Satisfaction with life among public and private university students in Sabah, Malaysia: A modification scale using factor analysis


Abstract This research intended to develop a valid and reliable instrument of the Satisfaction with Life Scale (SWLS) to measure satisfaction with life (SWL) constructs among public and private university students in Sabah, Malaysia, through the exploratory factor analysis (EFA) procedure. The pilot study obtained a sample of 108 students from public and private education institutions in Sabah, Malaysia, through an online survey using a self-administered questionnaire. The researchers performed the EFA procedure on SWL construct using IBM SPSS 25. The Bartletts' Test of Sphericity is highly significant (Sig. = .000). Furthermore, the sampling adequacy by Kaiser–Meyer–Olkin (KMO = 0.839) is excellent. Using the extraction method of Principal Component Analysis (PCA) with Varimax Rotation, a component of the SWL construct is extracted with an eigenvalue of 3.101. The variance explained for this component is 62.030%. The construct of SWL has Cronbach's alpha value of .817. The development scale and validation confirmed that the instrument is consistent and stable with both private and public college and university student samples. It adds a remarkable contribution to the measurement of SWLS, mainly in the context of higher education institution students. The EFA outcomes formed a configuration that extracts a component of SWL, which can be measured by the original five items established in this research. This research reveals that the SWL construct is applicable in this study.

Keywords: satisfaction with life, university students, measurement, scale development

1. Introduction

Life satisfaction is a cognitive component that refers to an individual's level of satisfaction with himself/herself based on the standards that the individual has defined as the desired life (Diener et al 1985). Individuals who show high levels of satisfaction with their lives can enjoy significant benefits such as maintaining a healthy lifestyle (De Neve et al 2013).

Several measurement instruments have been built to measure life satisfaction. Among most frequently used is the Satisfaction with Life Scale (SWLS) constructed by Diener et al (1985). The peculiarity of the measurement of life satisfaction constructed by Diener et al. (1985), which is mainly used in measuring the level of life satisfaction to date, is that Diener and Suh (1999) and Schimmack (Maroufizadeh et al 2015), suggested that phenomena that occur become subjective experiences due to the factors of cultural context differences and phenomena that occur. According to Diener and Suh (1999) and Schimmack et al (2002), individual life satisfaction is likely to be influenced by cultural factors. Neubauer et al (2019) suggested that phenomena that occur become subjective experiences
that can affect an individual’s level of life satisfaction. For example, the COVID-19 outbreak has a very significant impact on individual life satisfaction, especially for students whose teaching and learning systems are forced to undergo a new norm, i.e., online classes (Alghamdi 2021; Browning et al 2021).

Satisfaction with life among university students is a very important construct. A study conducted by Diener (2000) on college students from 17 different countries found that life satisfaction is more important than money to most college students. This is due to life satisfaction being closely related to physical health (Darling et al 2007), academic achievement (Chow, 2005), and optimistic attitudes (Extremera et al 2009). A study conducted by Paschali and Tsistas (2010) on 200 university students found that the level of life satisfaction did not differ between male and female students. The study explained that students who reported low scores in anxiety showed high levels of life satisfaction and vice versa. The study also explained that the life satisfaction scores of first-year students were lower than those of students who were in their final year of study.

The outbreaks of COVID-19 have dramatically impacted people’s mental health, especially their satisfaction with life. Most people were under lockdown due to the pandemic, which will cause long-term economic, academic, and health impacts (Kim et al 2020). University students are among the strongly affected by COVID-19 because of uncertainty regarding their future. This is because students start to face worries about their academic success, future careers, and lives. Before the pandemic occurred, university students were usually met with academic stress, but after the pandemic hit, their anxiety increased, and the level of anxiety affected their life satisfaction (Holm-Hadulla and Koutsoukou-Airyra 2015). Therefore, the researchers found that there is a need to conduct psychometric testing on SWLS among students of public and private universities, especially in the state of Sabah, which is also faced with the impact of COVID-19 outbreaks.

2. Methodology

This study employed a cross-sectional design through an online survey using a self-administered questionnaire. Using pilot study data obtained from 108 students, the aims were to investigate the validity and reliability of the Satisfaction with Life Scale (SWLS) to measure the construct of satisfaction with life (SWL) among public and private university students in Sabah Malaysia. Participants were enrolled in public or private universities in Sabah, Malaysia. A total of 108 students were selected using a non-random sampling method. The data were collected through an online survey using a self-administered questionnaire. All participants volunteered to participate. Before conducting this research, students were informed to obtain approval for voluntary participation. Data were collected by distributing online questionnaires designed using a Google form link to students. This study was reviewed by the Ethics Committee of the Faculty of Psychology and Education, Universiti Malaysia Sabah (UMS). They decided that the study had been following the ethical standards of psychology. Furthermore, informed consent was obtained from all participants for this study.

The Satisfaction with Life Scale (SWLS) was developed by Diener et al (1985) with a single dimension consisting of five items. The SWLS evaluates the global life satisfaction of one’s own life (e.g., “The conditions of my life are excellent”). The respondents were asked to indicate their degree of agreement with the five statements using a 10-point interval scale (1 = Strongly disagree to 10 = Strongly agree). Originally, the SWLS was measured using the seven-point Likert scale, as suggested by Diener et al (1985). In the current study, the researchers employed the 10-point interval scale to meet the assumptions of parametric statistical analysis (Baistaman et al 2020) and obtain more extensive choices as well as more independence (Ehido et al 2020). Previously, the SWLS reported good internal consistency with university students (Delgado-Lobete et al 2020). Scores can range from 10 (lowest score) to 50 (highest score), with the highest scores signifying those respondents are more satisfied with their life.

Data collection was performed through an online survey using a self-administered questionnaire, and then researchers performed it. Participants were informed that participation in the study was voluntary and that honorariums were not given to them. Secrecy and confidentiality concerning the participants’ identity were ensured and explicitly indicated in the informed consent. Their agreement was obtained upon their willingness to proceed to answer the online questionnaire. The method used for the translation of the SWLS was the forward translation technique. The English version of the SWLS was translated into Malay by the Translation and Editing Unit (UTUMS), Universiti Malaysia Sabah, Sabah, Malaysia. The research team performed revision of the translation and modifications to ensure the understandability and confirm the accuracy of the Malay version of the SWLS. Data were processed using the statistical software package IBM SPSS 25. The exploratory factor analysis (EFA) procedure was performed using the extraction method of principal component analysis (PCA) with orthogonal varimax rotation to analyse the structure of the SWL construct. The researchers used orthogonal varimax rotation with the assumption that each factor/item is independent. The method of rotation on SWLS was implemented in many studies, such as Yun et al (2019), Lopez-Ortega et al (2016), and Dirzyte et al (2021). The assessments of factor analysis have been done in terms of component and total variance explained. The internal consistency reliability was evaluated using Cronbach’s alpha.

3. Results and Discussion

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The current study was intended to develop a valid and reliable instrument of the Satisfaction with Life Scale (SWLS) to measure the satisfaction with life (SWL) construct through an exploratory factor analysis (EFA) procedure involving private and public university students in Sabah, Malaysia. The EFA procedure was performed to carry out principal component analysis (PCA) of the SWL construct. The SWL construct consists of five items in a questionnaire. The 10-point interval scale was employed to obtain more extensive choice and more independence. The results in Table 1 show the descriptive statistics for each item measuring the SWL construct. The mean values for every item ranged from 4.28 to 6.00, with standard deviation values ranging from 2.042 to 3.044.

<table>
<thead>
<tr>
<th>Items</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>In most ways, my life is close to my ideal.</td>
<td>5.16</td>
<td>2.284</td>
</tr>
<tr>
<td>The conditions of my life are excellent.</td>
<td>5.71</td>
<td>2.042</td>
</tr>
<tr>
<td>I am satisfied with my life.</td>
<td>6.00</td>
<td>2.312</td>
</tr>
<tr>
<td>Thus far, I have gotten the important things I want in life.</td>
<td>5.76</td>
<td>2.513</td>
</tr>
<tr>
<td>If I could live my life over, I would change almost nothing.</td>
<td>4.28</td>
<td>3.044</td>
</tr>
</tbody>
</table>

Table 1 Descriptive statistics for items measuring the SWL construct.

Bartlett’s test and the Kaiser–Meyer–Olkin (KMO) test were examined to determine the suitability of the data for structure detection. Table 2 demonstrates that Bartlett’s test of sphericity is highly significant ($P < .000$). Overall, the sampling adequacy by KMO ($KMO = 0.839$) is excellent (see Table 2). The KMO values for each item are between .814 and .877 (see Table 3), indicating that all items are highly adequate for factor analysis. These results (Bartlett’s Test is significant and $KMO > .60$) suggest that the data are satisfactory to continue with the data reduction technique.

<table>
<thead>
<tr>
<th>Type of Tests</th>
<th>Kaiser–Meyer–Olkin Test for Sample Adequacy</th>
<th>Bartlett’s Test of Sphericity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approx. Chi-square</td>
<td>.839</td>
<td>233.466</td>
</tr>
<tr>
<td>df</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Sig.</td>
<td></td>
<td>.000</td>
</tr>
</tbody>
</table>

Table 2 Bartlett’s test and Kaiser–Meyer–Olkin test values.

<table>
<thead>
<tr>
<th>Items</th>
<th>KMO</th>
</tr>
</thead>
<tbody>
<tr>
<td>In most ways, my life is close to my ideal.</td>
<td>0.814</td>
</tr>
<tr>
<td>The conditions of my life are excellent.</td>
<td>0.847</td>
</tr>
<tr>
<td>I am satisfied with my life.</td>
<td>0.824</td>
</tr>
<tr>
<td>Thus far, I have gotten the important things I want in life.</td>
<td>0.877</td>
</tr>
<tr>
<td>If I could live my life over, I would change almost nothing.</td>
<td>0.870</td>
</tr>
</tbody>
</table>

Table 3 Kaiser–Meyer–Olkin Test value for each item.

Table 4 shows the single component from the EFA procedure analysis based on an Eigenvalue greater than 1.0. The eigenvalue of component 1 is 3.101, and the variance explained for this component is 62.030%. The variance explained for measuring SWL surpassed the minimum requirement of 60%.

<table>
<thead>
<tr>
<th>Component</th>
<th>Initial Eigenvalues</th>
<th>Extraction Sums of Squared Loadings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total 3.101</td>
<td>% of Variance 62.030</td>
</tr>
</tbody>
</table>

Table 4 The component and total variance explained for the SWL construct.

Figure 1 demonstrates that one component surfaced from the EFA procedure for the SWL construct. The EFA procedure grouped the five items into one component. The component matrix shows the items that belong to one component.
Table 5 shows the components and their respective items. The factor loading for each item is higher than .50. Therefore, all five items will be retained and are suitable to assess the SWL construct.

<table>
<thead>
<tr>
<th>Items</th>
<th>Component 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>In most ways, my life is close to my ideal.</td>
<td>.875</td>
</tr>
<tr>
<td>The conditions of my life are excellent.</td>
<td>.874</td>
</tr>
<tr>
<td>I am satisfied with my life.</td>
<td>.846</td>
</tr>
<tr>
<td>Thus far, I have gotten the important things I want in life.</td>
<td>.764</td>
</tr>
<tr>
<td>If I could live my life over, I would change almost nothing.</td>
<td>.523</td>
</tr>
</tbody>
</table>

The final test is to determine the value of Cronbach’s alpha for the extracted component to evaluate the internal reliability of measuring the SWL construct. Internal reliability assesses the consistency of results across items measuring the same construct. Based on Table 6, Cronbach’s alpha for the component measuring the SWL construct is .817, indicating that the internal consistency reliability is excellent.

Table 6 The reliability analysis for component measuring SWL construct.

<table>
<thead>
<tr>
<th>Name of Component</th>
<th>No. of Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1</td>
<td>5</td>
<td>.817</td>
</tr>
</tbody>
</table>

The main aim of this work is to present results from a study that uses a sample of students to validate the Satisfaction with Life Scale (SWLS) in public and private universities in Sabah. The scale has been widely used in a variety of studies and samples and in different languages as well. This scale, however, for the first time, was included in the context of public and private universities in the state of Sabah and the setting of the new norms of the COVID-19 outbreak. The results from the analysis indicate that the SWLS is a reliable measure of satisfaction with life in the context of public and private university students in Sabah. The internal consistency in this study showed that the reliability coefficients are acceptable and high internal consistency, producing an alpha Cronbach equal to 0.817, consistent with other previous studies such as Lopez-Ortega et al (2016) and Yun et al (2019). Additionally, the SLWS shows good psychometric properties in the context of public and private university students in Sabah, with a unidimensional scale. This study’s exploratory factor analysis of the SWLS has surpassed the minimum requirement of 60%, which is 62.03%, explaining the total variance. The results of Diener et al (1985) consistently found that the single-factor structure explained by the total variance is as much as 66%. Several other studies also obtained a score range that is the same between 0.61 and 0.84.

The scree plot results in this study, which form a component with eigenvalues at 3.101, are consistent with the study results obtained by de Sousa et al (2015) with almost identical eigenvalues of 3.0, explaining 60% of the total variance. In line with the Kaiser criterion, the scree plot in this study forms a component consistent with several previous studies, such as de...
Sousa et al (2015). Meanwhile, the value of the factor loading obtained is more significant than >.50, explaining that all items are well represented by one factor. Only item 5 (If I could live my life over, I would change almost nothing) shows the lowest saturation factor loading compared to other items but is still within the set criteria. These results are similar to the results of a study conducted by de Sousa et al (2015), Gouveia et al (2009) and a study conducted by Diener et al. (1985), of which item 5 showed the lowest factor loading in most of the psychometric tests conducted. This is likely due to the content of the items, as suggested by de Sousa et al (2015). As the content in item 5 mentions, would not change almost anything, illustrates that the content of the item is less explicit as suggested by Pasquali (2010), which tends to confuse the respondent to be damaging its homogeneity and saturation.

Generally, this study is in support of the results of studies reported in the literature based on obtained eigenvalues, factor loadings, and single components successfully extracted from the analysis (Clench-Aas et al 2011; Glaesmer et al 2011; Sancho et al 2014; Zanon et al 2014). Therefore, it can be said that life satisfaction can be influenced by phenomenal factors experienced by respondents at the time the study was conducted. However, the study used samples with different characteristics, such as dealing with the COVID-19 phenomenon, and similar results regarding the psychometric properties and relevance of the measure to assess subjective cognitive well-being.

4. Conclusions

As mentioned, phenomena experienced by individuals, such as the COVID-19 outbreaks that urge the entire world population to adopt new living norms, have significantly influenced life satisfaction. University students, whose teaching experience is the same thing and learning practices that have been practiced since ancient times, that is, face-to-face and engaging in physical activities, have forced students to change 360 degrees of their learning patterns to virtual. These new norms significantly impact students' life satisfaction at university. Therefore, it is necessary to conduct a study to promote different levels of life satisfaction among university students. Even though this study has limitations based on the respondents being only 108 students, psychometric testing on life satisfaction research tools should be done first to ensure the instrument's content is relevant and represents the context of current phenomena. The study's results found that all five items in the SWLS were consistent and suitably used in measuring the life satisfaction of university students facing the impact of the COVID-19 outbreak.

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Ethical Considerations

The authors declare that all respondents agreed with this research.

Conflict of Interest

The authors have declared that no competing interests exist.

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