

PSYCHOMETRIC PROPERTIES OF ANXIETY ABOUT AGING SCALE AMONG MALAYSIAN YOUTHS

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ABSTRACT

The Anxiety about Aging Scale (AAS) is a questionnaire developed based multidimensional aging anxiety to measure anxiety towards aging. However, the AAS constructs and items vary depending on study population. This study aimed to explore the validity and reliability of AAS through evaluation of exploratory factor Analysis (EFA) and confirmatory factor analysis (CFA) among youths in Malaysia. A cross-sectional was conducted among 1988 university and college students in Klang Valley, Malaysia, selected using stratified proportionate random sampling. EFA results suggested four factors solution based on the interpretation of Eigenvalues and scree plot with 59.11% variance extracted. Results of CFA supported the four-factor model of revised 17-item AAS with acceptable model fit indices and high factor loading. The revised 17-item AAS has a good reliability through the assessment of internal consistency of the items. In conclusion, the revised 17-item AAS measures four distinct factors is a valid and reliable questionnaire to measure anxiety towards aging among Malaysian youths.

Keywords: *Anxiety about Aging Scale, CFA, Reliability, Anxiety, Elderly*

INTRODUCTION

Aging anxiety is a construct that differs from general anxiety in that it refers to the concerns and fears that we anticipate regarding the aging process traditionally associated with impairment, illness, and dependency (Lynch, 2000; R. E. Watkins, R. Coates, & P. Ferroni, 1998). Researches indicate that aging anxiety is a significant factor that mediates attitudes and behavior toward elderly. Previous studies also have indicated that aging anxiety is related to negative stereotype about elderly and aging (Ayalon & Tesch-Römer, 2017b; Boswell, 2012; Serrani-Azcurra, 2012). The presence of these negative perceptions has resulted to discrimination and social exclusion (Ayalon & Tesch-Römer, 2017a), which has been reported to influence the health of elderly (Meisner, 2011).

Research in aging anxiety has shown that this construct is influenced by various factors, with age being one of most widely studied (Trigueros et al., 2020). Researches have shown that young people were reported to have higher level of anxiety about aging (Gao, 2012; Yun & Lachman, 2006). This fear or anxiety about aging arises from concerns and worries about growing older, the anticipated experience related to old age and aging process (Rochelle E. Watkins, Rosemary Coates, & Paola Ferroni, 1998), fear of the unknown and a stereotypical misconception of this stage of life. These findings are inconclusive because few studies reported middle-aged and elderly were shown to have higher level of anxiety compared to younger people (Cheung et al., 2016; Yun & Lachman, 2006). In sum, the inconsistent findings in the previous researches have make it necessary to investigate the level of anxiety about aging among younger population.

Anxiety about Aging Scale (AAS)

There are several instruments developed to measure anxiety about aging or related to it. Namely five instruments are developed for various age groups including younger adults which are Personal Experience of Ageing (Steverink, Westerhof, Bode, & Dittmann-Kohli, 2001), Attitude-Aging-Visual Analogue Scales (Ligon, Ehlman, Moriello, Russo, & Miller, 2014), Reactions to Ageing Questionnaire (Gething, 1994), Personal Anxiety toward Ageing (Kafer, Rakowski, Lachman, & Hickey, 1980) and Anxiety about Aging Scale (AAS) (Lasher & Faulkender, 1993). Among the mentioned instruments, AAS is the widely used and appropriate instrument to assess fear of aging (Fernández-Jiménez, Álvarez-Hernández, Salguero-García, Aguilar-Parra, & Trigueros, 2020).

The AAS is a 20-item instrument developed based on multidimensional aging anxiety and has a four-factor model namely Fear of Old People, Psychological Concerns, Physical Appearance and Fear of Loss (Lasher & Faulkender, 1993). AAS validity and reliability has been established by its original authors and other previous studies among volunteer adults, university students, healthcare professional and community students (Aguirre, Ornelas, Gastélum, & Peinado, 2017; Gao, 2012; Koukouli, Pattakou-Parasyri, & Kalaitzaki, 2014; Lasher & Faulkender, 1993; Lynch, 2000; Ornelas, Gastélum, Lopez-Walle, & Rodríguez-Villalobos, 2016; Sargent-Cox, Rippon, & Burns, 2014). However, there has been lacking proper validation of AAS in Asiatic region.

Malaysia is experiencing rapid population aging. The proportion of elderly people is projected to increase to 15% of the total population in year 2030 (Samad & Mansor, 2017). With the rapid increase of elderly population, anxiety about aging will be one of crucial elements to explore especially among young adults population. A properly validated and reliable instrument will facilitate the exploration of this area among local population (Din, Adnan, Minhat, & Sciences, 2020; Ibrahim, Din, Abdullah, & Hamid, 2020), which is currently lacking in Malaysia. Thus, this study aims to explore the validity and reliability of AAS through evaluation by exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) among youths in Malaysia.

METHODS

Respondents

A cross-sectional study using self-administered questionnaire was conducted among university and colleges student in Klang Valley, Malaysia. Stratified proportionate to size sampling was employed, involving eligible university and college students. Inclusion criteria for this study were individuals with age 25 and below. Consent forms were given prior to answering the questionnaire.

Measurement tools

AAS was developed by Lasher and Faulkender (1993) to measure fear and anxiety about aging comprising of four factors namely Fear of Old People, Psychological Concerns, Physical Appearance and Fear of Loss. AAS contained 20 items with 5 items for each factor. Respondents were required to answer each item using a five-point Likert scale ranging from “Strongly Agree” to “Strongly Disagree”. A higher score indicated for higher level of anxiety. English items in this study were paired with its Malay version in the questionnaire. The item translation was done by bilingual translators fluent in both English and Malay. The forward translation of items from English to Malay was done by two bilingual translators. The translated items were then checked by a panel of experts composed of psychologist, medical doctor and gerontologist. Once the panel agreed, the forward translated items were then translated back to English. Comparison between the backward-translated items and original English items was done and checked by same panel of experts. No major discrepancy was found between the items and the result was considered as acceptable. Both English and Malay items were administered in the questionnaire. For the face validity assessment, the instrument was administered to 10 undergraduate students, as respondents. Respondents were asked to provide feedback on anything on the items in term of their comprehension of the items (Din, Arifin, Abdullah, Yusoff, & Aziz, 2018). The results showed that the items were adequately understandable and culturally relevant to the respondents.

Statistical analysis

Data entry and data analysis were conducted using SPSS version 21. Sociodemographic variables were analyzed using descriptive statistics, in which numerical variables were reported in the form of mean and standard deviations, while categorical variables were reported in the form of frequency and percentages.

EFA using principal axis factoring estimation with promax rotation was used. Kaiser-Meyer-Olkin (KMO) sample of adequacy and Bartlett’s test of sphericity were used to determine the suitability for EFA. Cut off value of more 0.7 for KMO and non-significant Bartlett’s test of sphericity set at significance level of 0.05 considered as acceptable for EFA. Eigenvalues and scree plot were used as guide for determining the number of factors. Item removal in EFA was done considering two criteria which were item loaded on different factor and strength of factor loading.

CFA was done in Mplus version 8.5 using maximum likelihood estimation (ML). For model fit evaluation three categories of model fit indices were used; absolute fit (chi-square goodness-of-fit [χ^2] and Standardized Root Mean Square Residual [SRMR]), parsimony fit (Root Mean Square Error of Approximation [RMSEA]) and comparative fit (Tucker-Lewis Fit Index [TLI] and Comparative Fit Index [CFI]) (Brown, 2006). Non-significant model chi-square goodness-of-fit was taken as indicative of model fit, with significance level set at 0.05. For RMSEA a cut-off value of 0.06 and less was acceptable, with upper limit of 90 percent confidence intervals (CI) also below the cut-off value and Clfit of more than 0.05 (Brown, 2006). For TLI and CFI, a cut-off point of 0.95 and above was taken to indicate model fit (Brown, 2006; Schreiber, Nora, Stage, Barlow, & King, 2006). For SRMR a cut-off point of 0.08 and less was used to indicate model fit (Brown, 2006). TLI, CFI, RMSEA and SRMR were given priority to determine the model fit. Factor loadings and modification indices were criteria used for item removal to improve model fit. Item with factor loading less than 0.5 was considered for removal (Kline, 2011). Reliability was assessed in the form of internal consistency through Cronbach’s alpha and consistency by item-to-total score correlations (Cronbach, 1951).

RESULTS

Respondent's characteristics

A total of 1988 respondents agreed to participate in this study. Their ages ranged from 17 to 24 years old. Characteristics of respondents is presented in Table 1. For the purpose of analysis in this study, the sample were split in two. A total 300 samples were randomly selected using SPSS random selection and was used for EFA. The justification sample size for EFA were based on minimum sample size to conduct EFA recommended by Comrey and Lee (2013). The rest of the samples were used for CFA.

Exploratory factor analysis

Results of scree plot and eigenvalues suggested that AAS comprised of five factors. However, considering theoretical development of AAS by Lasher and Faulkender (1993), AAS comprised of four factors. EFA was repeated by restricting the number of factors to four. The results are presented in Table 2. The item PC6 showed a high factor loading on factor different from its theorized factor. In order to improve for model validity in CFA, the item was considered for removal.

Table 1 Characteristics of all respondents (n = 1988)

Characteristics	Mean (SD)	Frequency(%)
<i>Age</i>	21.18 (1.76)	
<i>Gender</i>		
Male		608 (30.6)
Female		1380 (69.4)
<i>Education level</i>		
Diploma		344 (17.3)
Bachelor		1590 (80.0)
Master		52 (2.6)
Doctor of Philosophy		2 (0.1)
<i>Ethnicity</i>		
Malay		1540 (77.5)
Chinese		291 (14.6)
Indian		75 (3.8)
Bumiputera east Malaysia		70 (3.6)
Others		12 (0.6)
<i>Marital status</i>		
Married		43 (2.2)
Single/Divorced/Widowed		1945 (97.8)

Note: SD = Standard deviation; % = Percentage

Confirmatory factor analysis

CFA was conducted on 20-item AAS following the result of EFA. Result of CFA model fit indices is presented in Table 3. Model A represents the full initial model showed a lack of fit except for SRMR. To improve the model fit, item PC6 was removed after considering the item loaded on different than its theorized factor. Improvement after the removal is shown by Model B (Table 3). In order to further improve model fit, two items namely PA11 and PC7 were removed because of low factor loading with value of 0.31 and 0.40 respectively. Removal was done sequentially and model fit indices for each removal is shown in Table 3. Removal of PC7 represented by Model D showed acceptable fit for all indices except for χ^2 . All the items factor loadings were above their cut-off value (except for PA15) and modification indices did not show any substantial change that may improve the model fit indices. The 17-item revised AAS (Model D) demonstrated an acceptable model fit. Correlations between factors ranged from 0.03 to 0.32. The measurement

model of Model D is presented in Figure 1. Further, reliability analysis was done 17-item ASS model (Model D). Results for reliability is presented in Table 4.

Table 2 Factor loadings and communalities of items after EFA with Promax rotation

Item	Item statement	Factor			
		1	2	3	4
FO1	I enjoy being around old people	0.85			
FO2	I like to go visit my older relatives	0.82			
FO3	I enjoy talking with old people	0.86			
FO4	I feel very comfortable when I am around an old person	0.88			
FO5	I enjoy doing things for old people	0.73			
PC6	I fear it will be very hard for me to find contentment in old age			0.57	
PC7	I will have plenty to occupy my time when I am old		0.63		
PC8	I expect to feel good about life when I am old		0.86		
PC9	I believe that I will still be able to do most things for myself when I am old		0.77		
PC10	I expect to feel good about myself when I am old		0.73		
PA11	I have never lied about my age in order to appear younger			0.46	
PA12	It doesn't bother me at all to imagine myself as being old			0.74	
PA13	I have never dreaded the day I would look in the mirror and see grey hairs			0.86	
PA14	I have never dreaded looking old			0.89	
PA15	When I look in the mirror, it bothers me to see how my looks have changed with age			0.59	
FL16	I fear that when I am old all my friends will be gone				0.74
FL17	The older I become, the more I worry about my health				0.62
FL18	I get nervous when I think about someone else making decisions for me when I am old				0.77
FL19	I worry that people will ignore me when I am old				0.78
FL20	I am afraid that there will be no meaning in life when I am old				0.81

Note: FO = Fear of Old People; PC = Psychological Concerns; PA = Physical Appearance; FL = Fear of Loss. Kaiser-Mayer-Olkin measure of sample adequacy = 0.821, Barlett test of sphericity, p-value < 0.001, Variance explained: Factor 1 = 25.56; Factor 2 = 13.51; Factor 3 = 11.80; Factor 4 = 8.253; Total variance explained = 59.11

Table 3 Model fit indices for CFA model with item removal

Model	TLI/CFI	RMSEA (90%CI)/ Cl-fit p-value	SRMR	$\chi^2(DF)/$ p-value
Model A	0.882/ 0.898	0.070(0.067, 0.073)/ <0.001	0.071	13503.01(190)/ <0.001
Model B (Removal of PC6)	0.907/ 0.921	0.065(0.061, 0.068)/ <0.001	0.059	13100.98(171)/ <0.001
Model C (Removal of PA11)	0.932/ 0.943	0.057(0.053, 0.061)/ <0.001	0.051	12608.17(153)/ <0.001
Model D (Removal of PC7)	0.948/ 0.957	0.052(0.048, 0.056)/ <0.168	0.048	12182.01(136)/ <0.001

Note: TLI = Tucker-Lewis Fit Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; 90% CI = 90% Confidence interval; Clfit = Close fit; SRMR = Standardized Root Mean Square Residual; $\chi^2(DF)$ = Chi-square-goodness-of-fit (degree of freedom).

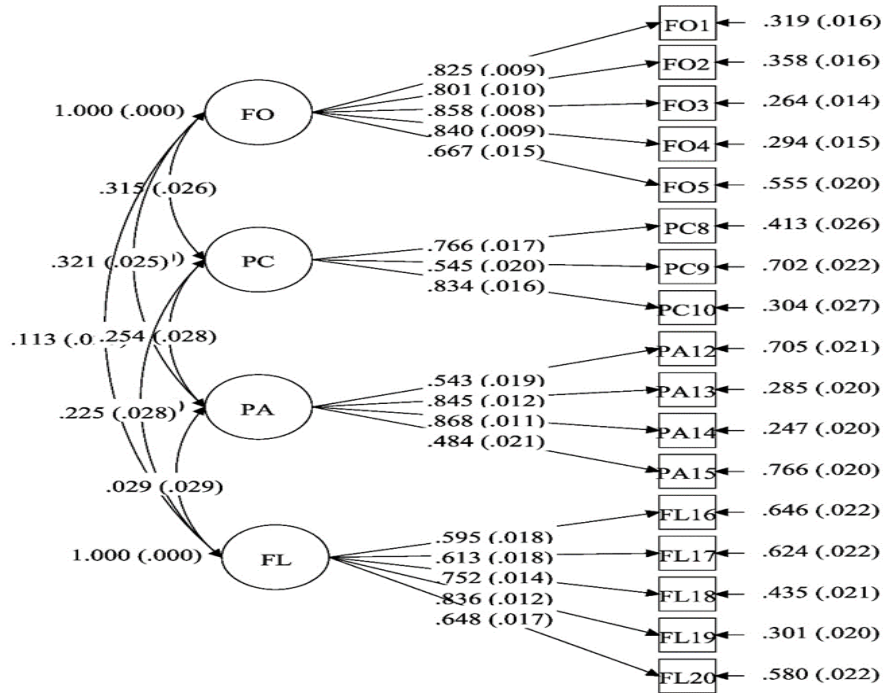


Figure 1: Measurement model for Model D

DISCUSSION

The results of model fit indices in CFA show the revised 17-item AAS has good four-factor model fit among Malaysian youths. This finding demonstrates that AAS is a multidimensional construct consistent with the original scale and other several AAS validation studies (Aguirre et al., 2017; Gao, 2012; Koukouli et al., 2014; Lasher & Faulkender, 1993; Ornelas et al., 2016; Sargent-Cox et al., 2014). The total variance extracted was high with amount of 59.1% supporting for content validity of the questionnaire. The findings were similar to those achieved in the original scale (Lasher & Faulkender, 1993), and also in several studies that have used the same instrument (Fernández-Jiménez et al., 2020). The model validity confirms the ability of revised 17-item AAS to discriminate and measure its dimensions: Fear of Old People, Psychological Concerns, Physical Appearance and Fear of Loss, across the youth population in Malaysia. In short, aside from helping human beings better understand their fears and concern toward aging process, this instrument would also facilitate the understanding about prejudices and behavioral attitudes towards the elderly and old age.

Through the CFA, the revised 17-item AAS shows high construct validity via the assessment of convergent and discriminant validity. A study among young adults in Taiwan reported similar findings with factor loadings ranging from 0.46 to 0.87 (Gao, 2012). Moreover, this study findings showed higher factor loadings compared to study by Sargent-Cox et al. (2014) which reported factor loadings ranged from 0.3 to 0.76 among adults. In the assessment of discriminant validity, low correlation between factors indicated good discriminant validity (Kline, 2011). Similar findings reported by a study in Taiwan with correlation ranging from 0.05 to 0.64 among the factors (Gao, 2012).

Table 4 Item factor loadings and reliability for CFA final model (Model D)

Item	Item statement	Factor				Cronbach's Alpha
		1	2	3	4	
FO1	I enjoy being around old people	0.83				0.90
FO2	I like to go visit my older relatives	0.80				
FO3	I enjoy talking with old people	0.86				
FO4	I feel very comfortable when I am around an old person	0.84				
FO5	I enjoy doing things for old people	0.67				
PC8	I expect to feel good about life when I am old		0.77			0.74
PC9	I believe that I will still be able to do most things for myself when I am old		0.55			
PC10	I expect to feel good about myself when I am old		0.84			
PA12	It doesn't bother me at all to imagine myself as being old			0.54		0.78
PA13	I have never dreaded the day I would look in the mirror and see grey hairs			0.85		
PA14	I have never dreaded looking old			0.87		
PA15	When I look in the mirror, it bothers me to see how my looks have changed with age			0.48		
FL16	I fear that when I am old all my friends will be gone				0.60	
FL17	The older I become, the more I worry about my health				0.61	0.81
FL18	I get nervous when I think about someone else making decisions for me when I am old				0.75	
FL19	I worry that people will ignore me when I am old				0.84	
FL20	I am afraid that there will be no meaning in life when I am old				0.65	

On the other hand, the reliability of revised 17-item AAS was assessed through internal consistency (Cronbach's alpha) showed that the instrument has a good reliability with Cronbach's alpha greater than 0.7 for all the factors, an acceptable cut off for indication of measurement scale (Nunnally & Bernstein, 1994). These findings were also reported in other studies (Chai, Cheng, Mei, & Fan, 2019; Rittenour & Cohen, 2016). In sum, the results showed that the factors in the revised 17-item AAS measures the same characteristics and the items are homogenous in their respective factor.

This study used EFA as precursor for CFA in identifying possible problematic items (Brown, 2006; Memon, Ting, Ramayah, Chuah, & Cheah, 2017). Item PC7 was found to be loading on other factor (Fear of Loss) than its theorized factor (Psychological Concerns) with reasonably high factor loading (0.57) during EFA. Therefore, item PC7 was later removed to eliminate the cross loading in order to improve model validity in CFA afterwards. In CFA, two items (PA11 and PC7) were removed to improve model fitness which result in total of three items removed for both EFA and CFA. The items removal contributed to 15% of the total items. Hair, Black, Babin, and Anderson (2009) recommend for new data collection for instrument revalidation if the items removal more than 20%. Thus, removal of items in this study was considered valid and there was no need for data resampling.

CONCLUSION

The findings from the current study demonstrate that the multidimensional revised 17-item AAS is a valid questionnaire and can be reliably used to measure anxiety towards aging among Malaysian youths. The psychometrically sound and publically available revised 17-item AAS provides a feasible approach to preform aging anxiety assessment in various settings involving young adult. As the burden to collect and interpret the data is low, this study will facilitate future research in aging anxiety in Malaysia.

There are a few limitations in this study that need to be addressed. First, EFA and CFA were used to provide construct validity of AAS. It would be beneficial if convergent validity of AAS can be established by conducting correlation analysis of AAS with other similar measures. Second, the current study only assessed items reliability through internal consistency. However, test-retest reliability is recommended to explore reliability of AAS items. Finally, respondents in this study were young adult age of 17 to 24 years old. It is recommended that validation of AAS to be done among other populations such as middle-age or elderly. All the points are to be considered for future research.

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