

A Health-Related Satisfaction with Life Scale Measure for Use with Cross-National Older Adults: A Validation Study

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Abstract

Objectives: Literature suggests some inconsistent results in the validity and reliability of the Satisfaction with Life Scale (SwLS) in older samples. The objective was to evaluate the psychometric properties of the SwLS in a cross-cultural sample of older adults.

Methods: This is a validation study to assess the psychometric properties of the SWLS in a sample of 1291 older adults 75 years of age or older, cross-culturally diverse and living in the community. A confirmatory factor analysis was performed. Item analysis and reliability, were also assessed.

Results: The systematic procedure used in the SwLS validation points to a good level of psychometric properties, such as reliability, construct, criterion validity, external validity and divergent criterion validity, suggesting that the SwL is assessing a construct different from the ones evaluated by PANAS and OtLQ.

Conclusion: The SwLS has demonstrated reliability, validity, and reproducibility for use in measuring health-related satisfaction with life among older adults in policy programs and interventions in community settings.

Keywords: cross-cultural, health aging, psycho geriatrics, quality of life, scales

1. Introduction

The world's older population is increasing at an incomparable pace. Currently, there are about 125 million people with 80 years or more and in 2050 the same age group is expected to total 434 million people (World Health Organization, 2015). Indeed, the proportion of older adults is growing exponentially worldwide (2.6% per year) and considerably faster than the population as a whole, with major consequences, such as increasing costs associated with health care and social support, and challenges concerning aging well cross-culturally (World Health Organization, 2015). As longevity increases, the quality of that longer life becomes a central issue for older adults (World Health Organization, 2015).

Satisfaction with Life (SwL) corresponds to the cognitive facet of subjective well-being (Pavot & Diener, 2004) and is defined as an overall cognitive and judgemental assessment of one's life including the current life (Diener, Emmons, Larsen, & Griffin, 1985). It was found to be related to gender, age, and socio-economic and educational level (Sposito, D'Elboux, Neri, & Guariento, 2013). SwL is pertinent for aging well and successful aging (Brown, Bowling, & Flynn, 2004) and may involve an assessment of life course goals and outcomes by the older individuals (Litwin, 2005). Some studies associated old age to a decrease in SwL, in part due to social, physical and psychological challenges in this stage of life, while others related old age to an increase in SwL (Angelini, Cavapozzi, Corazzini, & Paccagnella, 2012; Gwozdz & Sousa-Poza, 2010; von Humboldt, Leal, & Pimenta, 2014). In fact, old age can be experienced differently by each individual; and likewise SwL results in late adulthood are not consistent (von Humboldt et al., 2014).

SwL has been related to positive health indicators, such as self-reported health, social support, and positive health behaviours (Koivumaa-Honkanen et al., 2000; Strine, Chapman, Ballluz, Moriarty, & Mokdad, 2008).

Several studies indicated that the main predictors of SwL in old age are health, family support, religion, income, aging in place, living setting, education, social integration, sense of coherence, medication intake, quality of food and sleep (Ailshire & Crimmins, 2011; Joia, Ruiz, & Donalisio, 2007; von Humboldt et al., 2014). Additionally,

several dimensions related to health and family dynamics, including relationships with adult children and economic status, have had a great effect on SwL of old people (Kim, Sugisawa, Okabayashi, Fukaya, & Shibata, 1999). Conversely, several variables may negatively affect SwL in old age, such as, the dilapidation of financial resources and autonomy, low level of education, lack of spousal relationship, low social support, comorbidities, and loss of physical and mental functioning (Burlá, Pessini, Siqueira, & Nunes, 2014; Butler, Fujii, & Sasaki, 2011; World Health Organization, 2015).

The literature has provided evidence for the suitability of the Satisfaction with Life Scale (SwLS) and of the quality of its psychometric properties. Previous studies have used confirmatory factor analysis and shown its validity and reliability in different cultural samples. Moreover, the SwLS has been equated with a general factor of life satisfaction (Atienza et al., 2000; Glaesmer et al., 2011; Gouveia et al., 2009; Neto, 2001; Sancho, Galiana, Gutierrez, Francisco, & Thomas, 2014; Silva, Taveira, Marques, & Gouveia, 2015).

Older age is a developmental period often related to loss and decline. Although these losses may be profound, a significant number of older adults cope well, by balancing personal meaning with satisfaction, wisdom and creativity. In fact, the stability-despite-loss phenomenon among older adults suggests that they report SwL and appreciation for life, despite facing challenges due to bio psychosocial restrictions, namely declines in health, cognitive impairment and loss of social roles. This opposing relationship has been reiterated in the gerontological literature as the paradox of well-being (Fernández-Ballesteros, 2007; von Humboldt, 2016; Wrosch, Scheier, Carver, & Schulz, 2003). Moreover, some inconsistent results were found in relation to the validity and reliability of the Satisfaction with Life Scale (SwLS) in older samples (Vassar, 2008; Vassar, Ridge, & Hill, 2008); hence there is a need for more research focused on SwL with older adults.

The SwLS was validated in linguistically diverse older samples (e.g., Sancho et al., 2014; Shmotkin et al., 2006; Westerhof & Bennett, 2005; Westerhof, Whitbourne, & Freeman, 2011). We found no research which has validated the SwLS in a cross-national older population. Therefore, to integrate SwL in future interventions with older adults in the context of aging well, validity and reliability information about this concept is necessary. To address this question, our aim was to determine the psychometric qualities of a SwLS in cross-national older adults living in the community.

2. Methods

2.1 Participants

Potential 1400 older participants living at home, were identified and invited to provide informed consent to participate in this study. From these, 1291 older adults participated in our final sample.

Participants were mainly married women (58.2%). Participants' level of education was high; 16.2% completed a university degree and 39.9% completed high school. Approximately half of the participants were still professionally active (48.1%) and reported different occupational activities, namely entrepreneurs, artists and skilled workers. All the participants lived autonomously and 50.4% of the participants had a household income above 10,000 euros per year. Additionally, 50.7% of the sample indicated to be in good health (see Table 1).

In order to facilitate the validation of the SwLS in a cross-national sample, we recruited the participants based on their availability and used the same recruitment strategy for all nationalities.

For many healthy adults, middle age is lasting longer and old age is starting later (Deeg, 2005; United Nations, 2007). There have been significant shifts in the epidemiological pattern and the profile of older people living in Portugal (Permanent Mission of Portugal to the United Nations, 2011). The respondents in our sample were aged 75 years and older, therefore fell into the older adults category, which allowed us to fully assess their perspectives of SwL in old age.

Table 1. Socio-demographic characteristics

Characteristics	<i>N</i>	%
<i>N</i>	1291	100
Age (<i>M</i> ; <i>SD</i>)	83.9 (6.68)	
Sex		
Women	751	58.2
Men	540	41.8

Nationality		
Angolan	285	22.1
Brazilian	314	24.3
English	341	26.4
Portuguese	351	27.2
Education		
<High school	1082	83.8
≥High school	209	16.2
Marital Status		
Married or in a relationship	725	56.2
Not married nor in a relationship	566	43.8
Professional Status		
Inactive	670	51.9
Active	621	48.1
Family Annual Income		
≤10,000 €	640	49.6
≥10,001 €	651	50.4
Perceived Health		
Good	655	50.7
Poor	636	49.3

Note. *M*=mean; *SD*=standard deviation.

2.2 Material

This study included the following measures: (a) SwLS with good reliability ($\alpha=.78$) (Diener et al., 1985); (b) Orientation to Life Questionnaire (OtLQ) ($\alpha=.82$) (Antonovsky, 1993; von Humboldt & Leal, 2015); (c) Positive and Negative Affect Schedule (PANAS) with a high internal consistency ($\alpha=.88$ and $\alpha=.87$, respectively) (Watson, Clark, & Tellegen, 1988); (d) Adjustment to Aging Scale (AtAS) ($\alpha=.89$) (von Humboldt, 2016; von Humboldt, Leal, Pimenta, & Maroco, 2013), and (e) Socio-demographic and health status questionnaires. In addition, one measure of cognitive functioning, the Mini-Mental State Exam (MMSE) was employed.

2.3 Procedure

Older adults living in the community were invited to the research by means of an accompanying letter one month prior to the commencement of data collection. All participants received a document which contained relevant information on the purpose and procedures of this validation study. They were assured of privacy and confidentiality. They were informed that they could interrupt their participation from the study at any point. Questionnaires were coded, thus the identity of participants was not revealed. Participants were eligible to be included in the study if they were aged 75 years and older, able to understand and provide informed consent in relation to the study, and scored in the normal range of the MMSE (>26) (Folstein, M., Folstein, S., & McHugh, 1975).

This research was fully approved by the William James Center for Research, from ISPA-Instituto Universitário and the Portuguese Foundation for Science and Technology (FCT).

Scores for the SwLS, PANAS, OtLQ AND AtAS were analysed using established statistical techniques (to generate sample means, standard deviations, medians and ranges) in the Statistical Packages for Social Sciences (SPSS) Version 20.0.

Validity indicates the degree to which the instrument is measuring what it is intended to measure. Construct validity is one of three main types of evidence of validity, alongside criterion validity and external validity. In

order to analyze overall validity of the SwLS, construct-related, criterion and external validity, reliability and distributional properties were evaluated.

Construct validity indicates the extent to which a test measures the construct it purports to be measuring. We used Confirmatory Factor Analysis (CFA) to assess the construct validity of SwLS. In order to assess the structure of the scale factor, a varimax rotation method was used and principal components factor analysis was applied to scores obtained from answers given by the participants.

We also used the following statistics: chi-square (X^2/df), Comparative Fit Index (*CFI*), Goodness of Fit Index (*GFI*) and Root Mean Square Error of Approximation (*RMSEA*). Convergent and discriminant validity are both subtypes of construct validity. Convergent validity is verified when measures that are theoretically expected to correlate are indeed related (AVE scores >.450). Discriminant validity indicates the extent to which it is possible to discriminate between constructs that are theoretically expected to not be related (squared correlation between factors < individual factor AVE).

Criterion validity measures how well one measure predicts the outcome of another measure.

External validity indicates the extent to which the results of this study are stable and can be generalized beyond the study sample. A confirmatory factor analysis was performed in 60% of the sample, and the factor weights and correlations stability were evaluated in 40% of the sample (Maroco, 2010).

Distributional properties were evaluated through the exploration of minimum and maximum values, mean, skewness and kurtosis. Reliability indicates the degree to which the instrument consistently measures what it is intended to measure. For this purpose, we used the Cronbach's alpha.

3. Results

3.1 Construct Related Validity

3.1.1 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA) was employed in the five items in the data set and provided a good fit based on the goodness-of-fit statistics: $\chi^2/df=2.734$, $p<.001$, $CFI=.999$, $GFI=.996$, $RMSEA=.037$, $p=.800$, 90% confidence interval for the RMSEA=[.014; .061].

3.1.2 Convergent Validity

All factors presented good AVE scores (i.e., equal or above .50), thus demonstrating the convergent related validity of the factors (see Table 2).

The acceptable AVE score was .673, thus exhibiting good strength (see Table 2).

Table 2. Satisfaction with Life Scale: convergent validity and reliability

Satisfaction with Life Scale	AVE	Cronbach's Alpha
Overall scale	.673	.899

3.2 Criterion Validity

The OtLQ and PANAS presented divergent criterion validity. SwLS total score was positively and weakly correlated with OtLQ total score ($r=.255$; $p<.001$) and with PANAS total a ($r=.092$; $p=.001$). No other correlations were significant or superior in absolute value to the identified correlations.

3.3 External Validity

Support for external validity of the SwLS measurement was obtained in 60% and 40% of the sample with a good fit: ($X^2/df=1.764$; $CFI=.999$; $GFI=.995$; $RMSEA=.024$; $p=.992$; $C.I.$ 90%=[.000; .043]), hence the unconstrained measurement model does not have a significantly better fit than the model with constrained factorial weights ($X^2(4)=1.416$; $p=.841$) and the stability of the SwL was considered good.

3.4 Item Analysis

Overall, the summary statistics indicated skewness and the kurtosis values of the five items, below three and seven, respectively. Items classification ranged between one and seven (see Table 3).

Table 3. Satisfaction with Life Scale: values concerning minimum and maximum scores, skewness and kurtosis

Items	Minimum	Maximum	Skewness	Kurtosis
1	1	7	.022	-.674
2	1	7	-.244	-1.050
3	1	7	-.057	-.217
4	1	7	.175	-.807
5	1	7	.032	-.639

3.5 Reliability

The overall scale reliability including the five items was good, with Cronbach's alpha for the SwLS being .899 (see Table 2).

4. Discussion

This research intended to validate a SwL measure in an old sample. SwLS delivered data with good psychometric properties in our sample of older adults. Thus, this instrument may be used to directly assess the level of SwL in older populations. Early psychometric evaluation of SwLS with older samples consisted of a relatively small convenient sample ($n=53$), with an average age of 75, with good internal consistency across items (Diener et al., 1985). Later the SwLS was assessed in samples other than English, such as Angolan, Dutch, German older adults (Sancho et al., 2014; Westerhof & Bennett, 2005; Westerhof, Whitbourne, & Freeman, 2011), and old-old adults also with good internal consistency scores (Shmotkin et al., 2006).

According to Diener and his colleagues (1985), future research and cultural comparisons are needed to validate SwLS in different populations. The SwLS model showed a good fit ($X^2/df=2.734$; $CFI=.999$; $GFI=.996$; $RMSEA=.037$; $p=.800$; $C.I. 90\%=[.014; .061]$), thus corroborating previous research. Moreover, our study reiterated the SwLS as a multi-item and global evaluation of SwL with older samples, as shown across multiple age groups (Diener et al., 1985; Nieboer, Lindenberg, Boomsma, & Van Bruggen, 2005; Poon & Cohen-Mansfield, 2011).

These outcomes showed divergent criterion validity in the OtLQ and PANAS. Nonetheless, SwLS appears to be strongly correlated with personality measures, such as self-esteem, symptom check-list, neuroticism, emotionality, activity, sociability and impulsivity (Diener et al., 1985; Poon & Cohen-Mansfield, 2011).

Configurational invariance was found in our results. The unconstrained measurement model does not show a better fit than the model with constrained factorial weights ($X^2(4)=1.416$; $p=.841$). Despite the fact that the dimensionality of the SwLS appeared to remain the same across young and old age groups (Fujita & Diener, 2005; Pons, Atienza, Balaguer, & García-Merita, 2000) indicated that older participants varied significantly from younger individuals concerning the item reflecting weather conditions of life were excellent.

The reliability of SwLS was found to be very good, which corroborates the internal consistency of the SwLS found in other studies with old and very old adults (Diener et al., 1985; Sancho et al., 2014; Shmotkin et al., 2006; Westerhof & Bennett, 2005). Contrary to these results, Vassar et al. (2008) did not report satisfactory scores for validity and reliability of SwLS with older adults.

These results should be interpreted considering the study's limitations. We used the convenience sampling method, which limits the generalizability of our findings. A larger portion of our study participants were women (58.2%) however, this is reflective of the current demographics of older populations in developed areas. Our sample, while population-based, was 73% Caucasian and relatively well-educated. Hence our outcomes may not generalize to other populations with more diverse levels of educational and ethnicity.

This study has a cross-sectional nature. Future research is needed to discuss the stability of the SwLS. One should also investigate whether SwL is correlated to other personality measures, such as self-esteem, symptom check-list, neuroticism, emotionality, activity, sociability and impulsivity in both frail and high-functioning older populations.

The contribution of a cross-national research for validating the SwLS has a great potential in future research endeavours as the number of comparable data sets increases across diverse areas of the globe. Indeed, the inclusion of cross-cultural samples in gerontological research could benefit the understanding of the culturally-diverse concept of SwL held by older adults (Löckenhoff, 2009).

Additionally, this study expands previous research, corroborating the relevance of SwL in older diverse populations living in the community. The nature of our community-dwelling sample intends to overcome a limitation that is usually seen in studies with older adults, since previous research is often limited to frail older individuals. In light of our findings, the authors suggest using SwLS as a measurement tool for assessing SwL among older populations, with increased autonomy, well-being and longevity.

This study corroborates the view that aging well and with SwL is as an interactive process that requires adaptation to different socio-cultural settings.

Validation of the SwLS in older populations is an important step in ensuring that appropriate user-driven instruments are available for assessing health-related SwL in old age, and these results will also positively stimulate additional research and practice to improve health-related SwL among older adults. Moreover, SwL has shifted to be a part of general primary care in old age, hence the use of SwLS with older adults living in the community is an important step in adequating within the needs of the healthcare system. The SwLS is an effective user-driven brief instrument which may be easily administered in using an oral interview or self-report format in interventions focused on promoting the health and well-being of older adults.

The results of this study may be used for future cross-cultural research, together with other aging well variables, such as quality of life and well-being, among older age groups with different ethnicities. Indeed, the insertion of ethnicity in future studies may contribute to deepening our understanding of cultural differences in older adults' self-reported SwL.

In conclusion, this study has provided preliminary evidence in support of the validity, reliability, and reproducibility of the SwLS in culturally-diverse older adults living in the community.

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