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Adult Hope Scale: validation in older adults

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ABSTRACT

Objective: The Adult Hope Scale (AHS) is a widely used measure of hope and is reported to contain two distinct but interrelated constructs of agency (motivation to achieve goals) and pathways (planning routes to goals). Hope is thought to play a key role in the wellbeing of older people and while the AHS has been validated in young/middle-aged adults, the factor structure remains to be tested in older adults.

Method: Using computer-assisted personal communication, the AHS was completed by 1454 older Australians (726 F, age (mean (sd)) = 66.4 (5.81) y, range 55–84 y) stratified according to gender, location (metropolitan vs non-metropolitan), retirement status (yes/no) and age (55–65 vs 65 + y). Dimensionality was tested by (i) bifactor modelling (one-factor, two-factor and a bifactor model with a general factor, Hope, and two specific factors, Agency and Pathways) and (ii) exploratory graph analysis (which uses community detection algorithms to cluster variables into factors). Cross-gender invariance was also tested. Hope scores were compared between demographics and wellbeing (i.e. WHO-5 mental wellbeing and positive/negative coping questionnaire) groupings.

Results: Both bifactor modelling and exploratory graph analysis reveal that the AHS is unidimensional. Gender was shown to be invariant. Hope scores were comparable between demographic groupings, but higher scores were observed in older adults with higher mental wellbeing and positive coping with effect sizes in the small to medium range.

Conclusions: This study confirms that the AHS is a unidimensional scale and can be used to reliably measure hope in older Australian men and women.

KEY POINTS

What is already known about this topic:

(1) Hope plays an important role across the lifespan.
(2) The Adult Hope Scale (AHS) has been validated in young/middle aged adults.
(3) The AHS is reported to contain two factors: Agency and Pathways.

What this topic adds:

(1) The AHS is a unidimensional rather than a bidimensional scale in older adults.
(2) It is validated for use in older Australians.
(3) The presence of a single dimension is confirmed by two independent approaches: bifactor modelling and exploratory graph analysis.

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Hope; AHS; older adults; factor analysis; validation

Introduction

Hope is an enduring resource that underpins resilience, adaptability, and fulfilment and is thought to play an important role in maintaining wellbeing across the lifespan. In older adults, hope is associated with proactive and protective behaviours, life satisfaction and better physical and mental health (Barnett, 2014; Chan, Ng, et al., 2024; Ferguson et al., 2017; Khan et al., 2023; McLaren et al., 2024; Moraitou et al., 2006; Ong et al., 2006; Trezise et al., 2018; Wrobleski & Snyder, 2005). A widely used measure to assess hope is The Adult Hope Scale (AHS) (also known as the Dispositional Hope Scale, Hope Scale and Trait Hope Scale) (Snyder et al., 1991). The AHS contains two subscales based on Snyder et al. (1991) theory that hope is a " ... positive motivational state that is based on an interactively derived sense of successful agency (goal-directed energy) and pathways (planning to

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Table 1. Studies examining the factor structure of the AHS.

Author	Country	Sample size(s)	Setting	Mean Age (SD)
Abdel-Khalek and Snyder (2007)	Kuwait	323	College students	F = 21.0 (2.5)y *M* = 21.6 (2.7)y
Ahmed and Duhamel (1994)	Canada	160	College students	NR
Arndt (2004)	US	185	College students	21.8 (6.2)y
	Mexico	232		21.0 (2.8)y
Babyak et al. (1993)	US	955, 472, 630, 696	College students	NR
Ben Ayad et al. (2024)	Morocco	1150	College students	20.0 (2.6)y
Bernardo (2010)	Philippines	210[A], 268[B]	College students	[A]16-23y & [B]16-21y
Brouwer et al. (2008)	Netherlands	676	College students, delinquents & psychology clients	F = 25.8 (8.4)y *M* = 30.7 (11.3)y
Bryant and Cvengros (2004)	US	351	College students	19.8 (3.3)y
Creamer et al. (2009)	Australia	1025	PTSD patients	38.4 (13.7)y
Espinoza et al. (2017)	Spain	290	General & clinical population	34.6 (13.1)y
Galiana et al. (2015)	Spain	242	College students	20.4 (2.1)y
Gallagher et al. (2024)	US	3498	College students	21.5 (4.6)y
Gana et al. (2013)	France	310	General population	F = 27.9 (12.1)y *M* = 27.1 (9.9)y
Gomez et al. (2015)	Australia	670	General population	35.3 (14.2)y
Khodarahimi (2013)	Iran	300	General population	F = 37.9 (10.7)y *M* = 42.4 (11.4)y
Krafft et al. (2020)	Switzerland	4,177	General population	18–80+y
Li et al. (2018)	China	765	College students	19.7 (1.1)y
Marques et al. (2014)	Portugal	1012	High school students	16.2y
McCarter (2006)	US	104	Social service providers	22-68y
Moraitou et al. (2006)	Greece	150	Community centre	60-74y = 103 75-93y = 47
Pacico et al. (2013)	Brazil	450	High school students	16.8 (3.4)y
Park and Kim (2017)	Korea	171	Stroke patients	53.7 (13.8)y
Pleeging (2022) [D]	Netherlands	996	General population	55y
Roesch and Vaughn (2006)	US	1031	College students	20.4 (2.4)y
Rogers et al. (2024)	US	603,	College students	19.0 (1.8)y
		602	Online workers	40.1 (13.4)y
Smedema et al. (2013)	US	242	Spinal cord injury	44.6 (13.2)y
Snyder et al. (1991)	US	955, 635, 475, 875, 641, 339,	College students	NR
		97	Psychology outpatient	NR
		109	Psychology inpatient	NR
Steed (2002)	Australia	347	College students	F = 21.8 & *M* = 22.2
Sun et al. (2012)	China	345,	University staff	30.3 (4.2)y
		250,	College students	21.1 (1.3)y
		90	Cancer patients	55.0 (15.0)y
Venning et al. (2009)	Australia	3913	High school students	13-17y

NR = Not reported.

meet goals)" (p. 571). Accordingly, when examining the construct validity of the AHS most but not all studies report a two-factor solution – Agency and Pathways – with four questionnaire items loading onto each of the factors. However, most studies have validated the AHS in young/middle-aged adults (see Table 1). To date, only Moraitou et al. (2006) have examined the factor structure of the AHS in older adults, and while they report a two-factor solution, the item loadings differ substantively from those recommended by Snyder. Explanations for the difference in factor loadings remain unclear, but it is possible that older adults may conceptualise hope differently due to accumulated life experiences and changes to coping strategies and adaptive mechanisms: i.e., hope may function differently across developmental periods. Studies that include a developmental lifespan perspective of hope are limited, however literature examining hope and health suggests that positive reappraisal and finding meaning are important for maintaining hope in older adults (Duggleby et al., 2012). Examination of AHS items suggests that they measure "cognitive appraisal" but less so "finding meaning". Thus, it is possible that the Agency and Pathways factors may become less distinct with age. Overall, it remains unclear if findings from previous studies examining the factor structure of the AHS generalise to those for older adults and, moreover, for different cohorts such as older Australians.

Review: AHS factor structure

In an unstructured review of the literature using keyword searches and examination of reference lists in published articles, we identified 30 studies (English language; including two doctoral theses) that have assessed the factor structure of the AHS (see Tables 1 and 2). Studies have been undertaken in 17 countries, with participant numbers ranging from 90 to 4,177.

Table 2. Recommended factor-structure of the AHS.

Author	Factor Analytic Approach	Cronbach's a (Total score)	Agency & Pathways r-value	Item Rating Scale (points)	Factor Solution
Abdel-Khalek and Snyder (2007)	PCA (?)	.67	0.67	4	2
Ahmed and Duhamel (1994)[A]	PAF	.50	N/A	NR	1
Arndt (2004)[B]	One vs Two-Factor PAF	.71 (US)	NR	8	2
		.82 (Mexican)	N/A	8	1
Babyak et al. (1993)	One vs Two-Factor & 2nd Order CFA	NR (A/P = .96–.99)	NR	4	2
Ben Ayad et al. (2024)	Two-Factor CFA	.85	NR[G]	8	2
Bernardo (2010)[C]	One vs Two vs Three vs Four-Factor & 2nd Order CFA	.69	N/A	4	1
Brouwer et al. (2008)	One vs Two vs Bifactor CFA	NR	(2-factor = .91)[H]	8	1
Bryant and Cvengros (2004)	One vs Two-Factor CFA	NR	.68	8	2
Creamer et al. (2009)	One vs Two-Factor & 2nd Order CFA	.88	NR	4	2
Espinoza et al. (2017)	One vs Two-Factor vs 2nd Order vs Bifactor CFA	.89	N/A	8	1
Galiana et al. (2015)	One vs Two-Factor vs 2nd Order vs Bifactor CFA	.83	(2-factor = .93)[H]	4	1
Gallagher et al. (2024)	One vs Two-Factor CFA	NR	NR	8	2
Gana et al. (2013)	One vs Two-Factor CFA	.78	.78	8	2
Gomez et al. (2015)	One vs Two vs Bifactor CFA	.84	(2-factor = .80) [H]	4	1
Khodarahimi (2013)[D]	CFA	.90	N/A	8	1
Krafft et al. (2020) [E]	CFA	.89	NR	NR	2
Li et al. (2018)	One vs Two-Factor vs 2nd Order vs Bifactor CFA	.86	NR	8	1
Marques et al. (2014)	One vs Two-Factor CFA	.82	.68	4(?)	2
McCarter (2006)	Two-Factor CFA	.83	.84	8	2
Moraitou et al. (2006)	PCA	NR (A = .86 & *p* = .76)	.43	5	2
Pacico et al. (2013)	EFA and CFA	.80	N/A	5	1
Park and Kim (2017)	One vs Two-Factor CFA	.88	NR[G]	4	2
Pleeging (2022) [F]	NR (CFA?)	.87	NR	7	2
Roesch and Vaughn (2006)	One vs Two-Factor CFA	NR	.82	8	2
Rogers et al. (2024) [G]	Two-Factor CFA	.89	.85	6	2 (Long form)
		.83	.66	6	2 (Short form)
		.89	.72	8	2 (Long form)
		.91	.89	8	2 (Short form)
Smedema et al. (2013)	One vs Two-Factor CFA	NR (A = .87 & *p* = .84)	NR[G]	8	2
Snyder et al. (1991)	Two-factor PCA	.74–.84	.38–.57	4	2
Steed (2002)	Two-Factor CFA	NR (A = .68 & *p* = .68)	.86	4	2
Sun et al. (2012)	One vs Two-Factor CFA	NR	.69 (Staff)	8	2
			.54 (Students)	4	
			.60 (Patients)	8	
Venning et al. (2009)	Two-factor PCA	.83	NR	8	2

Note: A = Agency and *p* = Pathways. N/A = Not applicable. NR = Not reported. CFA = Confirmatory Factor Analysis, EFA = Exploratory Factor Analysis, PAF = Principal Axis Factoring, and PCA = Principle Component Analysis. [a]Item loadings not equivalent to those proposed by Snyder et al. (1991). [b]Constrained and unconstrained CFA was also undertaken to test cross-cultural structural equivalence. [c]Bernardo (2010) extended the AHS by adding three external Locus-of-Hope subscales, each containing eight items: external-family, external-peers, and external-spiritual. Analyses revealed that the combined questionnaire contained four factors with all the AHS items loading onto their own unique factor. [d]Filler items were included in the factor analyses. [e]Krafft et al. (2020) extended the AHS by adding the Perceived Hope Scale (PHS), which contains six items. Analysis revealed that the combined questionnaire contained three factors with the four Agency items and four Pathways items each loading onto separate factors. [f]Factor structure of a short-form AHS was tested with two items each loading on the Pathways and Agency subscales. [g]Factor structure of the short and long-form AHS are reported. [h]In their two-factor modelling, Ben Ayad et al. (2024), Park and Kim (2017) and Smedema et al. (2013) report cross factor loadings between Agency and Pathways of 0.86, 0.95 and .86, respectively.

Analytical approaches to factor analysis include confirmatory factor analysis (CFA), principal component analysis (PCA), and exploratory factor analysis (EFA) or a variant, such as principal axis factoring (PAF). Studies that have used CFA mostly report that a two (Agency and Pathways) compared to a one-factor (Hope) solution is optimal (Babyak et al., 1993; Bryant & Cvengros, 2004; Creamer et al., 2009; Gallagher et al., 2024; Gana et al., 2013; Krafft et al., 2020; Marques et al., 2014; McCarter, 2006; Park & Kim, 2017; Roesch & Vaughn, 2006; Smedema et al., 2013; Sun et al., 2012). Of note is that two of the studies reporting a two-factor solution added a correlated error component to improve the model fit, raising the possibility of overfitting (Babyak et al., 1993; Smedema et al., 2013). Two of the studies which have used CFA have also tested whether the first-order factors, Agency and Pathways load onto a second-order factor, Hope. Both studies report a two-factor solution, with a second-order factor pointing to the presence of a higher-order latent variable that only emerges when Agency and Pathways act together (Babyak et al., 1993; Creamer et al., 2009). Four studies have also used CFA but constrained modelling for the testing of only a two-factor solution. These studies confirm two-factor solutions with acceptable model fits (Ben Ayad et al., 2024; McCarter, 2006; Rogers et al., 2024; Steed, 2002). Two studies have also validated short-form versions of the AHS. Both report satisfactory two-factor model fits but with different item loadings (Pleeging, 2022; Rogers et al., 2024).

Rather than comparing the model fit to one versus two-factor solutions, several studies have not constrained the number of factors when undertaking factor analyses. One study used PAF and found that a one rather than a two-factor solution was optimal but containing only six of the eight AHS items (Ahmed & Duhamel, 1994). A further study also used PAF to explore factor structure and report a two-factor solution in the US but a one-factor solution in Mexican students, pointing to a cultural difference in the factor structure (Arndt, 2004). Two studies have used EFA and reported one-factor solutions (Khodarahimi, 2013; Pacico et al., 2013) while four using PCA reported two-factor solutions (Abdel-Khalek & Snyder, 2007; Moraitou et al., 2006; Snyder et al., 1991; Venning et al., 2009). Of the studies that have used PCA, Moraitou et al. (2006) are the only group to date to have examined the factor structure of the AHS in older adults (150 Greek adults aged 60 + y). Despite observing a two-factor solution, Moraitou and colleagues report item loadings different to those proposed by Snyder et al. (1991) and, in particular, two rather than four items loading onto "Agency" (AHS7 and AHS8) and five rather than four items loading onto "Pathways" (AHS1, AHS2, AHS3, AHS4 and AHS6) including two of which were previously held to be Agency items under Snyder's original-scale formulation (AHS2 and AHS6). They also report item cross-loadings (AHS5). Alternatively, several groups have used bifactor models to examine factor structure. This approach allows for the item variance to be partitioned between general and specific factors and is useful when the questionnaire measures a unidimensional construct (i.e., Hope) but also has distinct subdimensions (i.e., Agency and Pathways). The findings from studies that have compared one-factor, two-factor and bifactor (and multi-factor) models mostly support a bifactor solution, with items loading onto a general factor, Hope but not specific factors, i.e., Agency and Pathways (Brouwer et al., 2008; Espinoza et al., 2017; Galiana et al., 2015; Gomez et al., 2015). In contrast, one study found that a two-factor rather than a one or bifactor solution was the best model fit (Park & Kim, 2017), while a second study found that a bifactor solution that included a general Hope factor and two specific factors, Agency and Pathways, was the best model fit (Li et al., 2018).

Despite the various factor analytical approaches, inspection of model fits suggests that they are typically acceptable with little difference between one- and two-factor estimates. Thus, making it difficult to confirm the optimal solution. In addition, Agency and Pathways scores are often highly intercorrelated, while the two-factor cross-loadings for solutions are typically high (see Table 2). These issues raise concerns regarding the AHS and its multidimensionality. As an alternative to traditional approaches, the recent application of network analyses to factor analytics has led to new methods for estimating questionnaire dimensionalities such as exploratory graph analysis (EGA) (Golino et al., 2017). EGA uses community detection algorithms to cluster variables into factors, thereby avoiding the need for a priori decisions regarding the number of factors (e.g., parallel analysis or scree plots), and, as well, the need to clarify structure by rotating the factor matrix (e.g., Varimax) thereby making item cross-loading less problematic (Christensen & Golino, 2021). EGA is thought to be useful when the factor structure is unclear and when analysing ordinal data – as is the case with the AHS (Markos & Tsigilis, 2024). EGA has been recently used to explore the dimensionality of the Loneliness Scale in older adults (Lee et al., 2023), Multidimensional Schizotypy Scale in young adults (Christensen et al., 2019), Life Satisfaction Scale in older adults (Dominguez-Vergara et al., 2024) and the

Strengths and Difficulties Questionnaire in Aboriginal and/or Torres Strait Islander children (Santiago et al., 2021). EGA has yet to be used to examine the factor structure of the AHS.

Item scoring AHS studies

A challenge when interpreting AHS findings is that studies have used different item scalings and different response anchors (see Tables 1 and 2). Snyder et al. (1991) original study utilised a 4-point Likert-type rating scale, with response anchors ranging from 1 = definitely false to 4 = definitely true. This has been used by 10 groups (Babyak et al., 1993; Bernardo, 2010; Creamer et al., 2009; Galiana et al., 2015; Gomez et al., 2015; Moraitou et al., 2006; Park & Kim, 2017; Steed, 2002; Sun et al., 2012). By contrast, other groups have used different scaling and response anchors including a 5-point scale (totally false to totally true) (Moraitou et al., 2006; Pacico et al., 2013), a 6-point rating scale (strongly disagree to strongly agree) (Rogers et al., 2024), a 7-point rating scale (completely disagree to completely agree) (Pleeging, 2022), and an 8-point rating scale (definitely false to definitely true) (Arndt, 2004; Ben Ayad et al., 2024; Brouwer et al., 2008; Bryant & Cvengros, 2004; Espinoza et al., 2017; Gana et al., 2013; Khodarahimi, 2013; Li et al., 2018; McCarter, 2006; Roesch & Vaughn, 2006; Smedema et al., 2013; Sun et al., 2012; Venning et al., 2009). In their review of the internal consistency and test–retest reliability of the AHS, Hellman et al. (2013) report higher internal consistency for studies using the 8-item versus 4-item response format. As a general comment, including a neutral option such as can be achieved by a 5-point scale is reported to improve psychometric properties in non-socially sensitive questionnaires (Kankaraš & Capecchi, 2024). Increasing the scale range and including a neutral option may be a useful adaptation in future AHS studies.

The effect of demographics and wellbeing on AHS scores

Findings from AHS studies suggest that hope varies with age, education, income, marital status, physical and mental health status and possibly culture/race/ethnicity, SES, retirement status, and geographical location. Hope is reported to increase over 18–29 years-of-age, plateau from 30–64 years of age and then decline after 65 years-of-age (Marques & Gallagher, 2017). Alternatively, Pathways but not Agency is reported to decline with age (Bailey & Snyder, 2007). Marital status is also associated with hope. Married/cohabiting couples report higher hope than separated/divorced/widowed individuals (Bailey & Snyder, 2007) as do married compared to widowed older adults (Marques & Gallagher, 2017; Moraitou et al., 2006) while higher education and income levels and being married are associated with higher hope in patients with post-traumatic stress disorder (Creamer et al., 2009). Financial independence is further predictive of hope. Higher hope reported in financially independent versus dependent retirees (Mishra, 2024). In addition, hope is positively associated with positive financial behaviours such as financial planning and paying off credit cards (Arya et al., 2023). Hope is strongly linked to physical and mental health. Lower hope is reported in US college students undergoing psychological treatment compared to controls (Snyder et al., 1991) and higher hope in adults and retirees is associated with better physical and mental health (Allenden et al., 2018; Barnett, 2014; Gomez et al., 2015; Khan et al., 2023; Trezise et al., 2018; Zhang et al., 2023) while higher Pathway scores are reported to reduce the comorbidity in adults between anxiety and depression (Chan, Ng, et al., 2024). However, not all studies report an association in older adults between hope and physical health (Wrobleski & Snyder, 2005). Nonetheless, in older adults higher hope is associated with generativity, coping, self-efficacy and greater life satisfaction (Moraitou et al., 2006; Wrobleski & Snyder, 2005) and mediate the relationship between social support and loneliness (Zhang et al., 2023) while Agency is reported mediate the relationship between positive emotions and life satisfaction (Chan, Fung, et al., 2024). In contradistinction to the previous positive findings, the findings for cultural/race/ethnicity are mixed with differences in AHS scores reported by some (Flores-Lucas et al., 2023; Gomez et al., 2015; McCarter, 2006; Pleeging, 2022), but not all studies (Bailey & Snyder, 2007; Gallagher et al., 2024; Roesch & Vaughn, 2006). The association between SES and hope is under-researched, but Agency and Pathways are reported to play an important role in connecting social class to wellbeing in young and middle-aged, but only Pathways in older Chinese adults (Shi & Jiang, 2024). Regarding geographical locations, the findings

are also limited and mixed. Higher hope scores are reported in urban versus rural South Africans (Boyce & Harris, 2013) but the reverse in Greek participants (Moraitou et al., 2006). In contrast to the preceding demographics, measurement invariance is typically reported for gender. Similar AHS scores and factor structures have been reported by most studies which have compared genders including those examining patients with PTSD, college students, individuals undergoing psychological treatment, and the general population (Bailey & Snyder, 2007; Creamer et al., 2009; Gallagher et al., 2024; Gana et al., 2013; Marques et al., 2014; Pacico et al., 2013; Roesch & Vaughn, 2006; Snyder et al., 1991). Other studies have reported small but significant group differences with higher Hope and especially Agency scores in males (Boyce & Harris, 2013; Sadeghi et al., 2020). Finally, the AHS is reported to have good convergent validity. This has been tested in older adults (DiGasbarro et al., 2020; Wrobleski & Snyder, 2005) and mixed age samples which have included older adults (Krafft et al., 2020) but it is noted that the sample sizes of studies involving older adults have been small (e.g., DiGasbarro et al., 2020: $n = 64$; Wrobleski & Snyder, 2005: $n = 100$). The impact of demographics and the convergent validity of the AHS in older adults remains to be more fully explored.

Research aims and hypotheses

The aim of the current study was to examine the factor structure of the AHS in a large sample of older Australians using a bifactor model and EGA. The study will also test whether factor structure is invariant to gender and explores the effect of demographics and wellbeing measures on AHS ratings.

Method

Participants and procedure

This study examined demographic, wellbeing and AHS responses obtained from a larger study conducted in 2020 examining psychological wellbeing and financial decision-making of older Australians in times of uncertainty (Arya et al., 2023; Lowies et al., 2022). Participants were recruited through the Edith Cowan University Survey Research Centre, who were interviewed using computer-assisted personal communication (CATi). To ensure a balanced demographic profile, the sample was stratified according to gender (M/F; 50%/50%), geographical location (metropolitan/non-metropolitan; 60%/40%), retirement status (yes/no; 50%/50%) and age group (55–65/65+y; 60%/40%).

The study was restricted to participants aged 55+ years. Although definitions vary across disciplines and cultures, age 55 was selected as the lower boundary for defining "older adults" as it is often used as a benchmark in psychological and gerontological research examining transitions related to later-life changes. This life stage is coincident with the onset of pre-retirement or early-retirement phases, where life goals, planning, and motivation undergo significant adjustments (Eagers et al., 2018; Mooney et al., 2023). It is also when individuals recognise that their time is limited and aim to maximise emotionally meaningful experiences (Carstensen et al., 1999). Finally, it is an age often used by policy-makers as a benchmark such as the Australian government for early access to superannuation (Moneysmart, 2025).

The following demographic variables were collected: gender (M, F, and Other), age (55–64 y vs 65 + y), retirement status (Yes/No), geographical location (Metropolitan [major city] vs Non-Metropolitan [inner/outer regional]), employment status ((i) Working Part Time, (ii) Working Full Time, (iii) Looking for Work, and (iv) Not Looking for Work), income ((i) Self-Funded Retiree or receiving Superannuation benefits, (ii) Aged or Other Government Pension, (iii) Salaried/Wage Earner, and (iv) Unemployment Support), partnered (Yes/No), and housing status (Homeowner vs Renter). Socioeconomic status (SES) (Table 2) was also assessed using the Australian Government's Socioeconomic Index for Areas (SEIFA), with higher scores indicating higher SES (SEIFA: 1 = low SES to 10 = high SES) (Australian Bureau of Statistics, 2021). The sample was divided into Low (SEIFA 1–3), Middle (SEIFA 4–7) and High (SEIFA 6–10) SES for analyses. An additional measure of wellbeing was also collected: physical health status (Do you have a disability or long-term health condition? Yes/No).

The use of archival data for this study was approved by the University of South Australia ethics committee (#86/2020).

Measures

Adult Hope Scale

The Adult Hope Scale (AHS) (Snyder et al., 1991) is a 12-item self-report questionnaire consisting of four agency, four pathway, and four distractor items (see Table 3). AHS items were rated using a 5-point scale which was adopted to allow for a neutral response option (Kankaraš & Capecchi, 2024). In order to provide a more flexible and content-dependent response and to encourage participants to reflect on their experiences rather than claiming absolute truths, the following response keys were used: "1 = applies very well, 2 = applies fairly well, 3 = applies neither well or badly, 4 = does not apply well and 5 = does not apply at all". Responses were reverse coded, with higher hope scores indicating higher levels of hope. Estimates of the internal reliability (Cronbach's α) from previous studies for the AHS range from .50 to .99 (see Table 2).

WHO-5 mental wellbeing

Mental health was assessed using the WHO-5 Wellbeing Index, which consists of five questions (e.g., "I have felt cheerful and in good spirits".) rated on 6-point scale (0 = "at no time" to 5 = "all the time") (World Health Organization, 1998). Participants were asked about wellbeing over the past 2 weeks with scores ≤5 in older people indicative of poor mental wellbeing (World Health Organization, 1998). The WHO-5 has demonstrated high internal reliability, with Cronbach's α values typically exceeding .80 (Lara-Cabrera et al., 2022; Omani-Samani et al., 2019). Cronbach's α for the present study was .84.

Coping Index

Coping was assessed using the Coping Index, which asked participants: "Please rate how often you do the following things when you are feeling anxious, stressed or distressed on a scale of 0–3, where 0 is "Not at all" and 3 is "Most of the time" (Stallman, 2019, 2020). The Index contains 10 items assessing negative coping strategies (e.g., drinking alcohol) and nine positive coping strategies (e.g., think about yourself in a kind, encouraging and positive way). Negative items were reverse scored and summed with positive scores to generate a total coping score, with higher scores indicating greater coping. Cronbach's α for the present study was .74.

Statistical analyses

Data were analysed using R Studio (2024.024.1, ©2024 RStudio, PBC). Since Hope Scale items were not normally distributed, Spearman rank correlations (including partial correlations) were used to explore relationships between variables and to form the basis for factor analysis models.

Exploratory analysis

Exploratory factor analysis

Exploratory factor analysis (EFA) using principal axis extraction was used as an initial evaluation of the factor structure. The number of factors was determined using a parallel analysis (comparing eigenvalues to those generated in a comparable simulated dataset rather than using a generic threshold value) (Çokluk Bökeoğlu & Koçak, 2016; Dinno, 2009). Factor loadings are reported for the overall dataset and for gender (female and male) subgroups. Cronbach *α* values are reported across all items, with each item removed.

Exploratory graph analysis

To further investigate the factor structure, exploratory graph analysis (EGA) was conducted. In this network-based psychometric approach, variables (scale items) are represented as nodes, and the strength of the relationships between the variables is represented by the thickness of the edges. An algorithm is applied to obtain the community structure (number of dimensions). First, Unique Variable Analysis examined the dataset for variables that are too highly correlated (redundant), using partial correlations and weighted topological overlap (wTO), with threshold values for redundancy at small to moderate (wTO > 0.20),

Table 3. Median (IQR) hope scores according to demographic and wellbeing measures and results of group comparisons.

Variables	*n*	%	Median (IQR)	Group Comparisons (test-value, *p*-value, effect size (*r*))
Demographic Measures				
Gender[A]				
Female	726	50.1	32.00 (29.00–36.00)	ns
Male	728	49.9	33.00 (29.00–36.00)	
Age group				
55 – 64y	613	42.2	33.00 (29.00–36.00)	ns
65+y	841	57.8	33.00 (29.00–36.00)	
Retirement Status				
Retired	720	49.6	32.00 (29.00–36.00)	ns
Not Retired	731	50.4	33.00 (29.00–36.00)	
Employment Status				
Work part-time	332	22.8	33.00 (29.00–37.75)	Work part-time > looking for work (H(3) = 187.5, $p < .05$, $r = .16$) Work full-time > Looking for work (H(3) = 200.1, $p < .05$, $r = .14$)
Work full-time	412	28.4	33.00 (30.00–36.00)	
Looking for work	47	3.2	30.00 (27.00–35.00)	
Not looking for work	662	45.6	32.00 (28.00–36.00)	
Socioeconomic Index for Areas				
Low	294	20.2	33.00 (29.00–37.00)	
Middle	608	41.8	32.00 (28.00–36.00)	High > Mid (H(2) = 67.4, $p < .05$, $r = .08$)
High	552	38.0	33.00 (30.00–36.00)	
Partnered				
Yes	1062	74.6	33.00 (29.00–36.00)	Yes > No (U = 223,999.0, $p < .05$, $r = .06$)
No	392	25.4	32.00 (28.00–36.00)	
Income				
Government pension	301	21.1	32.00 (28.00–36.00)	Government pension > Unemployment support (H(3) = 307.1, $p < .001$, $r = .20$); Self-funded Superannuated > Unemployment support (H(3) = 376.3, $p < .001$, $r = .21$); Wage earner > Unemployment support (H(3) = 377.3, $p < .001$, $r = .18$)
Self-funded /Superannuated	459	32.2	33.00 (29.00–36.00)	
Wage earner	637	44.7	33.00 (29.00–36.00)	
Unemployment support	27	1.9	27.00 (22.00–31.00)	
Housing Status				
Renter	129	9.0	32.00 (27.00–35.00)	Homeowner > Renter (U = 72,267.0, $p < .01$, $r = .07$)
Homeowner	1311	91.0	33.00 (29.00–36.00)	
Geographic Location				
Metropolitan	889	61	33.00 (29.00–36.00)	ns
Non-Metropolitan	582	39	32.00 (29.00–36.00)	
Wellbeing Measures				
WHO-5 Mental Health				
Poor (≤5)	28	1.9	27.00 (24.00–34.75)	Good > Poor (U = 25936.0, $p < .005$, $r = .40$)
Good (> 5)	1416	98.1	33.00 (29.00–36.00)	
Coping Index[B]				
Low	700	50.5	31.00 (28.00–34.00)	High > Low (U = 273,603, $p < .001$, $r = .27$)
High	685	49.5	34.00 (31.00–38.00)	

(*Continued*)

Table 3. (Continued).

Variables	*n*	%	Median (IQR)	Group Comparisons (test-value, *p*-value, effect size (*r*))
Long-term Health Problem or Disability				
Yes	423	29.1	32.00 (28.00–36.00)	No > Yes (U = 240,417.0, $p < .005$, $r = .08$)
No	1030	70.9	33.00 (29.00–36.00)	

Hope was reversed score with higher scores indicating higher hope. [A]No participant reported "Other" gender. [B]Dichotomised according to the mean score = 36. Effect size: $r = .01$ (small), .30 (medium) and .50 (large).

moderate to large (wTO > 0.25) and large to very large (wTO > 0.30). Second, the EGA model specified graphical least absolute shrinkage and selection operator (GLASSO) and the Louvain algorithm for testing unidimensionality. Third, to check stability, the EGA was re-run with bootstrap resampling (non-parametric approach, 500 samples) (Christensen & Golino, 2021; Golino et al., 2017).

Confirmatory factor analyses

Confirmatory Factor Analysis (CFA) was conducted to compare: (a) a single-factor model; (b) a two-factor structure, proposed by Snyder (1991), with two correlated factors of Pathways and Agency; and (c) a bifactor model that included two orthogonal factors and a general factor. Goodness-of-fit was examined using the chi-square comparative fit index (CFI), root mean square error approximation (RMSEA), and standardised root mean square residual (SRMR). Indicators of a good fit are CFI close to 1.0, RMSEA p-close value <0.05, and SRMR < 0.08. McDonald's Omega quantifies the sum of the squared loadings of the general factor and all the factors used to calculate the explained common variance of the general factor (McNeish, 2018; Viladrich et al., 2017). McDonald's Omega is provided for the Bifactor Model.

Measurement Invariance for gender within the single-factor model was investigated using multi-group factor analysis. First, in a configurational approach, separate models were conducted for males and females. Second, a metric model specified equal factor loadings and allowed for different intercepts. Third, a scalar model specified equal factor loadings and intercepts across groups. These models were compared using comparison thresholds and chi-squared tests (van de Schoot et al., 2012).

Discriminant validity and sensitivity

To test for discriminant validity, we examined whether hope scores differed according to key demographic variables (gender, age, retirement status, employment status, SES, relationship status, income, housing status, and geographical location) and wellbeing measures (mental wellbeing, physical health status, and coping). Group differences were tested where appropriate using either Mann-Whitney or Independent Samples Kruskal Wallis tests. When testing between groups with more than one level, the significance values were adjusted using Bonferroni correction for multiple tests. The formula $r = z/\sqrt{N}$ was used to estimate the effect sizes.

Spearman correlations were used to examine relationships between Hope (Total Score), gender (binary F/M), age (years), WHO-5 Mental Wellbeing, and the Coping Index.

Results

Respondents were removed if they had any missing values on the AHS items ($n = 39$), resulting in a dataset of $n = 1454$ for analysis. The mean age of the participants was 66.4 (SD = 5.8; range = 55–84) y, and 49.9% of the respondents were female. The sample was weighted towards participants from Middle/High SES areas with only 20.2% from a Low SES area. Data was collected from all Australian states and territories (3.4% ACT, 19.7% NSW, 3.4% NT, 20.1% QLD, 13.4% SA, 4.9% TAS, 19.8 Vic and 13.3% WA). The full demographics are reported in Table 3.

Table 4. Trait hope scale (AHS) inter-item Spearman correlations (partial correlations).

		AHS item						
AHS item	Subscale	1	2	3	4	5	6	7
AHS1: I can think of many ways to get out of a jam.	Pathways	–						
AHS2: I energetically pursue my goals	Agency	0.458 (0.237)	–					
AHS3: There are lots of ways around any problem.	Pathways	0.442 (0.181)	0.360 (0.064)	–				
AHS4: I can think of many ways to get the things in life that are important to me.	Pathways	0.448 (0.145)	0.404 (0.106)	0.484 (0.236)	–			
AHS5: Even when others are discouraged, I know I can find a way to solve the problem.	Pathways	0.451 (0.163)	0.385 (0.031)	0.436 (0.129)	0.487 (0.189)	–		
AHS6: My past experiences have prepared me well for my future.	Agency	0.383 (0.063)	0.370 (0.045)	0.400 (0.106)	0.429 (0.090)	0.497 (0.213)	–	
AHS7: I've been pretty successful in life.	Agency	0.328 (0.012)	0.384 (0.095)	0.330 (0.026)	0.390 (0.090)	0.413 (0.082)	0.524 (0.300)	–
AHS8: I meet the goals that I set for myself.	Agency	0.317 (0.011)	0.452 (0.253)	0.298 (0.018)	0.339 (0.032)	0.380 (0.093)	0.409 (0.114)	0.447 (0.212)

Table 5. Standardised factor loadings from principal axis factoring for one- and two-factor models overall and for females and males.

AHS item	Proposed Subscale	Hope	Female	Male
AHS1	Pathways	0.63	0.58	0.68
AHS2	Agency	0.62	0.59	0.66
AHS3	Pathways	0.61	0.59	0.64
AHS4	Pathways	0.67	0.67	0.68
AHS5	Pathways	0.69	0.69	0.70
AHS6	Agency	0.68	0.71	0.65
AHS7	Agency	0.63	0.61	0.65
AHS8	Agency	0.58	0.60	0.56

Exploratory analyses (principal axis factoring)

The inter-item correlations are given in Table 4. These ranged in magnitude from 0.30 to 0.52, with a maximum partial correlation of 0.30 between AHS6 and AHS7.

EFA using the eigenvalue threshold of 1.0 and Horn's parallel analysis suggested retention of a single component (adjusted eigenvalues = 3.76, estimated bias = 0.11). Standardised loadings ranged from 0.58 to 0.69 for all items onto a single factor (Table 5), explaining 41% of the variance, with a significant test of the hypothesis that one factor is sufficient ($\chi^2_{20} = 246.8$, $p < 0.01$). Internal consistency for the single scale was "good" (Cronbach's α = 0.83, if single item removed α = 0.79–0.81). Factor loadings from EFA were relatively consistent for females (0.58–0.71) and males (0.56–0.70) relative to the dataset overall (Table 5).

Exploratory graph analysis

Unique Variable Analysis indicated a single pair of variables, AHS6 and AHS7 that had small to moderate suggested redundancy but not of sufficient magnitude to exclude from analyses (wTO = 0.22).

EGA yielded a network with a mean edge weight of 0.114 (SD = 0.076), and an edge weight range from 0.013 to 0.281. A single community was identified, with the Louvain Method confirming a unidimensional construct (Figure 1). Network loadings were relatively consistent across nodes (HS1 = 0.434, HS2 = 0.443, HS3 = 0.405, HS4 = 0.477, HS5 = 0.492, HS6 = 0.493, HS7 = 0.436, HS8 = 0.389). Bootstrap analysis consistently replicated a single dimension with stability values of 1.0.

Confirmatory factor analyses

CFA yielded significant standardised beta weights between 0.58 and 0.68 across the eight variables (Figure 2). The two-factor correlated model yielded similar, significant standardised beta weights and a strong correlation between the two latent factors (Pathways and Agency, $r = .86$, Figure 2). For the bifactor model, apart from AHS7, standardised beta values were larger for the general latent factor (Hope) compared to the other two latent factors. The path between Agency and AHS7 was significant ($p < 0.05$), and paths

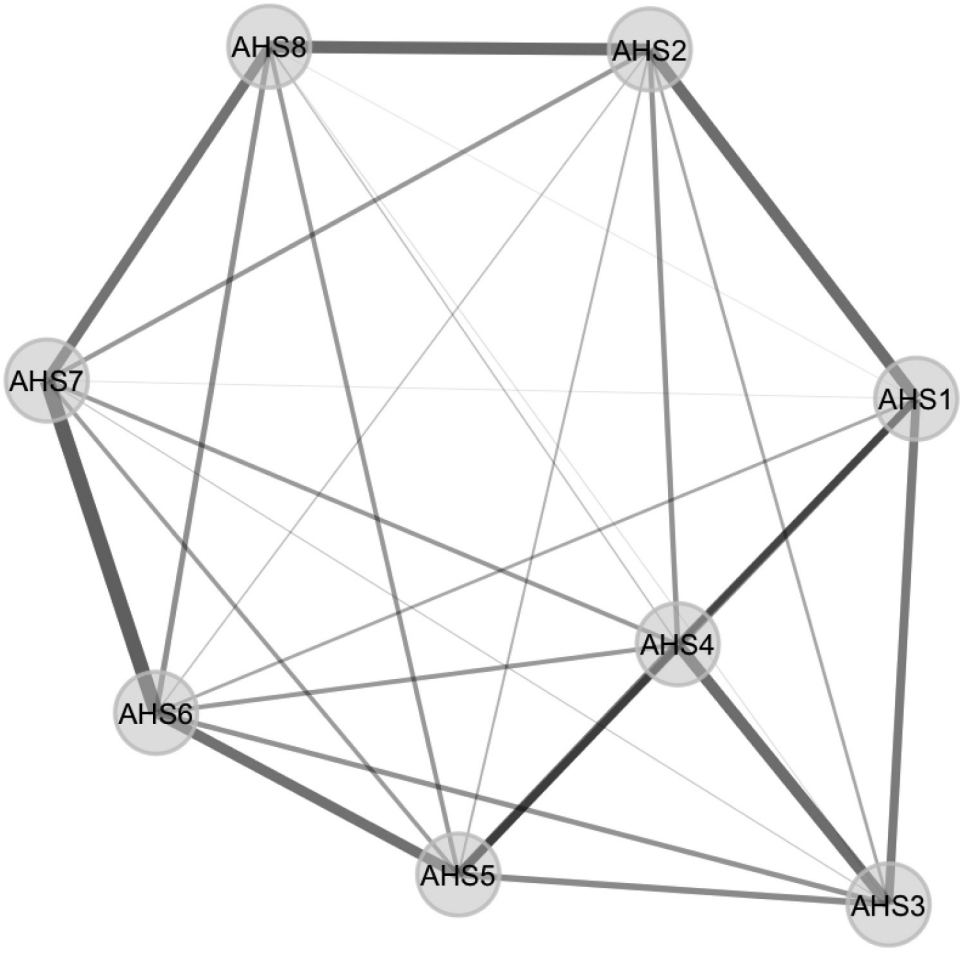

Figure 1. Exploratory graph analysis for relationships between the eight Adult hope scale variables. This network includes eight nodes (light grey circles), which represent the AHS items. There are 28 edges (connecting lines), which represent the relationships between the items, with thicker lines representing stronger relationships between nodes.

between Agency and AHS2, AHS6, and AHS8 were not significant. Paths between Pathways AHS1, AHS3, AHS4 and AHS5 were significant ($p < 0.05$). The general factor, Hope, explained 76% of the common variance. Model fit indices (Table 6) for all three models indicated a good fit (CFI > 0.938, SRMR < 0.08, RMSEA $p \leq .05$, close fit).

Invariance testing

Measurement invariance testing revealed significant differences between the metric and configurational models, and between the scalar and metric models ($p < .01$) by gender. Comparison of model fit indices supported good to excellent measurement metric-invariance and scalar-invariance (Table 7).

Discriminant validity and sensitivity

The median (IQR) Hope scores according to demographic and wellbeing measures together with the group difference results are given in Table 3. The mean (SD) WHO-5 and Coping Index scores were 18.0 (4.8) and 36.2 (6.0), respectively. No significant group differences were observed when comparing gender, age group, retirement status and geographical location. Significant but small differences with small effect sizes but higher Hope scores in respondents working full/part-time compared to looking for work, high versus middle SES, without compared to those with a long-term health problem or disability, partnered versus unpartnered, homeowners versus renters and government pension/self-funded superannuated/wage earners

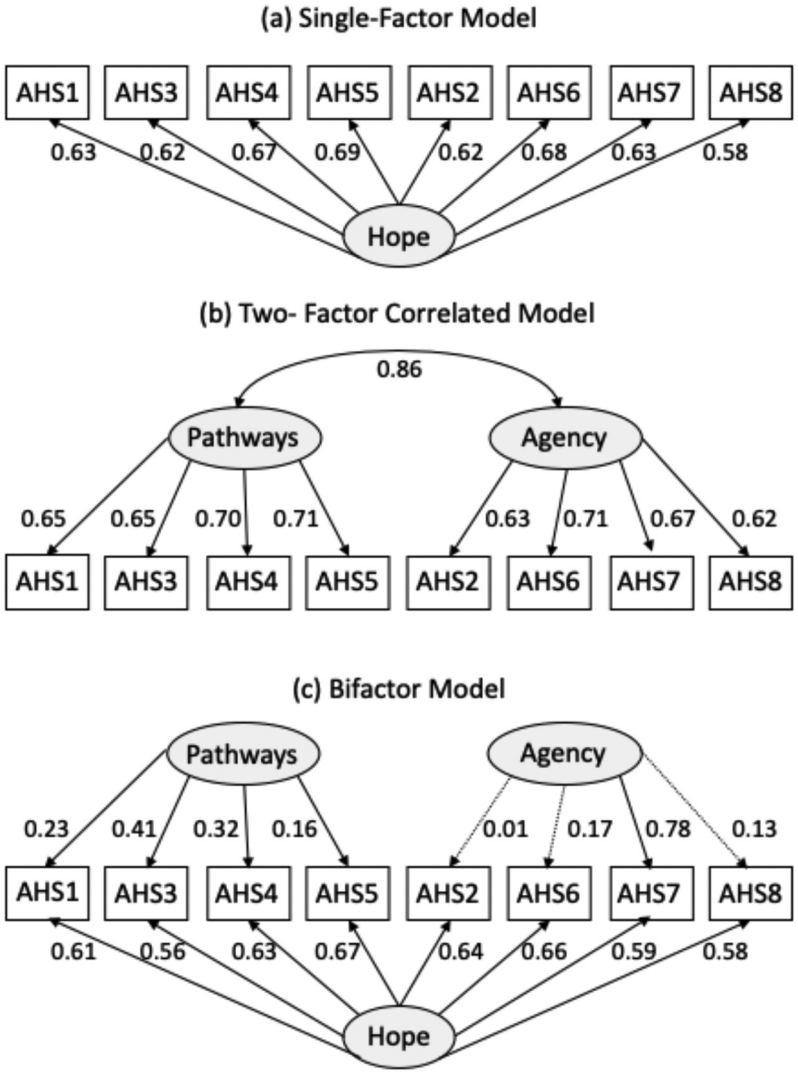

Figure 2. Confirmatory factor analysis models with standardised weights (and standard errors) for (a) the single factor model, (b) two-factor correlated model based on Snyder et al. (1991) model, and (c) bifactor model. Solid black arrows denote significant pathways, $p < 0.05$. Dashed arrows denote pathways that were not statistically significant.

Table 6. Summary statistics for confirmatory factor analyses of Adult hope scale models.

Model	Chi2 (df)	CFI	SRMR	RMSEA
(a) One-Factor	247.6 (20)**	0.938	0.043	0.088**
(b) Two-Factor Correlated	161.4 (19)**	0.961	0.035	0.072**
(c) Bifactor	100.3 (12)**	0.976	0.026	0.071**

CFI = comparative fit index (values closer to 1 indicate better fit); SRMR = standardised root mean square residual (values < .08 indicate better fit); RMSEA = root mean square error of approximation (p close < .05 indicate better fit); Model (a) refers to a unidimensional model with all items loaded on a single factor; Model (b) refers to the two-factor structure originally proposed by Snyder et al. (1991); Model (c) refers to the bifactor model including the two-factors proposed by Snyder et al. (1991). *$p < .05$ and **$p < .01$.

versus participants receiving unemployment support. In contrast, larger differences were observed for wellbeing measures with higher Hope scores and effect sizes in the small to medium range reported by participants with higher WHO-5 Mental Wellbeing and Coping Index scores.

A correlation table showing the relationship between Hope and key demographic and wellbeing variables is given in Table 8. Inspection of the correlation matrix revealed that the relationships between Hope, Gender and Age were not significant, and while a significant positive relationship was observed between Hope and Long-term Health Problem or Disability, the magnitude of the correlation was small. The only notable

Table 7. Measurement invariance testing for the Adult hope scale single-factor model for gender.

Model	$\chi 2$ (df)	CFI	SRMR	RMSEA
Configural	317.0 (40)**	0.914	0.046	0.098
Metric	331.9 (47)**	0.912	0.051	0.091
Scalar	339.6 (54)**	0.911	0.052	0.085
Metric-Configural	14.8 (7)**	−0.002	0.005	−0.006
	Metric Comparison	<.005	<.03	<.01
	Threshold	Excellent	Good	Excellent
Scalar-Metric	7.7 (7)**	<.001	0.001	−0.006
	Scalar Comparison	<.01	<.015	<.015
	Threshold	Good	Good	Excellent

CFI = comparative fit index (values closer to 1 indicate better fit); SRMR = standardised root mean square residual (values < .08 indicate better fit); RMSEA = root mean square error of approximation (p_{close} < .05 indicate better fit); *p < .05 and **p < .01.

Table 8. Spearman rank correlations between hope and key survey variables.

AHS item	Hope	Age	Gender	WHO Scale	Coping
Hope	–				
Age (years)	0.04	–			
Gender (F/M)[A]	−0.05	0.07**	–		
WHO-5	0.49**	0.12**	0.16**	–	
Coping Index	0.40**	0.06*	−0.07**	0.31**	–
Long-term Health Problem or Disability (Y/N)[B]	0.10**	−0.07**	0.02	0.24**	0.04

[a]Female = 0 and Male = 1. [b]Yes = 0 and No = 1; *p < .05 and **p < .01.

relationships with Hope were WHO-5 Mental Wellbeing and Coping Index, such that all three variables increased concomitantly.

Discussion

The current study aimed to validate the factor structure of the AHS in older Australians. The findings revealed a good fit to the bifactor model over the one- and two-factor models, with AHS items loading onto a general factor, Hope. This was the first study to apply EGA to the AHS, which also revealed a one-factor solution. The present findings are in agreement with the findings from most studies which have undertaken bifactor analyses to test for a higher-order factor (Brouwer et al., 2008; Espinoza et al., 2017; Galiana et al., 2015; Gomez et al., 2015).

Invariance testing revealed that a unidimensional model was the best fit for both males and females as indicated by the configural, metric and scalar measurement invariance findings. This is consistent with the previous findings (Bailey & Snyder, 2007; Creamer et al., 2009; Gallagher et al., 2024; Gana et al., 2013; Marques et al., 2014; Pacico et al., 2013; Roesch & Vaughn, 2006; Snyder et al., 1991).

Hope scores were compared between groups to explore the impact of demographics and wellbeing measures. Consistent with previous findings, no significant group differences were observed when comparing between retirement status and geographical location (Bailey & Snyder, 2007; Boyce & Harris, 2013; Marques & Gallagher, 2017; Moraitou et al., 2006). Contrary to previous findings, no association was observed between hope and age, but this may reflect limiting participants to those aged over 55y (e.g., Bailey & Snyder, 2007; Marques & Gallagher, 2017). Despite the latter findings, some group differences were observed. Higher hope scores were reported in general for older adults who were working, partnered, homeowners, without long-term health or disability issues, from high compared to middle SES areas, not on unemployment benefits, and those not looking for work (Bailey & Snyder, 2007; Marques & Gallagher, 2017; Mishra, 2024; Moraitou et al., 2006).' So that it reads: 'As observed by others, Higher hope scores were reported in general for older adults who were working, partnered, homeowners, without long-term health or disability issues, from high compared to middle SES areas, not on unemployment benefits, and those not looking for work (Bailey & Snyder, 2007; Marques & Gallagher, 2017; Mishra, 2024; Moraitou et al., 2006). However, despite these significant group differences, the effect sizes were small, suggesting the impact of the demographic factors was marginal. Nevertheless, while effect sizes are relatively small, it acknowledges that even small differences can have meaningful implications in applied and clinical contexts.

For example, the active fostering of hope in subpopulations who might benefit from early or more intensive interventions such as older adults experiencing social or economic disadvantage.

In contrast to the demographic findings, larger group differences were observed for the wellbeing measures. Specifically, higher hope scores with effect sizes in the small to medium range were reported by participants with higher mental wellbeing and coping and, to a lesser degree, better physical health. This is consistent with previous findings and suggests that hope in older adults is affected by life circumstances (Allenden et al., 2018; Barnett, 2014; Khan et al., 2023; Moraitou et al., 2006; Trezise et al., 2018). The findings also point to the role of fostering hope as a coping resource when treating patient groups with poor mental or physical health.

In general, the model fits were acceptable for the one-factor, two-factor and bifactor models. However, a small but meaningful advantage was evident for the bifactor model when examining the fit statistics and, moreover, the item loadings. Regarding model fits, it is noted that CFA constrains item loadings to only one latent factor. Therefore, if a two-factor solution is specified and the dimensions have conceptual support, then the fit is likely to be better for a two compared to a one-factor model. It is also likely given the presence of a high correlation between factors, as is the case with Agency and Pathways that a second-order factor (i.e., Hope) will be observed. Thus, given the hierarchical structure of CFA when strong correlations exist, then contrary to the argument by some authors, the presence of a second-order factor does not exclude the presence of a unidimensional scale (Babyak et al., 1993; Creamer et al., 2009). Compared to other factor analytical approaches, the advantage of bifactor models is that they allow items to load onto both a general factor (e.g., Hope) and a specific factor (e.g., Agency or Pathways). If, as observed in the present study, the general factor captures most of the variance in the items, then the specific factors will become weaker, which was evident when examining item-loadings. Apart from one exception that had a high item loading (AH7 = 0.78), the remaining items loading onto Agency in the bifactor model were non-significant (<0.17) and the items loading onto Pathways were significant and moderate at best (<0.41), whereas the item loadings onto the general factor, Hope, were all significant (>0.56). A one-factor solution was further supported following the EGA analysis. EGA is thought to be as accurate or more accurate than more traditional factor analytic methods (Christensen & Golino, 2021; Golino et al., 2017). Although the finding may be limited to older Australians, the bifactor and EGA findings suggest that the AHS is unidimensional. This raises concerns as to Snyder's original formulation of hope as a two-factor model (Snyder et al., 1991).

The AHS has typically been conceptualised as compromising two related but distinct factors: Agency (goal directed energy or motivation to achieve goals) and Pathways (planning and strategizing to meet goals). The present findings challenge this view. These results suggest the merging of motivating and planning components in later life and the presence of an overarching hope construct. Explanations for the merging are unclear but may be informed by Lifespan Developmental Theory and Socioemotional Selectivity Theory. Lifespan Developmental Theory proposes that there is a shift with age from growth-oriented to maintenance or loss-avoidance goals with an emphasis on minimising cognitive and, likewise, emotional distress (Baltes et al., 2007). Socioemotional Selectivity Theory proposes that emotional wellbeing is prioritised with age as the perception of mortality increases (Scheibe & Carstensen, 2009). This change is dependent on the cognitive control processes underpinning emotional regulation, which with age are reported to become more tightly coupled (Scheibe & Blanchard-Fields, 2009). Both theories point to the integration of cognitive and emotional wellbeing in older adulthood. In this context, hope may be experienced less as a set of discrete cognitive operations (e.g., motivation and planning) and more as an integrated affective-cognitive orientation towards meaningful goals. This reconceptualisation may render the Agency and Pathways components less distinguishable in older adults. Notably, the AHS was developed with samples of relatively young, healthy college students, whose experience of hope may be more analytically separable into motivational and planning components. In contrast, older adults may appraise hope more holistically, making the scale's original two-factor structure less applicable to this population.

While the evolution of hope over lifespan is not well understood, the exploration of hope as a concept in older adults is mostly limited to its interaction with health. In a metasynthesis of the literature examining the hope experience of older people with chronic illness, Duggleby et al. (2012) identified hope as the integration of two interrelated processes of cognitive appraisal and transcendence. The cognitive appraisal component of Duggleby's models aligns well with Agency (i.e., I find challenges meaningful, and I am capable of overcoming challenges) and to a lesser extent Pathways (i.e., I can generate workable solutions to

challenges). Conversely, transcendence (i.e., reaching inwardly and outwardly and finding meaning and purpose) is not well aligned with either Agency or Pathways. Arguably, AHS items place a stronger emphasis on the cognitive than emotional components of hope. Future studies may consider expanding the AHS to include items assessing the emotional components of hope such as "transcendence".

Hope is an important target for interventions, such as cognitive-behaviour therapy for the treatment of mood disorders and coping with life-threatening illnesses (Hernandez & Overholser, 2021; Snyder et al., 2000). Given that the AHS is unidimensional, then targeting the separate components of Agency and Pathways may not be meaningful in an older population. A holistic approach that simultaneously addresses motivation and goal planning may be more effective, e.g., therapeutic practices that enhance resilience, optimism, proactive coping, and cognitive reframing of life goals. A unified approach may have the added benefit of resonating more naturally with older adults, whose life experiences often lead to integrated cognitive-motivational processes (Carstensen et al., 1999).

This study has several limitations. Older adults were recruited by telephone, which may have introduced a sampling bias. Efforts were made to ensure that the sample included metropolitan and rural respondents to minimise coverage issues, but it was noted that the sample was biased towards older people from middle to high SES areas. According to the Australian Institute of Health and Welfare, approximately 58% of older Australians aged 65 receive age pensions, indicating a high number with limited incomes (Australian Institute of Health and Welfare, 2023). Future studies could explicitly target recruitment of older adults from a wider range of socioeconomic and ethnic backgrounds to achieve better alignment with national distributions and improve the generalisability of findings. A second limitation of the present study was the use of computer-assisted personal communication to collect data. The possibility of interviewer and social desirability bias cannot be excluded, especially as the larger study from which the present study was drawn investigated financial wellbeing with its associated sensitivities. However, it is noted that the same dataset was used by Arya et al. (2023) who concluded that psychological factors such as hope were associated with positive financial behaviour and therefore such a bias may be limited. Finally, it is noted that this is a cross-sectional study with its attendant limitations and that longitudinal studies are needed to clarify how hope evolves across critical ageing transitions. This information could be used to more effectively guide clinical and policy interventions to support ageing populations.

Conclusion

Hope plays an important role in wellbeing. In older adults, hope helps foster emotional resilience, buffers against loneliness and social isolation and engenders a positive outlook (Barnett, 2014; Chan, Ng, et al., 2024; Ferguson et al., 2017; Khan et al., 2023; McLaren et al., 2024; Moraitou et al., 2006; Muyan et al., 2016; Ong et al., 2006). These attributes have benefits for mood, health, cognitive function, general wellbeing and satisfaction with ageing. Finally, hope can help older adults cope with existential concerns about ageing and mortality (Sullivan, 2003). The ability to reliably assess hope in older adults is an important need which is fulfilled by the AHS. The present study provides useful insights into the AHS and its dimensionality in older adults. This includes the application of EGA to better understand AHS dimensions and the findings from the bifactor and EGA modelling suggesting that the AHS is best treated on a unidimensional scale in older Australian adults. Moving forward to further validate the AHS in older adults, these findings need to be replicated and extended to other cultural groups and older adult samples.

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Author contribution

KLa, JD, BL, RR, and KLu prepared the manuscript for publication. KLa, JD and KLu undertook statistical analysis.

Data availability statement

The data that support the findings of this study are available from the corresponding author, [KLu], upon reasonable request.

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