-0.0798	0.9364
Coping methods	===>	Self-control	_Parm19	-0.19922**	0.05152	-3.8665	0.0001
Psychosocial distress	===>	Sexual risk behaviour	_Parm20	0.75642**	0.06498	11.6403	<.0001
Female	===>	Sexual risk behaviour	_Parm21	0.02213	0.04620	0.4790	0.6320
Age range 10 – 14 years	===>	Sexual risk behaviour	_Parm22	-0.17843**	0.05664	-3.1501	0.0016
Educated to ≤ primary 4 level	===>	Sexual risk behaviour	_Parm23	-0.27468**	0.07263	-3.7818	0.0002
Educated to primary 5-7 level	===>	Sexual risk behaviour	_Parm24	-0.21780**	0.07205	-3.0227	0.0025
Pentecost/SDA/Orthodox	===>	Sexual risk behaviour	_Parm25	-0.01935	0.04725	-0.4095	0.6822
Caregiver talks	===>	Sexual risk behaviour	_Parm26	0.09694**	0.04765	2.0344	0.0419
HIV+ caregiver	===>	Sexual risk behaviour	_Parm27	0.12294	0.07685	1.5998	0.1097
HIV- caregiver	===>	Sexual risk behaviour	_Parm28	0.14721**	0.07419	1.9841	0.0472
Lira district	===>	Sexual risk behaviour	_Parm29	-0.19706	0.18752	-1.0509	0.2933
Muganda by ethnicity	===>	Sexual risk behaviour	_Parm30	0.10107**	0.04901	2.0623	0.0392
Lango/Acholi by ethnicity	===>	Sexual risk behaviour	_Parm31	-0.04054	0.18245	-0.2222	0.8242
Attending school	===>	Sexual risk behaviour	_Parm32	-0.11135**	0.05254	-2.1194	0.0341
Peer-influence	===>	Sexual risk behaviour	_Parm33	-0.05858	0.06619	-0.8850	0.3761
1-3rd socioeconomic quartile	===>	Sexual risk behaviour	_Parm34	0.07253	0.04793	1.5132	0.1302
Community stressors	===>	Coping methods	_Parm35	-1.14402**	0.03498	-32.7006	<.0001
Psychosocial distresses	===>	Coping methods	_Parm36	0.45172**	0.08093	5.5813	<.0001
Educated to ≤ primary 4 level	===>	Psychosocial distresses	_Parm37	0.29435**	0.06204	4.7448	<.0001
Educated to primary 5-7 level	===>	Psychosocial distresses	_Parm38	0.21035**	0.06225	3.3791	0.0007
Anglican	===>	Psychosocial distresses	_Parm39	-0.11101**	0.04715	-2.3542	0.0186
No job	===>	Psychosocial distresses	_Parm40	0.40024	0.27255	1.4685	0.1420
Student	===>	Psychosocial distresses	_Parm41	0.52773**	0.29045	1.8169	0.0692
Tender/driver/hawker	===>	Psychosocial distresses	_Parm42	0.16410*	0.09558	1.7169	0.0860
Farmer	===>	Psychosocial distresses	_Parm43	0.25192*	0.15267	1.6501	0.0989
No sick person in home	===>	Psychosocial distresses	_Parm44	-0.00575	0.05212	-0.1103	0.9122
One sick person in home	===>	Psychosocial distresses	_Parm45	0.02272	0.05410	0.4199	0.6746
Lived with 1 caregiver	===>	Psychosocial distresses	_Parm46	-0.11096	0.07309	-1.5181	0.1290
Lived with 2 caregivers	===>	Psychosocial distresses	_Parm47	-0.16463**	0.07130	-2.3090	0.0209
Caregiver engaged in trade	===>	Psychosocial distresses	_Parm48	-0.09186*	0.04807	-1.9110	0.0560
HIV- caregiver	===>	Psychosocial distresses	_Parm49	-0.08182	0.05162	-1.5852	0.1129
Rukungiri district	===>	Psychosocial distresses	_Parm50	-0.51333**	0.05274	-9.7341	<.0001
Psychosocial care	===>	Psychosocial distresses	_Parm51	0.03894	0.04714	0.8261	0.4087

© University of Pretoria

	Path list		Parameter	Coefficient	Standard Error	*t* value	*P* value
Peer-influence	===>	Psychosocial distresses	_Parm52	0.46995**	0.04865	9.6591	<.0001
Tender/driver/hawker	===>	Coping methods	_Parm53	0.17997**	0.08303	2.1676	0.0302
Farmer	===>	Coping methods	_Parm54	0.14771*	0.08305	1.7784	0.0753
No sick person in home	===>	Coping methods	_Parm55	-0.28334**	0.08320	-3.4056	0.0007
Lived with 1 caregiver	===>	Coping methods	_Parm56	-0.36153**	0.13458	-2.6864	0.0072
Lived with 2 caregivers	===>	Coping methods	_Parm57	-0.27064**	0.13234	-2.0451	0.0408
Lira district	===>	Coping methods	_Parm58	-1.13973**	0.11748	-9.7011	<.0001
Rukungiri district	===>	Coping methods	_Parm59	-0.75945**	0.10590	-7.1713	<.0001
Psychosocial care	===>	Coping methods	_Parm60	0.21076**	0.08567	2.4601	0.0139
Peer-influence	===>	Coping methods	_Parm61	0.22551**	0.09837	2.2926	0.0219

Notes:
Correlation coefficients with labels (**) (*) show that the effect of the source variable on the outcome variable in the path list is significant at .05 or .10 significance level.

© University of Pretoria

Table 50. Standardised SEM path variances for predictors of sexual risk behaviour among HIV-unaware adolescents

		Variance parameters			
Variable	Parameter	Estimate	Standard Error	*t* value	*P* value
Deflection		0.10000			
Peer-influence	_Add001	0.18952**	0.01456	13.0192	<.0001
No job	_Add002	0.20576**	0.01580	13.0192	<.0001
Student	_Add003	0.23615**	0.01814	13.0192	<.0001
Tender/driver/hawker	_Add004	0.02022**	0.00155	13.0192	<.0001
Farming	_Add005	0.06070**	0.00466	13.0192	<.0001
Female	_Add006	0.24852**	0.01909	13.0192	<.0001
Caregiver talks	_Add007	0.21294**	0.01636	13.0192	<.0001
HIV+ caregiver	_Add008	0.24129**	0.01853	13.0192	<.0001
HIV- caregiver	_Add009	0.20323**	0.01561	13.0192	<.0001
1-3rd socioeconomic quartile	_Add010	1.20856**	0.09283	13.0192	<.0001
Age range 10 – 14 years	_Add011	0.21062**	0.01618	13.0192	<.0001
Educated up to ≤ primary 4 level	_Add012	0.16398**	0.01260	13.0192	<.0001
Educated up to primary 5-7 level	_Add013	0.24487**	0.01881	13.0192	<.0001
Anglican	_Add014	0.23470**	0.01803	13.0192	<.0001
Pentecost/SDA/Orthodox religions	_Add015	0.11517**	0.00885	13.0192	<.0001
No sick person in home	_Add016	0.19521**	0.01499	13.0192	<.0001
One sick person in home	_Add017	0.23470**	0.01803	13.0192	<.0001
Lived with 1 caregiver	_Add018	0.22255**	0.01709	13.0192	<.0001
Lived with 2 caregivers	_Add019	0.24987**	0.01919	13.0192	<.0001
Caregiver engaged in trade	_Add020	0.17570**	0.01350	13.0192	<.0001
Lira district	_Add021	0.23543**	0.01808	13.0192	<.0001
Rukungiri district	_Add022	0.13798**	0.01060	13.0192	<.0001
Muganda by ethnicity	_Add023	0.12160**	0.00934	13.0192	<.0001
Lango/Acholi by ethnicity	_Add024	0.23317**	0.01791	13.0192	<.0001
Attending school	_Add025	0.10411**	0.00800	13.0192	<.0001
Psychosocial care	_Add026	0.10859**	0.00834	13.0192	<.0001
Community stressors	_Add027	1.3728E-12*	0	Infty	.
Poverty of basic needs	_Add028	2.74089**	0.21053	13.0192	<.0001
Personal threats	_Add029	0.69526**	0.05493	12.6583	<.0001
Interpersonal problems	_Add030	1.33596**	0.10297	12.9742	<.0001
Internal HIV stigma	_Add031	9.58829**	0.74157	12.9297	<.0001
Anger	_Add032	4.80929**	0.43338	11.0973	<.0001
Attention problem	_Add033	2.76147**	0.27333	10.1029	<.0001
Anxiety	_Add034	7.51684**	0.66218	11.3516	<.0001
Depression	_Add035	2.48914**	0.20995	11.8557	<.0001
Sleep unrest	_Add036	1.51411**	0.13106	11.5531	<.0001
Psychosis	_Add037	2.83566**	0.24745	11.4597	<.0001
Somatisation	_Add038	2.51702**	0.20181	12.4725	<.0001
Suicide ideation	_Add039	1.44194**	0.11570	12.4622	<.0001
Disobedience	_Add040	0.80056**	0.06883	11.6317	<.0001
Disruptiveness	_Add041	2.09705**	0.19453	10.7802	<.0001
Destructiveness	_Add042	0.46329**	0.04109	11.2756	<.0001
Aggressiveness	_Add043	0.66704**	0.06076	10.9779	<.0001
Delinquency	_Add044	0.66284**	0.06820	9.7184	<.0001
Socialisation	_Add045	3.32125**	0.25691	12.9278	<.0001
Social support	_Add046	20.52027**	1.57615	13.0192	<.0001
Self-control	_Add047	8.40782**	0.64610	13.0131	<.0001
Risky sexual conditions	_Add048	0.40075**	0.07931	5.0529	<.0001
Risky sexual actions	_Add049	0.57106**	0.06486	8.8052	<.0001
Internalising distress	_Add050	2.62766**	0.41507	6.3307	<.0001
Externalising distress	_Add051	0.16336**	0.03700	4.4148	<.0001
Sexual risk behaviour	_Add052	0.48292**	0.08863	5.4485	<.0001
Coping methods	_Add053	1.31428**	0.23632	5.5615	<.0001
Psychosocial distresses	_Add054	1.79801**	0.33065	5.4379	<.0001

Notes: Estimates or coefficients with labels (**) (*) show that the variance of the variable is significant at .05 or .10 significance level

© University of Pretoria