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**THE SOUTH AFRICAN PERSONALITY INVENTORY: A
PSYCHOMETRIC EVALUATION OF THE AFRIKAANS VERSION**

by

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PRETORIA

21 October 2019

REMARKS / COMMENTS

- In this mini-dissertation, the master's student refers to herself as the researcher.
- The researcher made use of primary data.
- The 6th edition of the APA referencing style was used.
- Multiple authorships of a single reference apply plural tenses throughout this dissertation.
- Please take note that symbols and abbreviations are used throughout the dissertation (refer to the list of symbols and abbreviations on p. 4). However, in some instances, a concept will be written out when referring to keywords or terms.
- The words *constructs* and *factors* have similar meanings, and will be used interchangeably.

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DECLARATION

I, Amanda Rautenbach, declare that *The South African Personality Inventory: A psychometric evaluation of the Afrikaans version* is my own work both in content and execution. All the resources that I used in this study are cited and referred to in the reference list by means of a comprehensive referencing system. Apart from the normal guidance from my study leaders, I have received no assistance, except as stated in the acknowledgements.

I declare that the content of this thesis has never been used before for any qualification at any higher education institution.

I, Amanda Rautenbach, declare that the language in this dissertation was edited by Peter Southey.

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A handwritten signature in black ink, appearing to read 'A. Rautenbach'.

21 October 2019

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TABLE OF CONTENTS

DECLARATION REGARDING PLAGIARISM.....	I
LIST OF ABBREVIATIONS	- 3 -
1. BACKGROUND TO THE STUDY	- 4 -
1.1. INTRODUCTION	- 4 -
1.2. PURPOSE STATEMENT	- 5 -
1.3. THE RESEARCH QUESTION.....	- 6 -
1.4. RESEARCH OBJECTIVES	- 6 -
1.5. ACADEMIC VALUE AND INTENDED CONTRIBUTION OF THE PROPOSED STUDY	- 7 -
1.5.1. THEORETICAL CONTRIBUTION	- 7 -
1.5.2. PRACTICAL CONTRIBUTION	- 7 -
1.5.3. SUBJECT-FIELD CONTRIBUTION	- 7 -
1.6. DEFINITION OF KEY TERMS.....	- 8 -
2. LITERATURE REVIEW	- 8 -
2.1. PERSONALITY	- 8 -
2.2. PERSONALITY THEORIES	- 10 -
2.2.1. Trait theory	- 10 -
2.2.2. Biological Theory	- 11 -
2.2.3. Behavioural theory	- 12 -
2.2.4. Psychodynamic theory	- 13 -
2.2.5. Humanistic theory.....	- 13 -
2.3. PERSONALITY APPROACHES.....	- 13 -
2.3.1. Lexical approach	- 14 -
2.3.2. Emic-etic approach.....	- 14 -
2.4. PERSONALITY MODELS	- 15 -
2.4.1. Five-factor model.....	- 16 -
2.4.2. Eysenck's three factor model	- 17 -
2.4.3. HEXACO model	- 17 -
2.4.4. Chinese Personality Assessment Inventory (CPAI).....	- 19 -
2.5. PERSONALITY MEASUREMENTS IN SOUTH AFRICA	- 19 -
2.5.1. NEO Personality Inventory Revised (NEO-PI-R).....	- 20 -
2.5.2. 16 Personality Factor Questionnaire (16PF)	- 21 -
2.5.3. Occupational Personality Questionnaire (OPQ)	- 23 -
2.5.4. Basic Traits Inventory (BTI)	- 23 -

2.6.	CHALLENGES OF MEASUREMENT IN SOUTH AFRICA.....	- 24 -
2.7.	THE LINGUISTIC ISSUES OF MEASUREMENTS IN SOUTH AFRICA	- 25 -
2.8.	SOUTH AFRICAN PERSONALITY INVENTORY (SAPI).....	- 26 -
2.9.	AFRIKAANS PERSONALITY ASSESSMENT.....	- 27 -
2.10.	PSYCHOMETRIC PROPERTIES AS A MEASUREMENT OF A PERSONALITY ASSESSMENT	- 28 -
2.10.1.	Construct validity	- 28 -
2.10.2.	Item functioning.....	- 29 -
2.10.3.	Reliability.....	- 30 -
2.11.	BIOGRAPHICAL AND DEMOGRAPHICAL DIFFERENCES ACCORDING TO PERSONALITY	- 31 -
3.	METHODOLOGY.....	- 31 -
3.1.	RESEARCH APPROACH.....	- 32 -
3.2.	RESEARCH DESIGN.....	- 34 -
3.3.	RESEARCH PARTICIPANTS.....	- 36 -
3.3.1.	Strengths and limitations of the study based on the sampling strategy ...	- 38 -
3.4.	MEASURING INSTRUMENTS.....	- 39 -
3.5.	RESEARCH PROCEDURE.....	- 42 -
3.6.	ETHICAL CONSIDERATIONS.....	- 43 -
3.7.	DATA ANALYSIS	- 44 -
3.7.1	Item analysis	- 45 -
3.7.2.	Exploratory factor analysis	- 46 -
3.7.3.	Reliability analysis.....	- 51 -
3.7.4.	Product-moment correlation and Multivariate analysis of variance (MANOVA)	- 52 -
4.	RESULTS.....	- 52 -
4.1.	ITEM ANALYSIS	- 53 -
4.2.	PRINCIPLE COMPONENT ANALYSIS AND EXPLORATORY FACTOR ANALYSIS.....	- 59 -
4.2.1.	Communalities.....	- 59 -
4.2.2.	Total variance explained and number of factors to extract	- 69 -
4.2.3.	Factor structure	- 70 -
4.3.	STATISTICAL RELIABILITY.....	- 76 -
4.4.	PRODUCT-MOMENT CORRELATION.....	- 77 -
4.5.	MANOVA.....	- 78 -
5.	DISCUSSION	- 79 -

6. PRACTICAL IMPLICATIONS	- 87 -
7. LIMITATIONS	- 88 -
8. RECOMMENDATIONS.....	- 90 -
8.1. RECOMMENDATIONS FOR FUTURE RESEARCH	- 90 -
8.2. RECOMMENDATIONS FOR PRACTICE	- 91 -
9. CONCLUSION.....	- 91 -
10. ORIGINALITY REPORT.....	- 106 -
APPENDIX A: RAYMOND CATTELL'S 16 PERSONALITY FACTORS	- 107 -

LIST OF FIGURES

<i>Figure 1. Factors of the HEXACO model</i>	- 18 -
<i>Figure 2. Summary of quantitative research</i>	- 35 -
<i>Table 1: The SAPI Factor Structure</i>	- 27 -
<i>Table 2: Post-positivism Paradigm Elements Applied in the Study</i>	- 33 -
<i>Table 3: Characteristics of Participants (N = 201)</i>	- 37 -
<i>Table 4: SAPI Constructs and the Corresponding Items</i>	- 40 -
<i>Table 5: Cronbach's Alphas of the Ethnic Groups' 18 Facet-Scale Scores</i>	- 41 -
<i>Table 6: Steps Followed to Conduct the EFA</i>	- 48 -
<i>Table 7: Dataset Abbreviations</i>	- 53 -
<i>Table 8: Descriptive Statistics of the Afrikaans SAPI</i>	- 53 -
<i>Table 9: Communalities with PCA Extraction</i>	- 59 -
<i>Table 10: Second Conducted Communalities with PAF Extraction and Oblimin Rotation Method</i>	- 63 -
<i>Table 11: Third Conducted Communalities with PAF Extraction and Oblimin Rotation Method</i>	- 67 -
<i>Table 12: Fourth Conducted Communalities with PAF Extraction and Oblimin Rotation Method</i>	- 68 -
<i>Table 13: Initial Total Variance Explained and Eigenvalues</i>	- 69 -
<i>Table 14: Initial Pattern Matrix and Item Loadings</i>	- 70 -
<i>Table 15: Final Total Variance Explained and Eigenvalues</i>	- 74 -
<i>Table 16: Final Pattern Matrix with Item Loadings</i>	- 75 -
<i>Table 17: Statistical Reliability and Alpha Coefficients of the 5 Extracted Factors</i>	- 76 -
<i>Table 18: Descriptive Statistics of the Afrikaans SAPI</i>	- 77 -
<i>Table 19: Correlation Coefficients between the Three Retained Factors</i>	- 77 -
<i>Table 20: MANOVA - Differences in Age, Gender, Economic Status, Marital Status, Province, and Qualifications</i>	- 78 -
<i>Table 21: ANOVA - Differences on Age Groups (2016)</i>	- 78 -

THE SOUTH AFRICAN PERSONALITY INVENTORY: A PSYCHOMETRIC EVALUATION OF THE AFRIKAANS VERSION

ABSTRACT

- o **Orientation:** South Africa's cultural and linguistic diversity requires special measures to ensure that the assessments used in employment settings are scrupulously fair. To this end, Section 8 of The Employment Equity Act requires that psychometric tests are scientifically proved to be valid and reliable and not to discriminate unfairly against any individual or group. The South African Personality Inventory (SAPI) sets out to meet these criteria by incorporating culture-specific elements and by providing versions in each of South Africa's 11 official languages.
- o **Research purpose:** The key determination of this study was to investigate the psychometric properties of the Afrikaans version of the South African Personality Inventory (SAPI). The aforementioned properties include item analysis, exploratory factor analysis (EFA), reliability analysis, product-moment correlation and multivariate analysis of variance (MANOVA).
- o **Motivation for the study:** To contribute to the fair, valid and reliable use of the SAPI questionnaire in all language versions of the instrument by examining the psychometric properties of the Afrikaans version and comparing it with the validated English version. Once this has been done for each of the 11 official South African languages versions, a culturally neutral instrument will be available for the full diversity of employment settings in South Africa.
- o **Research design, approach and method:** This study used a quantitative cross-sectional research design with an emic approach, objectivist ontology and a post-positivist research paradigm. Primary data was collected by administering the Afrikaans version of the SAPI questionnaire to a non-probability sample of 201 purposively selected white Afrikaans-speaking South Africans who are economically and non-economically active and have a minimum qualification of Grade 12. An online Afrikaans version of the SAPI along with a biographical

questionnaire was used to collect data. Item analysis was investigated by means of a descriptive statistical analysis. An initial principle component analysis followed with exploratory factor analysis was performed to determine the instrument's factor structure. A reliability analysis was conducted in order to measure the internal consistency of the instrument. Product-moment correlations explored the relationships between variables. Further analysis was done to detect the relationships of the variables and to detect differences.

Main findings: The White Afrikaners attach immense importance to the social-relational factors. From the six factors, only three factors were extracted, namely the Social-relational Positive, combined Social-relational Negative/Conscientiousness, and Intellect/Openness factors. These factors showed adequate validity and reliability. The item functionality needs to be re-evaluated in order to measure all the six factors of the SAPI and different analytical techniques should be applied. The relationships between the remaining three factors were sufficient, and only age differences were detected in the experience of Social Relational Negative/Conscientiousness

- o **Practical/managerial implications:** The results of this study provide a firm foundation for the further investigation of the validity of the Afrikaans version of the questionnaire. Furthermore, insight is given to researchers and practitioners on the need to develop, adapt or translate psychometric instruments, especially for use in an environment which is multicultural and multilingual.
- o **Contribution/value-add:** This study contributes to cultural-specific research on the assessment of personality in South Africa. Its thorough investigation and attempt to validate the Afrikaans version of the SAPI is supported by an extensive body of literature relevant to standardizing the SAPI. Practitioners and organisations will now be able to administer a culturally informed personality assessment where the home language of the employees is Afrikaans.
- o **Keywords:** South African Personality Inventory (SAPI); item analysis; exploratory factor analysis (EFA); internal consistency; cross-cultural psychology; personality.

LIST OF ABBREVIATIONS

Abbreviation	Meaning
16PF	16 personality factor questionnaire
BTI	Basic traits inventory
CFA	Confirmatory factor analysis
CPAI	Chinese personality assessment inventory
EFA	Exploratory factor analysis
FFM	Five factor model
HEXACO model	Honesty-humility, emotionality, extraversion, agreeableness, conscientiousness, and openness model
HPCSA	Health Professions Council of South Africa
IOP	Industrial and Organisational Psychology
NEO-PI-R	Neo personality inventory revised
OPQ	Occupational personality questionnaire
SA	South Africa
SAPI	South African personality Inventory
SD	Standard deviation

SOUTH AFRICAN PERSONALITY INVENTORY: A PSYCHOMETRIC EVALUATION OF THE AFRIKAANS VERSION

1. BACKGROUND TO THE STUDY

1.1. INTRODUCTION

Psychometric assessment practice in South Africa has faced numerous challenges which are mainly attributable to the country's multi-cultural and multi-lingual nature (Foxcroft, 2004; Laher & Cockroft, 2014). In other words, South Africa is confronted with a lack of unbiased cross-cultural psychological assessments since people from various biographic and demographic backgrounds experience their reality differently. One of the main reasons for this is poor translation, resulting in a loss of cultural relevance in the semantic content of the assessment instrument (Wang, Lee, & Fetzer, 2006). This needs to be corrected as it contradicts the regulations stipulated in the Employment Equity Act 55 of 1998 which promotes stakeholders' constitutional right to equality in the workplace and the elimination of unfair discrimination. The Act oversees the use of assessment measures as Section 8 of the Act specifies that an assessment tool must be reliable, valid, applied fairly to all and not biased. However, Foxcroft and Roodt (2013) claim that there is limited evidence that these criteria are met by tests currently used.

In order to address these psychological assessment challenges, the South African Personality Inventory (SAPI) was developed by professors Deon Meiring, Fons van de Vijver, Ian Rothmann and Deon de Bruin with the intention of authenticating an indigenous personality questionnaire, standardising it across all South African ethnic groups (Nel et al., 2015) and making it available in all 11 official languages.. In basic terms, the SAPI aims to be "an indigenous and psychometrically sound personality instrument that adheres to the requirements of South African legislation and excludes cultural bias (Hill et al., 2013, p. 1). It used a combined lexical and emic-etic approach as the starting point. The first phase focused on the research participants' words and perceptions (lexical approach), as well as the philosophies, ideas and theories in specific cultural groups (emic) (Fetvadjev, Meiring, Nel, van de Vijver, & Hill, 2015). Comparisons

were made in order to identify the commonalities of expression and the traits that are shared across the different cultural groups (etic approach) (Nel et al., 2012). The combination of approaches was based on Berry, Poortinga, Segall and Dasen's (2002) finding that a personality structure may seem universal but expressions and terminology may differ across contexts, which ultimately affects accurate assessment.

The South African context and the legislation that governs test use make it clear that the manner in which psychological assessments are compiled, administered and interpreted (for example the use of phrases familiar only to certain language groups) may have an impact on test results. While all 10 translated versions of the SAPI deserve equal rigour in confirming their equivalence with the English version, the potential reach of the Afrikaans version is relevant to this investigation of its validity. A national survey conducted in 2011 revealed that Afrikaans, as the home language of 14% of the South African population, was the third most widely used home language after Zulu, the home language of 22.7% of the population, and isiXhosa, the home language of 16% (Statistics South Africa, 2012). Although certain personality questionnaires have been translated into Afrikaans (for example the NEO PI-R questionnaire), their adequacy has been challenged on the grounds of misleading personality descriptors and a loss of information despite efforts to ensure that the final translated product was accurate. However, competent translators in this field are scarce (Nopote, 2009).

1.2. PURPOSE STATEMENT

The main purpose of this research is to determine the psychometric properties of the Afrikaans version of the SAPI by applying relevant statistical analysis to primary data obtained by administering it to speakers of Afrikaans, and to measure the extent to which biographical and demographical variables are experienced differently. By verifying that this version does provide a psychological measure that is useful, reliable and valid for the Afrikaans population, this study might contribute to research on SAPI's capacity to provide psychological measures that are tailored to South Africa's multicultural complexity. Although research has been done on the challenges of translating

psychological assessment measures, limited information is available on these challenges in a multicultural context.

1.3. THE RESEARCH QUESTION

This study is guided by the following proposed research question:

What are the psychometric properties of the Afrikaans version of the SAPI when it is administered to white Afrikaners?

1.4. RESEARCH OBJECTIVES

The main objective of this research is to evaluate the construct validity of the Afrikaans version of the SAPI. This study will focus on determining the following:

- To determine the item functioning of the Afrikaans version of the SAPI
- To determine the construct validity and reliability of the Afrikaans version of the SAPI
- To determine the relationships between the constructs of the Afrikaans SAPI translated version and to identify differences in the experience of these constructs by the different demographics.

The participants will be authentic Afrikaans speakers, diverse in terms of gender, age and socio-economic status. They will be required to complete an online version of the Afrikaans SAPI questionnaire.

1.5. ACADEMIC VALUE AND INTENDED CONTRIBUTION OF THE PROPOSED STUDY

1.5.1. THEORETICAL CONTRIBUTION

There is still a dearth of research on the development and adaptation of psychological assessments to eliminate bias arising from cultural diversity. This study hopes to contribute to the growing interest in this field by adding to the literature pertaining to the challenges of translating existing psychological measures, with the Afrikaans version of the SAPI serving as a kind of case study.

1.5.2. PRACTICAL CONTRIBUTION

The aim is to accentuate the functionality of the Afrikaans version of the SAPI project by acknowledging South Africa's rich diversity, the challenges of translation, the background of the Afrikaans population and the objectives of this instrument. Seeing that Afrikaans is the third most widely used home language in South Africa, the successful translation of the Afrikaans version of the instrument would accommodate 14% of the South African population, third behind Zulu and isiXhosa (Statistics South Africa, 2012). It will also establish a valid Afrikaans personality assessment to be used for employee-related measurement.

1.5.3. SUBJECT-FIELD CONTRIBUTION

This study builds on the existing foundation of indigenous psychological tests to stimulate further thinking about how to overcome the existing challenges in the development and use of assessments measures in the South African context. The field of Industrial and Organisational Psychology will be enriched with a valid personality assessment that can be applied to a bigger market and eliminates bias.

1.6. DEFINITION OF KEY TERMS

The main concepts in this study are personality, the South African Personality Inventory, and assessment. Their definitions for this study's purpose are briefly discussed below.

Personality (section 2.1): The totality of all differentiating characteristics of individuals' thoughts, emotions and behaviours which remain relatively constant over time in various situations among a specific reference group (Coulacoglou & Saklofske, 2017).

South African Personality Inventory (section 2.6): A personality inventory for the main South African ethno cultural groups (Fetvadjiev et al., 2015).

Psychometric evaluation (section 2.8): The use of reliable and valid assessment instruments to measure individuals' mental capabilities, personality characteristics and behavioural style, usually done to determine their person-organisation fit (de Souza, Alexandre, & Guirardello, 2017).

Personality assessment (section 2.7): The prediction of people's behaviour in different circumstances or their ability to perform well in specific roles (Boag, 2015).

2. LITERATURE REVIEW

This study begins with a conceptualisation of personality and its relevant components, as well as the psychometric properties of the Afrikaans version of the SAPI. A critical review of definitions, as well as the theories, approaches, models, measurements, Afrikaans personality assessment challenges and psychometric properties as a measurement of the SAPI will be included for these conceptualisations. Finally, the focus of the anticipated study will be discussed by means of providing a body of knowledge.

2.1. PERSONALITY

The concept of personality is defined in multiple ways by different sources, with considerable overlapping of the definitions (Foxcroft & Roodt, 2013). The definitions

provided below are grouped where the correlation and similar reference among them is evident. Coulacoglou and Saklofske (2017) consider personality to be an umbrella term covering major component systems which include temperament, identity, cognitive capability, character, ethics value systems and object relations. Gruszka, Matthews, and Szymura (2010) define temperament as a personality trait that exists from the early years of childhood, and is observable in both human and animal behaviour. They refer to formal aspects of behaviour that include temporal and energetic patterns. They also maintain that traits of temperament develop across life stages, although they are fairly stable and observable from early life stages. However, despite its relative stability in determining human behaviour, certain conditions, such as stressful situations, may have an impact on temperament and cause a change in human behaviour (Gruszka et al., 2010).

Corr and Matthews (2009) define personality as a prediction of a person's actions in a given situation. They found that temperament is a predictor of adult personality, although personality can be fairly unstable during childhood. They also found that the temperament of children is a timid, albeit reliable predictor of the personality of adults, as well as of criminal behaviour and mental illnesses. They have also obtained evidence proving that traits are accurate predictors of meaningful real-world results, as well as behaviours that are work-related and can serve as performance indicators.

According to Cattell (1950), personality can also be seen as the organisation of a person's psychophysical systems that determines their unique adjustment to their environment. Rothbart (2007) argues that a personality grows with experience and temperament, which includes conditions of development regarding oneself, other individuals, the social and physical environment, as well as the individual's values, strategies of coping and attitudes. Finally, Graziano (2003) emphasises that personality remains consistent and stable over the long-term. Corr and Matthews (2009) support this, arguing that the correlation between the temperament of a child and the personality dimensions of an adult indicates that traits of personality are 'neuropsychic entities' and that there are mental structures in every personality that serve as the reason for consistent behaviour.

2.2. PERSONALITY THEORIES

A personality theory refers to the theory of an observer when meeting a stranger – a theory about the stranger’s personality (Baudson & Preckel, 2013). Different personality theories emphasize different aspects of personhood. Implicit personality theories, on the one hand, provide a description of covariance patterns that are perceived between various personality characteristics (Schneider, 1973). He maintains that these patterns may be based on concrete relationships between dimensions of personality and on misconceptions which are not necessarily aligned with empirical findings. Implicit theories describe an individual’s subjective views which may include prejudices and stereotypes they are not aware of (Baudson & Preckel, 2013). Implicit theories are also powerful predictors of behaviour. Explicit personality theories, on the other hand, relate to models and meanings of a specified concept (Baudson & Preckel, 2013). The personality theories discussed below include the trait theory, biological theory, behavioural theory, psychodynamic theory and the humanist theory.

2.2.1. Trait theory

The definition of a basic personality trait cannot be settled solely by a factor analysis of trait measures (Zuckerman, Kuhlman, Joireman, Teta, & Kraft, 1993). In their study Zuckerman et al. (1993) argue that traits ought to form part of a theory with a biological basis which is demonstrable. Psychobiologists know more about traits such as anxiety and sensation seeking and less about conscientiousness, agreeableness, and openness to experience (Zuckerman et al., 1993). When referring to traits, different writers have their own understanding and inferences and do not agree on a common definition (Prince, 1929). The personality trait is the most commonly evaluated personality attribute, and even though various trait approaches exist, traits are commonly viewed as intra-individual “temperament-like-variables” (Boag, 2015). The recognition of traits’ reference to personal differences and to meaningful within-person variability in various situations has increased in the past decade (Lievens et al., 2018). In other words, consistency and within-person variability in various situations are encapsulated in a trait conceptualisation

known as “whole trait theory”, which are meaningful information sources regarding traits (Lievens, et al., 2018). In addition, Prince (1929) maintains that traits refer to

- views and ideals
- complex habits
- beliefs and prejudices
- acceptance of social and ethical conduct
- persistent desires and aspirations
- innate cravings and tendencies and various other analogous characteristics of human nature, all of which differentiate one person from another and determine their behaviour.

Traits usefully summarise the general behavioural tendencies (for example sociability level) of individuals in different situations, although additional information can be obtained if the amount of variability in trait expressions of the individual in different situations is known (Lievens et al., 2018).

2.2.2. Biological Theory

Matthews and Dorn (1995) argue that some independent cognitive and neural functions are associated with traits, which together support adaptations to physical and focused social environments. According to Matthews and Gilliland (1999), influential theories which form the biological basis of traits of personality were proposed by Hans J. Eysenck and Jeffrey A. Gray. Their study accentuates Gray’s highlighting of the importance of using a new and rotated axes for impulsivity and anxiousness, whereas Eysenck’s theory focuses on traits of psychoticism, extraversion and neuroticism. It also states that Gray provides descriptions of more particular systems which are related to inhibition and activation of behaviour, whereas Eysenck makes use of several arousal systems as the central explanatory constructs. Gray’s theory also provides a stimulating insight into the effects of motivational variables, as well as a better explanation than that of Eysenck for

data (for example, instrumental conditioning for rewarding stimuli, and extraverts' positive affectivity).

According to Corr (2004) a programme of research pursued by Eysenck was devoted to describing the key dimensions of personality, and the development of causal theories that were biologically based and accountable for the dimensions. This biological personality model is the most influential, and Eysenck laid the foundations which are necessary for the realisation of personality neuroscience (Corr, 2004). Gray's biological theory is seen as providing an explanation which is a narrower range of Eysenck's findings (Matthews & Dorn, 1995). In addition, according to this study there is limited evidence of Gray's revised personality axes which prove that it predicts psycho physiological and performance criteria better than the original dimensions of Eysenck. This study suggests that assumptions regarding the biological approach need to be reassessed, however (Matthews & Dorn, 1995).

2.2.3. Behavioural theory

According to Magidson, Roberts, Collado-Rodriguez, and Lejuez (2014), personality traits are unfixed and the possibility is increasing that traits are most closely linked to issues which are health related and can be modified in interventions. Their study suggests that, according to growing research a bottom-up approach may be used to alter problematic traits of personality by means of behavioural interventions. Their study also suggests that this can be done by targeting fundamental behaviours underlying personality in order to produce healthy behaviour patterns which become automatized over a period of time and also manifest in personality trait changes. However they also state that changing personality traits by using a bottom-up approach is a fairly drawn-out process and entails a clear theory integration and interventions that allow actual clinical application.

2.2.4. Psychodynamic theory

Weinberger (1998) states that the psychodynamic theory does not intellectualise motivated unconscious defences mainly with regard to individual traits. Instead, defence mechanisms are better understood in relation to personality structure and psychological development level (Weinberger, 1998). The challenges faced by the psychodynamic approach to developmental psychopathology must be dealt with, and it is also necessary to accommodate the epistemic framework by undertaking a radical reappraisal (Fonagy & Target, 2000). Developmental psychopathology is the study of the development of psychological disorders (e.g., psychopathy, autism, schizophrenia and depression) with a life course perspective. Researchers who work from this perspective emphasize how psychopathology can be understood as normal development gone awry (Fonagy & Target, 2000). Weinberger (1998) also states that perspectives of social-cognition and psychodynamics on personality have progressively found common ground over the past two decades.

2.2.5. Humanistic theory

The Humanistic approach relies on universal needs, namely autonomy, life purpose, relationships, self-acceptance, growth and mastery of the environment (Diener, Oishi, & Lucas, 2003). Interestingly, they contend that the extent to which individuals satisfy their needs correlates with their life satisfaction. According to Epting and Leitner (1992) a strong bond exists between the personal construct psychology of George Kelly and humanistic psychology. They also maintain that humanistic concepts are evident in personal construct psychology, which includes constructive alternativism, transitive diagnosis, role relationships, credulous approach, and understanding an individual according to the anti-reductionist holistic approach.

2.3. PERSONALITY APPROACHES

Personality approaches serve the purpose of identifying basic structural personality dimensions (Elliot & Thrash, 2002). Personality approaches mainly emphasise different

trait, affective dispositions, and motivational systems (Elliot & Thrash, 2002). Two personality approaches are discussed below, namely the Lexical approach and the Emic-etic approach. Both approaches illuminate the concept of personality as they both tap into different aspects of personality, namely psychological effects, prominent psychological constructs and transferability (Parrigon, 2018; Fetvadjiev et al., 2015).

2.3.1. Lexical approach

The lexical approach is commonly employed in personality related research (Valchev et al., 2011). According to Parrigon, Woo, and Tay (2018) this approach aims to identify fundamental psychological situation deviations along with their influence on a wide range of psychological effects. They claim that this approach consists of the ability to identify a wide-ranging attribute set, which is one of the main reasons for its success in the field of personality. According to Valchev et al. (2011) the reason for the frequent application of this approach in personality psychology is due to the assumption that outstanding differences of individuals pertaining to psychological operations are encrypted in language. They state that more prominent individual differences are more likely to be transformed to single terms to assist with describing individuals. Their study indicates that single-term person-descriptors are commonly extracted from vocabularies produced in lexical studies. They also see interviews and their analysis as an alternative method. For these reasons the lexical approach was used in this study.

2.3.2. Emic-etic approach

According to Fetvadjiev et al. (2015) many of the diverse personality assessment approaches in different cultures separate the emic and etic approaches. Their study found that the etic (or cross-cultural) approach focuses on model and tool transferability across cultures. A key feature of this approach is its acceptance of the Five-factor model or the Big Five (which covers the five personality dimensions of extraversion, conscientiousness, openness, agreeableness, and neuroticism) and its measurement instruments which include the NEO-PI-R, Big Five Inventory, and the International

Personality Item Pool (Fetvadjiev et al., 2015). Their study found that the emic approach (or indigenous approach), on the other hand, focuses on the assessment of salient psychological constructs, typically in a non-Western cultural context. These researchers found that the majority of emic concepts make a reference to aspects of social-relational personality, which have traditionally been studied in isolation without an overarching theoretical framework or a universal personality model for reference. However there is a recent propensity towards integrating emic and etic studies (Fetvadjiev et al., 2015).

According to Chao, Lambert, and Keith (2013), emic and ethnic approaches have been used in fields that include cross-cultural psychology, linguistics, research methods, and social science. Their study also confirms that cross-cultural psychology researchers have used these epistemologies and that academics make use of these approaches when studying psychology, cultural differences and human systems. Fetvadjiev et al. (2015) contend that a different version of the emic-etic approach entails the simultaneous development of models and tools in various cultures. They aim to find a balance between the aspects of emic and etic by using the multicentre approach. They maintain that the psycho-lexical study of implicit personality concepts crosses various languages and classically represents the multicentre approach with respect to model development.

2.4. PERSONALITY MODELS

A model (in general) is a reproducible device that can be re-experienced, used to communicate various concepts and tested to determine its adequacy (Corr & Matthews, 2009). Personality models may be used as a representation of traits or characteristics, along with relevant mechanisms, various internal processes on diverse abstraction levels and in diverse interest domains (for example, cognitive or social). Moderate correlations are evident between personality models and features of personality, since both concern long-term human dispositions (Cawley, Martin, & Johnson, 2000). Personality models entail the construction of scales, as well as external, deductive and inductive strategies to be considered and rationales for each model to be compared (Burisch, 1984). Personality models include the Big Five factor model, Eysenck's three factor model, the

HEXACO model, and the Chinese personality assessment inventory, which are discussed below.

2.4.1. Five-factor model

This model is also widely known as the Five-Factor Model (FFM), which was developed from a lexical tradition in research on personality (Museum, 2007). This model suggests five broad personality dimensions, namely conscientiousness, openness, neuroticism, extraversion, and agreeableness. According to Fetvadjev et al. (2015) research in this field provides reasonable support for replicating the FFM across various cultures. Their study also highlights the weak replication of certain factors (usually openness) in cultural regions in Africa in particular when compared to Western targets. The reason for this is viewed as data quality issues rather than the applicability of the model in different cultures. According to Strus, Ciecuch and Rowinski (2014), the FFM is the fundamental conceptualization of the basic dimensions of personality. They emphasise that the roots of the FFM lie in the psycho lexical and questionnaire approaches.

The significant convergence among the various Five Factor Models is demonstrated in numerous studies, even though the five factors of the FFM are constructed slightly differently in the psycho lexical and questionnaire approaches (Strus et al., 2014). According to the same study, psycho lexical studies were mainly used to verify the personality structure of the FFM when it was first proposed. They found that according to the lexical hypothesis all important personality aspects are programmed in the majority of the world's languages. They explain that the focus of this particular line of research was to classify the linguistic traces and to provide an order for them that would allow for an explanation of the human personality structure. The ordering process entailed the reduction of a large word set that made a reference to personality attributes to a set of smaller dimensions of personality, usually by means of a factor analysis (Strus et al., 2014).

2.4.2. Eysenck's three factor model

In 1947 Hans Eysenck labelled his three factor model as hierarchical (Costa & McCrae, 1995). According to Digman and Inouye (1986) the first factor of this model is the dimension of introversion-extraversion. Their study illustrates that the content of this factor generally agrees with its correlating conception. According to this study, even though this factor has frequently been understood as surgency, the preference remains for introversion-extraversion as this is the conception of wider scope and it also mirrors the traditional Jungian concept clearly. This study also states that the second factor involves scales that emphasise interpersonal relations. Among the scales with high positive loadings are thoughtfulness and conscious concern (Digman & Inouye, 1986). They propose that there is similarity between these factors and a factor interpreted as agreeableness in similar studies. Digman and Inouye (1986) interpret the second factor as friendly compliance.

In addition, they view the third factor as the concept of will, which involves being careful, doing planning and being persistent. It has also been commonly seen as conscientiousness, but they argue that conscientiousness includes the second factor, which is why it is not seen as the best label. Besides, the will concept includes goals related to motivation and future orientation. In the end Digman and Inouye (1986) recommended that this factor be entitled "Will to achieve", as significantly high correlations were illustrated between this trait's ratings and educational accomplishments. However, the simple term "will" is essentially closer to this trait's meaning.

2.4.3. HEXACO model

Burtăverde, Chraif, Anitei, and Dumitru (2017) view the HEXACO model as an important personality model. It proposes six factors of personality which were developed according to the lexical hypothesis and also feature in the FFM. Burtăverde et al. (2017) analysed data from lexical studies in order to obtain the six personality factors (see Figure 1 below, as adapted from Burtăverde et al., 2017).

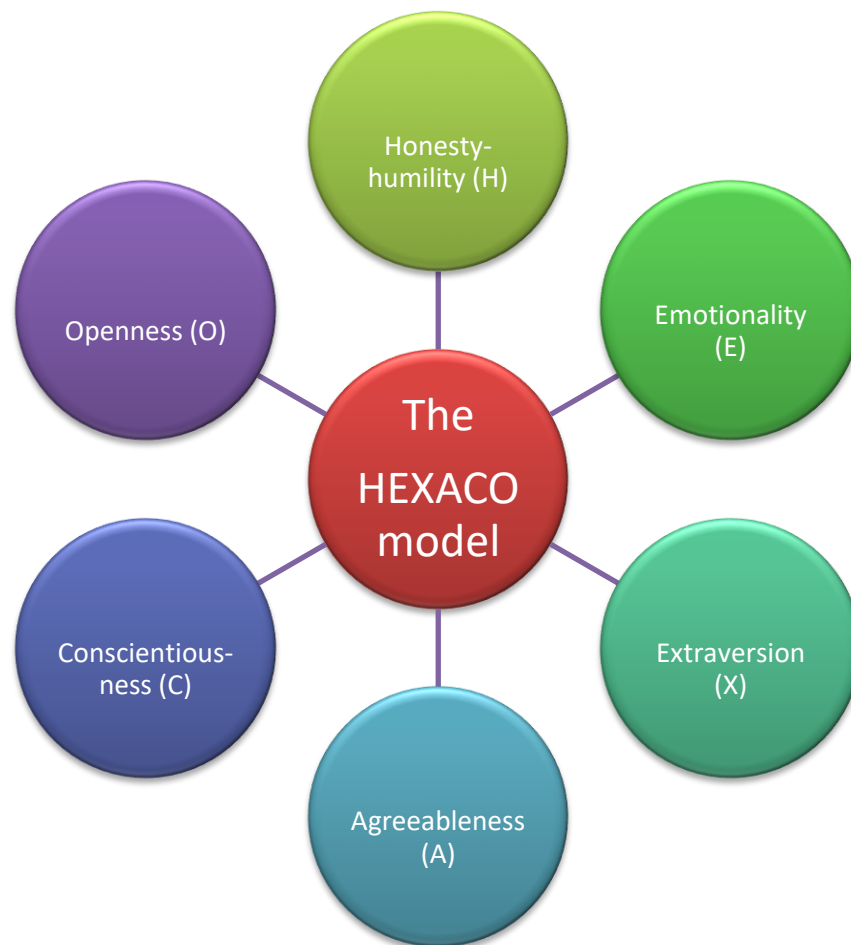


Figure 1. Factors of the HEXACO model

Although the HEXACO model resembles the FFM, its authors have accentuated content characteristics, which differentiates it from the FFM. Three factors that are significantly similar to FFM factors are extraversion, conscientiousness, and openness to experience (Burtăverde et al., 2017). They maintain that one of the most important dissimilarities is the newly added factor that is empirically validated and known as Honesty-humility. This factor includes distinct differences in the propensity to be genuine, modest and fair-minded versus manipulative, hollow, and materialistic. In conclusion, Burtăverde et al. (2017) found the HEXACO personality model to be valid cross-culturally in more than twelve languages, which confirms it as a powerful and robust personality model.

2.4.4. Chinese Personality Assessment Inventory (CPAI)

According to Cheung, Kwong and Zhang (2003) the CPAI was developed as an indigenous measurement instrument of the Chinese personality following a combined emit-etic approach. In addition, as is evident in this study, just as English personality assessments include idiosyncratic personality traits, the CPAI contains personality traits that are not found in other assessments but are important to the Chinese. Twenty-two personality scales are included in the CPAI, along with twelve clinical scales (Cheung et al., 2003). According to this study the CPAI is standardized on a sample which represents the Chinese population in Hong Kong and the People's Republic of China. These researchers list the four factors of personality in the CPAI as dependability, interpersonal relatedness, individualism and social potency. They note that the CPAI uses three scales to evaluate validity, namely the good impression scale, the infrequency scale and the response consistency index. The good impression scale uses 12 items to identify participants who lean towards faking well, while the response consistency index attempts to identify inconsistent answers or participants (Cheung et al., 2003).

Cheung et al., 2003 argue that the CPAI offers a way to differentiate between cultures and also to accentuate the personality similarities between a Western instrument that is imported and an instrument that is indigenous to the Chinese culture. They maintain that the CPAI provides a measuring tool of the personality domains that are interdependent, as well as a person perception for individuals who are not Chinese. They argue that the personality conception in Asian cultures is oriented interdependently, whereas in Western cultures it is more independent. They suggest that indigenous and imported instruments might have dissimilar but equally valuable conceptualisations of cultures which are actually the same (Cheung et al., 2003).

2.5. PERSONALITY MEASUREMENTS IN SOUTH AFRICA

Ntuli (2012) argues that the applied psychology field has a need for personality measures that are valid because of the importance of the role of personality characteristics in understanding and predicting behaviour in a work context. She adds that what makes personality measures so important is that they are used to select, manage and place

employees in organisations. Hogan (2005) identifies money and people as the determinants of success, with personality psychology providing a better understanding of human nature and measuring its key components. According to Ntuli (2012) the need for valid and reliable personality measures is to assure all South Africans that these measures are not biased in any way. Personality measurements in South Africa include the NEO personality inventory revised, the 16 personality factor questionnaire, the Occupational personality questionnaire and the Basic traits inventory, which are all discussed below.

2.5.1. NEO Personality Inventory Revised (NEO-PI-R)

The NEO-PI-R measures both an individual's Big Five personality traits — extraversion, neuroticism, agreeableness, openness to experience and conscientiousness — and six subcategories, or facets, of each of them (Costa Jr., McCrae, & Kay, 1995). According to Schipper, Sollman, and Berry (2010) the NEO-PI-R was initially the NEO-PI, updated since and translated into several languages. In addition, the NEO-PI-R is a key research tool that examines the relationship between mental health-, physical-, and behavioural variables and personality (Schipper et al., 2010). They maintain that it is not intended to measure psychopathology and is also not diagnostic of particular psychiatric disorders listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM).

The NEO-PI-R addresses validity issues by asking three questions regarding the accuracy of responses, item completion and the honesty of responses (Schipper et al., 2010). They claim that the transparency of the questions is dubious. This instrument is not intended to be used in settings or samples where response distortion is a common phenomenon, which is why administration in such settings should be accompanied by a valid and independent response validity check (Schipper et al., 2010). They report that the structure of the five factors measured by the NEO-PI-R has been replicated and used recurrently across several cultures and languages. In addition, this study reports moderately high discriminate and convergent validity, and ratings of self and the observer which correlate highly.

2.5.2. 16 Personality Factor Questionnaire (16PF)

The 16PF questionnaire contains 185 self-rated items with three response options for each of them (Moreira et al., (2012). Moreira et al. (2012) also state that 16 primary personality factors are assessed which Cattell derived from the lexical hypothesis saying that fundamental traits of personality will be programmed into language as single words. This statement has become known as the Lexical Hypothesis, which posits that if there is a word for a trait, it must be a real trait. Allport and Odbert utilized this hypothesis to identify personality traits by working through two of the most comprehensive dictionaries of the English language available at the time, and extracting 18,000 personality-describing words (Allport & Odbert, 1936). From this gigantic list they extracted 4500 personality-describing adjectives which they considered to describe observable and relatively permanent traits. See [Appendix A: Raymond Cattell's 16 Personality Factors](#) for an in-depth overview of the 16 personality factors (Cattell, 1950). The fundamental personality traits as adapted from Moreira et al. (2012), are listed below:

- Warmth (A)
- Reasoning (B)
- Emotional Stability (C)
- Dominance (E)
- Liveliness (F)
- Rule-consciousness (G)
- Social Boldness (H)
- Scale Sensitivity (I)
- Vigilance (L)
- Abstractedness (M)
- Privatness (N)
- Apprehension (O)
- Openness to Change (Q1)
- Self-reliance (Q2)
- Perfectionism (Q3)
- Tension (Q4)

This measuring instrument covers the 16 traits of bipolar sources and eight of its derivatives, also known as second-order factors (Abrahams & Mauer, 1999). The 16 PF is a paper-and-pencil test containing a set of multiple scales of questionnaires which are designed to provide information regarding the primary factors of personality of individuals (Abrahams & Mauer, 1999). It was developed by Raymond Cattell in 1949 in the USA, from where it was exported to numerous countries (Abrahams & Mauer, 1999). However, the 16PF has been criticised for validity, the theoretical framework and item structure, as various researchers have attempted to replicate the measure but failed to confirm Cattell's original findings. Abrahams and Mauher (1999) add that significant differences have been found and reported on various factor levels, which are related to cross-cultural dynamics. The source traits are labelled to be easily understood, see the traits listed below (Abrahams & Mauher, 1999).

- Warmth
- Intelligence
- Ego strength
- Dominance
- Impulsivity
- Conformity
- Boldness
- Suspiciousness
- Imagination
- Shrewdness
- Guilt proneness
- Rebelliousness
- Self-sufficiency
- Ability to bind desire
- Free-floating anxiety

An issue when conducting research in a cross-cultural context includes considering whether a personality assessment which is developed in one cultural environment can be used in a different cultural environment. Research needs to establish that the

psychological constructs in the original culture are applicable in the target culture and that the measures are equivalent (Abrahams & Mauer, 1999).

2.5.3. Occupational Personality Questionnaire (OPQ)

The OPQ contains 248 items measuring work-related characteristics of personality. It consists of 31 eight-item scales, where the responses are according to a 5-point rating scale ranging from 1 – agree to 5 – disagree (Barrick, Stewart , & Piotrowski, 2002). According to Van der Merwe (2002) the OPQ assesses a wide and comprehensive variety of personality attributes, namely interpersonal relationships, thinking styles, styles of teamwork, styles of problem-solving, motivations and emotions, styles of leadership, and styles of influencing in the organisational context. Research in their study also shows that the involvement of psychologists in testing is lacking, and inappropriate training in the utilisation of tests and testing itself is seen globally, where an astonishing 60% of test users have not received appropriate training before using psychological tests. Their study also state that the misuse of tests is a worldwide problem, which can be addressed through training and informing public to provide better understanding. The tests can also be utilised for identifying individuals with potential who do not have a scholastic background which meet the minimum standard. Van der Merwe (2002) also states that focus is presently placed on the validity of utilised tests and an attempt is made to implement tests with an increased cultural fairness in the future. It is also evident in this study that cultural-fairness issues are the cause of psychometric tests no longer being used for promotion purposes within organisations, instead targeted selection or assessment interviews are being used instead.

2.5.4. Basic Traits Inventory (BTI)

Graziano (2003) describes the BTI as a self-reported paper-and-pencil test in questionnaire format. It contains 193 items rated on a five-point Likert scale ranging from strongly disagree to strongly agree (Graziano, 2003). According to Metzger, De Bruin, and Adams (2014) the BTI was developed by Taylor and De Bruin (2005) to assess

personality in South Africa across multiple cultures on individuals with a minimum qualification of Grade 12 (Metzer et al., 2014). The BTI is based on the Big Five personality factors — neuroticism, openness to experience, agreeableness, conscientiousness, and extraversion — and includes the underlying facets as well.

Empirical support has been provided for the Five-factor model in a South African context (Graziano, 2003), where the BTI is seen as user-friendly and easily understandable (Taylor & De Bruin, 2005). Metzer et al. (2014) say that it does not make use of psychological terms and the language excludes any type of jargon but they note that it does take at least 45 minutes to complete. The BTI can be used for multiple purposes, including recruitment, selection, educational purposes, research, psycho diagnostics, counselling and staff development (Metzer et al., 2014). Several items were included in the questionnaire to ensure the applicability of the BTI across the multiple cultures in South Africa and to eliminate racial, gender and language bias. All items in the BTI were screened for comprehensibility and content appropriateness to ensure their suitability across all cultures, (Metzer et al., 2014).

2.6. CHALLENGES OF MEASUREMENT IN SOUTH AFRICA

Psychological measurement in South Africa faces many challenges for multiple reasons. The intention in adapting the SAPI is for every sample to have a sufficient variation of participants in terms of gender, age and educational level to ensure an equal representation in the samples (Adams, Van de Vijver, & De Bruin, 2012). Three main sources of error that have been identified in test adaptation are (1) language and cultural differences, (2) technical designs and methods, and (3) the interpretation of results (Hambleton & Patsula, 1998). Language and cultural difference errors relate to the analysis and assessment of cross-cultural results which should focus not only on the source's word equivalence and the versions of the test which were adapted, but also on all the parts of the entire process (Hambleton & Patsula, 1998). Technical designs and methods contain errors that can affect adapted tests' validity arising from the particular test itself, selected translators, the translation process, and establishing equivalence through empirical analysis (Hambleton & Patsula, 1998). Finally, the interpretation of

results focuses on establishing a foundation to compare different language and/or cultural groups in order to gain a better understanding of differences and similarities (Hambleton & Patsula, 1998).

The multicultural nature of society in South Africa consists of the 11 official languages and the four ethnic groups of blacks, Indians, Coloureds, and whites (Valchev et al., 2014). With the development of a new personality assessment, it should be determined how the measurement correlates with existing South African personality assessment tools which are in association with a universal personality structure (Fetvadjiev et al., 2015). This can be used as the foundation to determine the relationships between factors and whether biographical and demographical variables are experienced differently of the Afrikaans SAPI translated version. The three standards which are important to consider with test adaptation and usage are (1) test revalidation after revisions have been made to a test (for example to use it in a second language), (2) the assessment of the adapted test's reliability and validity, and (3) establishing multi-language tests' comparability (Hambleton & Patsula, 1998). These three standards consider the possible sources of error which might be present when tests are adapted (Hambleton & Patsula, 1998). The categories of possible sources of error mentioned in the previous paragraph should be attended to in order to ensure equivalence across the language and cultural groups (Hambleton & Patsula, 1998). The next section discusses the linguistic issues due to the SAPI being the first measurement instrument to evaluate inherent personality concepts from an ethnic perspective in the 11 official South African languages (Valchev et al., 2014).

2.7. THE LINGUISTIC ISSUES OF MEASUREMENTS IN SOUTH AFRICA

Corr and Matthews (2009) state that personality science builds on the degree to which conceptualisations of personality are entrenched in linguistics and semantics. They emphasize the importance of the conceptualization of personal characteristics which define traits, as well as the structures of dimensions emerging from them. The number of official South African languages and the availability of test administrators who speak the official languages are two other main practical translation problems in South Africa

(Van Eeden & Mantsha, 2007). In addition, important cross-cultural information is lost when individuals respond in the cultural language presented (Van Eeden & Mantsha, 2007).

A translation limitation is the dependence on English translators (Valchev et al., 2011). Translating a measure makes test equivalence challenging (Valchev et al., 2011). Translation can be approached in various ways. A method called “blind-back translation” is used to translate a measure by using a word-forward translation followed by a second translator translating the measure back to the source language without seeing the initial source language version (Valchev et al., 2011). This method entails an analysis of the differences between the source-, translated, and back-translated versions (Valchev et al., 2011). The expert review method entails an identification of translation differences and cultural barriers by a panel of experts in the measurement’s source language to analyse the suitability and comprehensiveness of the translated version (Valchev et al., 2011). A measure’s content validity is threatened if the focus of translation is placed only on linguistic translation, as it can lead to meaning incongruity (Valchev et al., 2011). Valchev et al. (2011) suggest using a “dual focus” approach which draws from the language and culture of the groups under study. Various cultural and linguistic group members tend to interpret and view item meanings differently, which is why cultural equivalence focuses on ensuring that participants in different countries have a mutual understanding of questions, disregarding similar terms (functional equivalence). Finally, metric equivalence pertains to item difficulty and is essential when instruments are adapted between languages (Valchev et al., 2011).

2.8. SOUTH AFRICAN PERSONALITY INVENTORY (SAPI)

The main purpose of the SAPI is to measure personality in South Africa, and to be used as a tool to address the measurement and linguistic issues mentioned above (Hill et al., 2013). Ntuli (2012) argues that the onus rests on test-developers to take culture and language into consideration when developing personality measures in the context of South Africa. The SAPI contributes in various ways, including the measurement of students’ housing preferences (Khozaei, Hassan, & Razak, 2011). In addition, according

to Khozaei et al. (2011) the SAPI is thus valuable in that it can contribute to multidisciplinary research which includes management, architecture, and social science. In addition, the SAPI strives to reduce testing bias by developing a model of personality that is indigenous and can be used with the various ethnic groups across South Africa (Fetvadjev et al., 2015). The SAPI project did not originate in a predefined model such as the FFM; instead the focus was on offering wide-ranging coverage of concepts of personality considered relevant in the various groups (Fetvadjev et al., 2015). These researchers found that the SAPI measures a positive social-relational factor in addition to the Big Five factors. The sub-constructs of the SAPI delivered coefficients of Cronbach's alpha of at least .70. The six dimensions are listed in Table 1 below (Nel et al., 2015).

Table 1: *The SAPI Factor Structure*

Dimension	C	E	I/O	SN	SP	N
Sub-Construct	<ul style="list-style-type: none"> ▪ Achievement orientation ▪ Emotional maturity ▪ Integrity ▪ Orderliness ▪ Traditionalism-Religiosity 	<ul style="list-style-type: none"> ▪ Playfulness ▪ Sociability 	<ul style="list-style-type: none"> ▪ Broad-mindedness ▪ Epistemic curiosity ▪ intellect 	<ul style="list-style-type: none"> ▪ Conflict-seeking ▪ Deceitfulness ▪ Hostile egoism 	<ul style="list-style-type: none"> ▪ Facilitating ▪ Interpersonal relatedness ▪ Social intelligence ▪ Warm-heartedness 	<ul style="list-style-type: none"> ▪ Negative emotionality

C = Conscientiousness

E = Extraversion

I/O = Intellectual/Openness

SN = Social relational negative

SP = Social relational positive

N = Neuroticism

2.9. AFRIKAANS PERSONALITY ASSESSMENT

Afrikaans is spoken as a home language by 14% of the total population of South Africa (Statistics South Africa, 2012). The two main ethnic Afrikaans speaking groups are whites and Coloureds. According to Stell (2010) South Africa and Namibia are the two countries where Afrikaans is widely spoken. The Dutch settlers introduced Afrikaans to SA in 1652 in Cape Town (Niesler, Louw, & Roux, 2005). Different varieties of Afrikaans exist, namely Eastern Border Afrikaans, Tsotsitaal, Griqua Afrikaans, Muslim Afrikaans,

Cape Afrikaans, and Orange River Afrikaans (Le Cordeur, 2011). Challenges pertaining to Afrikaans speakers and personality assessment are evident in the reviewed literature. The Afrikaans grammar structure is significantly different from English (Meyer, 2012). A difficulty in translating the SAPI into Afrikaans is the restricted vocabulary for personality descriptors in Afrikaans (Van Eeden & Mantsha, 2007). It is recommended to translate a measure that is well-established into the target language, rather than developing a new instrument in a language, which is time-consuming and difficult (Valchev et al., 2011). Valchev et al. (2011) suggest that testing of personality dimensions in South Africa may progress significantly if the test items are outlined in a concrete manner with contextualised terms.

2.10. PSYCHOMETRIC PROPERTIES AS A MEASUREMENT OF A PERSONALITY ASSESSMENT

Boag (2015) states that assessment instruments should be valid and reliable. Reliability refers to the extent to which the results are replicable. Validity refers to whether the measurement is accurate and measures what is supposed to be measured (Golafshani, 2003). Boag (2015) also argues that valid assessment procedures include substantive theory on the nature of the trait and the influence of the trait on the test scores.

2.10.1. Construct validity

Whiteley (1983) defines a construct as a trait that is expected to reflect in an individual's performance in a test. In the same study, construct validity is evident where measures need to be interpreted as an assessment of a trait which is not defined operationally. Construct validity involves evaluating the theoretical framework as a whole (Thompson & Daniel, 1996). Boag (2015) maintains that for scientific reasons construct validity is one of the most important traits of a test. Modern developers of personality assessments would entitle that their assessments find it important to examine a certain attribute of people. Good content validity of a measurement refers to the consistency of one domain of a measurement with the rest of the measurement (Yao, Chung, Yu, & Wang, 2002).

In addition, these researcher also state that a measurement with good criterion-related validity refers to a domain of the measurement which correlates highly with criteria from external sources.

Measuring the construct validity of an instrument can involve factor analysis (Thompson & Daniel, 1996). Another term they use for construct validity is factorial validity, which seeks to answer the question: “Is what is supposed to be measured, measured successfully?” or “What exactly are we measuring with the test?” where the correct answer should be the factors or loadings. They state that factor analysis can be either exploratory (EFA) or confirmatory CFA). EFA isolates the structures of the factors without taking the researcher’s theoretical expectations into consideration. CFA on the other hand can be used for testing rival models, with the purpose of quantifying the fit of each model. Their study illustrates the importance of testing the rival models to compare their ability to fit the same data. Testing multiple models for plausibility provides stronger evidence of their validity (Thompson & Daniel, 1996).

Whiteley (1983) identified four criteria which can be used to evaluate the construct representation of a measurement instrument. Firstly, individuals’ test performance should relate to the item traits, which is why the item traits should be defined clearly in the proposed methodology. Secondly, a comparison of the theories of the construct measured should be provided. This can be done by operationalising the opposing theories and comparing model fits. Thirdly, the theoretical constructs of the items must be quantified in the methodology. It is required to have parameters for the construct items if the measure should be simplified into theoretical constructs which are more basic. Fourthly, the construct measurements should be provided in the methodology. Moreover, parameters should be provided for measuring differences between individuals on the constructs (Whiteley, 1983).

2.10.2. Item functioning

Guilera, Gómez-Benito, Hidalgo, and Sánchez-Meca (2013) argue that standardised measurement instruments aim to operationalise constructs such as aptitudes, attitudes and skills, to assist with decision making and to provide a framework for cross-cultural

studies. Their study emphasizes the importance of ensuring that the measurements are objective, that they guarantee results that are equally valid for all subjects, that they contain equally levelled measured traits and also that there will be no impact of variables which are irrelevant regarding what the measure intends to measure, such as the linguistic level or the cultural background. Teresi, Ramirez, Lai, and Silver (2008) argue that differential item functioning (DIF) involves evaluating conditional item response relationships with group membership. Their study also emphasizes that the selection of the groups for the study should be based on considerations of a theoretical nature which take into consideration whether or not the constructs under study are hypothesized to share the same meaning across various groups. Guilera et al. (2013) state that items will display different if the statistical properties of an item differ from the study group when they are matched on the particular attribute. Teresi et al. (2008) argue that DIF adjustment can be done by means of removing items contributing to the DIF.

2.10.3. Reliability

According to de Souza, Alexandre, and Guirardello (2017), reliability is the ability to produce a result that is consistent across time and space. According to Cortina (1993) the alpha coefficient is extremely important in universal statistics and research which involves the construction and use of tests. According to Cortina (1993) there is confusion regarding the meaning of the alpha coefficient, although it is the generally accepted reliability formulation. He says that the reliability estimate used depends on the sources of variance that are considered to be relevant. There is a clear distinction between the concept of alpha as Cronbach defined it, and the item alpha which is standardized (Cortina, 1993). In addition, the Cronbach's alpha considers the item differences in standard deviations (SD) of the items, and remains smaller than the alpha of the item which is standardized to the degree to which the dissimilarities exist. Cortina (1993) also proposes that alpha equals the mean of split-half reliabilities, and that the split-half technique measures a test's internal consistency. He maintains that this can be done by drawing a comparison of the results of the first half of a particular test with the results of the second half. The standardized alpha remains appropriate when the standard scores of the items are added to form the scale scores. However, Cortina (1993) states that the

standardized alpha is inappropriate when a total of simple raw scores are used as an instrument score, because the total dissimilarities in the variance of items will affect the score total. According to Hill et al. (2013), reliabilities are highly acceptable when standardised tests produce testing scores that are between 0.85 and 0.95.

2.11. BIOGRAPHICAL AND DEMOGRAPHICAL DIFFERENCES ACCORDING TO PERSONALITY

The biographical and demographical information obtained from the candidates is helpful in establishing test score norms for the assessment. According to Foxcroft and Roodt (2009), it is important to determine suitable norms before the measurement instrument can be standardised. The test norms are used to meaningfully interpret the test scores by means of comparing the score of individuals to those of a similar group of people. The biographical elements which are taken into account include age, gender, race, marital and parental status, province, and economic activity. According to research by Specht, Egloff, and Schmukle (2011), the major causes of personality changes could be attributed to genetic factors, as proven by the essentialist perspective, and the contextualist perspective focused on environmental factors. Age seems to be the biographical element with the most prominent personality differences in this study. According to Park and Hess (2019), the prominence of aging attitudes may rise in middle-age and late-age groups, with an increased impact of personality on well-being.

3. METHODOLOGY

Methodology entails the process of collecting and analysing data pertaining to the particular research topic, which includes the approach, design, research process, sampling, data collection, data analysis, ethics and trustworthiness of the study. This section discusses these aspects of methodology, as well as the limitations of the quantitative research study.

3.1. RESEARCH APPROACH

A research paradigm can broadly be defined as a way of explaining an individual's fundamental set of beliefs and how these beliefs influence the way research is conducted (Lund research Ltd, 2013). A research paradigm is an encapsulation of the ontology, epistemology and methodology of the research study (Lund research Ltd, 2013). Millis, Bonner, and Francis (2006) suggest that a paradigm should be chosen by researchers which are aligned with their beliefs regarding the nature of reality. According to Kim (2003) the most popular applied paradigms include positivism, interpretivism and critical theory. In addition, additional paradigms are suggested by Creswell and Plano (2007) including constructivism, post-positivism, pragmatism, and advocacy or participatory paradigm.

The post-positivist paradigm is applied in this study. According to Ponterotto (2005) post-positivism originated from dissatisfaction with certain positivist aspects. In addition, post-positivists recognise a reality that is objective in nature and perceived in an imperfect manner, whereas positivists are accepting of a reality that is apprehensive. It is said that positivism and post-positivism serve as an anchor for quantitative research (Ponterotto, 2005). Taylor and Medina (2013) define post-positivism as a modified social sciences scientific method and a mild form of positivism that allows more room for interaction between researchers and their participants, even though this paradigm follows similar principles as the positivist paradigm. They also state that the purpose of the post-positivism paradigm is to yield knowledge that is generalisable and objective about social patterns, and also supports the presence of universal laws among relationships in variables that are pre-defined (Taylor & Medina, 2013).

Scotland (2012) argues that post-positivistic knowledge is more objective and certain than that of other paradigms. He elaborates by stating that post-positivism pursues an understanding of causal relationships, which is why experimentation studies along with correlational studies are being used. Scotland's (2012) view supports the suitability of the post-positivist paradigm for the purposes of the study, which attempts to use a quantitative approach to confirm what the psychometric properties of the translated Afrikaans version of the SAPI are and to evaluate the testing and translation challenges involved in developing it. The objectives were (1) to determine the item functioning of the

Afrikaans version of the SAPI, (2) to determine the construct validity of the Afrikaans version of the SAPI, and (3) to determine the reliability of the Afrikaans version of the SAPI.

According to Wahyuni (2012), aspects that need to be addressed in this study, which are elements of the post-positivism paradigm, are illustrated in Table 2 below.

Table 2: *Post-positivism Paradigm Elements Applied in the Study*

Element	Definition and application in the study
Ontology	The researcher and reality are separate, where reality is objective and existent outside the knowledge and thoughts of an individual. This study aims to make sense of information in a realistic manner.
Epistemology	Credible information is used to explain specific contexts as objective reality is existent beyond the human mind. Therefore, delimitations of the study and bias were considered.
Methodology	The use of descriptive statistics, as well as EFA in order to accomplish the objectives of the study.
Validity	The data is a true measurement of reality, which provides certainty for the study. Construct validity is a key focus area of the psychometric properties of the Afrikaans version of the SAPI, in order to ensure the adequate measurement of what is intended to be measured.
Reliability	Ensuring the replication of results obtained in the study. Consistency is measured by conducting EFA to determine the reliability of the Afrikaans version of the SAPI.

An emic approach was used in this study as it attempts to relate and define a variety of elements of one sub-culture (for example, relationships) to another as they are perceived by members of that specific sub-culture instead of by the investigators (Ballin, Breslin, Wierenga, & Shepard, 1980). Sinkovics, Penz, and Ghauri (2008) state that emic

research is the view of reality from the insider's perspective, which places emphasis on the phenomena in a specific culture by using concepts that are used in that same culture.

3.2. RESEARCH DESIGN

Research designs serve to uncover different ways of collecting and analysing data, or the broad plan to address the stated research questions (Saunders, Lewis, & Thornhill, 2012). This study is quantitative in nature. According to Struwig and Stead (2007), quantitative studies are conclusive, including large samples and procedures of data collection based on a structured approach.

Quantitative research designs are characterised by their systematic and objective methods which use numerical data from a designated subgroup to generalise the findings (Maree , 2016). In other words, quantitative research focuses on three aspects, namely objectivity, generalisability and numerical data. Saunders et al. (2012) state that the main objective of quantitative research is to analyse variable relationships that are measured and analysed in a numerical manner by means of various statistical techniques. Maree (2016) describes the main characteristics of quantitative data analysis as the comparing groups, describing trends, and relating variables through both descriptive and inferential statistics. Quantitative research allows the researcher to become familiar with the subject under study and perhaps produce hypotheses to be tested (Golafshani, 2003). Golafshani (2003) provides the brief summary of quantitative research in Figure 2 below.

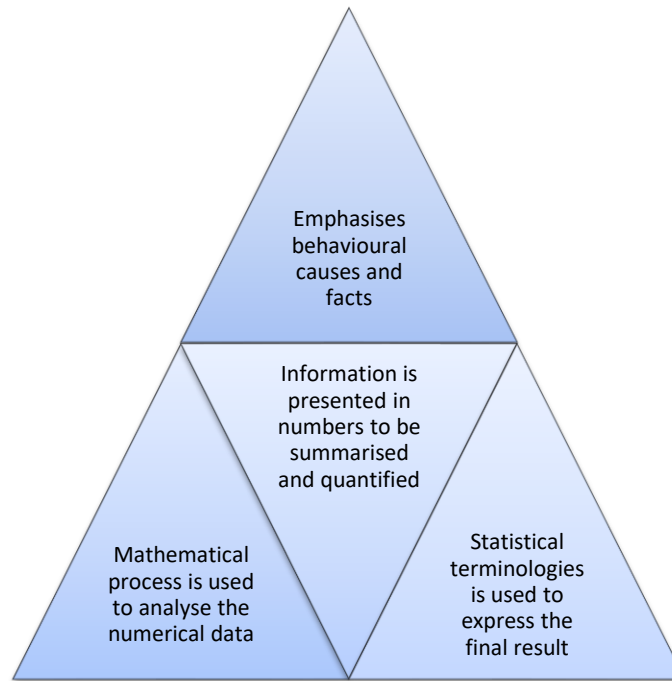


Figure 2. Summary of quantitative research

It is of the utmost importance for the researcher to construct a measuring instrument which can be administered according to procedures that are predetermined in a standardised manner (Golafshani, 2003).

A cross-sectional design was used for in this study. Levin (2006) states that studies that are cross-sectional are carried out at one point in time. She adds that cross-sectional studies are used to provide an estimate of the outcome frequency of interest for a particular population. She also states that data collection pertaining to individual characteristics can be obtained, which includes risk factors exposure and information regarding the outcome. According to Mann (2003), cross-sectional studies are fairly easy and quick to conduct and inexpensive, even though they do not differentiate between cause and effect. Welman, Kruger, and Mitchell (2012) describe cross-sectional designs as designs that are specific and use cohorts (criterion groups) that are examined at the same point in time in terms of at least one variable. A limitation of cross-sectional designs is that they are conducted at a specific point in time, where it is not possible to indicate a sequence of events (Levin, 2006). It is also not possible to infer causality (Levin, 2006). However, she also states that possible associations are indicated by cross-sectional

studies, which is why it is useful for the purpose of future research to generate hypotheses.

3.3. RESEARCH PARTICIPANTS

The data should expose human experiences in their multiplicity, dissimilarity and heterogeneity (Nicholls, 2009). The method of sampling for the quantitative study should be appropriate for the research study. A target population consists of all the members who meet the requirements specified for a research study (Marshall, 1996). A sample is a smaller group of participants who are selected from a population for the purpose of investigation (Marshall, 1996). According to Marshall (1996), the accuracy of the interpretations will increase and the results will be more generalizable, the more representative the sample is of the population.

There are two main types of sampling technique categories, namely probability sampling and non-probability sampling (Koerber & McMichael, 2008). Non-probability sampling techniques are usually used in qualitative research, when the possibility of being selected for the sample is unknown (Alvi, 2016). This study made use of a purposive and non-probability quota sampling method to obtain a minimum of 200 participants. Non-probability sampling does not rely on randomness principles or the theory of probability (Maree, 2016). Tansey (2007) states that subjective judgment plays a role in non-probability sampling as the onus is on the researcher to decide which participants to include in the sample. The non-probability method was chosen for this study as it supports the purpose of the study. Maree (2016) substantiates this by stating that non-probability sampling is used where instruments of measurement need to be tested and time is limited. Non-probability sampling is appropriate for this study as the participants should be white Afrikaans speaking South Africans.

Purposive sampling is a form of non-probability sampling which is used when a specific cultural sphere needs to be studied with experts who are knowledgeable (Tongco, 2007). Purposive sampling can be defined as a sample being approached with a prior purpose in mind and the elements to be included in the study are predefined (Palinkas et al., 2015). Purposive sampling is also known as judgment sampling, which is defined by

Tongco (2007) as the deliberate selection of participants based on their qualities. Tongco (2007) states that the competence and reliability of the informant must be ensured, as the quality of the purposive sample is essential for the quality of the gathered data. The quota to be met for participating in this study as part of the non-probability sample method is illustrated in Table 3 below.

Table 3: Characteristics of Participants (N = 201)

Characteristic	Category	Frequency	Percentage
Age	18-25	64	31.8
	26-35	36	17.9
	35-45	26	12.9
	46-55	54	26.9
	56-65	20	10.0
	Total	200	99.5
	Missing	1	.5
	Total	201	100.0
Gender	Male	46	22.9
	Female	155	77.1
	Total	201	100.0
Race	White	201	100.0
	Total	201	100.0
Marital and parental status	Unmarried, no children	71	35.3
	Unmarried, with children	4	2.0
	Married, no children	21	10.4
	Married, with children	95	47.3
	Divorced, no children	2	1.0
	Divorced, with children	4	2.0
	Widow(er)	4	2.0
	Total	201	100.0
Province	Gauteng	88	43.8
	Kwazulu-Natal	2	1.0
	Limpopo	3	1.5
	Mpumalanga	86	42.8
	Northern Cape	1	.5
	Northwest	6	3.0
	Free State	6	3.0
	Western Cape	6	3.0

		Other	2	1.0
	Valid		1	.5
	Total		201	100.0
		Grade 10 or 11	2	1.0
		Matric	52	25.9
		Technical / College Certificate	9	4.5
		Technical / College Diploma	18	9.0
		University Diploma	16	8.0
		Undergraduate Degree	57	28.4
		Honours Degree	28	13.9
		Master's Degree	14	7.0
		Doctoral Degree	2	1.0
		Other	3	1.5
	Total		236	100.0
Economic Activity		Active	153	76.1
		Inactive	48	23.9
	Total		201	100.0

Table 3 shows that the sample consisted of mainly white females (77.1%), between the ages of 18-25 (31.8%) and married with children (47.3%). The highest qualification of most of the participants was an undergraduate degree (28.4%) and they form part of the economically active population (76.1%). The large sample size and sampling techniques used in this study contribute various strengths and limitations to the study, which are discussed next.

3.3.1. Strengths and limitations of the study based on the sampling strategy

A large sample of 201 participants obtained through purposive non-probability sampling poses certain challenges. Faber and Fonseca (2014) found that a large sample causes the process of data collection to be more complicated and difficult to monitor. In addition, the need for human and financial resources tends to increase to achieve the desired outcome, and small differences easily transform into significant statistical differences with larger sample sizes (Faber & Fonseca, 2014). Acharya, Prakash, Saxena, and Nigam

(2013) state that it is more difficult to generalise the results of non-probability samples to the target population. Couper (2000) supports this, and adds that efforts to present errors of sampling or confidence intervals with designs of non-probability are misleading. Finally, the findings cannot be generalised to the target population with non-probability sampling (Saunders et al., 2012).

The sampling strategy used in this study also brings various strengths to the study. Firstly, Faber and Fonseca (2014) argue that larger sample sizes make it easier to generalise results to the target population. In addition, Welman et al. (2012) state that a purposive sampling technique enables the researcher to gather participants intentionally, which provides a sample that represents the target population of the study accurately. They maintain that the research objectives are met more easily with purposive sampling as it enables the researcher to choose the sample with the research objectives in mind.

3.4. MEASURING INSTRUMENTS

Biographical questionnaire: A biographical questionnaire was included in the study to capture participant characteristics in terms of age, gender, language group, ethnicity, qualification/s obtained, work history and area of origin to obtain demographic information. This was necessary in order to determine whether the sample met the requirements for the study.

Afrikaans version of the SAPI: The SAPI is an indigenous personality measurement instrument that measures six constructs across all of the 11 official South African languages (Fetvadjev et al., 2015). These constructs include a positive social-relational factor, a negative social-relational factor, openness, neuroticism, conscientiousness and extraversion. The SAPI questionnaire consists of 188 items to be answered by selecting a response on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). According to Fetvadjev et al. (2015), a total of 188 items are included in the final SAPI version. The constructs, together with the number of items and item titles it consists of, include the following (see Table 4 below, as adapted from Fetvadjev et al. (2015):

Table 4: SAPI Constructs and the Corresponding Items

Construct	Total items included	Item and example included
Social relational positive (SR-Pos)	10	Facilitating “I give guidance to people in their life decisions”
	9	Interpersonal relatedness “I help people live in peace”
	12	Warm heartedness “I support others when they need it”
	4	Social intelligence “I understand how people feel”
Social relational negative (SR-Neg)	6	Conflict seeking “I cause fights”
	3	Deceitfulness “I mislead others”
	13	Hostile egoism “I make people feel vulnerable”
Extraversion (E)	6	Playfulness “I enjoy laughing with others”
	7	Sociability “I chat with many people”
Conscientiousness (C)	12	Integrity “I acknowledge my mistakes”
	11	Orderliness “I do things with precision”
	8	Emotional maturity “I calm down easily”
	10	Achievement orientation “I get motivated by my goals”
	4	Traditionalism-Religiosity “I believe in tradition”
Neuroticism (N)	10	Negative emotionality “I get angry a lot”
Intellect/Openness (O)	10	Intellect “I learn new things easily”

6	Epistemic curiosity “I love learning more about the world
5	Broad mindedness “I seek new experiences”

Fetvadjev et al. (2015) conducted a study where the sample of participants for the SAPI project consisted of 671 blacks, 198 Coloureds, 104 Indians, and 391 whites. The Cronbach’s Alphas, per ethnic group, is presented in Table 5 below, which includes all of the 18 facet-scale scores (Hill et al., 2013).

Table 5: Cronbach’s Alphas of the Ethnic Groups’ 18 Facet-Scale Scores

Scale (number of items)	Black	Coloured	Indian	White	Mean
Facilitating (10)	0.84	0.85	0.87	0.88	0.86
Integrity (12)	0.76	0.83	0.84	0.79	0.81
Social Intelligence (4)	0.71	0.75	0.82	0.74	0.75
Interpersonal relatedness (9)	0.77	0.81	0.83	0.78	0.80
Warm-heartedness (12)	0.83	0.89	0.83	0.87	0.85
Deceitfulness (3)	0.58	0.59	0.75	0.53	0.61
Conflict-seeking (6)	0.67	0.70	0.71	0.64	0.68
Hostility-Egoism (13)	0.80	0.84	0.89	0.83	0.84
Emotional Balance (8)	0.71	0.77	0.73	0.74	0.74
Negative Emotionality (10)	0.75	0.73	0.76	0.77	0.75
Playfulness (6)	0.71	0.76	0.84	0.81	0.78
Sociability (7)	0.75	0.80	0.84	0.86	0.81
Achievement Orientation (10)	0.79	0.78	0.81	0.82	0.80
Orderliness (11)	0.81	0.85	0.88	0.86	0.85
Traditionalism-Religiosity (4)	0.57	0.65	0.78	0.75	0.69
Intellect (10)	0.74	0.81	0.79	0.76	0.78
Broad-Mindedness (5)	0.60	0.66	0.72	0.75	0.68
Epistemic Curiosity (6)	0.66	0.77	0.83	0.80	0.76
Mean	0.72	0.77	0.81	0.78	0.77

Hill et al. (2013) state that a reliability coefficient less than 0.70 should be considered as unacceptable in terms of its clinical significance. Reliability coefficients ranging from 0.70 to 0.79 can be regarded as fair, while those ranging from 0.80 to 0.89 can be regarded as good, and those above 0.90 can be seen as excellent. Hill et al. (2013) consider reliability coefficients higher than 0.70 to be acceptable for research purposes and the development of instruments.

3.5. RESEARCH PROCEDURE

Different techniques of data collection can be used to gather data from the relevant samples, with each technique having its own strengths and limitations (Maree, 2016). According to Welman et al. (2012), data can be either primary or secondary. Their study obtained primary data, defined as information which is collected by the researcher him- or herself (Welman et al., 2012).

As mentioned earlier, data collection relied on two methods for the purpose of distribution, each with its advantages and limitations. The first was by means of hard copies of the SAPI questionnaire in order to accommodate participants who either do not have access to the internet or who might be unfamiliar with completing the questionnaire online or electronically. The advantages of completing the SAPI questionnaire in this manner included minimised the cost of training individuals to become computer literate, instant assistance and direct communication with the researcher to clarify uncertainties, an optimal response rate in a group administration under conditions which were standardised, and ease in completing more questionnaires in a short time period (Maree, 2016). The advantages of distributing the questionnaire in hard copy point to the limitations of distributing the SAPI questionnaire online. This technique involved sending links to the SAPI questionnaire, after which the participants completed the questionnaires online. The advantages included low costs pertaining to collecting data compared with printing multiple hard copies and providing pencils to each candidate; the participants were able complete the questionnaires at a convenient time; a wide spread of participants were accessible, and the processing of data was easier (Maree, 2016). Once more, the

advantages of distributing the questionnaires online can be accepted as the limitations of distributing the questionnaires in hard copy.

3.6. ETHICAL CONSIDERATIONS

Ethics is a crucial aspect of research as it focuses on protecting the rights of both the research participants and the researchers (Foxcroft & Roodt, 2013).. Ethical considerations serve as guidance for the use, interpretation and security of the results, which is why it is of the utmost importance to protect the privacy of the participants (Foxcroft & Roodt, 2013). Leedy and Ormrod (2005) classify research into four categories of ethical issues, namely: (1) informed, voluntary participation, (2) the protection of participants against any harm, (3) the right to privacy, and (4) honesty among colleagues in the profession. In addition, participants were provided with letters of informed consent before they completed the SAPI questionnaires, indicating that the data would only be used for research purposes. The focus was on the ethical considerations in order to protect the participants, the researchers and the University of Pretoria. The ethical guidelines are discussed below:

- **Voluntary participation:** It is ethical to ensure that candidates participate voluntarily to avoid anyone feeling obliged or forced into participating in a research study, as it should be done of an individual's own free will. According to Leedy and Ormrod (2005), the participation of participants should be completely voluntary. Participants were made fully aware of their voluntary participation and their right to withdraw at any time.
- **Informed consent:** This is an ethical issue which should be considered to ensure that the participant is well informed about the process and possible risks related to the study. It is the first ethical principal that should be considered when conducting research . (Flick, Von Kardorff, & Steinke, 2004). Written consent was obtained from participants who completed the SAPI questionnaire in hard copy, whereas informed consent was obtained electronically from those who completed the SAPI questionnaire online. The informed consent form included the objectives of the study, the utilisation of data to be obtained, the roles of the participants and the benefits and potential risks.

- **Participant safety:** Researchers should comply with the ethical requirement to avoid participants being at risk of physical or psychological harm by ensuring a safe environment. Leedy and Ormrod (2005) argue that the onus rests with the researcher to ensure that no harm is inflicted on the participants (either physical, emotional or psychological). The participants need to be informed immediately should the researcher become aware of any potential risks.
- **Confidentiality:** The issue of confidentiality is also extremely important as the results or research process cannot be disclosed to anyone not directly involved. Psychologists should not discuss any information about the participants with anyone, as the law requires that psychological services should remain confidential (Foxcroft & Roodt, 2013). All information obtained for the purpose of this study will remain confidential and any disclosure of information will not be permitted without consent from the participants. The participants' right to privacy will be respected.
- **Anonymity:** The candidates have the right to be kept anonymous in order to protect their privacy. According to Babbie (2008), anonymity refers to the inability of the researchers or readers to link the participants to the results. The completion of the hard copies and the online questionnaires will remain anonymous.
- **Accountability:** Researchers are accountable for the use of assessment measures, their interpretation and the protection of the final results (Foxcroft & Roodt, 2013). The data and any other relevant material will be stored and secured on the personal computer of the researcher and only the researcher and supervisors will have access to them.

3.7. DATA ANALYSIS

Statistical inquiry is applied as a means of analysing the data in order to accommodate the post-positivist approach which is followed in this study. This study will use the IBM SPSS and AMOS programmes to conduct the statistical analysis by means of an item

analysis, Exploratory Factor Analysis (EFA), and a reliability analysis. The IBM SPSS and AMOS are computerised programmes which specialise in statistical procedures and data analysis in order to conduct research that requires statistical analysis (Pallant, 2005). The process of data analysis in this study applied the following multiple analysis techniques:

- a. Descriptive statistical analysis (to calculate Skewness, Kurtosis, and Mean score);
- b. PCA and EFA (communalities, total variance explained, and pattern matrix); and
- c. Cronbach Alpha (testing internal consistency);
- d. Product-moment correlation (to specify the relationship variables);
- e. Multivariate analysis of variance (MANOVA)

The reason for using EFA as opposed to CFA was because of the small number of participants in this study ($N=201$) and since the instrument is new and needs refinement of the items and constructs.

3.7.1 Item analysis

Item analysis is applied to determine whether discrepancies exist in the items, and to address these discrepancies (Maree, 2016). In addition, items which are unsuitable for the instrument, can be identified in this manner. According to Maree (2016), item analysis is guided by three objectives, namely: 1. the identification and elimination of items which are flawed, 2. the identification of items which discriminate between good and bad participants, and 3. the identification of shortcomings of the items. The item analysis was conducted by means of analysing Skewness, Kurtosis and the Mean score (the arithmetic scores' average), in order to determine the data distribution.

3.7.1.1 *Skewness*

According to Maree (2016), Skewness is a measure that provides a description of the extent to which the distribution diverges from symmetry. Two types of Skewness can be determined, namely positive Skewness and negative Skewness. Positive Skewness

refers to the majority of data evident in the upper scale end, whereas negative Skewness indicates that the majority data is evident in the lower scale end (Maree, 2016). Each item's Skewness was analysed to establish the item responses of the participants. The researcher identified variables with a Skewness of >2 as problematic. Thus, any item-totals which exceeded 2 were disregarded for further analysis.

3.7.1.2 Kurtosis

Kurtosis provides a description of the distribution's peakedness or flatness, and correlates directly with the distribution's standard deviation (Maree, 2016). The researcher analysed each item's Kurtosis with the purpose of determining the participants' response tendencies. Variables with a >4 Kurtosis were identified as problematic and were eliminated from the dataset to prevent analysis distortion.

3.7.1.3 Mean score

Welman et al. (2012) states that the Mean score can be defined as a sample's average score, which is calculated score total divided by the score amount in the dataset. The Mean score of each item is analysed with the purpose of establishing the participants' response to every item. Additionally, the Mean score determines the central tendency for Likert scale data.

3.7.2. Exploratory factor analysis

Principle Component Analysis (PCA) as an extraction method is usually done first with newly developed instruments in order to determine the amount of factors to retain and to detect the communality values. Thereafter an Exploratory Factor Analysis (EFA) is followed to explore the retained factors with a different extraction method, which a statistical procedure which is used widely in research, especially with psychologically related constructs such as personality (Lorenzo-Seva & Ferrando, 2006). Exploratory

factor analysis was utilised after the PCA when the amount of factors are detected and can be verified or disputed. Additionally, the Afrikaans version of the SAPI is a new instrument and it is newly translated, therefore this approach was deemed appropriate. It tested item loadings in order to make sure the item measure the construct it was developed to measure. The items which do not load (less than 0.3 loading), load onto a wrong construct, or showed cross-loadings were excluded for further analysis. In addition, EFA follows an investigative approach to determine the amount of factors to collect (de Winter & Wieringa, 2009). One of the main purposes of EFA is to reduce a set of variables in order to manage it easier whilst retaining the variance as much as possible (Conway & Huffcutt, 2003). In addition, when the variables are reduced into smaller groupings, reliability and validity will increase (Floyd & Widaman, Factor analysis in the development and refinement of clinical assessment instruments, 1995). It is suggested for researchers to use the EFA to formulate a hypothesis with regards to the nature of their questionnaire's underlying factors (De Winter & Wieringa, 2009).

Floyd and Widaman (1995) are of meaning that EFA explores, identifies, and explains correlations of factors through the evaluation of questionnaire item's dimensionality, as well as the reduction of data. The study's data property, design, and research question/s determine the EFA process (Costello & Osborne, 2005). Floyd and Widaman (1995) state that EFA is applied by factor-analysing an instrument to measure a specific field, in order to identify variables which can be differentiated, but still signify the theoretical constructs in the specific field. Keep in mind that these researchers usually do not have expectations regarding the subscale structure, which is why EFA focuses on identifying the underlying latent variable of the scale in order to help the researcher to identify the amount of constructs which are hidden. Next, data will be reduced in the EFA process by creating a pool for a group of measured variables in order to generate summary indices (Floyd & Widaman, Factor analysis in the development and refinement of clinical assessment instruments, 1995).

Exploratory factor analysis entails random sampling, normal distribution, as well as the visibility of linear variable relationships which are observable by the researcher (Suhr, 2006). The reliability decreases as the sample size decreases due to correlation coefficients becoming less reliable, thus the ideal correlation matrix is >0.3 (Tabachnick,

Fidell, & Ullman, 2007). The purpose of interpreting fit measures is to determine the validity of the structure. Fit measures, or also the chi-square test, determines the extent to which data's observed distribution fits well with the expected distribution therefor for independent variables (West, Taylor, & Wu, 2012). Floyd and Widaman (1995) summarises four steps to take when conducting an EFA (see Table 6 below).

Table 6: *Steps Followed to Conduct the EFA*

Step 1: The suitability of data	Determine the appropriateness of the data set for factor analysis by assessing item intercorrelations and the sample size.
Step 2: Extraction Of factors	This has been done in order to determine the least amount of factors which are the best representation of variable intercorrelation. The approaches to apply factor analysis include principal component analysis (PCA) and principal axis factoring (PAF). The PAF serves to extract factors from the correlation matrix in its original form, with squared multiple correlation coefficients placed diagonally as initial communality estimates. New communalities are estimated with these factor loadings. The process will be iterated until communality changes are satisfactory for extraction. The PCA aims to find the simplest way to generate an answer with as few factors as possible, and to explain the original dataset variance. The PCA has been applied in this study as a first step before EFA commenced.
Step 3: Selection of factors	This can be done by making use of techniques such as the scree test or Kaiser' criterion, this step is crucial in EFA because the validity of the model can be compromised by over-factoring or under-factoring. Eigenvalues are used in both techniques, where the reduced correlation matrix or input provides it to the scree test, and the Kaiser criterion exclusively preserves factors which eigenvalues are at least 1.0. A graph is generated by the scree test where the vertical axis represents the eigenvalues, and the horizontal axis represent the factors.
Step 4: Rotating and interpreting the factors	The factors are rotated in order to be interpreted. The smallest number has to be identified for the rotation to take place. Factor rotation can be done through (1) orthogonal rotation, which entails generating factors which do not correlate due to their orientation in a 90° direction within a multidimensional space, or (2) the oblique factor solution which allows correlation of factors at an angle not more than 90°. After factor rotation is

completed, factors which are defined poorly are excluded, and interpretation can easily take place.

In other words, factor analysis provides a summary of the data to easily understand relationships and interpret patterns. Basically, variables are being regrouped into sets to differentiate between the various concepts or constructs. Exploratory factor analysis uncovers patterns which are complicated by investigating predictions of the test, as well as the set of data. Moreover, strengths of EFA include providing assistance to the researcher to determine the amount of latent constructs which underly a set of items, it also provides an hypothesis for an underlying construct which is not measured directly, as well as allow the researcher to easily categorise the factors by means of defining the content (Suhr, 2006). In contrast, Suhr (2006) also highlights some limitations of EFA which include deciding how many factors should be included, and the interpretation of the meaning of the factors which are subjective in nature.

The researcher mainly focused on the following methodological considerations: (1) communalities, (2) total variance explained, and (3) pattern matrix.

3.7.2.1 *Communalities*

Yong and Pearce (2013) defines the communality estimate as the variable's estimated proportion of variance which is free of error variance and is shared with other variables in the matrix. The estimates provide a reflection of the variable's variance in common with all others. Communalities can be described as the variance proportion of an item which other common factors can account for. It will be beneficial for the solution of the factor analysis if the communalities increase. In addition, items which deliver communality estimates which are high, tend to be more reliable, and consequently tends to be related to the domain of interest and have more in common with variables measured in that domain (Yong & Pearce, 2013). A high communality score of $>.8$ is not a common phenomenon, which is why communality scores in the range from $.4$ and $.7$. The extraction method used to explore the communalities is the Principal Component Analysis

(PCA), in order to determine the amount of factors to retain and determine the inter-item correlation. In order to ensure a factor solution of high quality, items with communalities of $<.20$ were excluded for further data analysis.

3.7.2.2 *Total variance explained and pattern matrix*

In order to identify the factor loadings of the questionnaire, a principal axis factor analysis was conducted with an Oblimin rotation method with Kaiser Normalization. This was done after the initial Principle Component Analysis in order to detect the inter-item correlations (communalities) and the amount of factors. A few items were disregarded due to low communalities. The total variance explained was also investigated. According to Yong and Pearce (2013), the total variance of a variable comprises the communality, unreliability, and the specificity of variables. Usually, the variance cumulative percentage is removed after each factor's extraction from the matrix, and this iteration continues until the variance is nearly 75-85% accounted for (Gorsuch, 1990). In addition, the percentage provides an indication of the total each factor added to the total variance. After the communalities and total variance were evaluated, the factors loadings were assessed. The pattern matrix can be defined as the containing element of the item or factor loadings (Gorsuch, 1990). In other words, the pattern matrix consists of rows of data, where each row represents an equation for regression in which the function of the factors are expressed by a standardised observed variable (items). Factor loadings of 0.3 and higher were seen as acceptable.

3.7.2.3 *Factor correlation matrix*

The factor correlation matrix is applied to determine whether a patterned relationship exist amongst the variables (Yong & Pearce, 2013). Moreover, the data is presented in a table to illustrate the variable correlation coefficients. The correlation matrix is commonly used due the ease of interpretation, in comparison to covariance tables (Fung & Kwan, 1995). Moreover, it easily provides an analytical summary of the required data for a more progressive analysis. This matrix is usually assessed before investigating the factor

loadings, since the rotation method can be identified. In this case correlations were detected, therefore, oblimin rotation method was utilised throughout.

3.7.3. Reliability analysis

Pallant (2013) states that Cronbach's alpha can be defined as a measurement to determine internal consistency, which indicates the extent to which a set of items are related in a group. Pallant (2013) also states that the Cronbach's alpha value should ideally be at least 0.7 which means a higher Cronbach's alpha value indicates higher internal consistency. In addition, Lee Cronbach developed Alpha in 1951 in order to provide a measure of internal consistency of an assessment which is expressed as a figure between 0 and 1. The extent to which all the items in an assessment measures the same concept can be described as internal consistency, and it is connected to the inter-relatedness of the assessment's items. It is important to determine the internal consistency before an assessment is done in order to ensure internal validity. In addition, the amount of measurement error in a test is known as reliability estimates.

Basically, when reliability is interpreted, it is the correlation the test has in itself. When this correlation is squared and subtracted from 1, the index of measurement error is produced. The alpha will increase towards 1 when test items correlate more. A score above 0.7 illustrates good reliability which means that the test can be considered reliable for internal consistency (Tavakol & Dennick, 2011). Thus, a reliability analysis is conducted in order to determine the internal consistency of the Afrikaans version of the SAPI in order to determine the viability thereof, whereas differential item functioning is applied in order to determine the extent to which the various abilities of certain groups differ as measured by an item of the Afrikaans version of the SAPI. The researcher used Cronbach's alpha coefficient to determine each extracted factor's internal consistency.

Streiner (2003) stated that, according to the classical test theory, the observed score of a person entails two components, namely (1) a true score and (2) an error component. The error component's Mean is zero, it tends to be random in nature, and is not systematic. Furthermore, due to the likelihood of error in measurement scales, reliability

can be considered as relating to true score variances, indicated by σ^2_{True} , to the total score, indicated by σ^2_{Total} (Streiner, 2003).

3.7.4. Product-moment correlation and Multivariate analysis of variance (MANOVA)

To specify the relationship and degree of correlation between variables, Pearson product-moment correlation was utilised by the researcher. The correlations indicate convergent and divergent validity, meaning the correlations would ideally be between 0.10 and 0.90. Convergent validity can be defined as various indicators of constructs which are theoretically similar or overlapping, which are strongly interrelated (Wang, French, & Clay, 2015). Moreover, divergent validity should be established after convergent validity has been established. Divergent validity helps to determine the construct validity by means of differentiating between the various constructs present in the study, and how it differs (Nickerson & Fishman, 2009). In addition, a Multivariate analysis of variance was conducted to establish the difference significance in the experience of the remaining variables, in terms of age, gender, qualifications, marital status, and province (Fidell & Tabachnick, 2001). A further analysis was conducted on the relationships to determine the practical significance by means of using a one-way analysis of variance (ANOVA), if the Wilk's Lambda values demonstrated statistically significant differences.

4. RESULTS

This section describes the obtained results of the total sample ($N=201$) after an item analysis, EFA, reliability analysis, product-moment correlation analysis and multivariate

analysis of variance (MANOVA) was conducted. Abbreviations used in the dataset are listed in Table 7 below.

Table 7: Dataset Abbreviations

<i>Abbreviation</i>	<i>Meaning</i>
<i>ANOVA</i>	Analysis of variance
<i>C</i>	Conscientiousness
<i>DN</i>	Social desirability impression management
<i>DP</i>	Social desirability positive impression management
<i>E</i>	Extraversion
<i>I</i>	Intellect-openness
<i>MANOVA</i>	Multivariate analysis of variance
<i>N</i>	Neuroticism
<i>SN</i>	Social-relational negative
<i>SP</i>	Social-relational positive

4.1. ITEM ANALYSIS

Table 8 below provides a summarised illustration of the descriptive statistics (Mean, Standard deviation, Skewness and Kurtosis) to investigate the normality of the dataset.

Table 8: Descriptive Statistics of the Afrikaans SAPI

Item	Mean	Std. Deviation	Skewness	Kurtosis
SP1_1	4.15	.825	-1.696	4.661
C1_1	2.11	.948	.634	-.270
E1_1	4.48	.633	-1.528	4.925
I1_1	4.29	.639	-.581	.492
N1_1	3.55	.979	-.505	-.498
SN1_1	1.91	.941	.953	.269
C2_1	3.35	.958	-.507	-.317
SP2_1	1.55	.853	1.942	4.300
N2_1	1.79	.993	1.366	1.496
C3_1	1.91	1.013	1.212	1.253
SP3_1	1.48	.761	2.025	5.043
C4_1	1.98	1.063	1.049	.562
SP4_1	4.17	.740	-1.098	2.709
E2_1	4.52	.567	-.819	.631

SN2_1	4.22	.749	-.891	.847
N3_1	4.21	.645	-.452	.343
C5_1	3.58	1.065	-.425	-.539
SN3_1	3.09	.978	-.224	-.507
E3_1	3.92	.961	-.659	-.303
C6_1	3.56	.893	-.636	.214
N4_1	1.96	.966	.964	.645
SP5_1	4.36	.607	-.924	3.405
SN4_1	4.23	.638	-1.056	3.897
I2_1	4.31	.756	-1.432	3.416
C7_1	1.72	.861	1.295	1.685
N5_1	3.79	.711	-.760	1.325
SN5_1	3.74	.866	-.637	.315
SP6_1	3.85	.603	-.749	2.584
E4_1	3.94	.875	-.966	.953
C8_1	3.26	1.122	-.329	-.762
SN6_1	4.03	.741	-.943	2.261
DN1_1	3.94	.965	-.746	-.168
SP7_1	1.49	.831	2.270	5.875
C9_1	3.75	.843	-.806	.899
DN2_1	4.17	.657	-.406	.180
SN7_1	3.84	.835	-.670	.376
C10_1	1.79	.854	1.063	.901
SP8_1	3.83	.742	-.458	.207
SP9_1	4.19	.656	-.645	1.113
SN8_1	4.01	.656	-.333	.375
C11_1	4.16	.578	-.494	2.009
I3_1	4.20	.651	-.780	1.736
SP10_1	3.72	1.065	-.466	-.811
SP11_1	4.79	.423	-1.604	1.161
I4_1	4.43	.595	-.507	-.611
C12_1	2.23	1.004	.636	-.143
SP12_1	4.03	.699	-.572	.704
SN10_1	3.76	.568	-.298	.259
C13_1	4.17	.674	-.421	-.001
N6_1	1.61	.812	1.628	3.152
SP13_1	4.32	.669	-1.088	2.907
SP14_1	2.77	.958	-.109	-.487
DP1_1	3.97	.635	-.089	-.145
C14_1	4.04	.856	-.714	.226
E5_1	2.71	1.099	.129	-.957
C15_1	3.68	.948	-.534	-.298
I5_1	4.31	.779	-1.190	1.706
SP14_A_1	3.82	.740	-.822	1.272
SP15_1	4.26	.632	-.629	1.112

C16_1	4.21	.637	-.566	.973
DP2_1	1.76	.852	1.374	2.404
SP16_1	1.62	.829	1.509	2.215
SN11_1	3.10	1.136	.008	-1.028
DN3_1	4.13	.740	-1.044	2.571
N7_1	4.46	.538	-.219	-1.152
SN12_1	4.42	.652	-.897	.700
E6_1	3.33	1.137	-.487	-.536
N8_1	3.41	1.055	-.361	-.460
DN4_1	4.28	.578	-.116	-.531
SP17_1	3.94	.739	-.655	1.081
SP18_1	3.86	.693	-.626	.831
E7_1	3.89	.823	-.662	.185
N9_1	4.27	.624	-.521	.629
DP3_1	4.10	.663	-.423	.426
DN5_1	4.32	.608	-.439	.106
SN13_1	3.94	.732	-.523	.391
I6_1	4.21	.830	-.895	.509
SP19_1	1.36	.633	1.920	3.828
DP4_1	3.19	1.202	-.230	-.778
DP5_1	3.18	1.237	-.132	-.990
SP20_1	4.07	.797	-.844	.682
SN14_1	4.12	.652	-.561	1.032
SP21_1	4.08	.631	-.791	3.039
I7_1	3.96	.789	-.598	.208
SN15_1	3.27	1.155	-.262	-.859
C17_1	4.52	.735	-2.019	5.482
I8_1	2.45	1.139	.463	-.668
C18_1	3.73	1.017	-.768	.236
SN16_1	3.77	.990	-.484	-.368
SN17_1	1.77	.847	1.059	.893
N10_1	1.89	.904	1.119	1.282
SP22_1	2.72	1.294	.094	-1.248
SN18_1	4.06	.653	-.495	.884
C19_1	3.60	.776	-.328	.447
SN19_1	4.09	.588	-.317	1.090
SP23_1	4.10	.796	-.970	1.328
DP6_1	4.24	.559	.001	-.322
SP24_1	4.14	.784	-1.016	1.537
SN20_1	4.17	.625	-.386	.557
SP25_1	3.94	.712	-.502	.476
E8_1	2.03	.818	.719	.590
SN21_1	3.35	.909	-.257	-.683
SN22_1	3.92	.747	-.733	.790
I9_1	3.66	.738	-.190	-.172

SP26_1	4.10	.632	-.443	.885
C20_1	3.84	.744	-.682	.625
I10_1	3.68	.836	-.775	.762
SP27_1	3.53	.806	-.777	.816
C21_1	4.28	.574	-.261	.404
SN23_1	4.30	.700	-.936	1.199
N11_1	2.54	1.062	.287	-.582
SP28_1	4.03	.636	-.492	1.089
C22_1	3.23	1.232	-.286	-.998
SP29_1	2.52	1.077	.300	-.727
SN24_1	4.02	.717	-.679	.879
SP30_1	4.09	.590	-.171	.462
SN25_1	4.23	.668	-.819	2.104
N12_1	4.10	.605	-.320	.815
DN6_1	4.15	.666	-.892	2.705
I11_1	4.17	.564	-.151	.730
SP31_1	4.09	.856	-.901	.658
SN26_1	4.04	.555	.016	.276
I12_1	3.89	.706	-.614	.775
SP32_1	3.81	.724	-.891	1.501
N13_1	4.16	.681	-.980	2.757
C23_1	2.50	1.136	.331	-.951
SP33_1	4.04	.615	-.544	1.535
SN27_1	2.07	.855	.455	-.416
C24_1	3.14	1.038	-.331	-.828
E9_1	4.25	.765	-1.263	2.794
SP34_1	4.19	.695	-.913	2.173
N14_1	3.48	1.104	-.442	-.534
SP35_1	3.70	.889	-.444	-.254
SP36_1	1.63	.745	1.325	2.385
C25_1	4.27	.581	-.117	-.490
E10_1	4.11	.738	-.776	.886
I13_1	4.02	.840	-.797	.589
C26_1	4.04	.684	-.524	.675
DP7_1	3.90	.831	-.814	.967
SP37_1	4.03	.655	-.354	.422
SN28_1	4.18	.784	-1.139	2.227
N15_1	4.10	.624	-.323	.530
I14_1	4.17	.615	-.507	1.283
SP38_1	4.11	.681	-.423	.208
I15_1	4.03	.787	-.738	.502
E11_1	3.54	1.103	-.491	-.587
SP39_1	3.35	1.094	-.536	-.564
SN29_1	4.18	.738	-.971	1.838
I16_1	1.84	.845	.968	.794

N16_1	3.78	.826	-.430	.057
I17_1	3.81	.719	-.585	.994
DP8_1	4.14	.690	-.925	2.422
SP40_1	4.33	.575	-.179	-.636
E12_1	3.74	.934	-.461	-.426
SP41_1	4.05	.709	-.490	.335
SP42_1	3.87	.920	-.855	.570
SP43_1	4.25	.587	-.415	1.100
C27_1	3.77	.968	-.692	.121
SP44_1	2.46	.999	.521	-.223
SN30_1	2.52	.927	.416	-.034
DN7_1	4.01	.574	-.639	2.395
I18_1	4.13	.574	-.326	1.366
DN8_1	2.96	1.043	-.399	-.604
SP45_1	3.97	.663	-1.320	4.500
I19_1	3.93	.849	-.615	-.053
DN9_1	4.39	.570	-.287	-.716
SN31_1	3.48	1.053	-.303	-.716
I20_1	4.24	.680	-.740	.901
SN32_1	3.10	.967	-.261	-.336
N17_1	3.96	.741	-.830	1.515
N18_1	4.18	.676	-.928	2.592
C28_1	3.61	.730	-.710	1.071
SP46_1	3.02	.946	-.139	-.728
SP47_1	1.96	1.017	.936	.044
C29_1	2.88	1.051	.038	-.749
SP48_1	2.19	1.055	.563	-.566
SN33_1	1.59	.686	.943	.433
I21_1	4.21	.797	-1.483	3.532
I22_1	2.13	.976	.643	-.095
SN34_1	3.70	.829	-.500	.102
SP49_1	4.01	.667	-1.027	3.049
I23_1	4.23	.586	-.563	1.906
C30_1	1.56	.802	1.736	3.498
DP9_1	3.12	1.096	-.144	-.645
C31_1	3.28	1.020	-.171	-.615
SN35_1	1.89	.865	1.016	1.107
E13_1	3.96	.777	-1.165	2.676
DN10_1	3.27	1.215	-.526	-.868

VALID N (LISTWISE)

3.8.1.1 Skewness

The Skewness of the data presents the shape of the data. The values should be between -2 and 2 for the data to yield a normal distribution. Three items have been excluded, as it fell outside the parameters of -2 and 2, namely items SP3 (2.025), SP7 (2.26) and C17 (-2.01). Table 8 illustrates 37 positive Skewness scores, and 149 negative Skewness scores. This indicates that there is a significant Skewness to the left, and that a positive Skewness distribution can be concluded.

3.8.1.2 Kurtosis

The Kurtosis values range between 6 and -2, whereas 49 scores were negative and the remaining 139 scores reported positive. Six items had been excluded, which had higher scores than the cut-off of 4 (SP1, SP3, SP7, SP45, E1, and C17). The distribution shape was peak, due to more scores which had reported on the positive side.

3.8.1.3 Mean score

It is evident in Table 8 that the Mean scores of all the items are between 1 and 5. The values of 1 to 5 represent Likert scale values. If the score is closer to 5, it indicates that most participants agreed with an item. Thus, if the score is closer to 1, it means participants disagreed to items. The Mean score for the 188 items of the Afrikaans SAPI is $M=3.54$. The lowest reporting item is SP19, $M=1.36$. This means that most participants disagreed more with this item than with any other item. On the other hand, item SP11 reported the highest, $M=4.79$. This means that more participants are in agreement with this item than any other item in the dataset.

4.2. PRINCIPLE COMPONENT ANALYSIS AND EXPLORATORY FACTOR ANALYSIS

The first-order factor structure of the Afrikaans SAPI version was explored by means of conducting an EFA. Henceforth, the following results will be discussed: communalities, total variance explained, and pattern matrix.

4.2.1. Communalities

To determine the amount of items to retain, the item-correlation, and to determine the total amount of factors to extract, a PCA and EFA without rotation was conducted on the dataset. See Table 9 for the communality results after extraction. The values have been sorted from smallest to largest.

Table 9: *Communalities with PCA Extraction*

Item	Extraction
DN10_1	.073
SP22_1	.133
SP11_1	.135
SP46_1	.143
SN5_1	.146
N5_1	.174
SP2_1	.182
SP5_1	.186
C20_1	.194
SN24_1	.197
E5_1	.205
SN2_1	.210
N1_1	.215
I21_1	.219
C27_1	.227
C24_1	.233
N6_1	.236
C22_1	.239
SN3_1	.244
SN10_1	.246
DP5_1	.247

E12_1	.248
N13_1	.253
C29_1	.253
C1_1	.256
I2_1	.257
E4_1	.259
I20_1	.262
C3_1	.264
E2_1	.265
C11_1	.265
I5_1	.267
E13_1	.271
SN31_1	.274
SN6_1	.275
I22_1	.277
SP27_1	.277
SN23_1	.277
E9_1	.291
SN1_1	.293
SN21_1	.294
SN30_1	.296
I8_1	.297
SP49_1	.301
C15_1	.301
I3_1	.301
SN28_1	.305
C9_1	.305
C2_1	.308
SP20_1	.310
SP12_1	.315
C6_1	.316
DN8_1	.317
SP42_1	.318
SP13_1	.319
N2_1	.319
SN26_1	.319
SP19_1	.322
SP10_1	.323
I6_1	.324
SN11_1	.327
SP47_1	.331
E10_1	.331
C5_1	.331
SN16_1	.332
DP7_1	.333

SP6_1	.335
DP8_1	.342
C21_1	.345
DP3_1	.345
I18_1	.347
SP24_1	.349
I13_1	.350
SN35_1	.352
C23_1	.352
DN1_1	.355
I1_1	.356
I15_1	.361
I23_1	.363
C13_1	.365
SN29_1	.366
DP6_1	.367
SP14_1	.368
C7_1	.370
SP28_1	.371
N4_1	.372
I19_1	.372
SN8_1	.373
DP4_1	.373
DN6_1	.373
DN3_1	.374
SN7_1	.374
SP23_1	.376
SP34_1	.377
N17_1	.378
DN4_1	.379
SN17_1	.379
N8_1	.381
E6_1	.382
DP1_1	.393
DN7_1	.394
C25_1	.394
SN20_1	.394
C12_1	.395
C28_1	.397
SN27_1	.401
I4_1	.401
I17_1	.407
SN18_1	.407
SP40_1	.414
E7_1	.414

SP32_1	.414
C19_1	.416
N10_1	.420
SN32_1	.420
N3_1	.421
SP39_1	.422
SN22_1	.422
SP41_1	.422
C30_1	.423
SP48_1	.423
N9_1	.424
C8_1	.425
SN4_1	.425
SP33_1	.426
SP14_A_1	.426
C4_1	.427
N7_1	.427
SP17_1	.428
SP35_1	.430
N18_1	.439
SP4_1	.440
I9_1	.446
C10_1	.446
E3_1	.449
SP29_1	.452
C18_1	.454
SP31_1	.461
SN12_1	.462
SP21_1	.463
SP43_1	.463
DN5_1	.464
SN14_1	.466
SP15_1	.466
I10_1	.467
SP9_1	.469
DN9_1	.475
SN34_1	.478
E8_1	.478
SP36_1	.481
SN13_1	.482
N11_1	.482
I12_1	.483
I14_1	.485
DP9_1	.491
I16_1	.492

SP8_1	.495
SP18_1	.496
SP16_1	.496
SP44_1	.498
N12_1	.503
N16_1	.508
C14_1	.509
C26_1	.512
C31_1	.513
SP25_1	.517
SN33_1	.523
SP37_1	.525
DN2_1	.526
SP30_1	.533
SN15_1	.545
SN25_1	.553
I11_1	.555
SN19_1	.565
SP38_1	.566
DP2_1	.575
I7_1	.578
C16_1	.595
SP26_1	.607
N14_1	.608
N15_1	.633
E11_1	.637

Table 9 illustrates 10 items which had to be excluded due to unsatisfactory communality values of <0.2. These items include DN10 (0.073), SP22 (0.133), SP11 (0.135), SP46 (0.143), SN5 (0.146), N5 (0.174), SP2 (0.182), SP5 (0.186), C20 (0.194), and SN24 (0.197). An ideal communality value should at least be 0.3 (Costello & Osborne, 2005). Furthermore, the Total Variance Explained was conducted to inspect the Eigenvalues to determine which factors to extract. The TVE and pattern matrix is illustrated and discussed in sections 3.7.2.4 and 3.7.2.5 respectively. A second EFA is conducted with the extracted items and is illustrated in Table 10 below.

Table 10: *Second Conducted Communalities with PAF Extraction and Oblimin Rotation Method*

Item	Extraction
E5_1	.178
SN2_1	.188
I21_1	.193

E2_1	.195
N1_1	.200
N6_1	.202
E12_1	.202
C29_1	.204
C27_1	.209
C22_1	.214
C24_1	.215
N13_1	.216
I20_1	.216
SN3_1	.223
E4_1	.225
I2_1	.229
I22_1	.229
SP27_1	.229
C3_1	.232
SN10_1	.238
C1_1	.239
SN31_1	.243
C11_1	.251
SP20_1	.260
I5_1	.262
SN23_1	.263
E13_1	.268
SN6_1	.268
SN28_1	.271
SN21_1	.273
I6_1	.274
SP10_1	.276
SN1_1	.278
E9_1	.280
SN30_1	.282
C15_1	.282
I3_1	.283
SP19_1	.283
C9_1	.289
SN11_1	.291
N2_1	.291
SP49_1	.292
SP42_1	.293
SN26_1	.298
SP12_1	.299
SP47_1	.299
C6_1	.300
I8_1	.301

C2_1	.306
I18_1	.309
C5_1	.311
C23_1	.322
C21_1	.324
E10_1	.324
SP6_1	.328
SP24_1	.331
I1_1	.332
I13_1	.332
I15_1	.338
SP13_1	.341
I23_1	.345
SN29_1	.345
SP28_1	.346
SN35_1	.348
SN7_1	.354
SP14_1	.355
SN16_1	.356
C13_1	.357
SP34_1	.358
E6_1	.358
C7_1	.359
N4_1	.361
I19_1	.361
N8_1	.363
I4_1	.364
SN8_1	.364
C28_1	.364
C19_1	.367
SP23_1	.373
N3_1	.374
C12_1	.375
SP32_1	.375
N7_1	.376
N17_1	.376
SP40_1	.377
SN17_1	.380
SN18_1	.385
SN27_1	.386
C25_1	.392
E7_1	.395
SP39_1	.397
SP41_1	.398
N10_1	.398

SN4_1	.400
SP33_1	.404
N9_1	.406
SN32_1	.406
C8_1	.408
SP48_1	.409
SN34_1	.410
SN22_1	.410
SN20_1	.414
SP14_A_1	.416
C4_1	.416
SP4_1	.417
I17_1	.418
I10_1	.418
SP17_1	.419
C30_1	.420
SP35_1	.421
N16_1	.423
SP15_1	.424
N18_1	.434
C31_1	.434
C10_1	.437
E3_1	.441
C18_1	.441
SP43_1	.441
SP29_1	.442
I9_1	.442
SN12_1	.442
SP21_1	.443
SP31_1	.447
SN13_1	.452
SN15_1	.459
SN14_1	.462
C14_1	.464
SP44_1	.464
N12_1	.472
N11_1	.472
I16_1	.473
SP9_1	.473
E8_1	.477
I12_1	.478
SP16_1	.479
I14_1	.487
SP36_1	.487
SP18_1	.490

SP8_1	.500
C26_1	.501
SP37_1	.507
SN33_1	.508
SP30_1	.520
SP25_1	.525
I11_1	.535
SN25_1	.538
SN19_1	.552
SP38_1	.555
C16_1	.565
I7_1	.566
SP26_1	.619
N14_1	.624
N15_1	.631
E11_1	.670

Table 10 indicates four items with unacceptably low communality values identified during the second EFA conducted, namely E5 (0.178), SN2 (0.188), I21 (0.193), and E2 (0.195). A PAF rotation and oblimin extraction method was used during the second EFA. These items will be excluded from the dataset for further analysis. A third EFA was conducted to further analyse the communalities to determine the amount of factors to extract (see Table 11 below).

Table 11: *Third Conducted Communalities with PAF Extraction and Oblimin Rotation Method*

Item	Extraction
E4_1	.092
E3_1	.134
E10_1	.158
I5_1	.195
C24_1	.220
C29_1	.231
E12_1	.239
SN1_1	.254
I3_1	.271
C3_1	.282
C15_1	.293
I1_1	.302
SP34_1	.306
SN30_1	.308
I15_1	.315

SN3_1	.327
C2_1	.342
C5_1	.343
SP28_1	.343
SP15_1	.379
SP33_1	.391
I17_1	.392
SN17_1	.414
SP21_1	.431
SP8_1	.450
SP18_1	.480
SN35_1	.494
SN12_1	.506
SN27_1	.507
I14_1	.510
SP35_1	.530
SP30_1	.570
I7_1	.615

It is evident as seen in Table 11 above that four communality items were unacceptably low. These items include E4 (0.092), E3 (0.134), E10 (0.158), and I5 (0.195), and will thus be excluded from the dataset for further analysis. A fourth and final EFA was conducted to determine the final suitable items for analysis, see Table 12 below.

Table 12: *Fourth Conducted Communalities with PAF Extraction and Oblimin Rotation Method*

Item	Extraction
C24_1	.223
C29_1	.240
SN1_1	.269
I3_1	.283
C3_1	.293
SN30_1	.300
C15_1	.310
C5_1	.313
I15_1	.315
SP34_1	.315
C2_1	.330
SN3_1	.338
I1_1	.357
SP28_1	.366
SP15_1	.372
I17_1	.376
SN17_1	.384

SP33_1	.405
SP21_1	.434
SP18_1	.455
SN12_1	.469
SP8_1	.476
I14_1	.496
SN35_1	.517
SP30_1	.591
SN27_1	.592
SP35_1	.597
I7_1	.629

The final communality values, as illustrated in Table 12, were all above 0.2. Thus, the remaining 28 communality values were all acceptable and included in the dataset for further EFA. The following sections provides an explanation as to how many factors will finally be extracted.

4.2.2. Total variance explained and number of factors to extract

The number of factors to extract depends on the results of the total variance explained. The Eigenvalues were used to identify which factors have a value of >3. See Table 13 below for an illustration of the total variance explained along with the corresponding Eigenvalues.

Table 13: Initial Total Variance Explained and Eigenvalues

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	29.611	19.228	19.228	29.017	18.842	18.842
2	11.004	7.145	26.373	10.389	6.746	25.589
3	6.437	4.180	30.553	5.821	3.780	29.369
4	5.857	3.803	34.356	5.258	3.414	32.783
5	3.823	2.482	36.839	3.195	2.075	34.858
6	3.746	2.432	39.271	3.132	2.034	36.892
7	3.118	2.024	41.295			

As seen in Table 13, seven factors have Eigenvalues of >3. Considering that the theoretical number of factors to extract is empirically six, and the cumulative percentage

of the TVE is 39.27% of the six factors extracted, the delivered TVE is not ideal. The process was iterated until five factors were extracted.

4.2.3. Factor structure

The Pattern Matrix provides an illustration of the initial six extracted factors, along with the item loadings. The extraction method used is the PAF with oblimin rotation and Kaiser normalisation.

Table 14: *Initial Pattern Matrix and Item Loadings*

Item	Factor					
	1	2	3	4	5	6
C1_1	-.086	.226	.146	.249	-.122	-.113
I1_1	.135	-.091	-.160	-.126	.411	.135
N1_1	.218	.258	.041	-.202	-.055	-.190
SN1_1	-.208	.423	.052	.027	-.039	-.067
C2_1	-.014	.135	.484	.046	-.098	-.047
N2_1	-.118	.481	-.118	.091	.020	-.137
C3_1	-.129	.256	.338	-.032	.053	.039
C4_1	-.035	.446	.199	.154	-.213	-.187
SP4_1	.469	-.331	.242	.069	.091	.012
E2_1	.060	-.247	.141	-.181	.090	-.151
SN2_1	.064	.171	.037	-.022	.143	-.331
N3_1	.083	-.310	.133	-.126	.432	.116
C5_1	.006	.053	.521	-.194	-.109	-.019
SN3_1	.079	.332	.250	.110	.003	-.077
E3_1	-.049	.071	-.039	-.707	-.061	.143
C6_1	.437	.143	.028	-.050	.163	-.055
N4_1	-.045	.606	-.183	-.133	-.054	-.009
SN4_1	.503	-.295	.192	.115	.088	-.004
I2_1	.205	.035	-.117	-.328	.044	.018
C7_1	-.093	.597	-.066	-.080	.022	.026
SP6_1	.340	.060	-.099	-.369	-.017	.110
E4_1	-.036	-.013	.184	-.468	.021	.130
C8_1	-.113	.051	-.061	-.336	.532	.183
SN6_1	.166	.037	.011	-.097	.138	-.357
C9_1	.220	.038	.011	-.168	.342	.032
SN7_1	.429	-.007	.063	-.048	.264	.018
C10_1	-.212	.587	.127	-.141	-.001	-.013
SP8_1	.689	.179	-.135	-.145	-.151	.023
SP9_1	.212	.128	-.181	-.505	-.054	-.186

SN8_1	.442	-.264	-.053	-.059	.055	.028
C11_1	.442	.036	-.112	-.041	.037	-.058
I3_1	.241	-.170	.006	-.073	.301	-.002
SP10_1	.045	.200	.160	.159	.352	-.249
I4_1	.148	-.312	-.149	-.272	-.196	-.185
C12_1	-.014	.582	-.024	.105	.038	-.133
SP12_1	.055	.111	-.079	-.208	.071	-.411
SN10_1	.108	.007	-.247	-.335	.034	.011
C13_1	.250	.011	-.067	-.465	-.029	.036
N6_1	-.022	.436	-.001	.013	-.058	-.044
SP13_1	.135	-.165	.174	-.039	.026	-.472
SP14_1	.143	.443	.316	.037	-.005	.071
C14_1	.063	.010	-.083	-.034	.648	.105
E5_1	.127	.315	.214	-.038	.014	.101
C15_1	.159	.002	.505	.044	-.059	-.047
I5_1	-.239	-.159	.124	.114	.379	-.308
SP14_A_1	.350	-.029	-.129	-.083	.367	.059
SP15_1	.586	-.186	.059	.082	.112	.067
C16_1	.637	.050	.006	-.090	.106	-.124
SP16_1	-.141	.641	-.008	.073	.097	-.052
SN11_1	.096	.005	.492	-.090	-.189	.016
N7_1	.058	-.384	-.022	-.251	-.025	-.254
SN12_1	.222	-.373	.097	-.181	.152	-.183
E6_1	.069	.254	-.192	-.078	.428	-.130
N8_1	-.041	.061	.579	-.048	-.036	-.136
SP17_1	.139	.160	-.349	-.238	.270	-.123
SP18_1	.603	.066	-.026	-.100	.120	-.029
E7_1	.263	.249	-.054	-.220	.250	-.188
N9_1	.423	-.216	.083	-.090	.169	-.053
SN13_1	.618	.052	-.067	-.056	.082	.006
I6_1	-.113	-.052	.066	-.518	.012	-.105
SP19_1	.136	.390	.015	.107	-.076	.296
SP20_1	.235	-.108	.324	-.090	.177	-.059
SN14_1	.313	-.030	-.108	-.394	.119	-.043
SP21_1	.451	-.217	.024	-.022	.109	-.217
I7_1	.019	.018	-.072	-.159	.675	-.024
SN15_1	.088	.232	-.032	.123	.602	-.114
I8_1	.008	.553	.013	-.044	-.031	-.049
C18_1	.089	-.139	-.122	-.061	.552	.006
SN16_1	-.188	.085	-.006	.152	.441	-.384
SN17_1	-.091	.577	-.011	-.020	-.091	.053
N10_1	.073	.462	.242	-.026	.229	.257
SN18_1	.396	-.239	.042	.016	.253	-.027
C19_1	.337	.188	.031	-.077	.100	-.353
SN19_1	.547	-.260	.180	-.068	.166	.042

SP23_1	.093	.076	.090	-.378	.206	-.235
SP24_1	-.023	-.024	.114	-.573	.062	.057
SN20_1	.040	.012	.143	-.170	.310	-.411
SP25_1	.299	-.138	-.022	-.023	.516	-.003
E8_1	-.241	.571	.043	-.064	-.171	-.110
SN21_1	.178	.041	-.393	.078	.167	-.153
SN22_1	.204	.064	-.315	-.163	.260	-.169
I9_1	.448	.018	-.208	-.212	.127	.010
SP26_1	-.017	.208	-.033	-.773	.079	-.040
I10_1	.418	-.078	-.399	.004	.126	.084
SP27_1	.148	.104	-.386	-.079	.139	.015
C21_1	.126	-.053	.139	-.445	-.034	-.158
SN23_1	.085	-.077	.113	-.418	-.044	-.134
N11_1	.087	.624	.055	.117	.242	-.049
SP28_1	.493	.005	-.056	-.007	.058	-.182
C22_1	.029	.256	.235	.229	.025	-.055
SP29_1	.063	.633	.124	-.002	-.080	-.012
SP30_1	.649	.012	.015	-.103	.018	-.083
SN25_1	.092	.105	.023	-.725	-.013	.083
N12_1	.413	-.369	-.028	-.016	.205	.078
I11_1	.374	-.477	.018	-.155	.041	.039
SP31_1	-.059	-.073	.037	-.678	-.090	-.046
SN26_1	.311	-.068	.080	-.124	-.050	-.321
I12_1	.638	.138	-.025	-.046	-.169	-.255
SP32_1	.364	.014	-.475	.003	-.016	-.079
N13_1	.290	-.037	.056	-.141	-.118	-.247
C23_1	.039	.368	.238	.077	.087	.266
SP33_1	.553	-.038	.114	-.109	.064	.038
SN27_1	-.044	.494	.275	.040	.033	-.001
C24_1	-.038	.211	.307	.132	-.052	-.037
E9_1	.222	-.328	.081	-.207	.029	.091
SP34_1	.358	-.196	.196	-.041	.029	-.278
N14_1	.009	-.087	-.115	-.049	.748	.043
SP35_1	.585	.125	-.085	-.068	.055	-.067
SP36_1	-.002	.531	.106	.163	.135	.294
C25_1	.344	-.183	.050	-.082	.009	-.347
E10_1	.097	-.038	.026	-.463	-.028	-.172
I13_1	.013	.011	-.060	-.559	-.003	-.025
C26_1	.515	-.283	.018	-.016	.171	.003
SP37_1	.068	-.019	-.169	-.623	-.021	-.086
SN28_1	-.049	-.238	.131	-.377	.032	-.160
N15_1	.462	-.472	.008	-.006	.224	.097
I14_1	.206	-.210	-.025	-.063	.506	-.012
SP38_1	.471	-.401	.058	-.034	.193	.095
I15_1	.081	-.058	-.106	-.039	.352	-.298

E11_1	.009	-.075	-.129	-.074	.763	.018
SP39_1	.069	.039	.607	-.158	-.051	.050
SN29_1	.049	-.232	.224	-.421	.151	.144
I16_1	-.055	.627	.044	.071	.077	.137
N16_1	.047	.099	-.057	.044	.616	-.071
I17_1	.041	-.052	-.166	-.152	.478	-.124
SP40_1	.101	-.203	.045	-.455	.047	-.083
E12_1	.090	-.126	.003	-.367	-.046	-.023
SP41_1	.033	-.217	-.104	-.454	-.012	-.164
SP42_1	.180	.073	-.165	-.336	.165	.017
SP43_1	.299	-.127	.017	-.329	-.066	-.280
C27_1	.074	.000	.144	-.367	.132	.029
SP44_1	.102	.450	.383	-.049	.199	.211
SN30_1	.078	.364	.229	.156	-.136	-.101
I18_1	.092	.007	.008	-.501	.002	-.056
I19_1	.281	-.328	-.049	-.017	.210	-.092
SN31_1	-.051	.288	.000	-.426	.093	-.071
I20_1	.160	-.232	.264	-.150	.125	.035
SN32_1	.069	.318	.453	.165	-.020	-.052
N17_1	-.044	-.013	-.031	-.538	.169	-.084
N18_1	-.022	-.141	-.024	-.525	.182	-.093
C28_1	.460	.084	-.114	-.218	-.003	-.078
SP47_1	.150	.361	.150	.322	-.033	-.019
C29_1	-.123	.154	.384	-.051	.005	-.029
SP48_1	-.010	.456	.325	.063	-.025	.080
SN33_1	.001	.501	.089	.073	.175	.434
I21_1	.049	-.149	-.195	-.065	.024	-.275
I22_1	.124	.395	.155	.026	.127	.115
SN34_1	.068	.117	-.101	-.100	.280	-.440
SP49_1	.111	.120	-.260	-.272	.148	-.148
I23_1	.018	-.041	-.206	-.293	.259	-.171
C30_1	.147	.592	.023	.068	-.036	.220
C31_1	.074	.192	-.048	.069	.583	-.138
SN35_1	-.125	.558	.015	-.018	-.008	-.085
E13_1	.305	-.056	-.078	.021	.178	-.221

Extraction Method: Principal Axis Factoring.
Rotation Method: Oblimin with Kaiser Normalization.
a. Rotation converged in 43 iterations.

Table 14 provides an illustration of the six distinct factors and their item loadings. The loadings were required to be at least 0.3, with cross-loadings which delivered 0.3 on more than one factor (if the loadings were less than 0.5 apart, the item was disregarded), and no-loadings which delivered less than 0.3. Factor 1 contains nine item loadings, with

twelve cross-loadings of other items which range between -.331 and -.475. Factor 2 consists of seven items, with eleven cross-loadings in the range of -.310 and .501. Factor 3 comprises six items with five cross-loadings, between the range of .316 and -.475. Factor 4 contains four items, with four cross-loadings ranging from .340 and -.369. Factor 5 has seven items with six cross-loadings in the range of -.310 and .441, and Factor 6 had no items which solely loaded on this factor, however seven cross-loadings were identified between the range of -.310 and .501.

The rotation converged in 43 iterations. Eleven items did not load satisfactorily on any factor. These items were eliminated in the next EFA conducted, and the process was iterated until items loaded satisfactorily on a single factor. A total of 160 items were eliminated, as they either delivered no-loadings, cross-loadings, or wrong loadings on the factors. The process was iterated to obtain the final Pattern Matrix. The extraction method in PAF with the oblimin, Kaiser Normalisation rotation method. Rotation converged in 21 iterations. Items E3, E4 and E10 were excluded in the third conducted EFA due to no-loadings. Item I5 had a low communality, and E12 had a wrong and negative loading. These items were omitted for the final EFA.

Table 15: Final Total Variance Explained and Eigenvalues

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings ^a
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	6.590	23.535	23.535	6.021	21.503	21.503	4.682
2	2.852	10.186	33.721	2.249	8.033	29.536	2.558
3	1.813	6.475	40.196	1.234	4.409	33.944	3.040
4	1.385	4.946	45.142	.815	2.911	36.855	4.224
5	1.330	4.749	49.891	.724	2.586	39.441	1.529

Finally, five factors were extracted to deliver the highest Eigenvalue of 23.53 and the lowest of 4.74. The total variance explained is 49.89% for the Afrikaans SAPI. When factors are correlated, the sums of squared loadings cannot be added to obtain a total variance. The fourth and final Pattern Matrix and item loadings are presented in Table 16.

Table 16: Final Pattern Matrix with Item Loadings

	Factor				
	1 - Social P	2 - New Factor (SN and C)	3 - Social N	4 - Intellect	5 - Conscientiousness
I1_1	.027	.135	-.069	.522	-.213
SN1_1	-.117	.095	.402	-.012	.103
C2_1	-.052	.438	-.062	-.080	.246
C3_1	-.116	.097	.224	.036	.413
C5_1	-.007	.038	.025	.009	.547
SN3_1	.014	.570	.032	.048	.042
SP8_1	.749	-.018	.061	-.090	-.018
I3_1	.060	-.071	-.074	.454	.086
C15_1	.100	.070	-.128	-.087	.504
SP15_1	.320	.121	-.127	.175	.023
SN12_1	.188	-.270	-.331	.190	.249
SP18_1	.612	.112	-.030	.106	-.074
SP21_1	.365	-.109	-.198	.221	.168
I7_1	-.118	.004	.064	.872	.068
SN17_1	.052	.146	.559	-.043	-.003
SP28_1	.590	-.084	-.024	-.020	.028
SP30_1	.691	-.084	-.011	.083	.130
SP33_1	.462	.227	-.241	.114	-.055
SN27_1	-.042	.710	.183	.071	-.028
C24_1	-.074	.338	-.029	-.122	.164
SP34_1	.319	-.037	-.188	.160	.209
SP35_1	.799	-.018	.184	.033	-.047
I14_1	.100	.050	-.206	.549	-.091
I15_1	.160	-.142	.069	.438	.026
I17_1	.074	-.095	.109	.548	-.092
SN30_1	.085	.442	.142	-.147	-.005
C29_1	.003	.068	.202	-.070	.371
SN35_1	.086	.070	.720	.049	.069

Extraction Method: Principal Axis Factoring.
 Rotation Method: Oblimin with Kaiser Normalization.
 a. Rotation converged in 16 iterations.

A total of 5 factors were extracted, and it seems items from SN and C combined to form factor 2. The other factors seem more salient. Factor 1 (SP) has nine items, Factor 2

(combined SN and C) has five items, Factor 3 (SN) consists of four items, Factor 4 (I) contains six items, and Factor 5 (C) has four items. Thus, a total of 28 items were retained, which load satisfactorily on the five distinct factors.

4.3. STATISTICAL RELIABILITY

The Cronbach Alpha coefficient was used to evaluate the statistical reliability of the five identified factors. The Cronbach alpha was based on the number of items of the corresponding factor. See Table 17 below for an explanation of the reliability analysis of each distinct factor.

Table 17: *Statistical Reliability and Alpha Coefficients of the 5 Extracted Factors*

Factor	Cronbach's Alpha	N of Items
SP	.849	9
Combined SN and C	.693	5
SN	.208	4
I	.772	6
C	.486	4

Table 17 indicates the Cronbach alpha of Factors 1 to 5, whereas Factor 1, Social relational positive, has a high reliability coefficient of $>.8$. Thus, Factor 1 will be retained as it delivers a high internal consistency. Factor 2, combined Social relational negative and Conscientiousness, will be retained although it is under 0,7. This factor will be retained since this is an exploratory study. The Cronbach alpha of Factor 3, Social relational negative, will be disregarded due to its low reliability value. Factor 3 is valid, although it is not reliable. A high reliability value $>.7$ is indicated for Factor 4, Intellect. Factor 4 will be retained. Factor 5, Conscientiousness, will be disregarded due to the low alpha of .486. Factor 5 is valid, however it is not reliable. Thus, three factors are retained, namely SN, combined SN and C, and I (Cronbach alphas >0.7). The factor with the highest reliability value is Factor 1, with a reliability value of .849. The lowest reliability value is Factor 3, SN, with a reliability value of .208, followed by Factor 5, C, with a low reliability value of .486.

Table 18: *Descriptive Statistics of the Afrikaans SAPI*

Item	Mean	Sd	Skewness	Kurtosis
Social Relational Positive	4.0079	.46190	-.412	1.762
Social Negative Conscientiousness	2.8328	.63835	.194	-.031
Intellect Openness	4.0755	.48100	-.020	-.338

It is evident in Table 18 that most participants agreed with the positive variables (SP and IO), as value 4 was predominantly selected on the 1 to 5 Likert scale, whilst SN/C were mostly disagreed with, with value 2 selected on the 5 point Likert scale of the questionnaire. It can be concluded that most factors are providentially normally distributed.

4.4. PRODUCT-MOMENT CORRELATION

The Product-moment correlation coefficient results are reported in Table 19. The correlation coefficients indicated relate to the retained factors, namely Factor 1 (SP), Factor 2 (combined SN and C), and Factor 4 (I). Therefore, the Pearson product-moment correlation was used in this study.

Table 19: *Correlation Coefficients between the Three Retained Factors*

	Social Relational Positive	Social Negative Conscientiousness	Intellect/ Openness
Social Relational Positive	1	*	*
Social Negative/ Conscientiousness	-.175*	1	*
Intellect/ Openness	.536**	-.322**	1

* Correlation is statistically significant at the 0.05 level (2-tailed).

** Correlation is both statistically and practical significant at level >0.10 (small effect), >0.3 level (medium effect), and >0.5 level (large effect).

It is evident in Table 19 that Factor 4, Intellect/Openness has a strong, positive statistical and practical correlation with Social Relational Positive (.536**), and medium, negative statistical and practical correlation with Social Relational Negative/Conscientiousness (-.322**). Acceptable convergent and divergent validity is evident, with not too high correlations (0.9 and higher) or too low correlations (0.1 and lower).

4.5. MANOVA

MANOVA's were conducted to determine if there are evident differences in the experience of the remaining variables (Factors 1, 2 and 4) in terms of age, gender, qualifications, marital status and province. See Table 20 (MANOVA's) and Table 21 (ANOVA) respectively.

Table 20: MANOVA - Differences in Age, Gender, Economic Status, Marital Status, Province, and Qualifications

Effect	Value	F	Hypothesis df	Error df	Sig.	Partial Eta Squared
Age	.853	2.630	12.000	510.922	.002	.051
Gender	.982	1.224 ^b	3.000	197.000	.302	.018
Economic status	.993	.437 ^b	3.000	197.000	.727	.007
Marital status	.918	.928	18.000	543.543	.545	.028
Province	.883	.891	27.000	552.620	.626	.041
Qualifications	.823	1.415	27.000	552.620	.082	.063

a. Design: Intercept + Age, Gender, Economical status, marital status, province, qualifications

b. Exact statistic

c. The statistic is an upper bound on F that yields a lower bound on the significance level (Age)

Table 20 illustrates statistical significance differences with Factor 2 (SN/C) after a Wilk's Lamda analysis was conducted ($p < .05$). It is evident that statistical significance exists with the different age groups. The detailed differences are explored and illustrated in Table 21 below.

Table 21: ANOVA - Differences on Age Groups (2016)

Dependent Variable		Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Social Relational Positive	18 to 25	3.950	.058	3.836	4.064
	26 to 35	3.929	.077	3.777	4.081
	36 to 45	4.078	.091	3.899	4.258
	46 to 55	4.076	.063	3.952	4.200
	56 to 65	4.054	.104	3.850	4.258
Social Negative / Conscientiousness	18 to 25	2.869	.078	2.716	3.023
	26 to 35	2.964	.104	2.759	3.169
	36 to 45	3.123	.122	2.882	3.364
	46 to 55	2.664	.085	2.497	2.831
	56 to 65	2.580	.139	2.305	2.855

Intellect / Openness	18 to 25	4.156	.060	4.038	4.274
	26 to 35	4.037	.080	3.880	4.194
	36 to 45	3.897	.094	3.713	4.082
	46 to 55	4.059	.065	3.930	4.187
	56 to 65	4.133	.107	3.923	4.344

It was found that the statistical significant differences are only evident with Factor 3 (SN/C). Evidently, the different age groups do not experience Factor 1 (SP) nor Factor 4 (I/O) differently. However, the age group of 36-45 years seem to experience Factor 2 (SN/C) the most, whilst the age group of 56-65 years' experience Factor 2 (SN/C) the least.

5. DISCUSSION

The purpose of this study was to investigate the psychometric properties of the Afrikaans version of the South African Personality Inventory (SAPI). This section aims to interpret and discuss the results from the analyses, in line with the three empirical objectives of this study, as mentioned in Section 1.4.

Research Objective 1: To determine the item functionality of the Afrikaans version of the SAPI

It is important to ensure that the items of the SAPI are not redundant, and that it enhances the quality of the psychometric instrument by adding significant value. The Skewness value provides an indication of the randomly selected Likert scale items from 1 to 5 by participants, where no clear dominant value between 1 and 5 is evident. The Skewness score should ideally be between -2 and 2 (Maree K. , 2016). The Kurtosis value signifies the same value selected by the majority of the participants on the Likert scale of 1 to 5. The Kurtosis score should ideally between -4 and 4 (Maree, 2016). The ideal Skewness and Kurtosis scores would indicate a normal data distribution (West, Finch , & Curran, 1995).

The following items reported a high Kurtosis of >4 , namely, SP1, SP2, SP3, SP7, and SP45 which means that most participants selected the same values with these items distinctively. When looking at the Mean scores of SP1 (“I make others feel comfortable”), E1 (“I talk a lot”), and SP45 (“I relate well to others”), it seems most participants selected value 4 (agree). It means most participants agreed with these items. This can be due to the social desirability of the item. Lalwani, Shavitt, and Johnson (2006) states that social desirability is prevalent in various different types, which is determined by culture. In a social environment, people tend to adapt tactics of behaviour which are appropriate in a social environment, to create a favourable self-concept (Mtshelwane, Nel, & Brink, 2016). Social desirability consists of two factors namely self-deception and impression management. These items may also generate participants to utilise impression management tactics so that participants present themselves in a favourable light. A reason for social desirability can be assigned to the desire to be perceived as intellectual, in order for the particular individuals to achieve the desired outcomes which is beneficial to them, through their displayed behaviour (Mtshelwane, Nel, & Brink, 2016). In addition, impression management can be defined as a conscious effort to control or regulate information to influence an audience’ impressions (Leary, 2019).

Moreover, the Mean scores of SP2 (“I help others when they are in need”), SP3 (“I listen to other people’s problems”), and SP7 (“I guide people in life”) are all 1, which means that most participants strongly disagreed with these items. This can be due to the items being too ambiguous or un-descriptive, as the individuals might not have understood these items clearly. However, this statement might not be applicable for items SP3 and SP7, as these items delivered high Skewness scores, which indicate that these items have been randomly selected. Item C17 (“I work in an organised manner”) shows high Kurtosis and Skewness, which means that most participants selected the same value at random with this item. The Mean score of C17 (4.52) indicates that the most participants selected values 4 (agree) or 5 (strongly agree) on the Likert scale.

The Mean score for the 188 SAPI items is $M=3.54$, which means that the participants understood the SAPI questionnaire essentially. This means that that the most items which was agreed or disagreed with, is in good balance. Additionally, items were not

discriminated too much in terms of the chosen values on the Likert scale (1 to 5) when the questionnaire was answered by the participants. The lowest reporting Mean score is $M=1.36$ of SP19 (“I teach people ways of doing things”), which means that most of the participants strongly disagreed with this item. The reasons for this might include misunderstanding of the question (translation error), or a sense of disposition of the white Afrikaans population (against the white Afrikaans social norm).

According to Coetzee (1981), errors of translation should be differentiated from the use of social or regional dialects. To iterate, SP19 in Afrikaans stated “Ek leer mense maniere om dinge te doen”. The word “maniere” in Afrikaans means “manners”. This could easily have been misinterpreted by the participants as teaching others manners or etiquette. On the other hand, the second reason for this item delivering a low Mean score, could be assigned to the participants avoiding going against the acceptable social norms of not teaching others how to do things. Marx and Milton (2011), emphasises the contextuality of whiteness and the importance of considering the different geopolitical locations, along with its intersections and the interconnecting axes of colonialism, gender, nationality, class, politics, and sexuality of transnationalism. In addition, these researchers state that white Afrikaans identities in South Africa have battled to reposition themselves after Apartheid.

Moreover, the highest reporting Mean score of SP11 (“I understand other people”) is $M=4.79$, which means that most participants strongly agreed with this item on the 5-point Likert scale than any other item. The upper end of the scale contains the majority of the item responses for this item (higher than 3). This can be attributed to one of two reasons. Firstly, participants responded in a socially desirable way. According to Laher (2013), an awareness of the inner self of participants is shown, based on social feedback and their life experiences. Secondly, most of the participants who answered this item, really believe they have a good understanding of people.

Communalities refer to the extent to which items measure the same construct, or the proportion of variance which is free of error variance and is shared with other variables in the matrix (Yong & Pearce, 2013). According to MacCallum et al. (1999), it is essential for items to be included in the final EFA to have satisfactory communality values, as the quality of the factor analysis result increases exponentially with communality increases.

A total of 17 items with communalities of $<.20$ were excluded for further data analysis to ensure a factor solution of high quality. The process was iterated until the items were excluded from the dataset for further analysis. These items show low correlation with the rest of the items, which means these items do not fit with the other items in the instrument.

The item with the lowest Communality value of $.073$ is DN10 (“There has been at least one occasion when I failed to return something I borrowed”). This item rather measures social desirability impression management, and mainly the integrity of an individual. In addition, four items which form part of the Extraversion construct, reported low Communalities, namely: E2 (“I laugh a lot”), E3 (“I have good social skills”), E5 (“I have many friends”), and E10 (“I make jokes with everyone”). One item, N5 (“I worry a lot”), forms part of the Neuroticism construct. With the above-mentioned items, self-concept should be taken to account. According to Laher (2013), individuals are necessarily not likely to perceive themselves in an undesirable manner, especially where negative emotions are taken into consideration. The low Communality value of this item indicates the unsuitability to describe personality in this context.

Eight items which form part of the Social-relational construct, reported low Communalities, namely: SP2 (“I help others when they are in need”), SP5 (“I am a friend one can rely on”), SP11 (“I understand other people”), SP22 (“I talk to others to resolve differences”), SP46 (“I tell the truth”), SN2 (“I threaten people”), SN5 (“I behave in an arrogant manner”), and SN24 (“I only think of myself”). These items relate to acceptable ways of behaviour in a social context. Van der Westhuizen (2019) argues that White Afrikaans speaking individuals, as the disposition in society previously established, remain masked of the normativity that whiteness obtains in social imaginary. Thus, the low Social-relational Communality items indicate low correlation to self-description and personality measurement in the Afrikaans culture. These items will likely not be reliable to include in the measurement instrument.

Finally, the remaining three items for exclusion due to low communality values, include C20 (“I am hard-working”), I5 (“I understand things easily”), and I21 (“I find education important”). C20 forms part of the construct of Conscientiousness, whereas I5 and I21 forms part of the construct of Intellect/Openness. The items relate to work-related behaviour and intellectuality. Thus, these items rather measure intellect and work-related

interests of the White Afrikaans speakers than their personality. It can be seen as an indication of the Afrikaans group who lacks to emphasise these behaviours when describing their personalities. These items should be excluded from the measurement instrument.

Research Objective 2: To determine the construct validity and reliability of the Afrikaans version of the SAPI

After items have been disregarded due to low communalities, factor loadings of the questionnaire were identified. Initially, the Pattern Matrix illustrated various item cross-loadings, wrong loadings, and no-loadings on the initial six factors of the SAPI. The extraction method used is the PAF with oblimin rotation and Kaiser normalisation. Items with cross-loadings, no-loadings or wrong loadings have been omitted for the final EFA. The item loadings should be at least .3 for inclusion, if cross-loadings delivered 0.3 on more than one factor (if the loadings were less than 0.5 apart), the item was disregarded). No-loadings which delivered less than 0.3 have also been disregarded.

More SP items loaded on Factor 1 than any other items, of which other items cross-loaded on this factor. The items which cross-loaded on SP Factor 1, include: C19 (“I put things back on their proper place”), N12 (“I feel emotions deeply”), SN14 (“I challenge people in front of others”), C25 (“I stay focused on my tasks”), I10 (“I seek adventure”), I11 (“I am curious about the world”), SN26 (“I hide from others who I really am”), and N15 (“I can deal with difficulties in my life”). A combination of SN and C items loaded more on Factor 2 than any other items, of which other items cross-loaded on SN/C Factor 2, including: SP4 (“I forgive others when they have hurt me by mistake”), SP44 (“I take responsibility for my mistakes”), SP47 (“I give my attention to others”), N3 (“I am calm in most situations”), SP14 (“I value others for what they are”), N12 (“I feel emotions deeply”), SP48 (“I encourage people to develop”), N15 (“I can deal with difficulties in my life”), I11 (“I am curious about the world”), and SP38 (“I make time for others”).

In addition, more SN items loaded on Factor 3 than any other items of which other items cross-loaded on SN Factor 3, which includes SP14 (“I value others for what they are”), SP44 (“I take responsibility for my mistakes”), SP48 (“I encourage people to develop”), I10 (“I seek adventure”) and SP32 (“I am a source of inspiration to people”). More I items loaded on Factor 4 than any other items, of which SP6 (“I consider others’ needs”), SN14 (“I challenge people in front of others”), SP47 (“I give my attention to others”), and C8 (“I check for errors in work that has been done”) cross loaded on I Factor 4. More C items loaded on Factor 5 than any other items, of which other items cross loaded on C Factor 5, which includes SP14 (“I value others for what they are”), SN16 (“I have taken things that do not belong to me”), I5 (“I understand things easily”) and SN20 (“I only care about my own things”). The cross-loadings can be ascribed to various reasons. Firstly, the ambiguous nature (wording) of the items might account for cross-loadings, as it can cause measurement of more than one factor (Gendall & Hoek, 1990). Secondly, certain items might be too long, which might cause confusion for the participants. Thirdly, items might be misinterpreted, as Gendall and Hoek (1990) state that a question can be asked in various different ways, but by changing one word, a question’s entire meaning can change as well.

In total, fourteen items did not load satisfactorily on any of the factors. These items were omitted for the final EFA, and the process was iterated until items loaded satisfactorily on a single factor. The process was iterated to obtain the final Pattern Matrix. The extraction method used was PAF with the oblimin, Kaiser Normalisation rotation method. The no loading items can be ascribed to poor fit with any of the factors, or the inability of the item to find relevance with any of the extracted factors. Moreover, Item I5 had a low communality, and E12 had a wrong and negative loading. The Extraversion, as well as Neuroticism items are evidently scattered into all five factors, with no dominant item loadings on one factor, which is why there is no E nor N Factors. In contrast, SN and C items are predominantly measured, as Factor 2 measures combined Sn and C, Factor 3 also measures SN items, and Factor 5 also measures C items. This can be due to the misinterpretation of the items, as participants construct a pragmatic meaning which includes their own interpretation of the main theme of the question, the reason for it being asked, and what the acceptable answer should be (Schaeffer & Presser, 2003). Another reason might be the wrongful development of the items for the wrong factor.

The internal consistency of the test scores of the four extracted factors is expressed by Cronbach's Alpha, and was calculated by means of SPSS (IBM Corporation, 2017). Reliability measures the consistency of a factor, to determine whether the factor can be replicated in the future or not (de Souza, Alexandre & Guirardello, 2017). It was noted that the Alpha coefficient decreased exponentially as the number of items decreased. In addition, de Souza et al. (2017) state that the partial Alpha increase can be ascribed, in part, to the total scale items. The highest internal consistency value of the test scores of this research study was $\alpha = .849$ for Factor 1 (SP), and the lowest internal consistency of $\alpha = .208$ for Factor 3 (SN). The second lowest internal consistency of $\alpha = .486$ was Factor 5 (C). The high internal consistency value can be ascribed to Taylor (2004) also found in her study of the construction of a South African five-factor personality questionnaire on the White Afrikaans group, high reliability coefficients of Openness $\alpha = 0.91$, and Conscientiousness $\alpha = 0.94$. Good internal consistency coefficients can each, distinctively, be seen in the Afrikaans SAPI version as the result of factors which inter-correlate highly due to common constructs being measured somewhat consistently. The high internal consistency values can be attributed to the social-relational constructs White Afrikaners evidently identify with. The two factors to be excluded, SN and C, reported exceptionally low reliability values. This can be attributed to inconsistent measurement of these constructs, as White Afrikaners reportedly did not identify with SN or C to such a great extent.

Thus, Factors 3 (SN) and 5 (C) showed adequate construct validity, however no reliability. Construct validity can be described as the link between constructs and observations and measurements, and the extent to which a test measures what it is supposed to measure (Dikko, 2016). In this case, Factors 3 and 5 distinctively measure what is intended to be measured, however these factors do not produce consistent results under consistent conditions. Therefore, Factors 3 and 5 are valid measures, however it will not be possible to replicate this in a future study. Thus, only Factors 1 (SP), 2 (combined SN/C), and 4 (I) is retained for further exploration.

Research Objective 3: To determine the relationships between the constructs of the Afrikaans SAPI translated version and to identify differences in the experience of these constructs by the different demographics.

The final descriptive statistics indicate that the final constructs of the Afrikaans SAPI version include: (1) SP, (2) combined SN and C, and (3) I/O. The White Afrikaans participants of this study primarily agreed with the positive factors of SP and I/O, as they have selected value 4 on the Likert scale from 1 to 5 for both these factors. This can be ascribed to their individualistic nature, as mentioned earlier. Individualistic cultures tend to be more independent with strong values of formality and self-efficacy (Van Dyk & De Kock, 2004). The group's social desirability, and impression management can also be contributing factors for them agreeing to positive SP and I/O items. In contrast, most of the participants selected value 2 on the 5-point Likert scale (disagree) when the negative variable of SN was tested. This can be due to the ambiguity of the items which can cause a misinterpretation of the questions, or impression management. Fortunately, a normal distribution of the dataset is maintained.

The correlation matrix indicates that Factor 1 (SP) has a small, negative statistical and practical correlation (-.175) with Factor 2 (SN/C). This indicates that a person who tends to possess social relational positive characteristics, is unlikely to have social relational negative traits. Valchev et al. (2014) found that the White group in their study also attained a higher score on social-relational scales, as well as negative impression management. On the other hand, Factor 4 (I/O) has a strong, positive statistical and practical correlation (.536) with Factor 1 (SP), which means that a person who tends to be intellectual/open, is likely to be more social relational positive. This indicates the strong relational emphasis placed on intellect and openness by the White Afrikaans culture. Thus, a person who is resilient is more likely to be pleasant, amicable, and avoidant of conflict and meddlesome relations. And finally, Factor 4 (I/O) has a medium, negative statistical and practical correlation (-.322) with Factor 3 (SN/C). This means that if individuals who tend to be intellectual/open, will likely not be social relational negative or conscientious. This observation is supported with the findings made by Fetvadjev et al. (2015), in which Conscientiousness and Openness did not correlate strongly as two distinct SAPI factors. Mostly, the factor correlations of the Afrikaans version of the SAPI were adequate,

however it is not identical to the factor correlations of the original SAPI. Acceptable convergent and divergent validity can be concluded, as the correlations are not too high (>.9) or too low (<.1). The acceptable convergent and divergent validity values can be ascribed to the theoretical interrelated nature of the constructs, and thus also, the uniqueness of each construct which has been differentiated from one another.

Finally, the difference between the age, economic status, marital status, province, and qualifications of the White Afrikaans group was examined for the three remaining factors. A significant difference was evident with only Factor 2 (SN/C) ($p < .05$) after conducting a Wilk's Lamda analysis. Evidently, the statistical significant difference exists only amongst the age groups, whereas individuals of 36-45 years of age experience SN/C the most. Individuals of 56-65 years of age experience SN/C the least. According to Specht, Egloff, and Schmukle (2011), age has a curvilinear influence on mean levels of personality. In addition, personality changes occur throughout the lifespan of an individual, however more significant changes occur in young and old ages due to social demands and experiences (Specht, Egloff, & Schmukle, 2011). In this study, individuals between 36-45 years of age experience SN/C the most. The reason for this being that individuals in this age group tend to experience mid-life turmoil frequently, and seem susceptible to SN experiences. Individuals of this age group also tend to be more conscientiousness, as they have a need for achievement and are committed to work at this age (Witt, Burke, Barrick, & Mount, 2002). Lastly, individuals from different age groups do not experience SP or I/O differently. This finding can be attributed to the fact that these constructs are generally experienced and understood in the same manner by the majority of the individuals.

6. PRACTICAL IMPLICATIONS

One of the many benefits of having a valid and reliable instrument which can be administered in all 11 official South African languages is that the individuals can understand it more easily due to its availability in their home language. This study served to investigate the Afrikaans version of the SAPI, with focus on its psychometric properties of the white Afrikaans group. Organisations and qualified practitioners can use this

measuring instrument in a culturally informed way for various reasons, namely (1) recruitment and selection, (2) career guidance, (2) career development, (3) management development, (4) talent management, and (5) coaching. The Afrikaans version of the SAPI will provide the necessary support to organisations and cater for their recruitment needs, which will more accurately determine which position is more suited for which personality.

The preliminary factor structure presented good internal consistency with the exclusion of two factors which had inadequate statistical reliability values. This study established a solid foundation for further exploration to validate the Afrikaans version of the SAPI in the future. The further validation can particularly focus on item functionality, construct validity and reliability and relationships between the constructs and the demographic variables. The final validation of the Afrikaans SAPI version will provide a personality measurement instrument that is indigenous in nature and applicable to the rich multicultural context of South Africa.

This study emphasised the importance of considering linguistic and translation barriers in order to deliver a valid assessment measure in a rich multicultural context such as South Africa. It is crucial to stay focused on the intended personality underpinnings of the measurement, to ensure their accurate measurement. The research can be further used in other research which concerns either psychometric measurements of personality or translation challenges. The Afrikaans version of the SAPI can potentially add organisational value by providing information which is scientifically tested to be valid and reliable, and with employee behaviour which is self-reported. The SAPI is a valid and reliable measurement instrument which combines a valid questionnaire design with careful statistical modelling (Presser et al., 2004).

7. LIMITATIONS

The proposed study faces multiple limitations which include the research design, contextual challenges, the length and duration of the questionnaire, the impact of translation on cultural equivalence and the limited availability of prior research. The restricted accessibility of the sample, due to the purposive sampling technique used and

the literacy level considered, contributed to the moderately small sample size of $N = 201$. This limits the generalisability of the research (Maree, 2016). The random sample of only white Afrikaners, who were mostly females, can also be of concern as it does not represent the entire white Afrikaner population. The lengthy questionnaire consisted of 188 items and took on average 35 minutes to complete. This was also a limitation as it may have discouraged some participants from completing it successfully. The online method of gathering data in particular delivered data sets which were invalidated by the incompleteness of the answers, thereby influencing the research results.

Next, cultural equivalence is not necessarily guaranteed by linguistic or translation equivalence as language is not the only determinant of culture. Thus, even though the Afrikaans SAPI version may represent a sufficient part of the Afrikaans population, cultural barriers should be considered when interpreting the results of the various translated versions of the SAPI. The wording and the items need to be understandable by the participants for the questionnaire to be interpreted correctly. The different dialects of Afrikaans spoken in various locations could therefore also be a limitation as individuals could have a different interpretation of certain phrases. This was not clearly evident, however.

Aspects such as personality and demographical factors might have had a substantial impact on the participants' responses. Therefore, the study's results might be impacted by personality factors (e.g., agreeableness) and demographic factors (e.g., age and gender) which might cause interpretive differences between cultures. Social desirability as seen by different genders could also have had a negative impact on the results of the study, which revealed that participants may have provided answers which leaned towards social desirability or impression management.

Next, the researcher's attempt to assure anonymity of the participant responses, does not guarantee free divulging of information without caution. The caution of participants to freely share information might have an impact on the collected information's richness. This may be due to the participants' perspectives of the results of the study possibly reflecting undesirably on their culture, hence not supporting complete answers. Finally, the statistical analysis method followed was EFA due to the limited sample size and the impracticality of performing a CFA. The CFA would have been beneficial for this study in

that it would have provided a measurement instrument which was scientifically proven to be valid and reliable.

8. RECOMMENDATIONS

8.1. RECOMMENDATIONS FOR FUTURE RESEARCH

In view of the limitations of this study, increasing the sample size in a replication of the study would make it possible to generalise the findings to the white Afrikaans population in the process of validating the Afrikaans SAPI instrument. It is also advisable to include Coloured Afrikaners to ensure demographically representative results for the entire Afrikaans speaking community. Mainly females participated in the study, between the ages of 18 to 25 (31.8%) and 46 to 55 (26.9%) from the Gauteng (43.8%) or Mpumalanga (42.8%) provinces. It would be recommended for future studies to use a stratified sampling technique in the future to ensure a representative sample of the South African profile.

A solely paper-based method is recommended rather than including an online questionnaire, due to technological constraints in the South African context. A large part of the population may have been excluded due to the online data collection process, and participants who may not be familiar with the online assessment user interface. The online completion of the questionnaire has also proved to be less valid, as many participants failed to complete the entire questionnaire. This can be avoided with a paper-based questionnaire. The high Skewness and Kurtosis results indicate that several items may have been misinterpreted due to ambiguity arising from direct translation from English to Afrikaans. The Afrikaans SAPI items can be reviewed, rephrased and adapted to eliminate the misinterpretation of the questions, also by ensuring short and clear items. Research can be extended to include research on the Afrikaans culture (white and Coloured groups), and to establish personality similarities and differences between these groups based on their responses in the Afrikaans SAPI version.

8.2. RECOMMENDATIONS FOR PRACTICE

By referring to the practical implications mentioned earlier, it is suggested that the item functionality, construct validity and reliability, and relationships between the constructs and the demographic variables should be explored further for validation of the Afrikaans measuring instrument. It is recommended that practitioners who use the SAPI scrutinise the culture-fitness of the Afrikaans SAPI in organisations. It is important to ensure good culture appropriateness of an instrument when practitioners measure personality traits (Foxcroft, Paterson, Le Roux, & Herbst, 2004). When a construct measures behavioural traits, it is recommended to use a measuring instrument in the language which the test takers are most comfortable using. The literacy of the test-takers should be considered when administering the instrument and interpreting the results, so as to make provision for illiterate participants before administering the assessment.

9. CONCLUSION

This study examined the psychometric properties of the Afrikaans SAPI version. The results showed that 28 items had satisfactory item loadings. Three factors that showed adequate statistical reliability have been retained: Factor 1 (SP), Factor 2 (combined SN and C), and Factor 4 (I/O). Valchev et al. (2014) found that the social-relational factor forms an integral part of defining personality in the South African context, and this was also evident in the results of this study, which showed that white Afrikaners attach immense importance to social-relational factors. The dataset consisted predominantly of female participants (77.1%), which means that results could have been biased if the female participants were more likely than males to avoid answers that are not aligned with the norms of society. The results of this study indicate that there is room for further exploration of the validity of the Afrikaans SAPI version, specifically pertaining to item functionality, construct validity and reliability, and relationships between the constructs and the demographic variables.

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APPENDIX A: RAYMOND CATTELL'S 16 PERSONALITY FACTORS

Below is a table outlining the personality traits measured by the 16PF Questionnaire.

Descriptors of low range	Primary factor	Descriptors of high range
Impersonal, distant, cool, reserved, detached, formal, aloof	Warmth (A)	Warm, outgoing, attentive to others, kindly, easy-going, participating, likes people
Concrete-thinking, less intelligent, lower general mental capacity, unable to handle abstract problems	Reasoning (B)	Abstract-thinking, more intelligent, bright, higher general mental capacity, fast-learner
Reactive emotionally, changeable, affected by feelings, emotionally less stable, easily upset	Emotional Stability (C)	Emotionally stable, adaptive, mature, faces reality calmly
Deferential, cooperative, avoids conflict, submissive, humble, obedient, easily led, docile, accommodating	Dominance (E)	Dominant, forceful, assertive, aggressive, competitive, stubborn, bossy
Serious, restrained, prudent, taciturn, introspective, silent	Liveliness (F)	Lively, animated, spontaneous, enthusiastic, happy-go-lucky, cheerful, expressive, impulsive
Expedient, nonconforming, disregards rules, self-indulgent	Rule-Consciousness (G)	Rule-conscious, dutiful, conscientious, conforming, moralistic, staid, rule-bound
Shy, threat-sensitive, timid, hesitant, intimidated	Social Boldness (H)	Socially bold, venturesome, thick-skinned, uninhibited
Utilitarian, objective, unsentimental, tough-minded, self-reliant, no-nonsense, rough	Sensitivity (I)	Sensitive, aesthetic, sentimental, tender-minded, intuitive, refined
Trusting, unsuspecting, accepting, unconditional, easy	Vigilance (L)	Vigilant, suspicious, skeptical, distrustful, oppositional
Grounded, practical, prosaic, solution oriented, steady, conventional	Abstractedness (M)	Abstract, imaginative, absentminded, impractical, absorbed in ideas
Forthright, genuine, artless, open, guileless, naive, unpretentious, involved	Privateness (N)	Private, discreet, nondisclosing, shrewd, polished, worldly, astute, diplomatic
Self-assured, unworried, complacent, secure, free of guilt, confident, self-satisfied	Apprehension (O)	Apprehensive, self-doubting, worried, guilt-prone, insecure, worrying, self-blaming
Traditional, attached to familiar, conservative, respecting traditional ideas	Openness to Change (Q1)	Open to change, experimental, liberal, analytical, critical, freethinking, flexibility
Group-oriented, affiliative, a joiner and follower dependent	Self-Reliance (Q2)	Self-reliant, solitary, resourceful, individualistic, self-sufficient
Tolerates disorder, unexacting, flexible, undisciplined, lax, self-conflict, impulsive, careless of social rules, uncontrolled	Perfectionism (Q3)	Perfectionistic, organized, compulsive, self-disciplined, socially precise, exacting will power, control, self-sentimental
Relaxed, placid, tranquil, torpid, patient, composed low drive	Tension (Q4)	Tense, high-energy, impatient, driven, frustrated, over-wrought, time-driven

Primary Factors and Descriptors in Cattell's 16 Personality Factor Model (Adapted from Conn & Rieke, 1994).