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Exploratory factor Analysis on Satisfaction with Life Scale (SWLS) with army veterans sample in Malaysia

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Abstract

The objectives of this study are to explore the reliability and factor structure of Satisfaction with Life Scales (SWLS) in measuring satisfaction with life at retirement among army veterans. SWLS is a unidimensional factor comprising five items to measure life satisfaction based on a respondent's subjective evaluation of his own satisfaction of life that he experiences in general. The SWLS has been extensively used across many countries employing different types of samples. However, little is known on the items of SWLS for a sample of army veterans in Malaysia. In this study, the sample consists of pensionable other-ranks (Ors) army veterans (n=101) who had attended resettlement training prior to their retirement. Questionnaires were administered via mailed survey at the pilot test stage. A stratified random sampling was employed in the sample selection. The result on exploratory factor analysis indicated that only four out of five items conformed to the scale. The Satisfaction with Life Scale showed good internal consistency with an alpha value of 0.858 for its reliability. The reliability and items of SWLS scales discovered in the study indicate that SWLS is a promising reliable scale for data collection from army veterans.

Keywords: Reliability, Exploratory Factor Analysis, Satisfaction With Life Scale, Army Veterans, Malaysia

Introduction

Satisfaction with Life Scale (SWLS) is a scale widely used in measuring cognitive judgment of subjective well-being in general through self-reporting on the way an individual judges his own life

experience (Diener, Emmons, Larsen, & Griffin, 1985). Pavot and Diener (1993) defined life satisfaction as “a judgmental process, in which individuals assess the quality of their lives on the basis of their own unique criteria”. Thus, life satisfaction is not considered as a permanent experience of an individual but as interchangeable within the context of how an individual lives and experiences the life-changing events. In other words, an individual expresses his own judgment on what he considers as life satisfaction according to his point of view at a particular time. An individual will be likely to admit a high level of life satisfaction if he rates his current stage of life as matching his desired standard.

Problem Statement

Veterans of armed forces in Malaysia are defined as Malaysian citizens who had served in the army full time and had never been retired or discharged from service on grounds of misconduct. They comprise regular forces of the Malaysian Armed Forces, volunteer forces mobilised full time by the Malaysian Armed Forces regardless of length of service, Force 136, British Forces who served in Malaya, Malaysia or Singapore, and Sarawak Rangers (*Veterans Act 2012 (Act 740)*, 2012). They rendered their services in the armed forces wholeheartedly and led a life routine that is different from their civilian counterparts in terms of discipline, physical training, and regimented activities during their active duties. While on active duty, they had constantly received commandment from their superior, thus at retirement, they need to accept and adapt to the changes in their daily routine, life expenses, second career, social interaction, and networking as they return to the life of civilians.

Wolpert (2000) discovered that about 30% of veterans experienced difficulties in adjusting and being satisfied with life after retirement. Meanwhile, Normah Zakaria (2013) revealed that veterans face difficulty in managing their second career and life affairs in their middle-age. As a result, satisfaction with life is a crucial variable that needs to be studied to measure the subjects' satisfaction based on their own perception of their experience of life. Thus, an examination on the reliability and validity of Satisfaction with Life Scale (SWLS) is paramount prior to the study.

In Malaysia, the validation and psychometric properties of SWLS have long been reported as a promising reliable scale with an internal consistency of alpha Cronbach value of 0.83 on a sample of 816 Malay and 738 Chinese participants (Swami & Tomas Chamorro-Premuzic, 2009); a confirmatory factor analysis revealed SWLS is a unidimensional factor structure consisting of 5 items. Meanwhile, based on a sample of psychiatric (n=283) and medical (n=200) outpatients, Aishvarya et. al (2014) found that SWLS had an internal consistency of alpha Cronbach's value of 0.86 and a good criterion validity with a mean score of 20.5 for psychiatric patients and a mean score of 25.4 for medical patients. Emerson, Guhn, & Gadermann (2017) and Jang et al. (2017) argued that the characteristics, culture, and age of the sample using SWLS in measuring their life satisfaction might reveal differences from one sample to another in terms of reliability and factor structure. The two studies by Swami & Tomas Chamorro-Premuzic (2009) and Aishvarya et. al (2014) used a sample of civilians that cannot be generalised to army veterans population, suggesting that studies examining the reliability and factor structure of SWLS on army veterans are still lacking.

Research Objectives

The study aimed at examining the reliability and factor structure of the SWLS on a sample of army veterans in Malaysia.

Literature Review

Although Satisfaction with Life Scale (SWLS) is widely used in many countries to measure life satisfaction, recently, Jang et al., (2017) reported that in a cross-cultural research study across 26 countries on the measurement invariance of SWLS, it was found that most of the countries participating in the study showed noninvariance for item no. 2= *The conditions of my life are excellent*, no. 4=*So far I have gotten the important things I want in life* and no. 5= *If I could live my life over, I would change almost nothing*, while 26 countries in the study showed invariance for item no. 1= *In most ways my life is close to my ideal* and no. 3= *I am satisfied with my life*. The noninvariant result for item 2, 4 and 5 was found not solely attributable to the mean age of a country, implying a strong possibility of other sources contributing to the noninvariance occurrences. However, the data did not include countries in Central Asia, South Asia, and South East Asia. Besides, Emerson, Guhn, & Gadermann, (2017) demonstrated that meaningful comparisons of the mean of SWLS across gender may be valid in some situations, but most likely not valid across culture or age groups. Participants mostly ascribe similar meaning to like items on the SWLS regardless of their gender although age and especially culture seem to influence this process. Therefore, the result cannot be generalised to the population of South East Asia, or Malaysia specifically. Since cross-cultural researchers discovered the existence of noninvariant measurement of the item on SWLS for 26 countries, exercising caution is recommended when intending to use SWLS for a research study in Malaysia applying different characteristics of the sample.

The Satisfaction with Life Scale (SWLS) has been administered with various kinds of samples across the globe comprising Malay and Chinese in Malaysia (Swami & Chamorro-premuzic, 2009); medical and psychiatry outpatients in Malaysia (Aishvarya et al., 2014); German community (n=9711) sample with confirmatory factorial analysis verifying that SWLS has one dimension scale (Hinz et. al (2018); older adults aged 50-79 in USA, England, and Japan, with a single factor structure detected across these countries with the Japanese sample exhibiting lower intercept in item 4 (Whisman & Judd, 2016). Regardless, Japan was selected to represent East Asian Countries.

Methods

Participants. Participants were 101 pensionable -s (Ors) army veterans ranging from warrant officer 1 to private as their last rank before retirement. They were randomly selected using stratified random sampling technique throughout Malaysia covering five regions namely Northern, Klang Valley, Southern, Eastern, and Sabah and Sarawak. Participants were of middle-age from 40 to 49 years ($M = 43.79$, $SD = 1.951$). Participants with incomplete answers for any five items were removed during exploratory factor analyses. In this study, the subsequent analysis was performed on the responses from 101 out of 250 other-ranks (Ors) army veterans.

Instrument. The Satisfaction with Life Scales (SWLS) was developed by Diener, Emmons, Larsen, and Griffin (1985). The SWLS is a unidimensional scale with five items. Interval scale likert-type items

addressed the general view of personal experience on life satisfaction with each item scored on a scale of 1 = Strongly disagree to 7=Strongly agree. All are positive items.

Procedure. The SWLS was initially translated into the Malay Language using the standard back-translation technique (Brislin, 1970) in order to accommodate the participants who were only well-versed in the Malay Language, thus enabling them to respond to the questionnaires. An independent certified translator unaffiliated with the study then translated this version back into English. A Malay Language lecturer checked the translated Malay language version of SWLS to resolve minor differences that emerged during the back translation process. Further, the Malay translated version of SWLS was sent to three subject matter experts to verify the content validity of the version. Prior to the administration of SWLS to the participants, the translated version had been pre-tested to one participant who was later excluded from participating in the actual data collection. A pre-testing exercise of the translated Malay version on the SWLS to this particular participant is important to ensure that the instruction given, language used on the items and scales can be understood by all participants. In addition, participants also provided their demographic profile consisting of gender, age, level of education, length of retirement, and last ranks before they retired.

Analyses. The data were analysed using IBM SPSS version 22. Exploratory factor analysis was then carried out with principal component analysis (PCA) as the method of factor extraction, in order to identify the factor structure and items for the SWLS.

Results

Demographic profile of the participants. The current study comprises 98 percent male and 2 percent female counterparts. The majority of respondents were in between 40-45 years old (80.2%), SPM holders (66.3%), and Corporal (27.7%) with 1.5 years of retirement period (35.6%). Self-health among army veterans was at a good level (52.5%). Table 1 below summarises the demographic profile of the respondents.

Table 1: Demographic profile of the respondents (n=101)

Demography	Sub-profile	Frequency (n)	Percentage
Gender	Male	99	98
	Female	2	2
Education	SRP/PMR	24	23.8
	SPM	67	66.3
	STPM	2	2
	SKM 2	4	4
	SKM 3	3	3
	Diploma	1	1
Age	40-45	81	80.2
	46-49	20	19.8
Self-health	Very good	12	11.9
	Good	53	52.5
	Satisfactory	25	24.8
	Unsatisfied	10	9.9
	Very unsatisfied	1	1.0
Length of retirement	1-6 months	1	1.0
	7-12 months (1 year)	10	9.9
	13-18 months (1.5year)	36	35.6
	19-24 months (2 years)	26	25.7
	25-30 months (2.4 years)	28	27.7
Last rank	Warrant officer 1	7	6.9
	Warrant officer 2	19	18.8
	Staff sergeant	19	18.8
	Sergeant	23	22.8
	Corporal	28	27.7
	Lance Corporal	4	4.0
	Private	1	1.0

- *SRP/PMR- Sijil Rendah Pelajaran (Lower Certificate examination)/Penilaian Menengah Rendah(Lower Secondary Assessment)*
- *SPM- Sijil Pelajaran Malaysia/Malaysia Certificate Examination*
- *STPM-Sijil Tinggi Peperiksaan Malaysia (Higher Examination Certificate of Malaysia)*
- *SKM-Sijil Kemahiran Malaysia (Vocational Certificate of Malaysia)*

Internal Reliability of SWLS. In assessing reliability, internal consistency is employed in the study. Pallant (2005) stressed that internal consistency refers to the degree to which all the items forming the scale, measure the same underlying attribute. The results showed that the SWLS has sufficient internal consistency, with a Cronbach's alpha (α) value of 0.858, which is above the criterion level

for coefficient's alpha of 0.70 and above as suggested by Nunally & Bernstein, (1994). Thus, the SWLS can be used to examine its factor structure.

Exploratory Factor Analysis (EFA). In this study, the EFA was conducted on 101 participants after removing the participants of incomplete responses. To begin with, the normality of the data was examined. In normality testing with Shapiro-Wilk test (Shapiro & Wilk, 1965), the p value of the data must be above 0.05 for it to be considered normally distributed. In this study, the Shapiro-Wilk normality test showed that the data in table 2 are not normally distributed as all p-values of the items (GSwls1, $W=0.879$, $p=.000$, GSwls2, $W=0.880$, $p=.000$, GSwls3, $W=0.792$, $p=.000$, GSwls4, $W=0.825$, $p=.000$) are less than 0.05.

The cut-off value range was given as ± 3.29 (Hae-Young Kim, 2013) for skewness and kurtosis. In determining skewness and kurtosis on medium sample ($50 < n < 300$), the study showed a skewness of -1.155 ($SE=.240$), which is over the range of ± 3.29 . This indicates that the data is not normally distributed and is negatively skewed. Meanwhile, the kurtosis of 1.097 ($SE=.476$) indicates that the distribution is flatter.

Table 2. Shapiro-Wilk test of normality on SWLS

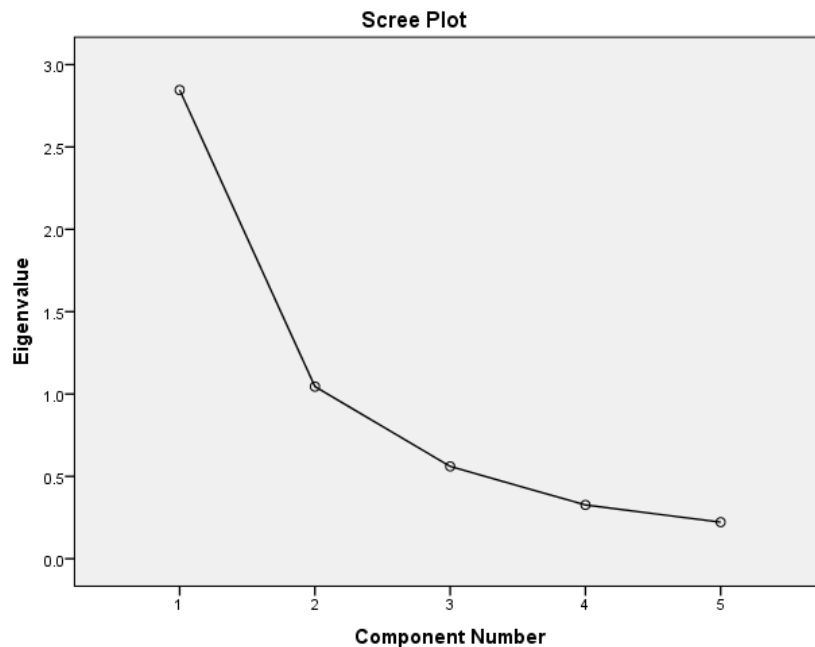
	Shapiro-Wilk		
	Statistic	df	Sig.
SMEAN(GSwls1)	.879	101	.000
GSwls2	.880	101	.000
GSwls3	.792	101	.000
GSwls4	.825	101	.000

Secondly, the sample measurement adequacy of the study was tested using Kaiser-Meyer-Olkin (KMO) measures of sampling adequacy. In testing KMO, Tabachnick & Fidell (2007) suggested that the KMO values of .60 and above are required and to be acceptably good the bits value should improve as it reaches 1.0. In the current study, the acquired KMO value of .750 was above the recommended value of .60, which fulfilled the sample adequacy for the study and thus, a factor analysis on this data could be conducted. Thirdly, Bartlett's test of sphericity was significant ($X^2 = 206.037$, $df=10$, $p < .05$), indicating that the correlation matrix was not an identity matrix. Fourthly, the communalities (in table 3) for all except 1 item (item 5 = .029) were above .40 (Osborne & Costello, 2005), confirming that each item demonstrated a magnitude of low to moderate and high communalities of .40 to .70 and .80 or above. Thus, it shared some common variance with other items. Given the overall indications, factor analysis was deemed possible; however, it must be conducted with caution.

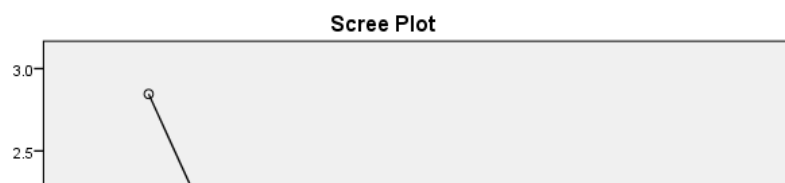
Table 3. Component, communalities, and factor matrix of the SWLS

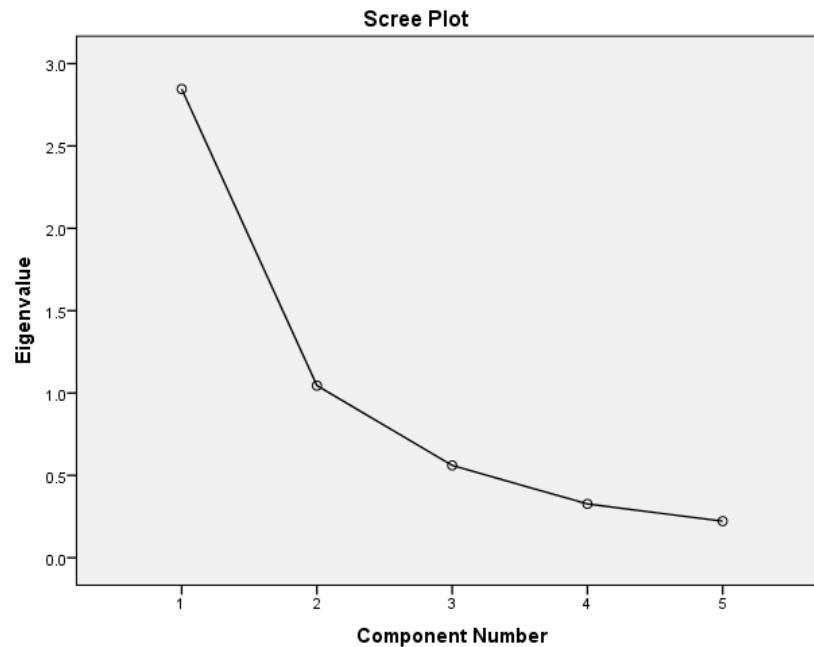
Component: 1	Communalities extraction	Factor loadings matrix
GSwls1	.608	.779
GSwls2	.814	.902
GSwls3	.765	.874
GSwls4	.631	.795
GSwls5	.029	

Extraction Method: Principal component analysis.



A factor analysis was conducted to extract the component and item for SWLS. The construct validity of the SWLS was performed using factor analysis to test whether the SWLS has one component or more. Principle component analysis with scree plot as in figure 1 was used to test the data on factor analysis. The result showed that the SWLS has one component with only four items in which the loadings were in between .779 and .90. Table 3 summarises the component, communalities extraction and factor loadings matrix for SWLS. The SWLS item 1 to item 4 were retained due to higher loadings that exceeded the cut-off point of .32 (Tabachnick & Fidell, 2001). As for item 5, it was dropped for showing no loading, indicating that the item was excluded from one component of SWLS.





Discussion

The study aimed at examining the reliability of the SWLS. Nunally & Bernstein (1994) suggested that the reliability of a construct must be 0.70 and above to be considered good. The internal reliability of the scale is acceptable with an alpha value of 0.858, indicating that the scale showed sufficiently good reliability of its internal consistency with veterans sample. Therefore, the SWLS is considered reliable to be used in research study with veterans sample.

On the basis of the data screening and factorability of the data, factor analysis was found suitable to be performed on SWLS. A unidimensional factor structure of SWLS was obtained via principal component analysis and exploratory factor analysis, although the sample tested did not reveal similar items of SWLS as reported by other studies. The SWLS with veterans sample had shown to have four items instead of five through retaining of items with loading of above .30 (Osborne & Costello, 2005). The remaining four items were GSws1 = *In most ways my life is close to my ideal*, GSws2 = *The conditions of my life are excellent*, GSws3 = *I am satisfied with my life*, GSws4 = *So far I have gotten the important things I want in life*.

Pertaining to item 5, which was GSws5 = *If I could live my life over, I would change almost nothing*; the study showed it had a low communality indices, therefore the item is excluded from the scale. Culture and age might influence the process of making judgement in measuring life satisfaction of an individual (Jang et. al 2017; Emerson, Guhn & Gadermann, 2017).

Veterans who are Malays and Muslims perceived the statement on item 5 as *whatever happened in the past it was over, as nothing can be changed*. Thus this statement was not applicable to them to get a reliable response. The statement of item 5 is culturally bound as veterans in Malaysia come from the collectivistic culture, where Islam as their religion and the way of life affects the Malay culture. As Islam is embedded in the Muslim's way of life and beliefs, it also permeates their values, behaviour, and way of thinking (Mastor, Jin, & Cooper, 2000). One of the pillars of Faith (Iman) in Islam is believing in Al-Qadar (Pre-ordainment), which means everything in our lives is already written. Their belief in al-Qadar (pre-ordainment) influence the veterans' perception that whatever happened in the past had already happened and pre-written. Besides, the veterans participating in the study were all former other-ranks (Ors) army. While on active duty in the army they were regimentally obligated to obey the commandment of their superior. Hence, if they had been given the opportunity to do something satisfied to whatever had happened in the past according to their judgement of satisfaction, they might not be able to manifest it.

Contribution

The current study contributes to the existing literature in two ways. First, this study provides evidence that SWLS is a reliable scale to measure life satisfaction on army veterans in Malaysia. Second, even though some studies found that SWLS has one factor structure with five items (e.g., Swami & Tomas Chamorro-Premuzic, 2009; Aishvarya et al., 2014), this study found a unidimensional factor with only four items in measuring SWLS.

Limitations

The study has its own limitation in that the participants were among other-ranks (Ors) army veterans, thus generalisation cannot be extended to air force and navy veterans. Moreover, the sample of the study on army veterans is relatively small with (n=101).

Directions for Future Research

Future research should investigate the psychometric properties of SWLS on the sample of the other two veterans population, the navy and air force veterans, respectively. Any future studies should embark on identifying cultural specificity, age, and any other variables that might influence the way participants provide answers for the scale. The use of a larger sample size is recommended on any study that investigates the validity and reliability of the SWLS.

Conclusion

In conclusion, the SWLS is a reliable scale to measure life satisfaction. It is a unidimensional factor with four items. The SWLS can be used and administered with confidence in future research among other-ranks (Ors) army veterans in Malaysia.

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