





Measuring social well-being in Africa: An exploratory structural equation modelling study



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The study investigated the factor structure of the 15-item social well-being scale in an African context. Social well-being is categorised into five dimensions: social integration, social contribution, social coherence, social actualisation and social acceptance. Data were collected from 402 participants in South Africa (50% male, average age of 21 years). Confirmatory factor analysis (CFA) and exploratory structural equation modelling (ESEM) were conducted in Mplus (version 8.1), on the 15-item measure. Results showed advantages of ESEM's flexibility, through which an unstable emic four factor solution emerged. For such complex multidimensional psychological constructs measured in novel contexts, ESEM is best suited for exploring factorial validity. Although the present study's findings should have implication for theory, future studies should further explore social well-being measurement using the long- and short-form instruments in diverse African samples.

Keywords: Africa; ESEM; factorial validity; measurement; social well-being.

Introduction

The understanding of well-being as something with only an intrapersonal location misses the reality that people are both private and public beings whose lives are socially and communally embedded (Keyes, 1998; Kpanake, 2018; Prilleltensky, 2005). White (2010) described well-being as social process with material, relational and subjective dimensions and emphasised the centrality of relatedness. Not only do sense of belonging, community and relationships constitute well-being (Ryff, 1989; White, 2010) but also feature prominently in what gives meaning to life (Wissing, 2014). According to Helliwell, Barrington-Leigh, Harris and Huang (2010), people make more positive evaluation of their lives when they live in societies where they themselves and others have people to rely on. Well-being is located in the social and cultural domains (White, 2010).

The social and community embeddedness of people is an integral characteristic of the African socio-cultural orientation in which the social good takes precedence over separate personhood (Kpanake, 2018; Molefe, 2017; Nyamnjoh, 2017, 2019; Wissing & Temane, 2013). It therefore makes sense that those interested in the study of well-being in an African context should take into account the social, relational and communal dimensions of well-being (see Chilisa & Tsheko, 2014; Mertens, 2016; Wilson, Wissing, & Schutte, 2019) and its measurement. From an African socio-cultural perspective, the nature of being is inherently relational (Chilisa, Major, & Khudu-Petersen, 2017). Social well-being is important because it captures a socially oriented conceptualisation of well-being (Patri, Albanesi, & Pietrantonio, 2016).

Given the significance of sense of community and relationships (Neto & Marujo, 2013; Molefe, 2017), the present study explored the factor structure of the five dimensional model social well-being of Keyes (1998). Social well-being captures how well an individual functions in their social life as a member of the greater community (Keyes, 1998). Keyes (1998, p.122) defined social well-being as 'the appraisal of one's circumstances and functioning in society', and proposed a five factor structure consisting of social integration, social acceptance, social contribution, social actualisation and social coherence. Social integration refers to the quality of an individual's perception of belonging and acceptance in the society (Keyes, 1998). It is therefore the extent to which people feel they have things in common with members of their environment (Keyes, 1998; Keyes & Shapiro, 2004). Social acceptance captures the meaning that individuals construct of their society as one that is accepting, characterised by trust, social comfort and the belief that people are kind and industrious. Social contribution is the evaluation of one's social worth through their perceived ability to give to others in the community (Keyes, 1998). It is intertwined with the evaluation of being an important member of the society and having the ability to contribute. Social

actualisation reflects the judgement that society has potential and it is growing and developing in a right trajectory. Social coherence captures the understanding of the social world as being making sense, organised, functioning well and predictable (Keyes, 1998, 2006; Keyes & Shapiro, 2004).

In the original measurement development and validation studies amongst adults in the United States of America, Keyes (1998) confirmed the theoretically intended five factor model using the longer form and shorter form. The measure demonstrated good convergent and discriminant validity as demonstrated by theoretically expected relationships with generativity, health of neighbourhood, dysphoric symptoms and subjective physical health (Keyes, 1998). Except for social acceptance, which had a lower reliability index, Keyes (1998) found the other four subscales had good internal consistency. Age was also found to be an influential factor in social well-being measurement. Except for social coherence, the other four dimensions were found to increase with age, albeit slower each year (Keyes, 1998). According to Keyes (1998), the observation that social coherence is higher amongst younger people can be attributed to their experience of the world reflecting their popular culture.

Outside of the many studies concerned with the mental health continuum (e.g. Joshanloo, Bobowik, & Basabe, 2016; Joshanloo, Wissing, Khumalo, & Lamers, 2013; Lamers, Westerhof, Bohlmeijer, Ten Klooster, & Keyes, 2011), only a few studies concerned specifically with the measurement of social well-being could be located (e.g. De Jager, Coetzee, & Visser, 2018; Shayeghian, Amiri, Vahedi-Notash, Karimi, & Azizi, 2019). The use of the 15-item measure is an improvement on the five-item subscale of the mental health continuum – short form (MHC-SF) because each of the dimensions is measured using three items. Shayeghian et al. (2019) applied exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to validate the Iranian version of the 15-item social well-being measure, which they found that, albeit with minor modifications, retained the intended factor structure. Their minor modifications included two pairs of covariance, in social integration and social coherence and the removal of the item ‘People who do a favour expect nothing in return’ of the social acceptance dimension (Shayeghian et al., 2019). In Portugal, CFA on the 33-item long-format Portuguese version measure yielded the theoretically intended five-factor structure, with good concurrent validity (Lages, Magalhães, Antunes, & Ferreira, 2018).

A South African study utilising the 15-item short-form version found an emic factor structure comprising three dimensions amongst a sample of employees in a motor manufacturing sector (De Jager et al., 2008). Notwithstanding that De Jager et al. (2008) could not replicate Keyes’ (1998) theoretically intended model, their interpretation of the factor solution was contextually meaningful and useful for our exploration. They named their three emergent factors: *social predictability and growth*, *social trust* and *social value and belonging*, leading them to express a careful observation that

‘social well-being in South Africa might be operationalised differently’ (De Jager et al., 2008, p.57). None of these studies used exploratory structural equation modelling (ESEM).

It is evident that the majority of previous studies relied on the use of CFA. The limitations of CFA, and the advantages of ESEM, are acknowledged by a number of scholars and methodologists (e.g. Asparouhov & Muthen, 2009; Marsh, Morin, Parker, & Kaur, 2014; Perry, Nicholls, Clough, & Crust, 2015). According to Marsh et al. (2014), the multidimensional structures of many psychological scales cannot be sufficiently represented using simple CFA models. In fact, this practice results in poor model fit and overestimation of factor correlations (Marsh et al., 2014). Recent studies have supported the use of ESEM as its flexibility allows for better model fit and less inflated inter-factors correlations (Marsh et al., 2014). The flexibility of ESEM is inherent in the sense that all items are specified to load on all the factors. This strategy allows cross-loadings, which tend to produce more realistically estimated factor correlations and better fit (Marsh et al., 2014). Examples of the use of ESEM in studying the factorial validity of multidimensional measures in positive psychology include Benitez-Borrego, Guàrdia-Olmos and Urzúa-Morales (2014), Joshanloo (2016a, 2016b, 2016c) and Joshanloo et al. (2016). In all of these studies, ESEM was found to be superior to CFA. According to Marsh et al. (2014), ESEM incorporates CFA and EFA, whilst EFA is considered to be suboptimal to CFA because of its open-ended exploratory nature.

The present study expands the research conducted by De Jager et al. (2008), amongst others, through applying CFA and ESEM to investigate the factor structure of the social well-being measure in an African sample. As indicated by Lages et al. (2018, p.16) ‘a proper understanding of mental health derives from the existence of valid and reliable measurement instruments, theoretically driven and adapted to their application contexts’. In line with this need for a contribution, whether the factor structure of Keyes social well-being holds true amongst African sample, needs to be examined. Thus, we needed to respond to the question of whether the social well-being indicators, namely social integration, social contribution, social coherence, social actualisation and social acceptance, as operationalised in Keyes (1998) model, should be used for assessment of social well-being in Africa.

Methods

Participants

Quantitative data were collected using a cross-sectional survey in which 402 students in South Africa participated. Data collection took place in 2015 at a university of technology located in the Gauteng province of South Africa. The sample consisted of 199 male (49.5%) and 191 female (47.5%) (12 people did not indicate their gender) students between the ages of 18 and 34 years, with an average age of 21.74 (standard deviation [s.d.] = 2.34) years.

Measuring instrument

Social Well-being Scale Short-Form

The Social Well-being Scale Short-Form (SWS-SF) (Keyes, 1998) is a 15-item scale designed to measure social well-being based on the five dimensions indicating how individuals appraise circumstances and functioning in society. It is scored on a 6-point Likert scale ranging from strongly disagree (1) to strongly agree (7). The five dimensions, social integration, social contribution, social coherence, social actualisation and social acceptance are each measured using three items. In the original study, Keyes (1998) found the subscales, except for social acceptance (0.41) to be reliable, as shown by Cronbach's alpha coefficients ranging between 0.64 and 0.73. Using CFA in Iran, Shayeghian et al. (2019) found modest reliability indices. In Portugal, Lages et al. (2018) found, the long version to be reliable. In South Africa, De Jager et al.'s (2008) three factor model also produced internally coherent dimensions: social predictability and growth ($\alpha = 0.62$), social trust ($\alpha = 0.69$), social value and belonging ($\alpha = 0.74$).

Procedure and ethical considerations

Data in the present study were collected as part of a project named *Hope, motivation and social well-being: Exploring eudaimonic well-being amongst youth*, (approved by the North-West University Research Ethics Regulatory Committee [reference number: NWU-00138-14-A8] and Vaal University of Technology Research and Innovation Ethics Committee [reference number: 20140425-1ms]). After the recruitment and consent process, the completion of questionnaires commenced under the supervision of research assistants and student tutors. Guidelines from the Helsinki Declaration (World Health Organization [WHO], 2001) and the South African Department of Health (2014, 2015), were followed. The written informed consent entailed all the necessary information through which the participant would know about the study, details of its procedures, risks and potential benefits and their ethically entrenched rights such as confidentiality, voluntary participation and withdrawal.

Data analysis

The present study investigated the model fit of the SWS-SF (15 items) using CFA and ESEM in Mplus (Muthén & Muthén, 1998–2017). We used robust maximum likelihood (MLR) estimation, with oblique geomin rotation. The five-factor model was tested first with CFA and second with ESEM. Their model fits were tested using chi-square (χ^2), root mean square error of approximation (RMSEA), standardised root mean square residual (SRMR), comparative fit index (CFI), akaike information criterion (AIC) and Bayesian information criterion (BIC) (Geiser, 2013). For good fit, the following criteria were used: smaller and insignificant χ^2 ; RMSEA and SRMR of less than 0.06; CFI of more than 0.95; Tucker–Lewis index (TLI) of more than 0.95; smaller AIC and smaller BIC (Byrne, 2012; Geiser, 2013; Hu & Bentler, 1999; Wang & Wang, 2012).

Results

The CFA five factor model in which each item loaded only on its one intended factor (Figure 1), yielded poor fit, $\chi^2(80) = 305.149$, $p < 0.000$; CFI = 0.706; RMSEA = 0.091, $p < 0.000$ [0.080 0.102]. The ESEM model fits the data better, $\chi^2(40) = 69.195$, $p = 0.002$; CFI = 0.950; RMSEA = 0.047, $p = 0.588$ [0.028 0.065]. Model fit indices are displayed in Table 1.

The standardised factor loadings for the CFA and ESEM models, based on the five factor solution are reported (Table 2). In the CFA model, except for the social contribution subscale, all the others have only two of the three items with factor loadings above 0.30. This unstable internal consistency renders not only the five dimensional structure proposed by Keyes (1998) untenable but also makes for an ill-fitting, highly restrictive CFA model.

The following items had non-salient loadings on any of the factors: 'I don't feel I belong to anything I'd call a community' (item 1 of social Integration), 'People do not care about other people's problems' (item 5 of social acceptance) and 'I find it easy to predict what will happen next in society' (item 15 of social coherence). With one item excluded, social integration is indicated by two items which speak to the community being a source of safety. Social coherence is indicated by three items in total: two from social acceptance and one from social actualisation. Two items from social coherence and two items from social actualisation had salient loadings on social acceptance. Lastly, the three items of social contribution straddle between social contribution and social actualisation. Item 9 'I have nothing important to contribute to society' cross-

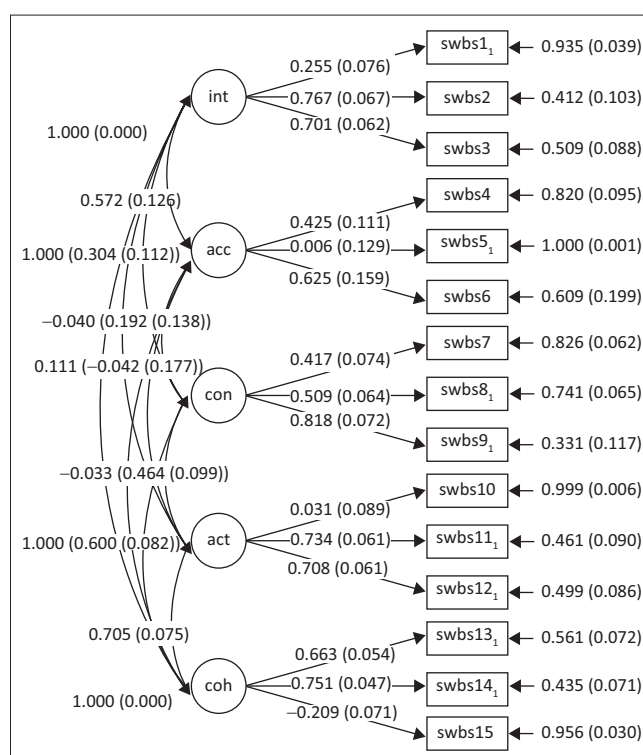


FIGURE 1: Confirmatory factor analysis model.

TABLE 1: Model fit indices.

Model	Model fit indices										
	χ^2	df	P	AIC	BIC	RMSEA	P	RMSEA 90% CI		CFI	SRMR
								Lower	Upper		
CFA	305.149	80	< 0.000	18629	18839	0.091	< 0.000	0.080	0.102	0.706	0.107
ESEM	69.195	40	0.002	18421	18785	0.047	0.588	0.028	0.065	0.961	0.023

χ^2 , Chi-square; df, degrees of freedom; P, probability estimate; AIC, Akaike information criterion; BIC, Bayesian information criterion; CFI, comparative fit index; CI, confidence interval; RMSEA, root mean square error of approximation; SRMR, standard root mean square residual; CFA, confirmatory factor analysis; ESEM, exploratory structural equation modelling.

TABLE 2: Confirmatory factor analysis and exploratory structural equation modelling standardised factor loadings for the South African sample.

Latent and indicator variables	Standardised factor loadings					
	Integration	Acceptance	Contribution	Actualisation	Coherence	CFA
Social integration						
1. I do not feel I belong to anything I would call a community	0.115 (0.165)	0.230 (0.135)	0.200 (0.261)	0.225 (0.207)	-0.012 (0.076)	0.255
2. I feel close to other people in my community	0.701 (0.177)†	0.014 (0.066)	0.067 (0.137)	-0.013 (0.058)	0.006 (0.155)	0.767†
3. My community is a source of comfort	0.694 (0.202)†	-0.009 (0.072)	-0.029 (0.079)	-0.003 (0.053)	0.189 (0.236)	0.701†
Social acceptance						
4. People who do a favour expect nothing in return	0.091 (0.152)	-0.073 (0.113)	-0.007 (0.102)	0.063 (0.102)	0.373 (0.121)	0.425†
5. People do not care about other people's problems	0.012 (0.106)	0.230 (0.114)	-0.064 (0.082)	0.149 (0.122)	-0.012 (0.108)	0.006
6. I believe that people are kind	0.073 (0.249)	-0.006 (0.076)	0.235 (0.206)	0.082 (0.124)	0.424 (0.262)†	0.625†
Social contribution						
7. I have something valuable to give to the world	0.008 (0.133)	-0.041 (0.059)	0.859 (0.577)†	-0.033 (0.096)	0.075 (0.324)	0.417†
8. My daily activities do not produce anything worthwhile for my community	0.000 (0.123)	-0.001 (0.085)	-0.005 (0.040)	0.818 (0.179)†	0.036 (0.100)	0.509†
9. I have nothing important to contribute to society	-0.024 (0.232)	0.190 (0.163)	0.407 (0.402)†	0.374 (0.245)†	-0.059 (0.167)	0.818†
Social actualisation						
10. The world is becoming a better place for everyone	0.019 (0.137)	0.146 (0.145)	0.061 (0.116)	-0.112 (0.175)	0.553 (0.235)†	0.031
11. Society has stopped making progress	-0.117 (0.174)	0.803 (0.176)†	-0.029 (0.079)	-0.139 (0.321)	0.044 (0.101)	0.734†
12. Society is not improving for people like me	-0.031 (0.120)	0.623 (0.165)†	-0.037 (0.087)	0.182 (0.300)	0.190 (0.166)	0.708†
Social coherence						
13. The world is too complex for me	0.159 (0.386)	0.513 (0.139)†	0.013 (0.349)	0.056 (0.077)	-0.150 (0.319)	0.663†
14. I cannot make sense of what is going on in the world	0.147 (0.372)	0.576 (0.162)†	0.127 (0.326)	0.012 (0.040)	-0.222 (0.324)	0.751†
15. I find it easy to predict what will happen next in society	0.209 (0.123)	-0.148 (0.111)	-0.007 (0.076)	-0.079 (0.091)	0.218 (0.127)	-0.209

CFA, confirmatory factor analysis.

†, standardised factor loadings showing significant loading of an item on the factor/dimension.

TABLE 3: Inter-factor correlations in confirmatory factor analysis.

Variables	Integration	Acceptance	Contribution	Actualisation	Coherence
Integration	1	-	-	-	-
Acceptance	0.572	1	-	-	-
Contribution	0.304	0.192	1	-	-
Actualisation	-0.040	-0.042	0.464	1	-
Coherence	0.111	-0.033	0.600	0.705	1

TABLE 4: Inter-factor correlations in exploratory structural equation modelling.

Variables	Integration	Acceptance	Contribution	Actualisation	Coherence
Integration	1	-	-	-	-
Acceptance	-0.030	1	-	-	-
Contribution	0.466	0.153	1	-	-
Actualisation	0.097	0.468	0.152	1	-
Coherence	0.311	-0.126	0.056	-0.148	1

loads on two dimensions, whilst item 7 'I have something valuable to give to the world' was retained in social contribution and item 8 'My daily activities do not produce anything worthwhile for my community' loads on social actualisation by itself.

The inter-factor correlations for the ill-fitting CFA model (Table 3), range between -0.33 and 0.705. The inter-factor correlations from the ESEM model, which range between -0.148 and 0.468 are shown (Table 4). A clear difference between the two sets of correlations is the moderate

range in the ESEM model as compared with some of the extreme correlation coefficients seen in the CFA model. However, the prevalence of non-target factor loadings of the indicator items in this ESEM model makes the hypothetical five factor structure untenable.

Discussion

The findings of this study show a deviation from the theoretically intended five-factor model proposed by Keyes (1998), with CFA yielding poor fit and ESEM being characterised by a number of non-target loadings. An emic four factor solution from the ESEM model, albeit with a degree of instability, was interpretable. The following four dimensions are observed: community as a source of safety (two items), the world as understandable (four items), the world as generous and kind (three items) and ability to contribute (two items). With four items excluded, this structure is made up of only 11 items. Two of the factors consist of only two items, making them minor factors.

The three items with no salient loadings on any of the factors, even with the ESEM option of flexible cross-loading were items 1 'I don't feel I belong to anything I'd call a community'; item 5 'People do not care about other people's problems' and item 15 'I find it easy to predict

what will happen next in society'. Items 1 and 5 may suggest that there is a negative wording factor or that the two items hold contextual interpretation, which offers the reasons for exclusion. In the absence of a negative wording factor, the latter is more plausible. It is possible, as opined by Ryff and Singer (1998) that the questions of not belonging to a community and that people's problems would not be cared about are incomprehensible in an African socio-cultural context. Two possible reasons may explain why item 15 does not resonate with the respondents in this study. The first has to do with the strong shouldering of responsibility to predict and the second points to the item's insistence on future-orientation and assumption of certainty of knowing what will happen next. The view that future-orientation does not enjoy salience in many African societies was made popular by amongst others Mbiti (1991). The high value of needing to predict what will happen in society makes an assumption of the society's tolerance for ambiguity (see Hofstede, 2011). Cultures, which are comfortable with unstructured situations, set and follow less rules and tend to live in the moment and are more tolerant to different opinions and are open to different experiences (Hofstede, 2011). Ryff and Singer's (1998) conception of practical wisdom and improvisation valued in an African socio-cultural context may offer a plausible explanation.

Community as a source of safety

Community as a source of safety dimension is constituted by content from the salient loading of two items, namely item 2: 'I feel close to other people in my community' and item 3: 'My community is a source of comfort', which had been intended to be indicators of social integration. In a study by De Jager et al. (2008), these two items, together with the two which are indicative of the ideas that the world is becoming a better place and that people are kind, were thought to represent social trust.

The world as understandable

The world as understandable is made up of four items representing item 11: 'Society has stopped making progress'; item 12: 'Society isn't improving for people like me'; item 13: 'The world is too complex for me'; item 14: 'I cannot make sense of what's going on in the world'. The first two items were intended as indicators of social actualisation and the other two for social coherence. This dimension is reminiscent of the comprehensibility dimension of Antonovsky's (1993) sense of coherence model. It refers to the experience of the world as being ordered, constant, structured and clear. The opposite end of this spectrum, as expressed by Antonovsky (1993), would be if the world is characterised by chaos, disorder, randomness and inexplicability.

The world as generous and kind

The world as generous and kind dimension is indicated by three items, which are item 4: 'People who do a favour expect

nothing in return', item 6: 'I believe that people are kind' and item 10: 'The world is becoming a better place for everyone'. This three item factor is reminiscent of the (individual) strength of kindness (see Park, Peterson, & Seligman, 2004), which is characterised by generosity, nurturance and care, when expressed at an individual level.

Ability to contribute

This factor is indicated by item 7: 'I have something valuable to give to the world' and item 9: 'I have nothing important to contribute to society'. Missing from this social contribution factor is item 8: 'My daily activities do not produce anything worthwhile for my community', which loaded on its own unique factor by itself. In Keyes' terms, it seems that one's sense of meaningful membership of a society hinges on their belief that they have something of value to offer. In an African context, the magnitude of this generosity is never in question or under judgement. As Ryff and Singer (1998, p.5) observed, 'Africans have no conception of the person apart from the community'.

Limitations and recommendations

The present study was applied on a single sample. A multi-sample study using a series of different factor analytical approaches would help in providing greater evidence of consistency of these seemingly novel findings. Even when it may appear from this study 'that ESEM is a more appropriate method for examining the factor structure of well-being scales' (Joshnloo et al., 2016, p.107), the inconclusive findings encourage future studies. We also used the short-form version of the scale. It is possible that a long-form version may produce more information about the factorial stability of the social well-being model. Lastly, qualitative studies, which use more inductive forms of exploration of a phenomenon, would help to define and describe social well-being from a laypeople's perspective (see Delle Fave et al., 2016; Mozaffari, Peyrovi, & Nayeri, 2015; Wilson Fadiji, Meiring, & Wissing, 2019).

Conclusion

It may be that in addition to the present study, there are at least two more empirical investigations (De Jager et al., 2008; Joshnloo, 2018) whose results attest to the heterogeneity and possible instability of the social well-being dimensions. These findings attest to the complexity of well-being as a socially embedded construct (see White, 2017). Acknowledging that well-being is not only located at a micro-level of individuals but it is also to understand that human lives are shaped by their ecology (Gruner & Csikszentmihalyi, 2018).

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Competing interests

The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

Authors' contributions

I.P.K., U.P.E., K.O.A., and J.R. all contributed equally to this work.

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Data availability

A data set was generated through a cross-sectional survey conducted amongst students at a university of technology in South Africa.

Disclaimer

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