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Satisfaction With Life Scale (SWLS): Confirmatory Factor Analysis and Psychometrics Properties Among Sample of Nigerian Middle-Aged Workers

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Abstract

Background: The measurement of the cognitive aspect of wellbeing is significant in today's world due to its link with mental health. The current study examined the factorial structure, psychometric properties and concurrent validity of the Satisfaction with Life Scale (SWLS) within the Nigeria socio-cultural setting. At the initial phase of the study, 109 participants working in a government owned University in Oyo State Nigeria completed the five items SWLS and their information was analyzed utilizing confirmatory factor analysis. One hundred and ten participants from a privately-owned university in Osun State Nigeria was used to concurrently validate the instrument with a similar measure: the six items Riverside Life Satisfaction Scale (RLSS)at the second phase. Result: The SWLS possess a satisfactory reliability (Omega (ω_t) = .84). The model fit indicators observed after exposing the SWLS to confirmatory factory analysis revealed moderately suitable fitness and acceptable item loading for a single factor scale. A statistically significant Pearson's (r) of = 0.79, p<.01 was observed between SWLS and RLSS. The SWLS possess an acceptable psychometrics property. It is a useful instrument for investigating life satisfaction within Nigeria sociocultural contexts.

Keywords: Life satisfaction, psychometrics, factor analysis, Nigeria.

Introduction

Life satisfaction is today, a phenomenon of growing attention in the public health space. The concept of life satisfaction as conceptualized by (Dienner et al., 1985), is the cognitive aspect of the more general concept of subjective well-being, which dealt with how people perceive their life conditions (Esnaola et al., 2017). This cognitive assessment basically depends on the prevailing life circumstances and how the individuals feel about their life directions and future options (Lopez-Otega et al., 2016). Specifically, assessment of one's life as satisfying or unsatisfying would be tied to the established subjective standard within the person cognitions, so that life encounters that are in uniform with their standard have greater impression on higher assessment of how satisfied they feel about their life than those that negate it.

Life satisfaction plays an influential role on subjective wellbeing and facilitates adaptive psychosocial functioning in people, making it an essential element in the human life cycle (Seligman & Csikszentmihalyi, 2000; Suldo & Huebner, 2006). Multiple studies on general subjective wellbeing and life satisfaction have suggested a strong association between a happier life, physical, mental and behavioural health (Diener & Chan, 2011; Helliwell et al., 2019) and maintenance of positive interpersonal relationship and professional success (Helliwell et al., 2019; Oishi et al., 2007). Similarly, individuals who are satisfied with the general life experiences thrive well in life, exhibit higher work productivity, engage more in effective learning and increased health related behaviours (Diener & Chan, 2011, Hinz et al., 2017; Strine et al., 2008).

Previous studies identified the subjective experience of stress and pressures of life on an individual's has been observed among young persons, especially during the outbreak of covid-19 (Lin et al., 2020). Young people are susceptible to life pressures with negative outcome on their psychological wellbeing (Helliwell et al., 2019) For example, as individuals go through time and age specific tasks, events, and activities (e.g., schoolwork, job tasks, relationship, marriage, childbirth), the pressures that comes from the expectations of others as well as their personal need to excel become more intense (Silva et al., 2015). Research findings show that life issues that exerts both psychological and physical pressures on individuals could influence psychological wellbeing and life satisfaction as well as future health (Hernandez et al., 2017).

Diener et al. (1985) provided the lead in measuring the state of life satisfaction in the population by introducing the broadly accepted Satisfaction with Life Scale (SwLS) with focus on screening global life satisfaction. The 5-item SwLS has been utilized in most research on subjective wellbeing (Agbo et al., 2012; Fergusson et al., 2015; Vinsalia&Handajani, 2021) and appeared to function well in diverse cultures and languages. The instrument has been validated and administered in numerous languages including Angola (Tomas et al., 2015); Spanish (Atienza et al., 2016), Dutch (Arrindell et al., 1991), Portuguese (Silva et al., 2015), Germany (Hinz et al., 2018), and Chinese (Ye, 2007). The five-item SWLS have been observed to function in a different way across cultures (Oishi, 2006; Tucker et al., 2006). For example (Tomas et al., 2015; Vaughan et al., 2010) hinted on how age and cultural affiliation could play a role on how individual interpret and respond to the five-item SWLS, while gender may have a little influence on performances on the SWLS items. However, the measure has displayed satisfactory psychometric properties with high reliability coefficients (Cronbach's alpha) between .79 to .89 (Diener et al., 1985; Pavot& Diener, 2008), test-retest reliability values of .83 were reported after two-week, .84 after a month and .82 after two months (Pavot& Diener, 2008). Adequate construct, convergent and divergent validity coefficients have been established during several validation studies using the scale (Galanakis et al., 2017; Pavot& Diener, 2008; Sachs, 2004), making it a reliable screening tool for life satisfaction, across different ages, sexes, socio-economic class and cultural backgrounds (Morrison et al., 2011; Vazquez et al., 2013). The factorial and structural analyses have supported a single factor and sufficient model fit indices of the five-item SWLS as hypothesized by the authors. However, the last item in the instrument sometimes exhibited a poor factor loading (Vazquez et al., 2013), possibly because the said item focus on the adaptation of the past years than the current state of adjustment compared to the rest of the items (Pavot& Diener, 2008).

The current study aims to revalidate the SWLS using a Nigerian sample. Considering the poor socio-economic conditions, insecurities and the rising cost of living being a recurrent problem among Nigerians (Agbo et al., 2014), the need to accurately measure the state of wellbeing and life satisfaction among this population will prove beneficial for social policy makers, as life satisfaction is an important index in determining how the people are living and flourishing as a nation (United Nations Development Programme, 2010). Thus, the scant of information on the factorial and structural strength of the SWLS among Nigerian population which may likely result in underreporting of the psychometric property of the scale in Nigeria necessitate this

research. The information from this research is expected to enhanced the large body of available statistics on the cross-cultural suitability of the SWLS and improve the scale among the Nigerian sample considering the socio-cultural circumstances that affect them. Hence, the current research seeks to (a) examine the exploratory factor analysis of the SWLS measurement; (b) confirm the single dimensionality of the SWLS using Structural Equation Modeling (c) examine the concurrent validity of the SWLS with similar measure.

Methods

Design

Cross-sectional survey design was employed in the research to establish the psychometric properties of the SLWS using a cohort of university workers in Nigeria.

Participants

One hundred and nine non-teaching staff were purposively selected from a Nigerian public university in Ibadan Oyo State Nigeria participated in the first study to determine the CFA of the instrument. Majority of the participants were males 70 (64.2%) while the females were 39 (35.8%). Their ages are between 29 and 61 years (Mean = 44.75, SD = 7.36). In the second phase, a fresh sample of one hundred and ten non-teaching staff was purposively drawn from a Nigerian privately-owned university in Osun State to establish the concurrence validity of the scale. Informed consent of the participants was taken after they were briefed of the study's objectives. Participation in the research was voluntary and withdrawal from participation was without any implication. Google form was deployed for data collection and only participants that click the consent box can continue with filling of the online questionnaire. Adopting snowball sampling technique, the link to the form was sent to the E-mails and social media sites i.e. Telegram, WhatsApp groups of the purposively selected respondents, and were implored to assist in disseminating the link to their networks, however, participants were only allowed to make single submission but they were allowed to edit their responses to the online form. The link was active for about two weeks. The inclusion criteria include being a staff of the selected university and willing to volunteer about 10 minutes of their time to take part in the research. Information from the participants was assured of strict confidentiality.

In all, a total of 219 non-teaching staff working in public and privately-owned universities in Osun and Oyo States, Nigeria (one hundred and nine for the CFA and one hundred and ten for the scale concurrent validation) were selected for the research. The Research Ethics

Committee of Redeemer's University, Nigeria approved the research protocols.

2.5 Instrument

Satisfaction with Life Scale (SwLS) developed by Diener et al. (1985). The instrument have 5 items (e.g., "The conditions of my life are excellent" and "If I were born again, I would change almost nothing in my life") was answered with a seven-point Likert scale (1 = strongly disagree, 7 = absolutely agree). The SWLS has shown a consistent and satisfactory Cronbach's alpha which ranged from 0.74 to 0.87 in different studies (Espejo et al., 2022; Pavot& Diener, 2008) and test–retest reliability of .82. The Omega (ω_t) of .84was observed in this research.

Data Analysis

The data was analyse using the SPSS version 23. Data on the sociodemographic variables were presented using mean, standard deviation and percentages, sample norms for Nigerian sample were determined for the scale. The instrument's internal consistency/reliabilitywas evaluated using McDonald's Omega (ω_t). The CFA in the first study (n=109). The measurement model was investigated using SPSS-AMOS version 21 (Irwing& Hughes, 2018). An array of tests for overall fitness was calculated using Chi-square, the Comparative Fit Index (CFI), Goodness of Fit Index (GFI), and Root Mean Square Error of Approximation (RMSEA), being the fit indices recommended by Hu &Bentler (1999). Statistics of the concurrent validity was examined to determine the correlation between the measure and a similar construct (Irwing& Hughes, 2018); for example, the SWLS and RLSS were correlated using Pearson's r.

Results

Table 1: Sociodemographic attributes of the Participants (n=219)

Variable	Frequency	Percentage (%)
Gender		
Male	113	51.6
Female	106	48.4
Marital Status		
Single	50	22.8

Married	156
71.2	
Separated	13
5.9	
Highest Qualification	
Secondary education	64
29.2	
First degree	76
34.7	
Postgraduate	79
36.1	
Designation?	
Junior Staff	84
38.4	
Senior Administrative Staff	93
42.5	
Senior Technical Staff	42
19.2	
Age Range	29-61
Mage = 43.09 (SD=7.53)	

Table 1 showed that the mean age of the participants was 43.09 (SD: 7.53) years. Male constituted 113 (51.6%) and female constituted 106 (48.4%)of the total sample. It is observed that 50 (22.85) were single, 156 (71.2%) were married while 13 (5.9%) were separated/divorced. The shows that 64 (29.2%) of the participants completed secondary school education, 76 (34.7%) have first degree while 79 (36.1% have postgraduate degree. Finally, the table shows that junior staff was 84 (38.4%), senior administrative staff were 93 (42.5%) while senior technical staff were 42 (19.2%).

Table 2: Model Fit Index for Satisfaction with Life Scale (SwLS)

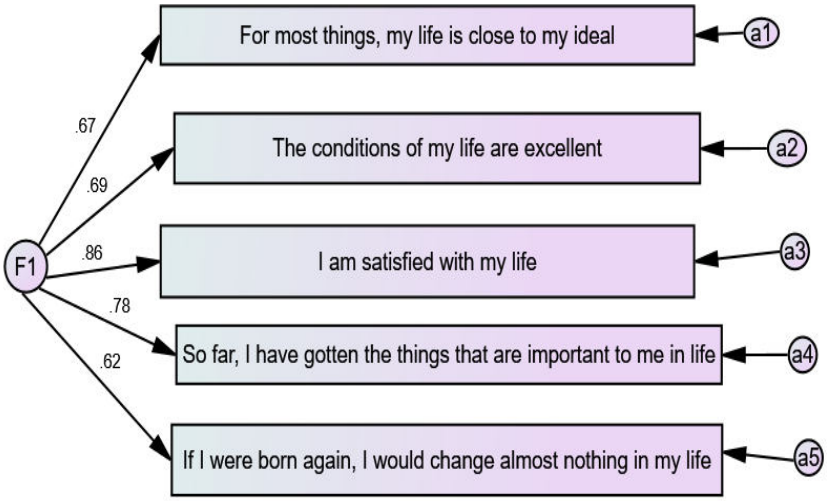
Model Fit Index	**Measures**	**Abbreviated**	**Accepted Value**	**Model Value**
Absolute Fit Index	Goodness of Fit Index	GFI	≥0.90	0.960
	Chi-square/Degree of Freedom	CMIN/DF	≥3.0	11.432/5
	Standardised Root Mean Residual	SRMR	<0.05	0.0407
	Root Mean Square error of	RMSEA	=.05 to .08	0.055

	approximation			
Incremental Fit Index	Comparative Fit Index	CFI	≥0.90	0.970
	Tucker-Lewis Index	TLI	≥0.90	0.940
Parsimony Fit Index	Parsimony Comparative Fit Index	PCFI	≥0.50	0.604

Source: Author

Table 2shows that the single dimension model for the instrument yielded goodness-of-fit indices which supported the acceptable threshold set for acceptability of a model. The chi square was significant ($\chi 2 = 11.432$; df = 5; p = .043). Similarly, other indicators of fit (CMIN/df, GFI, TLI, CFI RMSEA and SRMR), revealed a satisfactory value e.g.TLI= 0.940, GFI = 0.960; CFI = 0.970; RMSEA = 0.055 and SRMR = 0.0407.

Figure 1. Confirmatory factor analysis path diagram depicting the item loadings for the SwLS items.



Source: Author

Table 3: Item - Total Statistics of Satisfaction with life Scale (SWLS)

Reliability Statistics				
	N of Items			
Omega (ω_t)= .84	**5**			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
In most ways, my life is closer to my ideal	16.15	39.14	.60	.82
The conditions of my life are excellent	16.26	39.25	.63	.81
I am satisfied with my life	16.65	34.89	.78	.77
So far, I have gotten the important things I want in life	16.98	37.49	.63	.81
If I could live my life over, I would change almost nothing	17.59	37.08	.61	.82

Source: Author

Table 3 reveals an acceptable internal consistency value of (Omega (ω_t)= .84) for the 5 items SwLS.

Phase Two: Validation

Method

Following the examination of the reliability and factor structure for the items of the instrument, thephase two of the research provided evidence for the concurrent validity. For the second study, 110 participants were selected from a privately-owned university in Osun State, Nigeria. 43 (39.1%) were males and 67 (60.9%) were females. Age ranged between 29 and 59 years (Mean age of 41.43, SD = 7.35).

Instruments

Respondents were given self-reported five-item Satisfaction with Life Scale (SWLS; Diener et al., 1985) and Riverside Life Satisfaction Scale (RLSS)a six-item instrument created by (Margolis et al., 2019) (e.g., "I

am content with my life" and "Those around me seem to be living better life than I do"), rated on a 7-point response scale (1 = strongly disagree, 7 = strongly agree), the aggregated scores are between 6 and 42, while higher scores showed greater levels of life satisfaction. The instrument shows satisfactory value of reliability .78 in the initial research by author (Margolis et al., 2019).AnOmega (ω_t) of 0.75 was observed in the present study.

Procedure: The data collection during the second phase was similar to the one adopted at the initial phase of the research. Data was collected within two weeks in February 2022.

Table 4: The Measure of Validity of the SwLS

Variables	**(α)**	**RLSS (r)**
SwLS	.84	.79**
RLSS	.75	

**** p <.01**
SwLS, Satisfaction with Life Scale
RLSS, Riverside Life Satisfaction Scale

Source: Author

Table 4 shows the concurrent validity of the SwLS investigated alongside a similar standardized measure: Riverside Life Satisfaction Scale (RLSS) Margolis et al. (2019). Significant positive correlations was observed between SwLS and RLSS (*r*= .79, *p*=.000). The outcome reveals that SwLS is valid as an assessment tool for investigating life satisfaction within the Nigerian setting.

Table 5: Calculation of Norms for the SWLS
The 95% Confidence Interval of cutoff point determination for SwLS by gender

	Group Sample	Individual Male	Individual Female
Margin of Error	1.15	1.38	1.44
Sample size	219	113	106
Sample mean	21.01	20.26	21.60
Standard deviation	7.52	7.46	7.56

95% Confidence Interval	21.01 (95% CI 20.01 to 22.02)	20.26 (95% CI 18.88 to 21.64)	21.60 (95% CI 20.16 to 23.04)
Cutoff point	≥ 20.01	≥ 18.88	≥ 20.16

Source: Author

The cutoff points of the SWLS was investigated utilizing the 95% Confidence Interval (CI) technique. Table 5 revealed the group mean (20.01 to 22.01) based on 219 samples [21.01(95% CI 20.01 to 22.01)], the male population mean ranged from 18.88to 21.64, based on 113 samples [20.26 (95% CI 18.88 to 21.64)]. The obtained mean (20.16 and 23.04), based on 106 samples [21.60 (95% CI 20.16 to 23.04)]. Below these intervals is the limit (i.e., mean score minus 2 Standard Deviation) of ≥20.1, ≥18.88 and ≥ 20.16indicated the limit points for the group samples, male and female samples, respectively.

Discussion

The current study explored the psychometric characteristics of the 5-item Satisfaction with Life Scale (SWLS) among sample of Nigerian middle-aged adults in southwestern Nigeria. The result of the study demonstrated that the instrument possesses acceptable and satisfactory internal consistency and concurrent validity coefficient with similar measure. Regarding the outcome of the confirmatory factor analysis supported the single factor model of the SWLS with satisfactory fit indices, including GFI, TLI, CFI and SRMR, which are in keeping with the findings from other literatures (Atienza et al., 2016; Strine et al., 2008).The reliability value (Cronbach's alpha) of the item of the SWLS among the sample was (Cronbach's a = 0.84) andwhich is satisfactory (Vaughan et al., 2020) and corroborate the findings of other authors (Pavot& Diener, 2008; Ruggeri et al., 2020; Silva et al., 2015). The high reliability coefficient indicates that the Satisfaction with Life Scale has an acceptable internal consistency and can be used as a reference point for screening life satisfaction in future research among Nigerian sample. The finding of the study revealed complementary evidence for concurrent validity with similar instrument of well-being which corroborated previous findings (Vinsalia & Hanjani, 2021; Wiest et al., 2011). The Satisfaction with Life Scale is a well fitted instrument for assessing life satisfaction among individuals in different context. The current study confirm the potential usage of SWLS as confirmed in other studies with the same cultural experiences as Nigeria.

Conclusion

The SWLS was re-validated for use among Nigerian middle-aged adults and was found acceptable for use among the population. The reliability coefficient of the SWLS items is satisfactory. The Satisfaction with Life Scale (SWLS) had strong positive correlations with Riverside Life Satisfaction Scale (RLSS), indicating a suitable validity coefficient. In addition, the SWLS is gender-sensitive, as the 95% Confidence Interval (CI) showed that male samples had a lower cutoff point than female samples. The SWLS is useful as a screening tool for SWB and life satisfaction among adolescents and adults in Nigeria and other nations with similar socio-cultural experience.

Limitations of the Study

The current study was carried out within a state in a multicultural country like Nigeria, using a small sample size, future study need to explore the psychometric properties of the scale among large samples of middle aged adults for a robust findings. Therefore, generalization of the findings may be affected by the sample size, however, the study provide evidence for the use of the scale among Nigerian population. Future study may want to explore test-retest reliability and validated the scale with other measure so as to determine its discriminant validity.

Conflict of Interests: none.

Ethical Approval: The research used humans as respondents for the assessment. Due to this, the authors adhere to the Helsinki Declaration procedures and ethics in using human subjects for research. The objectives and procedures of the research was reviewed and approved by Redeemer's University's Internal Research Ethics Committee.

Funding/Support: No funding was received by the authors.

Informed Consent: Participants were properly briefed about the focus of the research and their consent was sought before the commencement of the research.Participation was voluntary, confidentiality was assured, and the respondents were free to leave at any stage of the study where they felt uncomfortable.

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