

ORIGINAL ARTICLE

THE MALAY-TRANSLATED VERSION OF THE AGGRESSION QUESTIONNAIRE (AQ): THE VALIDITY AND THE IDENTIFICATION OF TYPES OF AGGRESSION AMONG FEMALE PRISONERS

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Abstract

Objectives: The aim of this study is to validate the Malay version of the Aggression Questionnaire (AQ) for the purpose of the future study related to aggression. Furthermore, the study seeks to identify types of aggression hold by the female inmates. **Methods:** A cross-sectional study was designed involving 90 Malaysian female prisoners. The analyses include descriptive analysis, confirmatory factor analysis, and reliability testing. After one-week interval, a test-retest was conducted. **Results:** The preliminary analysis confirmed that factor analysis was appropriate for the Malay-translated version of the AQ. The four factors structure was assessed but the factor loadings are remarkable different from the original versions. The total Cronbach's alpha coefficients is very high ($\alpha = 0.91$). The Pearson's correlation however is low ($r = 0.48$) but acceptable for the instrument. Reliability of the subscales and the factors were also found satisfactory. Consequently, anger and hostility were identified as the most common types of aggression among the participants, followed by verbal aggression. In contrast, physical aggression was the least scored type of aggression. **Conclusion:** The Malay-translated version of the AQ was found to be valid and reliable to be used in future studies. *ASEAN Journal of Psychiatry, Vol. 12 (2): July – December 2012: XX XX.*

Keywords: Aggression, Psychometric, Validation, Reliability, Female Prisoners

Introduction

Aggression is often assessed in relation to behavioral and conduct problems in human [1, 2]. Significant relationship between aggression and antisocial behavior has been established [2], as well as to other mental health problems such as personality disorders and substance abuse [1, 3]. Findings from the previous studies marked, the need to assess aggression particularly among high-risk group such as offender and prisoners population. This is very crucial for proper intervention and rehabilitation such as anger management and violence therapy. With

increase in the number offender and prison's population worldwide, the assessment of aggression become particularly important.

The Aggression Questionnaire (AQ) is one of the most widely used self-report screening instruments for aggressiveness. It was designed by Buss and Perry (1992) with the third grade reading level to enable used in both children and adults. This instrument is used to identify four types of aggressive behaviors. According to the original version, the AQ consists of four factors or subscales, namely physical

aggression, verbal aggression, anger, and hostility. The original AQ contains 29 items using the 5-point Likert scale where the respondent rate themselves for each items according to the given scales (1 = extremely not like me, 2 = somewhat not like me, 3 = neither like nor unlike me, 4 = somewhat like me, 5 = extremely like me). Different number of items represents each subscale. Nine items indicate physical aggression, whereas five items indicate verbal aggression. Another seven items assess anger, and eight items represent hostility. The total internal reliability of the AQ is .89 with individual internal reliability for each subscale [4].

Several translations and validations studies were identified for the AQ. Other than original English, the AQ has been translated into Chinese [5], Japanese [6], Swedish [7], Spanish [8], Dutch [9], Greek [10], German [11], and Italian [12]. None of the studies had involved the Malaysian population and no published study on the Malay-translated version of the AQ was found during the course of the current study. In Malaysia, published psychometric instrument to measure aggressiveness has not been developed. On the other hand, the national language of the country is Malay, which is spoken by majority of the Malaysian. Thus, in order to assess aggression among the Malaysian, screening instrument that is originally in other language is needed and therefore, requires the translation and validation. In the current study, the AQ was selected to be translated and validated in Malay. The objectives of the current study are to validate the Malay-translated version of the AQ through confirmatory factor analysis and, to determine the reliability of the instrument through reliability testing.

Methods

Study design and participants

The current study adapted cross-sectional study design for data collection. The source population was prisons that have female prisoners in the Peninsular Malaysia. The sampling frame was two of the prisons. The sampling was done

according to a convenient sampling method. The availability of the participants was considered for the convenient sampling. The participants are required to be able to communicate, read and write in Malay without any help.

Separate calculation was done to determine the sample size in factor analysis and reliability testing. Calculation of the sample size for factor analysis was performed in accordance to Gorsuch's (1983) suggestion where the total number of items in an instrument is multiplied by 5 to obtain the required sample size [13]. On the other hand, calculation of the sample size for reliability testing was executed using Cronbach's alpha formula. With inclusion of estimated 20 percent dropout, the higher of the two resulting calculations, 165, was selected as the final sample size. However, due to the limited number of participants available in the selected population, only 90 participants could be recruited from the prisons. The sample size for test-retest reliability testing was 40.

Translation process

During translation, first of all, the original English version of the AQ was translated into Malay by the authors. The translations were examined thoroughly several times for adequacy of wording and meaning. Back-translation was done then. A language expert translated the Malay-translated version back into English. The expert had no prior knowledge of the original version. Later, both English-translated version and the original English version were compared for any distinct differences. The Malay-translated version of the AQ then finalized after no grammatical or language errors were identified.

Data Collection

In advance of the current study, a pilot study involving 50 female prisoners was conducted. Thus, for the current study, the data collection took place at two different prisons situated in the Peninsular Malaysia. The selected participants were properly informed regarding the current study through a briefing that was held prior to

the data collection. The briefing communicated on the purpose of the current study and any relevant information. The participants were allowed to ask as many inquiries regarding the current study to clarify any doubts. They were ensured of their rights to retreat from the current study at any time during the data collection. After the participants agreed to involve in the current study, they were given a respondent information sheet and a consent form to be read and signed. The data collection then commenced. On average, the participants took seven minutes to complete their response. Completed instruments were returned to the researcher. After one week, the same Malay-translated version of the AQ was given to some of the participants for test-retest reliability testing, to test if they would provide the same response as in the first phase. In addition, a face validity procedure was conducted involving 15 participants. Face validity is based on the participants' level of comprehension after going through the instrument [14]. The participants were asked to go through the Malay-translated version of the AQ and confirmed if they understood the translated instrument and the meanings. The participants unanimously agreed that they fully understood the instrument. Generally, the data collection processes were successfully completed without any problems.

Statistical Analysis

The data was organized and analyzed using SPSS version 19.0. Descriptive statistics were computed to summarize the demographic information and the frequency of occurrence for each subscale. The frequencies of occurrence were calculated based on the mean score. Subsequently, confirmatory factor analysis was executed to assess the factor structure of the Malay-translated version of the AQ. Based on the previous studies [8] [10], the translated instrument was extracted using principal component analysis with direct oblimin rotation. To ensure the adequacy of the instrument to proceed with factor analysis [15], the preliminary analysis for factor analysis was assessed. The values of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy,

individual Measure of Sampling Adequacy (MSA), and the Bartlett's test of sphericity were observed. The KMO value is required to be higher than the acceptable limit of 0.50 [16]. The individual MSA affects the value of the KMO and it is expected to exceed 0.50 [17]. Items with low individual MSA might be excluded from the analysis, depending on the KMO value. The Bartlett's test of sphericity, which was also included in the preliminary analysis, indicates the appropriateness of factor analysis for the translated instrument [17]. It is expected to be significant for the analysis to proceed.

As the preliminary analysis was completed, the analysis proceeded with the assessment of the factor structure. For the Malay-translated version of the AQ, four factors were fixed prior to the confirmatory factor analysis, as suggested by the original version and previous studies [4, 8, and 10]. The factors represent the subscale or content domain within the structure of the instrument. Each factor explains certain percent of variability for the instrument. Mostly, factor loading was assessed to determine the factor structure of the instrument. Items that are highly loaded into each factor were verified and then compared to previous studies. For reliability analysis, the internal consistency reliability of the translated version was calculated by the value of Chronbach's alpha coefficient (α). The internal consistency was measured for the total score as well as individual subscale and factor. Test-retest reliability was evaluated by Pearson's correlation coefficient R for the total score, individual subscale and individual factors.

Results

The age of the participants in the current study were in between 17 to 53 years old (Mean= 28.81 years, SD= 8.01 years). The summary of the participants' demographic information is shown in Table 1. As shown in the table, Malay (87.8%) made up most of the participants, with majority are married (52.2%). Most of the participants achieved secondary education as their highest education (80.0%) and had no stable job prior to incarceration (42.2%). As a

child, 80 percent of the participants had lived with their biological parents, with majority had four to five siblings (35.6%).

The mean scores for each subscale are as followed; physical aggression, M = 15; verbal aggression, M = 12; anger, M = 16; and hostility, M = 20. Anger and hostility were

identified as the most common types of aggression among the participants. The results are tabulated in Table 2. Most of the participants scored more than the mean score for verbal aggression (51.1%), anger (52.2%), and hostility (52.2%) subscales. On contrary, only 38.9% of the participants scored more than the mean score for physical aggression.

Table 1. Summary of Participants' Demographic Information (N= 90)

<i>Information</i>	<i>N</i>	<i>%</i>
Ethnicity		
Malay	79	87.8
Chinese	6	6.7
Indian	5	5.6
Marital status		
Single	22	24.4
Married	47	52.2
Divorcee	16	17.8
Widow	5	5.6
Highest education level		
Never been to school	3	3.3
Primary	9	10.0
Secondary	72	80.0
Tertiary	6	6.7
Employment prior to incarceration		
Permanent job	34	37.8
Always switching jobs	39	42.2
Unemployed	18	20.0
As a child, lived with:		
Both parents	72	80.0
Either parent and a stepfather/stepmother	8	8.9
Grandparents	7	7.8
Relatives	2	2.2
Foster family	1	1.1
Number of siblings		
Single child	4	4.4
1 – 3	25	27.8
4 – 5	32	35.6
More than 7	29	32.2

Table 2. Frequency of Occurrence of Each Subscale Among the Participants (N=90)

Subscales	N	%
<i>Physical aggression</i> Scores: 9 – 14* ≥ 15 [†]	55 35	61.1 38.9
<i>Verbal aggression</i> Scores: 5 – 11* ≥ 12 [†]	44 46	48.9 51.1
<i>Anger</i> Scores: 7 – 15* ≥ 16 [†]	43 47	47.8 52.2
<i>Hostility</i> Scores: 8 – 19* ≥ 20 [†]	43 47	47.8 52.2

Notes. * Less than the mean score, [†] Equal or more than the mean score.

Factor analysis

The preliminary analysis for the Malay-translated version of the AQ was found satisfactory. The KMO Measure of Sampling Adequacy was equal to .75 with the individual MSA lies within 0.48 to 0.91. Only one item (item number 4) had the individual MSA less than 0.50. Considering the high value of KMO Measure of Sampling Adequacy, the analysis proceeded with all items. The Bartlett’s test of sphericity of the translated version was found highly significant ($p < 0.001$), thus the analysis proceeded with the assessment of factor structure. Four factors that were extracted from the Malay-translated version of the AQ explained 51.74 percent of the variance. Factor 1 explained 30.14 percent of variance. Factor 2 explained 8.97 percent of variability in the translated version, whereas Factor 3 explained 6.64 percent. Lastly, Factor 4 explained 5.98 percent of variance. The factor loading however did not correspond to the original version. The factor loading is shown in Table 3. Based on the primary factor loading, nine items are highly loaded into Factor 1, 2 and 3 respectively, whereas only two items are highly loaded into

Factor 4. The original [4] and previous studies [8, 10] suggested four subscales, which are physical aggression, verbal aggression, anger, and hostility to represent each factor.

Apart from Factor 4, the other factors had no clear interpretation for labeling. As shown in Table 3, in Factor 1, five items (items number 8, 11, 16, 25, and 29) indicate physical aggression; three items (items number 3, 10 and 15) indicate hostility, and one item (item number 28) correspond to anger. In Factor 2, five items (items number 7, 17, 20, 24, and 26) indicate hostility; three items (items number 1, 12 and 19) correspond to anger, and one item (item number 21) to verbal aggression. Lastly, in Factor 3, four items (items number 2, 5, 13, and 22) indicative of physical aggression; three items (items number 9, 18 and 23) correspond to anger, and two items (items number 6 and 27) are verbal aggression. Based on the majority of similar items that highly loaded into each factor, Factor 1 represents both physical aggression and hostility, Factor 2 mostly represents hostility and anger, Factor 3 mostly represents physical aggression, and both items in Factor 4 represents verbal aggression.

Table 3. Factor Loadings for the Malay-Translated Version of the AQ

Items No	Factor loadings			
	Factor 1	Factor 2	Factor 3	Factor 4
1	0.403	0.412		
2			0.762	
3	0.540			0.534
4				0.746
5		0.346	0.397	
6			0.522	
7		0.629		0.445
8	0.481		0.377	
9		0.319	0.572	
10	0.596			
11	0.648			
12		0.561	0.311	
13			0.751	
14			0.445	0.700
15				
16	0.472			
17	0.809			
18		0.334	0.395	
19		0.376		
20		0.697		
21		0.798		
22		0.569		
23			0.877	
24			0.365	
25	0.302	0.742		
26	0.362		0.318	
27		0.392		
28	0.328		0.357	
29	0.501	0.307		0.319
	0.725			

High correlations between subscales, as well as between factors were demonstrated by Pearson's correlation coefficients. The results are shown in Table 4. All subscales were found highly correlated with one another ($p < 0.001$). The strongest correlation were demonstrated between anger and hostility ($r = 0.69$), followed by physical aggression and anger ($r = .64$), and between physical aggression and verbal

aggression ($r = 0.63$). Some of these result replicated the original and previous studies [4] [8] [9]. Between factors, strongest correlation was demonstrated between Factor 1 and Factor 3 ($r = 0.69$, $p < 0.001$). Other factors were also correlated with one another except for Factor 2 and Factor 4. The significant correlation between subscales and factors explained the factor loadings in the current study.

Table 4. Pearson’s Coefficient (R) Between Subscales and Factors

Scale	Verbal aggression	Anger	Hostility
Physical aggression	.63*	.64*	.49*
Verbal aggression	-	.51*	.54*
Anger	-	-	.69*
Factor	Factor 2	Factor 3	Factor 4
Factor 1	.49*	.69*	.24**
Factor 2	-	.51*	.14
Factor 3	-	-	.28**

* $p < .001$, ** $p < .01$

Reliability testing

In total, the Chronbach’s alpha of the Malay-translated version of the AQ is very high ($\alpha = 0.91$). The results of the Chronbach’s alpha and test-retest reliability are tabulated in Table 5. As shown in the table, the individual subscale produced considerable high internal consistency, except for verbal aggression. Based on the factors revealed in factor analysis, the individual

factor also had high internal consistency, except for Factor 4.

The test-retest reliability however is poor for the translated instrument. As shown in Table 5, the Pearson’s correlations for all subscales are less than 0.5. In contrast, based on the individual factor, the correlations are above 0.50 except for Factor 1. The total score also had low Pearson’s correlation.

Table 5. Chronbach’s Alpha and Pearson’s Coefficient (R) of Individual Subscales, Factors, and Total Score for the Malay-Translated Version of the AQ

Subscales / factors	Chronbach’s alpha (α)	Pearson’s correlation (R)
Based on subscales:		
Physical aggression	0.82	0.46*
Verbal aggression	0.64	0.30
Anger	0.79	0.42*
Hostility	0.71	0.42*
Based on factors:		
Factor 1	0.83	0.26
Factor 2	0.80	0.50*
Factor 3	0.86	0.61*
Factor 4	0.64	0.57*
Total score	0.91	0.48*

* $p < 0.001$

Discussion

The factor loadings in the current study did not correspond to the original version. The original AQ provides four subscales with certain number

of items. In contrast, the current factor loadings revealed different number of items in each factor and had no clear interpretation. The number of items for each factor was decided based on the items that highly loaded into the factor. As

example, items number 4 and 14 were highly loaded into Factor 4 compared to the other factors, thus both items were assigned to Factor 4. Apart from Factor 4, the remaining three factors had similar number of items assigned to each, which are nine respectively. These factor loadings are different from the original AQ where no subscale had the same number of items.

No single label could be assigned to each factor, except for Factor 4 (verbal aggression). Most of the items in the other factors are mixed together, thus it is difficult to assign a single label to the factors. These findings replicated the previous studies [11, 12] where different items were mixed in a single factor. Detailed examination of the items in each factor revealed that items that indicative of physical aggression are mostly found in Factor 1 and Factor 3. On the other hand, items that correspond to hostility are mostly loaded into Factor 1 and Factor 2. Lastly, items that indicate anger are mostly found in Factor 2 and Factor 3. These results suggested inter correlation between the items of different subscales.

Buss and Perry (1992) previously has suggested the associations between subscales in the AQ. Based on the component correlation matrix in the analysis result, each factor is highly correlated with one another, which means that there is some interrelation among the constructs being measured and thus the factors are theoretically dependent on one another [4,17]. The high correlation between subscales as well as factors showed that there is association between subscales and factors. This explained the items that were loaded highly into different factors than the original subscales. The strong correlation between anger and hostility may explain the foundation of Factor 2. Correlation between physical aggression and anger also may explain the foundation of Factor 3. Between factors, strong correlation between Factor 1 and Factor 3 may indicate physical aggression subscale. The items that mostly loaded into both factors may explain this result. Correlation between other factors may also be explained by the factor loadings. No correlation was

established between Factor 2 and Factor 4; indicate no association between the factors. Some previous studies had shown significant interrelation between items [12], where some items were found highly loaded into different primary loadings from the original [11,12], as demonstrated in the current study. Inter-correlations between subscales were also found significant in some previous study [9].

The original English version of the AQ had high internal consistency ($\alpha = 0.89$), demonstrated the high reliability of the instrument. Reliability refers to the consistency of an instrument to measure a construct when given to the same person at a separate time or given to a different person in a similar condition [17]. The Chronbach's alpha is suggested to be between 0.70 and 0.80 for a reliable instrument [17], but it depends heavily on the number of items [18] and the variety of the constructs being measured, such as in psychological construct [19]. The current study found the internal consistency for the total score of the Malay-translated version of the AQ is very high ($\alpha = 0.91$). The Chronbach's alpha for the subscales and the factors are also high ($\alpha = 0.64$ to 0.86). Only one subscale (verbal aggression) and one factor (Factor 4) showed Chronbach's alpha lower than 0.70 ($\alpha = 0.64$). As mentioned earlier, Factor 4 represents verbal aggression. These findings show that verbal aggression tends to have low internal consistency, as demonstrated in previous studies [8, 9,11].

The test-retest reliability of the AQ Malay-translated version in total is moderate, as measured by Pearson's correlation. The subscales also produced moderate Pearson's coefficient. The factors on the other hand, had higher test-retest reliability, except for Factor 1, which is low. As the test-retest reliability assess the consistency of measures between two scores when an instrument was given to the same person twice [10], the correlation showed shows Malay-translated version of the AQ had moderate consistency for repeated measure. This result contradicts the original version where the test-retest is highly stable over time [5]. The test-retest however depends on several factors

including the test-retest time interval [20], and the memory effect [21]. Furthermore, this result may have been influenced by the nature of the items in the AQ [20]. Aggressive behavior is generally unstable, such as impulsively hitting someone or constantly having arguments with others. These unstable behaviors could have had a tendency in lowering the test-retest reliability [22]. The cultural factors especially affect the instability of aggressive behavior, particularly among female in Malaysia.

Several translated and validated versions of the AQ were identified during the course of the current study. The AQ has been translated into Chinese among student and community adults [5]. Confirmatory factor analysis was conducted using different statistical software than the current study. The internal consistency for the Chinese version was established for each subscale, which ranges between 0.56 and 0.74 [5]. In Japanese-translated version, exploratory factor analysis was performed and four factors structure was revealed. The Chronbach's alpha for each subscale was found between 0.75 and 0.77 [6]. The AQ has also been translated into Dutch among a group of adolescent male offender aged from 12 to 18. All subscales were found significant intercorrelated with the total Chronbach's alpha equal to .86. The Chronbach's alpha for the subscales are between .51 and .75, with the lowest is verbal aggression [9]. In Greek, the AQ was validated among the general population and both exploratory and confirmatory factor analysis were conducted to examine the factor structure [10]. Four factors structure was revealed which explained 43.7 % of variance. The Chronbach's alpha was established in between 0.5 and 0.84, with the total value are between 0.85 and 0.88 [10].

In German-translated version, the confirmatory factor analysis also revealed four factors that explained 44.5 percent variability [11]. The internal consistency for the total score is 0.85, with individual Chronbach's alpha for each subscale range between 0.62 and 0.82. Again, verbal aggression had the lowest Chronbach's alpha value ($\alpha = 0.62$). Test-retest was conducted within nine months interval. High test-retest

reliability was produced for the total score ($r = 0.73$) and individual subscales ($r = 0.66$ to $r = 0.74$). Overlap of items in a single factor was mentioned in this study [11]. In Italian version, the exploratory factor analysis extracted only three factors from the translated version of the AQ [12]. Further confirmatory factor analysis revealed four factors structure that explained 44.59 percent of variance. In the study, significant interrelations between subscales were established with verbal aggression and anger was found mixed in two factors. The Chronbach's alpha ranged from .44 to .78, with the lowest being verbal aggression and anger [12].

Lastly, the AQ was also been translated into Spanish [8]. The factor analysis revealed four factors, which explained 42.1 percent of variance. Significant correlations were established between physical and verbal aggression, and between anger and all subscales. The current study replicated some of the finding in the validation of the Spanish-translated version AQ. The internal consistency for each subscale is between 0.57 (verbal aggression) and 0.77 (anger), with the total score is 0.82. Test-retest was done after five weeks interval. The test-retest reliability for the study, which was measured by Pearson's correlation, was found high. The total score had Pearson's correlation of 0.81. For the subscale, the lowest Pearson's correlation was hostility ($r = 0.57$) and the highest was anger ($r = 0.88$) [8].

Among the four types of aggression being measured by the AQ, most female prisoners in the current study exhibited higher tendency to engage in verbal aggression, become angry, or being hostile towards others. Compared to the three types of aggression, female prisoners are less likely to become physically aggressive. These findings showed that female inmates in Malaysian prison are more likely to exhibit their aggressive nature indirectly. They are unlikely to directly become aggressive by engaging in physical action, such as involve in fighting, breaking things, or threatening others, as being suggested by the questions in the AQ. Instead, they are more likely to feel angry and being

hostile, such as easily to gets angry, felt suspicious towards some people, and easily frustrated over things. As a result, they might engage in verbal aggressive acts, such as often getting into an argument and hardly agrees with others.

The study population in the current validation work is the limitation of the study, where only female prisoners were involved. Certain factors such as the nature of the prison's population and types of crime convicted by the prisoners needed to be considered.

It is possible that the prisoner had higher aggressive behavior compared to the free-living people and thus it might affect the validation and reliability testing. Thus, the current Malay-translated version of the AQ is more valid and reliable for female prison population rather than Malaysian population in general. Based on this limitation, local psychometric instrument to measure aggression could be designed in the future with reference to the finding of the current study.

In conclusion, the factor analysis and reliability testing yielded satisfactory results for the Malay-translated version of the AQ. Differences between the Malay version of the AQ and the original version, as well as to previous studies can be well explained. So far, the Malay-translated version of the AQ is valid and reliable as a screening instrument for identifying aggression among the Malaysian, especially female prisoners. Different sample's population is favorable in further study to validate the Malay-translated version of the AQ.

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