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# Portuguese version of the Family Environment Scale: application and validation

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## ABSTRACT

**OBJECTIVE:** To translate the Family Environment Scale into Portuguese and apply the instrument to validate it.

**METHODS:** The translation was applied to members of Brazilian families with the aim of evaluating its internal consistency and the concordance between members of the same family. One hundred and fifty-four volunteers living in the city of São Paulo in 2003 who were not receiving any kind of intervention for dealing with family problems were selected. The mean scores in the ten subscales of the instrument were compared between men and women, and between members of the same family. The internal consistency was evaluated by means of Cronbach's alpha.

**RESULTS:** The maximum possible score in each subscale was nine (good family functioning), except in relation to conflict and control. In most of the subscales, the mean score of the sample studied ranged from 5.1 to 7.6 (men) and 5.4 to 7.7 (women). In the conflict and control subscales, the means ranged from 1.8 to 4.6 (men) and 1.6 to 4.6 (women). These were similar to scores reported in international studies, except for higher scores in the cohesion and organization subscales, and lower score in the conflict subscale. There were no statistically significant differences between the scores attained by men and women. The reliability of the scale, evaluated according to Cronbach's alpha, ranged from 0.61 to 0.78 for the ten subscales.

**CONCLUSIONS:** Cultural factors may have influenced the results obtained in some of the subscales. The Portuguese version of the Family Environment Scale presented reasonable internal consistency that enables its use for evaluating changes in the family's environment and its functioning and after therapeutic interventions.

**KEYWORDS:** Family. Family relations. Socioeconomic factors. Psychiatric Status Rating Scales. Translations. Questionnaires. Reproducibility of results.

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## INTRODUCTION

It is important to obtain data on the family environment in the field of health care, since this may have a decisive influence on the development of many disorders and on the evolution of many kinds of treatment. Moos & Moos<sup>17</sup> define the family environment as the perception each member has of his/her family, i.e. the social-family atmosphere resulting from the relationships, personal growth, organization and control of the family system. These authors believed that the family environment influenced the members of the family and their process of adapting to situations. The personal characteristics of the family members, their coping abilities and well-being may affect the quality of the family relationships. Therefore, when one member presents an emotional

or a behavioral disorder, the whole family environment is likely to be affected.

Many instruments have been standardized with the objective of evaluating the family environment or some of its components.<sup>14,17</sup> There are few scales for assessing the way in which families function that have been translated into Portuguese and validated for Brazil, which points towards the need for instruments that are brief and easy to understand. The Family Environment Scale (FES) devised by Moos & Moos<sup>17</sup> makes it possible to describe the family climate; compare the perceptions of parents and children; and plan and monitor family changes. It can also be used to assess the impact of counseling or other kinds of intervention.<sup>3,11,16</sup> 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.<sup>17</sup> The choice and the content of the items were guided by three dimensions of the social environment: interpersonal relationships, personal growth and system maintenance.<sup>17</sup> The FES can be used in three ways: to evaluate the real environment (form R), the ideal environment (form I) or the expected environment (form E). The reliability of the FES was evaluated, yielding internal consistency rates (Cronbach's alpha) that ranged from 0.61 to 0.78 for the ten subscales.<sup>17</sup> The discriminant validity and construct validity were evaluated in many studies, and these showed its good capacity to discriminate between families with a functional family environment and those with problems.<sup>4,20,21</sup> The FES can also be used to evaluate the outcomes of interventions; to evaluate the level of adaptation of children and adults to the family environment; and to discriminate within the family environment between groups that differ regarding age, ethnic group and mental health.<sup>2,10,13,19</sup> In other countries, the FES has been used in several recent studies to evaluate the influence of the family environment on the psychological characteristics of adolescent children and on psychiatric disorders, including bipolar disorder and alcoholism.<sup>8,18</sup>

The objectives of the present study were to translate the Family Environment Scale\* into Portuguese and to apply the instrument to evaluate its internal consistency.

## METHODS

FES type R, which aims at evaluating the real environment, was used in the present study with the aim of describing the real situation of the family environment at the time of applying it. The scale is made up of 90 statements that are meant to evaluate the perceptions of each member of the family regarding the present

environment, i.e. the social and interpersonal climate of the family. The respondent is supposed to assess each statement as "true" or "false" in relation to the environment in his/her family. Each response receives a score of zero or one to indicate absence or presence of the item evaluated, respectively. The statements are grouped into ten subscales that belong to three dimensions. The presence of problems is indicated by a high score on the conflict and control subscales, and a low score on the other subscales. The total score for each subscale is obtained by adding up the number of points on each subscale. The first dimension, interpersonal relationships, includes three subscales: cohesion (help and support between the family members), expressiveness (expression of feelings) and conflict (openly expressed in the family). The second dimension, personal growth, includes five subscales: independence (capacity to make decisions), assertiveness (achievement-oriented activities), cultural interests (political, intellectual and cultural activities), leisure (social and recreational activities) and religion (ethical questions and religious values). The third dimension, system maintenance, includes two subscales: organization (planning of family activities) and control (presence of rules and procedures in day-to-day family life).

The FES was translated by two bilingual individuals and two others participated in the process of back-translation, one of them a native speaker of English, as recommended by Garyfallos et al.<sup>12</sup> A pilot application was carried out on a sample of ten families to analyze whether there were any comprehension problems regarding the instrument, for which some minor adjustments were made to the translation. After performing the backtranslation of the final version, the instrument was submitted to the author of the original instrument, who approved it. A bilingual specialist in family therapy evaluated the final version of the instrument and verified its semantic equivalence.

A convenience sample was made up of 76 volunteer families. At least two members of each family were interviewed, totaling 154 individuals. These families were invited to participate in the study by means of messages in the electronic media or personal invitations from the interviewer. The inclusion criterion was for the volunteers to have had at least four years of formal education. The exclusion criteria were the presence of cognitive deficit or psychiatric comorbidities that would make it impossible to apply the instrument; being under psychotherapeutic or psychiatric treatment (which might affect the family relations) at the time of the invitation to participate; and making abusive use of alcohol or other substances, or being dependent on these substances.

\* The use of the Family Environment Scale is regulated by copyright. The authors received permission from the Coaching Psicologia Estratégica, Brazilian dealer of the Consulting Psychology Press (CPP), to translate the instrument into Portuguese.

The data collection was performed on a single occasion, during a nine-month period in 2003, at the individuals' homes in the city of São Paulo or at the university research center, by the interviewing psychologist. The questionnaires were answered by the person with whom the initial contact was made, and by at least one more member of each family who agreed to participate in the study. The sociodemographic data were collected by means of a questionnaire applied by the interviewer. The mean time spent on filling it out was 20 minutes, and in most of the cases two members of the family participated. Some participants had doubts in some negative statements (e.g. "We do *not* pray in our family") that were promptly cleared up by the interviewer. Each volunteer received reimbursement for their transportation expenses.

The men and women's sociodemographic data of men and women were compared by means of the  $\chi^2$  test. The means and standard deviations of the scores for each subscale of the FES were calculated both for the 154 volunteers together and for the men and women separately. Comparisons between the mean scores for the men and women were made using Student's *t* test. The individuals who were initially approached were compared with their family member(s) by means of Student's *t* test for paired samples. The means from the Brazilian sample were compared with those obtained from five international studies mentioned by the author of the original "Family Environment Scale Manual 3<sup>rd</sup> edition".<sup>17</sup> Four of them were studies by Moos &

Moos (study 1: American population of normal families; study 2: African-American and Latino families; study 3:- parents of adolescent children; and study 5: normal adults),<sup>1</sup> and the other study (study 4) was by Carlson et al<sup>6</sup> (1991), with normal adults. Student's *t* test was used to compare the means from each study to those in this sample studied. The reliability of the Brazilian version of the FES was evaluated by means of Cronbach's alpha index as a measure of the internal consistency, and the split-half method. A significance level of 5% was adopted for all the tests. The criteria proposed by Landis & Koch<sup>15</sup> (1977) were adopted for interpreting the level of agreement: almost perfect (0.80 to 1.00); substantial (0.60 to 0.80); moderate (0.40 to 0.60); fair (0.20 to 0.40); slight (zero to 0.20); and poor (-1.0 to zero).

The volunteers were given prior explanations about the objective of the study and assurances regarding the confidentiality of the information collected. All the participants signed a consent form that had been approved, along with the research project, by the Medical Research Ethics Committee of the Universidade Federal de São Paulo (Unifesp), project no. 1184/01.

## RESULTS

Table 1 shows the sociodemographic data of the sample studied, which was made up of 56% women and 44% men, who were mostly single (57.8%) and had a family

**Table 1.** Sociodemographic data on the 76 Brazilian families whose members filled out the FES. Data expressed as percentages, except for age. São Paulo, Southeastern Brazil, 2003.

Variable	Men (N=67)	Women (N=87)	Total (N=154)	$\chi^2$ (or t)	p
Age (mean $\pm$ SD)	36 $\pm$ 16	42 $\pm$ 15	39 $\pm$ 15		n.s.
Marital status				15.0	0.001
Single	52.2	62.1**	57.8		
Married	44.8	20.7**	31.2		
Widowed/separated	3.0	17.2**	11		
Income (in minimum wages*)				2.03	n.s.
Up to 8	42.4	29.4	39.5		
From 9 to 15	33.9	52.9	38.2		
More than 15	23.7	17.7	22.3		
Living with				8.3	0.04
Original family	44.1	70.6**	50		
Conjugal family	52.5	23.5**	46		
Alone or with others	3.4	5.9	4		
Schooling				1.40	n.s.
Elementary education	31.3	28.7	30		
High school (complete/incomplete)	35.9	35.6	35.7		
Higher education (complete/incomplete)	32.8	35.7	34.3		

FES: Family Environment Scale

n.s. = non-significant

\* Minimum wage was R\$150,00 (equivalent to US\$420.00) per month in the year of study

\*\* differs from men,  $p < 0.05$

income of up to eight Brazilian minimum wages. In general, the women lived with their original families, while the men lived with their conjugal families.

Table 2 shows the means reached on the subscales by the men and women. No significant differences were detected between them. Comparison between the means obtained by interviewing the people initially approached and those of their family members showed there were no significant differences for most of the subscales. However, mothers scored higher than their children did on the independence scale (means of  $7.5 \pm 1.3$  versus  $6.6 \pm 1.3$ ); wives' scores were lower than their husbands' on the assertiveness scale ( $5.8 \pm 1.6$  versus  $6.5 \pm 0.8$ ) and higher than their husbands' on the leisure scale ( $5.5 \pm 2.2$  versus  $4.9 \pm 2.2$ ). There

were no differences between family members on the other subscales.

Table 3 shows a comparison between the mean scores from the ten subscales for the sample studied and the scores from five international studies. On the cohesion and organization subscales, the scores of the individuals in the present study were significantly higher than those reported in all of the five international studies. The sample studied reached higher mean scores on the assertiveness and religion subscales than did the normal American families reported in study 1. Compared with the sample of African-American and Latino families (study 2), the sample studied had higher scores on the expressiveness and independence subscales. The sample studied also had a higher mean score on the

**Table 2.** Mean scores on the family environment subscales of the FES (mean  $\pm$  SD), presented by the men and women in the sample from the 76 families. São Paulo, Southeastern Brazil, 2003.

Subscale	Men (N= 67)	Women (N= 87)	Total	p
Cohesion	7.6 $\pm$ 1.7	7.7 $\pm$ 1.3	7.7 $\pm$ 1.5	n.s.
Expressiveness	5.7 $\pm$ 2.0	6.1 $\pm$ 1.9	5.9 $\pm$ 1.9	n.s.
Conflict	1.8 $\pm$ 1.7	1.6 $\pm$ 1.8	1.7 $\pm$ 1.8	n.s.
Independence	6.7 $\pm$ 1.6	7.1 $\pm$ 1.4	6.9 $\pm$ 1.5	n.s.
Assertiveness	6.0 $\pm$ 1.2	5.8 $\pm$ 1.7	5.9 $\pm$ 1.5	n.s.
Intellectual interests	5.1 $\pm$ 1.8	5.5 $\pm$ 1.7	5.3 $\pm$ 1.8	n.s.
Leisure	5.2 $\pm$ 1.9	5.4 $\pm$ 1.9	5.3 $\pm$ 1.9	n.s.
Religion	5.9 $\pm$ 1.6	5.9 $\pm$ 1.5	5.9 $\pm$ 1.5	n.s.
Organization	6.5 $\pm$ 1.7	6.6 $\pm$ 1.8	6.6 $\pm$ 1.8	n.s.
Control	4.6 $\pm$ 1.8	4.6 $\pm$ 2.0	4.6 $\pm$ 1.9	n.s.

n.s.: non-significant (Student's t test)

**Table 3.** Mean scores on the family environment subscales of the FES (mean  $\pm$  SD) attained by the sample of 76 families (São Paulo, Southeastern Brazil, 2003) and by samples from normal families in international studies cited in the literature.

Subscale	Brazilian (N=76)	Study 1 (N=1.432)	Study 2 (N=454)	Study 3 (N=446)	Study 4 (N=2.774)	Study 5 (N=240)
Cohesion	7.7 $\pm$ 1.5	6.7 $\pm$ 1.5**	6.9 $\pm$ 1.9**	6.8 $\pm$ 2.0**	7.3 $\pm$ 1.9*	6.7 $\pm$ 2.4**
Expressiveness	5.9 $\pm$ 1.9	5.5 $\pm$ 1.6	5.0 $\pm$ 1.7**	5.7 $\pm$ 1.8	6.0 $\pm$ 2.1	4.9 $\pm$ 2.3**
Conflict	1.7 $\pm$ 1.8	3.2 $\pm$ 1.9**	3.3 $\pm$ 2.1**	3.8 $\pm$ 2.3**	3.2 $\pm$ 2.1**	3.3 $\pm$ 2.3**
Independence	6.9 $\pm$ 1.5	6.7 $\pm$ 1.3	6.0 $\pm$ 1.7**	6.8 $\pm$ 1.3	6.6 $\pm$ 1.5	6.8 $\pm$ 1.7
Assertiveness	5.9 $\pm$ 1.5	5.5 $\pm$ 1.6*	6.5 $\pm$ 1.5**	5.6 $\pm$ 1.8	5.8 $\pm$ 1.6	5.9 $\pm$ 1.8
Intellectual interests	5.3 $\pm$ 1.8	5.6 $\pm$ 1.8	5.4 $\pm$ 2.0	5.9 $\pm$ 2.3**	6.1 $\pm$ 2.3**	5.3 $\pm$ 2.5
Leisure	5.3 $\pm$ 1.9	5.3 $\pm$ 2.0	5.0 $\pm$ 2.3	5.5 $\pm$ 2.1	6.3 $\pm$ 1.9**	5.3 $\pm$ 2.4
Religion	5.9 $\pm$ 1.5	4.7 $\pm$ 2.0**	5.7 $\pm$ 2.2	5.2 $\pm$ 2.2**	5.6 $\pm$ 2.2	5.7 $\pm$ 2.3
Organization	6.6 $\pm$ 1.8	5.5 $\pm$ 1.9**	6.0 $\pm$ 2.3**	5.5 $\pm$ 2.2**	5.9 $\pm$ 2.2**	6.0 $\pm$ 2.9**
Control	4.6 $\pm$ 1.9	4.3 $\pm$ 1.8	5.0 $\pm$ 2.1	5.0 $\pm$ 1.9	4.6 $\pm$ 2.2	4.8 $\pm$ 2.3

\* differs from the Brazilian sample,  $p < 0.05$ , \*\* differs from the Brazilian sample,  $p < 0.01$  by Student's t test

Study 1 - study on the perception of family environment by normal and stressed families (Moos et al<sup>17</sup>)

Study 2 - study on the perception of family environment by adult African-Americans and Latinos (Moos et al<sup>17</sup>)

Study 3 - study on the perception of family environment by parents and adolescent children (Moos et al<sup>17</sup>)

Study 4 - study on the perception of family environment by normal adults and adolescents (Carlson et al<sup>6</sup>)

Study 5 - study on the perception of family environment by adults from normal and stressed families (Moos et al<sup>17</sup>)

**Table 4.** Internal consistency of the FES (type R) in a sample of 76 families. Internal consistency evaluated by Cronbach's alpha, correlation of the items with the totals for the subscales and consistency evaluated by the split-half method. São Paulo, Southeastern Brazil, 2003.

Subscale	Cronbach's alpha (N=76)	Correlation of the items with the totals for the subscales (N=76)	Reliability according to the split-half method (N=76)
Cohesion	0.87	0.55	0.90
Expressiveness	0.78	0.33*	0.85
Conflict	0.83	0.42	0.87
Independence	0.49	0.10*	0.37*
Assertiveness	0.39*	0.09*	0.29*
Intellectual interests	0.75	0.84	0.69
Leisure	0.68	0.20*	0.62
Religion	0.20*	0.58	0.51
Organization	0.69	0.25*	0.73
Control	0.70	0.37*	0.71

\* Low rates (<0.40)

religion subscale than what was observed in study 3, and higher on the expressiveness subscale than in study 5. On the conflict subscale, the score of the sample studied was lower than what was reported in all the foreign studies. The sample studied also presented a lower score on the assertiveness subscale than in study 2 and lower on the intellectual interests subscale than in study 3. With regard to the fourth international study, the sample studied presented a lower mean score in the leisure and intellectual interests subscales.

Table 4 presents the reliability of the Portuguese version of the FES, as evaluated by Cronbach's alpha index (internal consistency). The best reliability rates were attained in the cohesion (0.87), conflict (0.83) and expressiveness (0.78) subscales. Most of the subscales presented a reasonable internal consistency rates. Some subscales, on the other hand, presented low rates: religion (0.20), assertiveness (0.39) and independence (0.49). Evaluation by the split-half method showed good reliability for most subscales except independence and assertiveness. The sample studied presented lower levels of consistency than the levels described by those authors in three subscales: independence, assertiveness and religion. Analysis of these items revealed that some questions ("In our family, we think things out for ourselves", "Family members almost always rely on themselves when a problem comes up" and "In our family, we are not encouraged to speak up for ourselves") presented a low correlation with the total for the subscale. If they were eliminated from the calculation of Cronbach's alpha index, it would rise to 0.62. Examination of each question individually showed that the wording of the first of the questions mentioned above might not have been entirely clear. Regarding the second of these questions, the wording in Portuguese might have been too complex, given the educational level of most of the sample. In addition, the use of a

negative construction in the third of these questions might also have created comprehension difficulties.

Concerning religion and ethical values, the reliability was low ( $\alpha=0.20$ ). Statistical analysis of the items indicated that elimination of the questions "family members have strict ideas about what is right and wrong", "In our family, each person has different ideas about what is right and wrong" and "We believe there are some things we just have to take on faith" would raise Cronbach's alpha index to 0.56. This might be due to the fact that the first two of these questions relate to ethical matters rather than religion *per se*. These three questions presented low correlations with the total for the scale, which suggests that two different matters (religion and ethics) were being evaluated by this subscale. Moreover, the wording of the third question, which is somewhat reticent, might have caused comprehension difficulties among the respondents.

With regard to assertiveness, the reliability index was  $\alpha=0.39$ . The questions "how much a person makes is not very important to us" and "family members are often compared with others as to how well they are doing at work or school" presented a low correlation with the total score for the subscale. Their elimination would raise the alpha to 0.65.

## DISCUSSION

The present study is the first to evaluate the usefulness of the Family Environment Scale (FES) for assessing family environments in Brazil. Studies carried out in other countries had already confirmed that the FES is an effective instrument for detecting differences between functional families and families with problems related to the family environment.<sup>4,20,21</sup> Some authors have adopted the term "clinical families" to refer to those that

look for psychological or psychiatric treatment for some kind of disorder in the family system.<sup>1,22</sup> Many studies have emphasized the importance of systematized investigations into the family environment that might serve as a basis for better defining what a functional family is, and which factors influence this evaluation.

In the present study, no significant differences were detected between men and women in the mean scores for the ten subscales of the FES. These data partially corroborate what was reported by Brinson<sup>5</sup> in a study involving gender and drug dependence in clinical families. This author also observed that there were no differences between men and women on the subscales of the FES: cohesion, conflict, assertiveness, intellectual interests, leisure and control. However, the men in that study scored lower than the women did on the expressiveness, independence, religion and organization subscales. In another study<sup>9</sup> involving eating disorders, the women had lower scores than the men did on the organization subscale, while the men had lower scores on the conflicts scale.

The sample of families in the present study presented some statistically significant differences in relation to the results described in the five international studies described by Moos & Moos.<sup>17</sup> Cohesion and organization were higher than in the international studies. Cohesion belongs to the interpersonal relationship dimension, which evaluates the degree of mutual help and support within the family. Organization refers to system maintenance and evaluates the presence of a clearly structured organization that allows for planning of family activities. Apparently, the families analyzed presented a higher degree of cohesion than did the functional families in the five international studies, and this may be a cultural difference.

The lower score on the conflict subscale in comparison with the scores in the international studies, which evaluates the degree of aggressiveness and conflict openly expressed among the family members, may also be due to cultural characteristics. The American culture encourages competition and fighting for rights. On the other hand, Brazilian social organization until the middle of the 20<sup>th</sup> century was strongly influenced by a hierarchical structure centered on an authoritarian father figure. This might characterize a relatively repressive social environment that could, in turn, have contributed towards restraining the expression of aggressive behavior and favoring conflict avoidance.

Contrary to what was expected, greater differences were observed between the Brazilian families and the American families of African and Latin origin than between the Brazilian families and the general American

population. The lower assertiveness and higher expressiveness observed in the Brazilian families studied could also be the result of sociocultural differences in relation to behavior that is considered assertive in the American culture, which points towards the importance of considering the established social model.

The higher score on the religion subscale that was obtained in the present study might be associated with the strong religiosity of the Brazilian population.\* With regard to the intellectual interests subscale, the fact that the scores for the sample studied were below those of the American samples raises the hypothesis that perhaps the latter have access to a larger number of options, opportunities and cultural interests. In addition, there was a substantial difference in monthly income between the families in the present study and the American families, which may have made it difficult for the present sample to engage in cultural activities.

The higher score observed in the organization subscale may have been because the Brazilian families had greater cohesion and clearer definition of hierarchy. However, many authors in Brazil consider that Brazilian families are undergoing a transition process, with alterations to their organization.<sup>7,23</sup> A significant increase in the number of single-parent families and a reduction in the number of people in each family have been observed. On the other hand, the patriarchal nuclear family model, i.e. father, mother and children living together, is still preponderant in Brazil. Moreover, there are different forms of organization in each social class. Among families of low social class, for instance, there is a higher prevalence of transitory relationships and cohabitation.<sup>24</sup>

With regard to the internal consistency of the scale, some of the differences observed might be due to cultural factors. For example, the fact that assertiveness is less valued in Brazilian culture than among some samples of the American population<sup>17</sup> (African-American and Latino adults) may be responsible for the low internal consistency of this scale when all the original items are maintained. The reliability was significantly increased by taking out the questions that gave value to competitiveness.

The Portuguese version of the FES has good internal consistency, except for the religion, assertiveness and independence subscales. It may be useful for evaluating alterations in the family environment or in the way families function before and after therapeutic interventions, and also for comparing different groups of patients, particularly in relation to cohesion, expressiveness and conflict. Some of the questions used on the subscales with low internal consistency may be

\* Instituto Brasileiro de Geografia e Estatística. (Brazilian Institute of Geography and Statistics) Census of 2000. Available at: [http://www.ibge.gov.br/home/estatistica/populacao/censo2000/populacao/religiao\\_Censo2000.pdf](http://www.ibge.gov.br/home/estatistica/populacao/censo2000/populacao/religiao_Censo2000.pdf) [Accessed on 7 August 2005]

inappropriate for Brazilian culture, and perhaps should be eliminated or replaced by others. However, since the instrument is copyrighted material, such adaptations would depend on permission from the copyright holders. This adaptation process, with the replacement or removal of items, is under analysis.

More comprehensive studies with representative samples of the Brazilian population are needed for a more accurate evaluation of the reliability of the FES. Such studies should include families from different social and educational levels, as well as comparisons with clinical families. A study that will compare this sample with a sample of families of patients presenting dependency on alcohol and other drugs is underway.

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