

## ORIGINAL ARTICLE

### RELIABILITY OF BAHASA MALAYSIA VERSION OF FAMILY ENVIRONMENT SCALE AND ITS MEASUREMENT ISSUES

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#### Abstract

**Objective:** Family Environment Scale (FES) is one of the most widely used instruments to measure many family aspects. Cross cultural adaptation of the original FES is essential prior to local utilization as different cultures percept their family environments differently. We attempted to translate the FES into the Bahasa Malaysia language for adolescents, evaluate its reliability using internal consistency and compare its results with the original study. **Methods:** This is a cross-sectional study, involving adolescents aged 12-17 from four secondary schools. The adolescents were selected using quota sampling for different age, ethnic and academic performance. The study was divided into four phases, namely: i) translation of FES, ii) pilot test iii) internal consistency reliability test and iv) comparison of the study results with the original FES. **Results:** A total of 295 adolescents participated in this study. All of the reliability measurements generated (ranged between Cronbach's alpha 0.10 - 0.70) were lower than those originally reported for this instrument (ranged between Cronbach's alpha 0.61 -0.78). Five subscales in the Bahasa Malaysia version were found to be less than Cronbach's alpha 0.5, which were below the acceptable level for practical or research use. There was considerable variation observed between the sample population of this study and that of the original study, which could be due to the social cultural differences. **Conclusion:** The Bahasa Malaysia version of FES requires further culturally appropriate revision. A new measuring scale could also be devised to provide an accurate evaluation of the family environment as perceived by Malaysian adolescents, which has acceptable levels of reliability and validity. *ASEAN Journal of Psychiatry, Vol.11 (1): Jan – June 2010: XX XX.*

**Keywords:** Adolescents, Bahasa Malaysia, Family Environment Scale, measurement issues, reliability.

## Introduction

Family Environment Scale (FES) is a fairly comprehensive instrument used to measure many family aspects. It focuses on the family dynamic environment related to family cohesion, family communication, affective responsiveness, family adaptation and its relationship with behavioural problems among family members [1-3]. The scale is based on three dimensional conceptualisations of families. There are three separate forms of FES available that correspondingly measure different aspects of these dimensions [4]. The Real form (Form R) measures people's perception of their actual family environments, the Ideal Form (Form I) rewords items to assess individuals' perceptions of their ideal family environment and the Expectations Form (Form E) instructs respondents to indicate what they expect a family environment will be like. In the present study, FES type R was used to measure the adolescents' perception of their real family environment.

The challenges adolescents face today are unique and perhaps even more challenging than adolescents of the past. They seem to face more stress and the local media frequently reports on behavioural problems occurring among adolescents. According to the National Health and Morbidity Survey (NHMS) 2006 in Malaysia [5], the prevalence of psychiatric morbidity amongst children and adolescents was 20.3%, an increase of 7.3%, compared to the prevalence rate of 13% in the NHMS 1996 study [6]. To understand adolescent behaviour better, it is essential to have an instrument that assesses family environment [7]. Data on the family environment has been identified as a powerful contributor to problems among adolescents [8,9]. There are questionnaires that have been invented to measure the family structure, for example,

Family Environment Scale (FES)[4], Family Crisis Oriented Personal Evaluation Scale (F-COPES) [10], Family Functioning Index (FFI) [11], Family Adaptability & Cohesion Evaluation Scale (FACES) [12] and Family Dynamic Environment Scale (FDES) [8]. However, the dilemma faced by researchers in Malaysia is the availability of validated questionnaires in the local language (Bahasa Malaysia). Without validated questionnaires, conclusions from studies done in the local community could be questioned.

In this present study, we attempted to translate FES into the Bahasa Malaysia language to evaluate the family environment of Malaysian adolescents. The Family Environment Scale was developed to assess the interpersonal atmosphere within a family with respect to its relationships, patterns of growth, and its organisational features [4]. The 90-items FES consists of ten subscales, which describe the social environment of the family as perceived by its members [4]. The initial set of items in the FES was developed from structured interviews with members of different types of families and from adaptation of items from other social environment scales [4]. The content of the items were guided by three dimensions of the social environment: interpersonal relationships, personal growth and system maintenance [4]. The Relationship dimension comprises of Cohesion, Expressiveness and Conflict Subscales. The Personal Growth dimension includes assessments of Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active Recreational Orientation and Moral-Religious Emphasis. The third dimension of System Maintenance involves assessments of Organization and Control measures. The reliability of the original FES ranged from Cronbach's alpha 0.61-0.78 for the ten subscales [4]. FES is practical to use both clinically and in research. It is a

multidimensional measure in the study of family systems with adequate test-retest reliability and evidence of validity and sensitivity to change.

Thus, the aims of the present study were to translate the Family Environment Scale into the Bahasa Malaysia language, evaluate its reliability using internal consistency and compare its measurement results with the original FES results [4]. However, our study focused on measuring the perception of Malaysian adolescents' on their family environment, whereas the original FES [4] measured the perception of different categories of the family members. In such cases, complex interactions may exist between the environment, measurement sensitivity and the level of the variable being measured.

## **Methods**

The adolescents were selected from four different secondary schools. The schools were situated in Kuala Lumpur and were selected by the Ministry of Education. Within each school, the adolescents were randomly selected based on quota sampling. Quota sampling was done for ethnicities to represent the Malaysian population. The Malaysian population comprises multiracial ethnicities namely Malays, Chinese, Indians and other ethnic minorities. The academic performance was graded based on the teachers' assessment of the students' achievement. The inclusion criteria consisted of adolescents whose age ranged from 12-17 years old and who understood Bahasa Malaysia language. Those who have cognitive impairment such as mental retardation and difficulty in understanding Bahasa Malaysia were excluded from the study. Consent was obtained from the parents and adolescents prior to the study.

The study was divided into four phases, namely: Phase 1: Translation process; Phase 2: Pilot test; Phase 3: Internal consistency reliability test; Phase 4: Comparison of the study results with the original FES results [4].

### ***Phase 1: The translation process of FES***

The translation process was carried out by a group of experts consisting of linguists and medical personnel. The process of translation was carefully planned with the importance of ensuring the preservation of contents and the meanings. The aim was to evaluate clarity, comprehension, naturalness and adequacy of wording.

During this phase, two forward translations into Bahasa Malaysia language were done. This consisted of one translation conducted by medical personnel who was not blinded to the study and the other by a linguist who was blinded to the study [13]. Both of the translated versions were then back translated to English to assess the accuracy of the Bahasa Malaysia translations.

Then the two forward translations were reconciled and sentence-by-sentence revision was done to produce the first consensus of Bahasa Malaysia version. Translators were advised to report any difficulties encountered. A group of experts then compared the back-translation and forward translation and amendments were made accordingly.

### ***Phase 2: Pilot test***

The translated Bahasa Malaysia questionnaire and the original English questionnaire were tested on 8 respondents. The respondents were selected from a group of adolescents who were bilingual. The Bahasa Malaysia and English versions were

randomly administered to the respondents. Subsequently, this session was followed with a focus group discussion on the questionnaires that had been tested. This was to ensure word suitability and comprehension. The expert panels reviewed and came up with the final Bahasa Malaysia version of the FES.

***Phase 3: Internal consistency reliability test.***

Bahasa Malaysia version of the FES was tested for its internal consistency. Data collection was performed on a single occasion during a six-month period in 2007. A total of 295 participants were enrolled in this study. The Bahasa Malaysia version of the FES questionnaire was given to the participants. The time taken to complete the questionnaire was approximately 20 to 30 minutes.

***Phase 4: Comparison of the study results with the original FES***

Mean scores of the subscales of FES and the internal consistencies (Cronbach's alpha) were calculated. The results were then compared with the results of the original FES study on normal families [4].

***Measures***

FES type R was used in the present study. The scale is made up of 90 statements that are meant to evaluate the perceptions of the respondents regarding the present family environment. The respondent was supposed to assess each statement as "true" or "false" in relation to the environment in his or her family. Each response received a score of zero or one to indicate absence or presence of the item evaluated, respectively. If respondent's answer was the same with the FES answer scheme, one mark will be given and if not, zero mark will be given. The total

for each subscale was obtained by adding up the number of points on each subscale [14].

The statistical analyses were conducted using SPSS version 14.0. Descriptive analyses were done to determine the distribution of FES items and to calculate the mean score and standard deviation for FES subscales. Internal consistency was done to test for reliability using Cronbach's Alpha.

**Results**

Table 1 shows the demographic data of the participants in the study. Approximately 53% of them were girls and 47% were boys. Majority of the participants were Malays (63.1%), followed by Chinese (28.5%) and Indians (6.8%). The ethnic and gender distribution of the sample were approximately proportionate to the Malaysian population based on the Malaysian Statistics Department [15]. The mean age of the participants was  $14.9 \pm 1$  years old. Most of them had moderate to fairly good academic performance. Approximately 40% of them came from families with family income of RM 1000 – RM 5000 and majority of them lived with both parents.

Table 2 shows a comparison between the mean scores of FES from the ten subscales for the sample studied and the scores from the original study done by Moos et al on normal families. Respondents in this study scored higher in achievement orientation, moral-religious emphasis, organisation and control subscales. Meanwhile they scored lower in expressiveness, independence, intellectual-cultural orientation and active-recreational orientation subscales.

Table 3 illustrates a comparison between the reliabilities (internal consistency) of the FES

Bahasa Malaysia version and the original FES study [4] done on normal families. The internal consistencies for this study ranged between Cronbach's alpha 0.10 – 0.70. All of the reliability results generated were lower than those originally reported for this instrument. The best reliability rate attained was for cohesion (0.70). Five subscales in the Bahasa Malaysia version were found to be less than 0.5, which were below the acceptable level

for practical or research use. Those subscales were Independence (0.10), Expressiveness (0.22), Achievement Orientation (0.24), Active Recreational Orientation (0.33) and Moral Religious Emphasis (0.45). Other subscales presented acceptable reliability rates (0.5 and above) such as Conflict (0.63), Organisation (0.58), Control (0.54) and Intellectual-Cultural Orientation (0.51).

**Table 1: Socio-demographic data of the respondents**

| Socio-demographic variables       | Number | %    |
|-----------------------------------|--------|------|
| <b>Age (years)</b>                |        |      |
| 12-13                             | 21     | 7.1  |
| 14-15                             | 168    | 56.9 |
| 16-17                             | 106    | 35.9 |
| <b>Gender</b>                     |        |      |
| Male                              | 138    | 46.7 |
| Female                            | 157    | 53.3 |
| <b>Ethnic</b>                     |        |      |
| Malays                            | 186    | 63.1 |
| Chinese                           | 84     | 28.5 |
| Indians                           | 20     | 6.8  |
| Others                            | 5      | 1.7  |
| <b>Academic performance</b>       |        |      |
| Good                              | 38     | 12.9 |
| Fairly good                       | 156    | 52.9 |
| Moderate                          | 68     | 23.1 |
| Poor                              | 33     | 11.1 |
| <b>Parents' Marital Status</b>    |        |      |
| Married/living together           | 264    | 89.5 |
| Divorced/separated                | 31     | 10.5 |
| <b>Family Income</b>              |        |      |
| < RM 1000                         | 69     | 23.4 |
| RM 1001-5000                      | 120    | 40.7 |
| > RM 5000                         | 30     | 10.2 |
| Don't know                        | 76     | 25.8 |
| <b>Mother's educational level</b> |        |      |
| Primary school                    | 20     | 6.8  |
| Secondary school                  | 120    | 40.7 |
| Tertiary education                | 54     | 18.3 |
| Don't know                        | 101    | 34.2 |
| <b>Father's educational level</b> |        |      |
| Primary school                    | 19     | 6.4  |
| Secondary school                  | 97     | 32.9 |
| Tertiary education                | 71     | 24.1 |
| Don't know                        | 108    | 36.6 |

**Table 2: Comparison of mean scores of the sub-scales of FES between samples in this study and samples from a study on normal families by Moos et al**

| Dimensions                                   | Sub-scales   | Malaysian<br>(N = 295) |      | Study by<br>Moos et al<br>(N=1432) |      |
|--|--|------------------------|------|------------------------------------|------|
|  |  | Mean                   | SD   | Mean                               | SD   |
| <b>Relationship<br/>Dimensions</b>           | <b>Cohesion</b>  | 6.93                   | 2.02 | 6.73                               | 1.47 |
|  | The degree of commitment, help and support family members provide for one another                  |                        |      |                                    |      |
|  | <b>Expressiveness</b>  | 4.63                   | 1.56 | 5.54                               | 1.61 |
|  | The extent to which family members are encouraged to express their feelings directly               |                        |      |                                    |      |
| <b>Personal<br/>Growth<br/>Dimensions</b>    | <b>Conflict</b>  | 3.04                   | 2.09 | 3.18                               | 1.91 |
|  | The amount of openly expressed anger and conflict among family members                             |                        |      |                                    |      |
|  | <b>Independence</b>  | 4.82                   | 1.44 | 6.66                               | 1.26 |
|  | The extent to which family members are assertive, are self-sufficient and make their own decisions |                        |      |                                    |      |
| <b>System<br/>Maintenance<br/>Dimensions</b> | <b>Achievement orientation</b>   | 6.95                   | 1.31 | 5.47                               | 1.62 |
|  | How much activities are cast into an achievement-oriented or competitive framework                 |                        |      |                                    |      |
|  | <b>Intellectual-cultural orientation</b>   | 4.65                   | 1.87 | 5.56                               | 1.82 |
|  | The level of interest in political, intellectual and cultural activities                           |                        |      |                                    |      |
|  | <b>Active-recreational orientation</b>   | 4.97                   | 1.58 | 5.33                               | 1.96 |
| <b>System<br/>Maintenance<br/>Dimensions</b> | The amount of participation in social and recreational activities                                  |                        |      |                                    |      |
|  | <b>Moral-religious emphasis</b>  | 6.16                   | 1.50 | 4.75                               | 2.03 |
|  | The emphasis on ethical and religious issues and values  |                        |      |                                    |      |
|  | <b>Organization</b>  | 6.67                   | 1.78 | 5.47                               | 1.90 |
| <b>System<br/>Maintenance<br/>Dimensions</b> | The degree of importance of clear organization and structure planning                              |                        |      |                                    |      |
|  | <b>Control</b>   | 5.11                   | 1.91 | 4.26                               | 1.84 |
|  | How much set rules and procedures are used to run family life                                      |                        |      |                                    |      |

**Table 3: Comparison of internal consistencies (Cronbach’s alpha) between Bahasa Malaysia version and original English version of FES.**

| Subscales                         | Bahasa Malaysia version of FES |  | FES in English language (Moos et al) |  |
|-----------------------------------|--------------------------------|--|--------------------------------------|--|
|                                   | Cronbach’s alpha               | Corrected Average Item-Subscale Correlations | Cronbach’s alpha                     | Corrected Average Item-Subscale Correlations |
| Cohesion                          | 0.70                           | 0.39   | 0.78                                 | 0.44   |
| Expressiveness                    | 0.22                           | 0.08   | 0.69                                 | 0.34   |
| Conflict                          | 0.63                           | 0.31   | 0.75                                 | 0.43   |
| Independence                      | 0.10                           | 0.03   | 0.61                                 | 0.27   |
| Achievement orientation           | 0.24                           | 0.10   | 0.64                                 | 0.32   |
| Intellectual-cultural orientation | 0.51                           | 0.23   | 0.78                                 | 0.44   |
| Active-recreational orientation   | 0.33                           | 0.13   | 0.67                                 | 0.33   |
| Moral-religious emphasis          | 0.45                           | 0.20   | 0.78                                 | 0.43   |
| Organization                      | 0.58                           | 0.28   | 0.76                                 | 0.42   |
| Control                           | 0.54                           | 0.25   | 0.67                                 | 0.34   |

## Discussion

The present study is the first attempt to translate the FES into the Bahasa Malaysia language. In particular, this study focused on measuring the perception of Malaysian adolescents of their family environment. FES is an effective instrument to differentiate between functional families and families with problems [16,17,18,19]. Developing a culturally equivalent translated instrument requires familiarity with basic problems of linguistic adaptation, cultural construct and psychometric changes inherent in the translation process [7,20]. Thus, the cross-cultural adaptation and validation of the Bahasa Malaysia version of FES is important to assess the families in Malaysia.

Comparing between the respondents’ subscale mean scores with the findings in the original FES study by Rudolf Moos (using normal population), some variations were found. The mean scores for the two different samples were only similar in two subscales namely “cohesion” and “conflict”. This study population scored less in “expressiveness”, “independence”, “intellectual-cultural activities” and “active-recreational activities”. However, their scores were higher in “achievement orientation”, “moral-religious emphasis”, “organisation” and “control”. The findings showed that the study population in both studies was different in many areas. The variations could be due to the differences in the social cultural behaviour [17,18,20] whereby in our local context, the family



environment encourages achievements and adheres more to moral-religious values.

The sample population in this study also indicated that the local adolescents were less expressive and independent. The Malaysian society is strongly influenced by a hierarchical structure headed by an authoritarian father figure. This could lead to a relatively repressive social environment which contributes to less expressive and independent adolescents [11,17]. The hierarchical family structure may also explain the higher scores observed in organisation and control subscales. With regard to the intellectual-cultural and active-recreational activities subscales, the sample studied scored less compared to the American sample. The latter, perhaps, have better access to a larger number of options, opportunities and cultural activities [20].

In determining the reliability of the instrument, internal consistency was evaluated. In this study, the Cronbach's alpha for five subscales namely; "cohesion", "conflict", "organisation", "control" and "intellectual-cultural" were acceptable (Cronbach's alpha > 0.5) [21,22]. The other five subscales had Cronbach's alpha less than 0.5 hence unacceptable for practical or research use. Previous studies have also found that the reliabilities of some subscales in their studies were lower [23] in comparison to those initially reported of the original FES. The differences in the internal consistencies observed between the two sample populations might be due to cultural factors [20]. There is a difference in the lifestyle between Western and Malaysian setting with regards to family environment. Some of the questions used on the subscales with low internal consistency may be inappropriate for the Malaysian culture. Hence, these questions should be rephrased or replaced by other questions which

describe similar concepts to adapt to the local context.

For example, the low Cronbach's alpha for the subscale "Expressiveness" could be explained by the difference the way the Malaysian adolescents express themselves compared to the Western population. Majority of the Malaysian adolescents reported that "family members do not often keep feelings to themselves" however they also reported that "they are usually careful about what they say to each other". The latter statement contradicts the former. Being "careful about what we say to each other" is a normal practice in the Malaysian culture and perhaps does not represent expressiveness. The Malaysian adolescents perhaps have different concept of expressiveness, thus the items selected to represent the subscale "Expressiveness" should be re-evaluated to adapt to the local culture.

With regard to the subscale 'Independence', the internal consistency was very low, Cronbach alpha 0.10. Perhaps the concept of independence among Malaysian adolescents differs from that of Western countries. For example in Malaysia, where the family environment is strongly influenced by a hierarchical family structure, it is the norm for adolescents to ask permission from their parents before leaving the house thus, the item 'In our family, we have the freedom of movement' might not reflect independence. It is also not the normal practice for family members to strongly encourage one another to stand up for their rights or to speak out. The Malaysian adolescents might have difficulties in answering these items which describe 'Independence'.

For active-recreational orientation, the item 'our friends often come over to our house for dinner' might be inappropriate for the

Malaysian adolescents as it is culturally uncommon for adolescents to have friends over for dinner. The item 'sometimes family members attend courses or classes to acquire knowledge on new hobbies or interests (outside school) might also be inappropriate since there are not many courses or classes available for such interests in Malaysia. Thus, the items selected to represent these subscales should be re-evaluated to adapt to the local culture. Similarly, other subscales with low Cronbach's alpha values should be re-examined too.

One of the limitations of this study was the homogeneity of the sample. Although the participants were recruited from four different secondary schools, majority of the participants were from a middle class socio economic background, lived with both parents and had fairly good academic performance. Besides that, in this self reported study, the participants might have provided evasive or false responses if they did not feel comfortable answering a question truthfully. Another limitation was that we were not able to compare the findings in this study with the results of a previous FES study using only adolescents by Moos et al.

In conclusion, the Bahasa Malaysia version of FES requires further culturally appropriate revision. To improve the results, a repeat study should include: (i) rephrasing or changing the items in the subscales to be more suitable for the Malaysian context, (ii) a larger sample size, (iii) adequate variability of the participants and (iv) involvement of different members of the family. A new measuring scale could also be devised to provide an accurate evaluation of the family environment as perceived by Malaysian adolescents, which has acceptable levels of reliability and

validity and is applicable to Malaysian adolescents with a wide range of behavioural problems.

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