PUBLIC HEALTH RESEARCH

Malay Version of the Family Satisfaction Scale: Validity and Reliability among Malaysian Working Women

Sanaz Aazami*, Khadijah Shamsuddin, Syaqirah Akmal

Department of community Health, Faculty of Medicine, Universiti Kebangsaan Malaysia, 56000 Cheras, Kuala Lumpur, Malaysia.

*For reprint and all correspondence: Sanaz Aazami, Department of Community Health, Faculty of Medicine, UKM Medical Centre, Jalan Yaacob Latiff, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia.

Email: aazamisanaz@gmail.com

ABSTRACT

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Introduction	Family satisfaction is referred to the extent in which family members feel happy and fulfilled with each other. However, there has been lack of evidences on the family satisfaction scale within the Malaysian context. Therefore, the aim of this study was to assess validity of the Malay version of the Olson's Family Satisfaction Scale. This is to allow Malaysian researchers to bring family satisfaction in line with the different field of studies.
Methods	This study was conducted among 567 Malaysian working women. Data were collected using self-administrated questionnaires. This study conducted exploratory and confirmatory factor analysis, convergent validity and internal consistency using Cronbach's alpha.
Results	The findings of this study support the uni-dimensionality of the Malay version of the family satisfaction scale. The 10 items of the scale account for 68.1% of the total variance and the un-rotated factor loadings ranged from 0.76 to 0.87. Confirmatory factor analysis was run and supported the structure of family satisfaction scale. The results of confirmatory factor analysis using AMOS 21 in the current study reported the following indices: RMSEA= 0.06, CFI= 0.94, NFI= 0.94, TLI= 0.93. The convergent validity (average variance extracted= 0.65) and the internal consistency (Cronbach's alpha= 0.94) of this construct were adequately supported.
Conclusions	The findings support the factor structure, convergent validity and the internal consistency of the examined construct. Therefore, Malay version of the family satisfaction scale is a valid and reliable instrument among Malaysian working women.
Keywords	Malay Version of Family Satisfaction Scale - Family Satisfaction Scale - Confirmatory Factor Analysis - Convergent Validity - Exploratory Factor Analysis.

INTRODUCTION

Family satisfaction is referred to the extent in which family members feel happy and fulfilled with each other.[1] Despite advances in the research related to marital satisfaction, there has been lack of evidences on the family satisfaction scale. Olson & Wilson [2] developed a Family Satisfaction Scale which is presumed to be the first tool for measuring level of family satisfaction. This scale was developed to provide a valid and reliable instrument for research in the field of family research and family therapy.[2]

The operational base of Olson's family satisfaction scale is the Circumplex model in which the family dynamic is explained via three domains of Cohesion, Flexibility and Communication.[3] Cohesion refers to the emotional band of the family members. Family Flexibility is the quality and expression of leadership and organization, power structure of the family and adaptability in the role leadership and negotiation. Lastly, Communication refers to the degree of positive skills that members are utilized within the family system. The main hypothesis in the Circumplex model is that balanced families have high level of family cohesion and family flexibility. In addition, families with high level of family satisfaction will experience higher level of family communication.[2, 3] Based on the theoretical definition and clinical relevance of Circumplex model, family satisfaction scale was designed to measure the overall satisfaction level including the two domain of Cohesion and Flexibility.[2, 4] However, the Family Satisfaction Scale is designed for English speakers and further validated translation is required among non-English speaking populations.

Researchers in Malaysia have measured family satisfaction by either using a single item questionnaire[5] or translation of the existing instruments.[6] Using a scale that is reliable and validated in the respective language is a critical step in obtaining valid data. However, single item questionnaire or translation of pre-existing scales does not replicate validity and/or reliability of the scale. Despite these limitations, we are not aware of any validated instrument in Malay language which can measure level of individuals' satisfaction with family domain. Therefore, it is beneficial to have validated instrument in the Malay language that allows Malaysian researchers to bring family satisfaction in line with the different field of studies. Therefore, the aim of this study is to assess the construct validity of the Malay version of Olson's Family Satisfaction Scale among Malaysian working women.

MATERIAL AND METHODS

This is a part of bigger study[7, 8] which was conducted among 567 Malaysian working women who were working not less than 6 months in the public departments of Selangor, Putrajaya and Kuala Lumpur. This study was approved by the Ethic Committee of Universiti Kebangsaan Malaysia Medical Centre (UKMMC). Multiple-stage sampling method was used to reach the respondents. First, ten out of twenty four ministries were randomly selected. Second, ten departments of each ministries were randomly recruited which gives total number of 100 departments. Then, request letter of permission to collect data in respective department was sent to the Head/Deputy director/Director of each department. Upon approval to data collection, list of female staffs were obtained and participants were recruited by simple random sampling method. After approval to participate in the current study, women signed the written consent form and were informed about the study's aim, benefits and their voluntary participation rights. Data collection was conducted in a period of 7 months from August 2012 to February 2013. Anonymous self-reported questionnaire were used to collect data on family satisfaction.

Instruments
The Family Satisfaction Scale (FSS) was developed based on Olson & Wilson's[4] scale. The FSS includes 10 items with answer range from 1= very dissatisfied to 5= extremely satisfied which gives a total score of 10-50. The higher score indicates the more satisfied individual are with the family domain. The permission to use FSS was obtained prior to data collection.

Translation and pre-test
The English version of the Family Satisfaction Scale (FSS) was translated into Malay language using backward-forward translation. Two different groups of bilingual experts translated the FSS. Pre-test study conducted among 10 participants and pilot study was done among 50 participants. Women participated in the pre-test and pilot studies were working in the Hospital Universiti Kebangsaan Malaysia (HUKM) and simple random sampling method was employed to reach the respondents. The pre-test study (face validity) was done to ensure the translated items are easy to understand and wordings are appropriate. Then, content validity was examined to ascertain the content of the pre-final Malay version of FSS is appropriate and relevant to the purpose of study. At this stage, the produced Malay version of the FSS was piloted among 50 working women. Final version of the Malay language was created after applying the modification of pilot for family satisfaction scale. The 50 subjects from the pre-test and pilot study were not included in the final sample of this study.

Statistical analysis

The statistical analyses were conducted using SPSS version 21 and AMOS 21. The significant level set at level of less than 0.05. The internal consistency of the scale was measured via alpha Cronbach and was used to test the reliability of the scale.

To validate the psychometric properties of the scale, exploratory factor structure and Confirmatory Factor Analysis (CFA) were used. To determine the factor structure of the FSS, principal component analysis with varimax rotation was conducted. In order to verify the data set was suitable for factor analysis the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy[9] and the Bartlett's Test of Sphericity[10] were applied. The criteria for conducting the factor analysis was set as eigenvalue greater than 1 and the item factor loading at least 0.40.[11] Then confirmatory factor analysis was conducted using AMOS 21[12] and several indices were used to assess the usefulness of the model. The following criteria need to be met: Goodness of Fit Index (GFI) >0.90,[13] Root Mean Square Error of Approximation (RMSEA) with acceptance level of < 0.08,[14] Tucker Lewis Index (TLI) with acceptance level of >0.90,[15] Comparative Fit Index (CFI) with acceptance level of >0.90 [16] and finally Normal Fit Index (NFI) with acceptance level of >0.90.[17] Next, we assess the convergent validity of the unidimensional family satisfaction construct.

RESULTS

Sample's background

Family satisfaction scale with 10 items was applied to a sample of 567 working women with a mean age of 33.5 (SD= 8.6). The majority of women (93.7%) were Malay, 25.2% of them had secondary school education, 36.7% had high school certificate, 33.7 % bachelor degree and only 4.4% had post graduate degree. Women in this study were mainly (72.7%) married with 1.72 (SD=1.50) children on average.

Exploratory Factor Analysis (EFA)

Principal component analysis using varimax rotation were conducted and items with factor loading less than 0.40 were not allowed to load in the respective component. The KMO for 10 items of the FSS was 0.95 which indicates the adequacy of sample size and the Bartlett's Test of Sphericity was significant (p<0.001). Our analysis indicates that, family satisfaction scale is a unidimensional construct since there was only one eigenvalue more than one (6.81). The 10 items of the FSS account for 68.1% of the total variance and the un-rotated factor loadings ranged from 0.76 to 0.87 (table 2).

Reliability Analysis

Internal consistency of the FSS was examined. The alpha Cronbach value for the 10 items family satisfaction scale was 0.94. Mean, standard deviation, item-total correlation and the alpha Cronbach if item deleted are presented in table 1. The results shows that alpha coefficient of the scale when each item deleted does not fall 0.94 which is equal to the total alpha Cronbach for the complete scale.

Table 1 Statistic analysis of the item

Item	Mean	Std. Deviation	Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	4.49	0.66	0.71	0.94
2	4.02	0.74	0.78	0.94
3	4.16	0.75	0.82	0.94
4	4.25	0.72	0.78	0.94
5	4.26	0.74	0.81	0.94
6	4.08	0.75	0.83	0.94
7	4.08	0.84	0.70	0.95
8	3.93	0.79	0.83	0.94
9	3.88	0.79	0.80	0.94
10	4.30	0.73	0.74	0.94

Table 2 Principal component analysis for the Family Satisfaction Scale (N=567)

Items	Unrotated Factor loading
Item 1	0.77
Item 2	0.82
Item 3	0.86
Item 4	0.83
Item 5	0.85
Item 6	0.87
Item 7	0.76
Item 8	0.86
Item 9	0.84
Item 10	0.79
Variance	68.10%

Confirmatory Factor Analysis

The one factor model extracted from EFA was examined in AMOS 21 using maximum likelihood estimation method. The result of CFA (Figure 1) to test the family satisfaction construct with one dimensions displays the chi-square of 297.9 (df= 35, p=0.000) which shows poor fitness. However, there are some limitations for chi-square as a criterion to determine poor fitting or good fitting model. First, this test is sensitive to sample size and chi square statistic mainly reject in big sample size data.[18] On the other hand, chi-square statistic lack the power to determine the good fitting model where small sample size are used.[19] Therefore, because of this weaknesses, researchers mainly prefer to rely on other indices for determining the fattiness of their models.[18]

The Goodness of Fit Index (GFI) was created as an alternative to chi-square which determine the proportion of variance that is accounted for by the estimated population covariance.[13] The GFI in this study was 0.90 which shows the good fitting of the unidimensional model of the family satisfaction construct. Furthermore, the results of CFA in the current study reported the following indices: RMSEA= 0.06, CFI= 0.94, NFI= 0.94, TLI= 0.93. All of the reported indices imply that this model is a good fitting one for the 10 items of the family satisfaction construct.
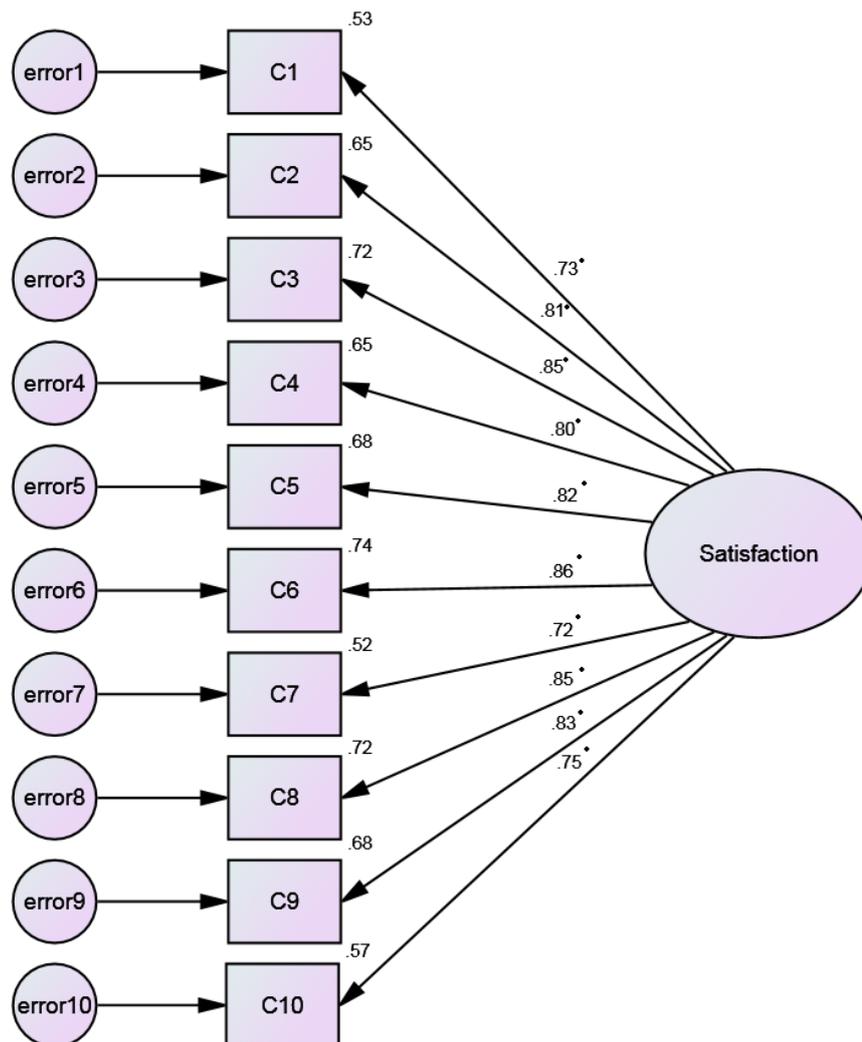
Figure 1 Confirmatory Factor Analysis of the family satisfaction construct

Convergent Validity
Fornell and Larcker [20] recommended that convergent validity of a construct can be confirmed by obtaining the Average Variance Extracted (AVE) greater than 0.50 in every single construct.

$$\text{AVE (Average Variance Extracted)} = \frac{\sum_{i=1}^{n} \lambda^2}{n}$$

λ = standardized factor loading,   n = number of items

According to the above formula the AVE for the examined model is 0.65 which confirms the convergent validity of the unidimensional family satisfaction construct.

DISCUSSION

This study aimed at assessing the reliability and validity of the Malay version of family satisfaction scale. Our findings support the validity of this scale by showing adequate and satisfactory results for

The AVE less than 0.50 indicate that variance explained by the construct is smaller than variance explained by measurement error. The formula given by Fornell and Larcker [20] was used to calculate AVE which has been described below:

exploratory and confirmatory factor analysis. The results of the current study are consistent with Olson's [4] study in which uni-dimensionality of the family satisfaction scale is confirmed. Confirmatory factor analysis also confirmed that the underlying factor structure of the Malay version of family satisfaction scale is equivalent to the original English questionnaire. Therefore this scale is able to measure family satisfaction among Malaysian working women.

Confirmatory factor analysis was conducted to estimate factor loading of each item. Factor loading refers to the level of a regression path from the latent variable to the indicators. The value of factor loading more than 0.5 is said to be an acceptable for one indicator and a value greater than 0.7 is considered to be good.[21] Our results revealed that Malay version of the Olson's[4] family satisfaction scale have no factor loading less than 0.72 which is a good indicator for the convergent validity.

Another aim of this study was to assess the internal consistency of the Malay version of family satisfaction scale. The assessment of factor-based Cronbach's alpha shows acceptable internal consistency for the family satisfaction scale among Malaysian working women. Another study investigated the reliability of FSS among survivor of traumatic brain injury and reported the similar results as we found in which Cronbach's alpha was 0.94.[22] This study also confirmed the convergent validity of FSS by showing its significant correlation with marital status.[22]

There are some limitations in this study which need to be addressed. This study investigated the Malay version of Olson's[4] family satisfaction scale among only Malaysian working women. However, the gender difference should be considered when measuring level of family satisfaction. Therefore, future researchers might benefit from investigation of the construct validity of Malay version of the family satisfaction scale among Malaysian men. In addition, the FSS is a copyrighted material and every researcher that wants to use this scale should purchase its permission via cs@facesiv.com. That's why the items of this scale were not presented in this study. However, the correspondent author of this study would be happy to share the Malay version of FSS to those who obtained permission for using this particular scale. Despite the addressed limitation, we found good evidences on reliability and good construct validity of this scale which can be used in future to identify level of women's satisfaction with the family domain. Malaysian researchers who are interested in examining family satisfaction and its related outcome may benefit from administering this scale as a validated instrument.

CONCLUSION

In conclusion, this study revealed that the Malay version of Olson's[4] Family Satisfaction Scale is a valid and reliable instrument to be used among Malaysian working women. Exploratory factor analysis in this study supports the uni-dimensionality of the Malay version of FSS. We conducted Confirmatory factor analysis to find out the structure of family satisfaction and its convergent validity. Our results prove that there is a great factor loading in the uni-dimensional structure of the FSS and convergent validity was established. Finally, assessment of factor-based Cronbach's alpha shows acceptable internal consistency for the family satisfaction scale among Malaysian working women.

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