

Validation of the Arabic version of the family assessment measure III (FAM III)

Abstract

Family functioning plays an important role in adaptation to developmental changes for both individuals and families. The Family Assessment Measure, third edition, (FAM III) is among the self-report measures used to assess family functioning. However, no version of FAM III has been validated in the context of Saudi Arabia. The purpose of this study was to examine the psychometric properties of the FAM III in Saudi Arabia. Respondents were presented with a questionnaire containing among others the FAM III and the Family Quality of Life Scale (FQoLS). The construct validity was assessed using confirmatory factor analysis, and concurrent validity, and the internal consistency reliability was assessed with Cronbach alpha coefficients. The results indicated that FAM III is a valid and reliable measure to be used in Saudi Arabia. Moderate correlations were found between subscales of FAM III and some subscales of FQoLS, indicating moderate concurrent validity. Cronbach alphas ranged between 0.68 and 0.76, indicating moderate reliability.

Keywords: psychometric properties, family assessment measure, FAM III, validity, reliability, Saudi Arabia

Introduction

The family is a dynamic, complex, and interpersonal system characterized by continuous balancing between stability and potential changes, which is also known as the 'family life cycle'.^{1,2} This life cycle includes various developmental tasks that every member of the family faces.² Family functioning is a key element in adaptation to these developmental tasks as well as to illnesses, for individuals and families as a whole.³ Dysfunctional families may be unable to face the challenges associated with their family members.⁴ Therefore, there is a need for tools that assess family functioning for professionals who work with children and families to evaluate their weaknesses and strengths.⁵

The Family Assessment Measure, third edition, (FAM III)^{6,7} is a widely used instrument to assess family functioning.⁸ This scale was designed to be used in both clinical and community settings to measure the process and outcome of therapy and also for basic and applied research on the Process Model of Family Functioning.⁹ The FAM III generates insights of weaknesses and strengths of families from three points of view: the family as a whole system, measured by the General Scale; dyadic relationships within the family, measured by the Dyadic Scale; and individual family members, through the Self-rating Scale.⁹ The General Scale provides an overall rating of family functioning focusing on the level of health/pathology of families from a systems perspective.⁶ The General Scale has 50 items incorporating 9 subscales (seven measures about the Process Model and two response styles: social desirability and defensiveness). The Dyadic Relationship Scale has 42 items with seven subscales and focuses on the relationships between specific dyads (pairs) of a family; an overall rating of family functioning is provided for each pair along with an index for each dimension of the Process Model. The Self-Rating Scale includes 42 items with seven subscales but focuses on perceptions of family functioning from an individual's point of view. An overall index is also provided along with seven constructs relating to the Process Model. The present study focuses on the General Scale given that it is the most used in research and is considered to be one of the most useful measures to evaluate family functioning as a system.⁷

The FAM III was developed according to a construct validation paradigm^{10,11} and was conceptualized based on the Process Model of

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Enas O Sarour,¹ Huda B Saifuddin,²

¹Department of Family Sciences, King Abdulaziz University, Saudi Arabia

²Department of Psychology, King Abdulaziz University, Saudi Arabia

Correspondence: Enas O Sarour, King Abdulaziz University, Family Sciences, Saudi Arabia, Email enassarou@gmail.com

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Family Assessment.¹² This model incorporates various approaches to family assessment, research, and therapy.¹³ The model integrates different concepts into a parsimonious and comprehensive framework that includes seven constructs, with the completion of tasks as the main construct. The other six constructs are gathered around the main construct and are the means through which the family completes the main task.⁹ Those six constructs are communication, affection expression, control, involvement, values and norms, and role performance. The model claims that what forms the existence of families are the common goals family members share, and to meet those goals, there are developmental challenges and crises they have to face and tasks they have to perform,⁸ and despite the fact that tasks change over the life cycle, the basic processes involved are the same and they comprise the seven dimensions of the model.¹⁴ Through the process of attempting task accomplishment, the family comes to succeed or fail in realizing the central objectives of the family as a group.⁸

The FAM III has been validated in several different cultures. With a sample of Mexican American adults, a study reported that the Spanish version of the scale had satisfying internal consistency reliability.¹⁵ Validation studies reported good validity and reliability of FAM III in the Italian culture.^{8,16} The Danish version of FAM III was also validated and exhibited satisfactory psychometric properties.¹³ However, other than one study,⁸ these studies validated the short version of FAM III. To the best of our knowledge, no Arabic version of FAM III has been validated. Moreover, most of studies had mothers as the only source of data,¹⁷ leaving apart any differences among mothers, fathers, and children.⁸ Therefore, the aim of the present study was to investigate the psychometric properties of FAM III in Saudi Arabia with fathers, mothers, and children as informants.

Aims

The current study aimed to contribute to the literature by investigating the psychometric properties of FAM III in a population of Saudi parents and children. The goals of the study were to test the FAM III factor structure and to estimate its internal consistency reliability. A further goal was to test the scale's concurrent validity by correlating the FAM III scores with the scores of the Family Quality of Life Scale.¹⁸

Methods

Participants

The design of this study was cross-sectional and 180 participants agreed to take part in the study. This sample was determined with convenience sampling methods. A link to the questionnaire was sent to participants via email or WhatsApp platforms. Participants were informed about the design and purpose of the study and they provided consent. Ethical guidelines were considered thought out the process of conducting the survey. Participation was voluntary and participants were allowed to withdraw from the study at any time. Among them, 70% were females and 30% were males; 50% were children, around 36% were mothers, and about 13% were fathers. The mean age of all the participants was 32.02 with a standard deviation of 15.8. For fathers, the mean age was 50.4 with a standard deviation of 10.1, for mothers, it was 44.7 with a standard deviation of 7.5, and for children, it was 17.7 with a standard deviation of 3.8.

Measures

Family assessment measure, third edition (FAM III)

The General Scale of the FAM III⁷ has 50 items that assess family functioning from a 'whole family' perspective. The scale includes seven constructs: the task accomplishment (TA) subscale assesses the ability of the family to identify tasks, manage crises, and resolve problems. The role performance (RP) subscale assesses the levels of agreement by family members to accept roles and their successful fulfillment of those roles in the course of the life cycle. The communication (CO) subscale evaluates the ability of the family to facilitate mutual understanding. The affective expression (AE) subscale assesses affective communication within the family. The involvement (I) subscale evaluates the involvement and connectedness between family members. The control (CT) subscale evaluates the influence and flexibility of family members. The values and norms (VN) subscale assesses the degree of agreement between family members on family values and cultural systems of the family. The items are scored on a four point Likert scale, with responses ranging from strongly disagree (0) to strongly agree (3). The General Scale of the FAM III includes two additional subscales: social desirability (SD) and defensiveness (D), which assess the protocol's validity and profile distortion. The scale has exhibited excellent internal consistency reliability (Cronbach alpha = .93).⁴

The family quality of life scale

The Family Quality of Life Scale (FQoLS)¹⁸ assesses perceived family well-being and was used to evaluate the concurrent validity of FAM III in this study. This scale has 36 items consisting of 4 subscales: family interaction (FI, 9 items), parenting (P, 9 items), emotional well-being (EW, 9 items), and physical/material well-being (P/MW, 9 items). The scale has been shown to exhibit good psychometric properties.¹⁸ It has been validated in Saudi Arabia and yielded good psychometric properties in that context.¹⁹ In the present study, the Family Quality of Life Scale had an overall internal consistency reliability of 0.86.

Data analysis

The statistical analysis was performed using the R statistical software.²⁰ The internal consistency of the FAM III and its subscales were calculated using Cronbach's alpha coefficients. The confirmatory factor analysis (CFA) was computed with the *lavaan* software package for R.²¹ As the data were not normally distributed, the estimator was

set to robust maximum likelihood. To assess the model fit of the FAM III, different fit indices were compared.²² These indices included Comparative Fit Index (CFI), Tucker Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Square Mean Residual (SRMR). The absolute fit indices (RMSEA and SRMR) were used to test whether the proposed 7-factor model of FAM III was represented in the data. RMSEA and SRMR values <.08 indicate a good model fit. Relative or incremental fit indices (CFI and TLI) were used to compare the hypothesized 7-factor structure model to a null model. Values >.90 for CFI and TLI indicate a good model fit.

Results

The descriptive statistics of the sample are summarized in Table 1. For the FAM III subscales, the mean score for task accomplishment was 6.7 with a standard deviation 1.97. The mean score for role performance was 8.2 with a standard deviation of 2.63. The average score for communication was 6 with a standard deviation of 1.89. The mean score for affective expression was 8.12 with a standard deviation of 2.26. The average score for involvement was 7.6 with a standard deviation of 1.84. The mean score for control was 7.15 with a standard deviation of 2.13. The average score for values and norms was 6.97 with a standard deviation of 1.81. The mean for the total score of the FAM III was 51.01 with a standard deviation of 8.09.

Table 1 Descriptive Statistics

Variable	n	%	Mean	SD	Mean (SD) of FAM III
Gender					
	Female	126	70		51.5 (7.5)
Position	Male	54	30		49.8 (9.1)
	Child	90	50		51.1 (7.8)
	Mother	65	36.1		51.6 (7.1)
Age	Father	25	13.9		49 (10.9)
		180		32.02	15.8
FAM III subscales					
TA	180		6.7	1.97	
RP	180		8.2	2.63	
CO	180		6	1.89	
AE	180		8.12	2.26	
I	180		7.6	1.84	
CT	180		7.15	2.13	
VN	180		6.97	1.81	
FAM III Total	180		51.01	8.09	
FQoLS subscales					
Family interaction	130		25.12	2.15	
Emotional wellbeing	130		24.5	2.07	
Parenting	130		22.6	3.18	
Physical/Material Wellbeing	130		25.7	1.61	
FQoLS Total	130		97.92	6.95	

Note: FAM III subscales: TA = task accomplishment, RP = role performance, CO = communication, AE, affective expression; I, involvement; CT, control; VN, values and norms

Confirmatory factor analysis

The psychometric properties of the proposed seven-factor model of FAM III were tested in the context of Saudi Arabia using confirmatory factor analysis. The initial model of the CFA showed a poor model fit. This was due to items exhibiting poor factor loading with their respective factors. Therefore, items whose factor loading was less than .30 were deleted. After running a second CFA without the deleted items, the fit indices were substantially improved. However, after inspection of modification indices, correlated errors were found. After controlling 17 correlated errors in a new CFA, a better model fit was achieved. The fit indices for the initial and improved models are shown in Table 2.

Table 3 Factor loadings, mean and SD of each FAM III item

Item	Mean (SD)	TA	RP	CO	AE	I	CT	VN
Q1	1.46 (0.9)	0.34						
Q2	1.62 (0.9)		0.76					
Q3	1.7 (0.9)			0.7				
Q4	1.49 (0.8)				0.39			
Q6	1.17 (1.06)					0.62		
Q7	1.27 (0.9)						0.63	
Q8	1.54 (0.9)							0.49
Q11	1.61 (0.9)	-0.87						
Q12	1.66 (1.00)		0.33					
Q13	1.55 (0.9)			-0.76				
Q14	1.60 (0.9)				-0.79			
Q16	1.72 (1.2)					-0.84		
Q17	1.45 (0.8)						0.51	
Q18	1.36 (0.9)							-0.61
Q21	1.56 (0.9)	-0.71						
Q22	1.61 (0.9)		0.79					
Q23	1.17 (1.07)			0.7				
Q24	1.59 (1.03)				-0.81			
Q26	1.58 (0.9)					0.17		
Q27	1.86 (0.9)						-0.04	
Q28	1.08 (0.8)							-0.03
Q31	1.44 (0.8)	0.09						
Q32	2.20 (0.75)		0.09					
Q33	0.75 (0.6)			0.12				
Q34	1.81 (0.8)				-0.04			
Q36	0.71 (0.73)					-0.06		
Q37	0.97 (0.8)					0		
Q38	2.01 (0.8)						0	
Q41	0.71 (0.6)	-0.11						
Q42	1.17 (0.9)		0.05					
Q43	0.83 (0.7)			0.04				
Q44	1.61 (0.9)				0.03			
Q46	2.45 (0.7)					0		
Q47	1.58 (0.8)						-0.01	
Q48	0.95 (0.7)							0.07

Note: FAM III subscales: TA, task accomplishment; RP, role performance; CO, communication; AE, affective expression; I, involvement; CT, control; VN, values and norms

r Model of FAM III

Concurrent validity of FAM III

The concurrent validity of FAM III was established by computing the Pearson correlation between FAM III subscales and the subscales

Table 2 Fit indices

Model	SRMR	RMSEA	CFI	TLI
Initial	0.12	0.1	0.56	0.51
Improved	0.06	0.08	0.91	0.89

The factor loadings of the items are presented in Table 3. The highlighted items had loadings below the cutoff of .03 and were removed. The correlations between the retained items adjusted for social desirability are presented in Table 4. Figure 1 displays visually the factor loadings with standardized path coefficients.

of the Family Quality of Life Scale. The results are summarized in Table 5. Except for the control and values and norms subscales, which did not show correlation with any of the subscales of the FQoLS family well-being scale, the rest of the subscales of the FAM III exhibited moderate correlations of some of the subscales of the FQoLS.

Table 4 Item total correlation adjusted for social desirability, and kurtosis and skewness

	Q1	Q2	Q3	Q4	Q6	Q7	Q8	Q11	Q12		
Q1	I										
Q2	-0.06	I									
Q3	0.06	0.24*	I								
Q4	0.23*	0	-0.11	I							
Q6	0.12	-0.07	-0.04	0.13	I						
Q7	0.22*	-0.06	-0.06	0.20*	0.26	I					
Q8	-0.14	0.13	-0.01	-0.14	-0.06	-0.29*	I				
Q11	-0.13	0.22	0.23*	0.06	-0.06	-0.02	0.04	I			
Q12	0.08	0.02	-0.02	0.08	0.05	-0.02	-0.02	0.21*	I		
Q13	0.20*	-0.01	0.02	0.08	0.13	0.13	-0.04	-0.04	0.12		
Q14	-0.04	0.17*	0.23*	-0.23*	-0.08	-0.11	0.16*	0.04	0.01		
Q16	-0.16*	0.03	0.21	0.08	-0.07	-0.18*	0.03	0.27*	-0.08		
Q17	0	-0.09	0.01	0.13	0.09	0.14	0.03	-0.09	0.03		
Q18	-0.09	-0.04	-0.08	0.13	0.16*	0.17	-0.04	-0.03	0.11		
Q21	-0.16*	0.13	0.04	0.04	-0.03	0.07	0.17*	0.26*	-0.02		
Q22	-0.15*	0.32*	0.24*	0.01	-0.04	-0.13	0.07	0.29*	0.12		
Q23	0.21*	-0.06	-0.20*	0.25	0.21*	0.35*	-0.15*	-0.04	0		
Q24	-0.12	0.15	0.24*	-0.3	-0.23*	-0.16*	0.23*	0.07	0.1		
	Q13	Q14	Q16	Q17	Q18	Q21	Q22	Q23	Q24	Skewness	Kurtosis
Q1										0.07	2.18
Q2										-0.21	2.1
Q3										-0.29	2.13
Q4										0.06	2.27
Q6										0.36	1.86
Q7										0.2	2.13
Q8										-0.08	2.1
Q11										-0.33	2.13
Q12										-0.26	1.99
Q13	I									-0.12	2.04
Q14	0.02	I								-0.3	2.2
Q16	-0.14	0.06	I							-0.32	1.51
Q17	0.19*	-0.05	0.02	I						0.05	2.5
Q18	0.21*	0	-0.08	0.46	I					0.19	2.12
Q21	-0.17*	0.1	0.23*	-0.03	-0.04	I				-0.17	2.02
Q22	-0.1	0.13	0.23*	-0.07	-0.1	0.19*	I			-0.07	2.03
Q23	0.19*	-0.15*	-0.32	0.06	0.05	0.07	-0.21*	I		0.37	1.85
Q24	-0.07	0.35*	0.24	0.04	0.07	0.19*	0.16*	-0.31*	I	-0.19	1.89

Table 5 Concurrent validity of FAM III and cronbach alphas of the scales and subscales

	TA	RP	CO	AE	I	CT	VN	Total	FI	EW	P	P/MW	α
TA	I												0.69
RP	0.48*	I											0.68
CO	0.17*	0.05	I										0.72
AE	0.43*	0.47*	-0.1	I									0.68
I	0.23*	0.19*	0.25*	0.33*	I								0.7
CT	-0.02	-0.09	0.21*	0.15*	0.23*	I							0.71
VN	0.05	0.14*	0.17*	0.22*	0.17*	0.28*	I						0.71
FAM III Total	0.62*	0.63*	0.41*	0.68*	0.58*	0.48*	0.50*	I					0.76
FI	-0.05	0.08	-0.24*	0.25*	-0.08	-0.04	-0.11	-0.03	I				0.75
EW	0	0.03	-0.23*	0.23*	-0.12	0.01	-0.02	-0.01	0.58*	I			0.75

Table Continued...

	TA	RP	CO	AE	I	CT	VN	Total	FI	EW	P	P/MW	α
P	-0.09	-0.03	-0.18*	0.15*	-0.21*	0.03	-0.05	-0.09	0.57*	0.56*	I		0.71
P/MW	0.19*	0.26*	-0.01	0.26*	0.16*	-0.02	0.02	0.23*	0.27*	0.33*	0.21*	I	0.81
FQoLS Total	0	0.08	-0.22*	0.27*	-0.13	-0.01	-0.06	0	0.82*	0.82*	0.84*	0.50*	0.86

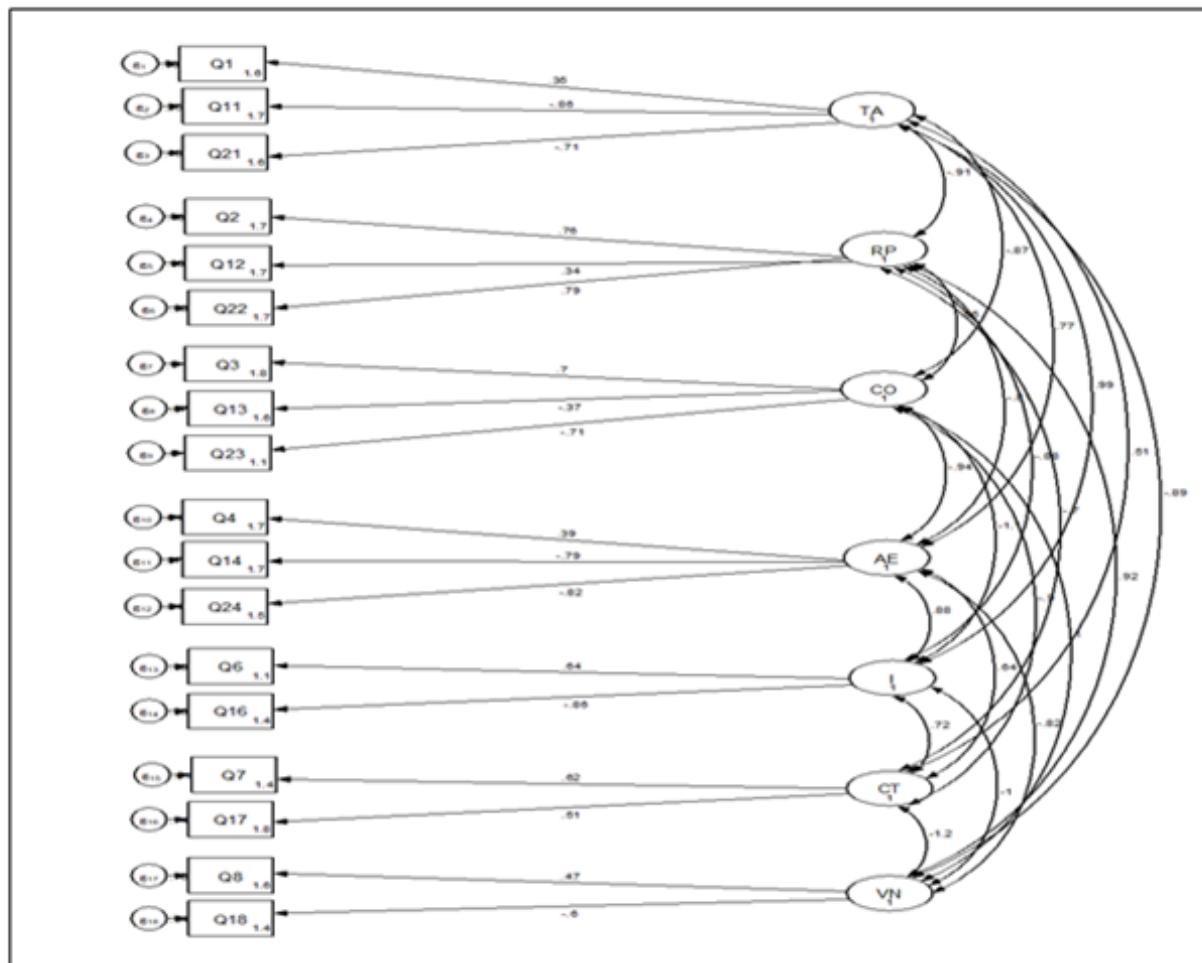


Figure 1 Generated Seven-Facto.

Internal consistency reliability

For the FAM III, the internal consistency reliability (α shown in Table 5) was 0.69 for task accomplishment, 0.68 for role performance, 0.72 for communication, 0.68 for affective expression, 0.70 for involvement, 0.71 for control, 0.71 for values and norms, and 0.76 for the total scale. For the Family Quality of Life Scale, the internal consistency reliability was 0.75 for family interaction, 0.75 for emotional well-being, 0.71 for parenting, 0.81 for physical/material well-being, and 0.86 for the total score. These were Cronbach alphas if an item is dropped.

Discussion

The purpose of the present study was to investigate the psychometric properties of FAM III in the context of Saudi Arabia. The seven-factor model proposed in the original study was validated using confirmatory factor analysis. The results of the CFA indicated a poor fit of the seven-factor model. This was due to some of the items having low factor loading to their respective factors. These

items were deleted and a new CFA was conducted. The fit indices were then improved, but after inspection of modification indices, 17 correlated errors were found. A final CFA was therefore run, controlling for the correlated errors, and this indicated acceptable fit indices. The explanation for these correlated errors might be found in the translations of the scales, where items that are worded similarly tend to have high covariations.²³ It has become a common practice to account for such correlated errors after which studies achieve good model fit in their CFA.²⁴ Few studies have reported goodness of fit for the FAM III general scale, which makes the comparison task difficult. An Italian version of FAM III⁸ was validated and reported fit indices slightly higher than those found in this study. The factor loadings of items ranged between .33 and .87 in this study, which is somewhat comparable to the study of Laghezza et al.,⁸ who reported factor loading between .24 and .75 in their CFA.

The results of this study indicated acceptable Cronbach alphas for the subscales of the FAM III, ranging between .68 and .72 and .76 for the total score, which indicate moderate internal consistency.

reliability. This was quite lower than the internal consistency reliability reported in the original FAM study (Cronbach alpha of .93).⁶ However, the Cronbach alphas for the subscales were similar to those reported in the Italian validation of FAM III.⁸ Other studies have also reported good internal consistency reliability of FAM III.^{15,16,25}

The subscales of FAM III had low to moderate intercorrelations, ranging between .15 and .48, although some subscales didn't exhibit any correlation. This was the case for task accomplishment with control and values and norms, role performance and communication, and communication and affective expression. Correlations were found between some subscales of FAM III and the subscales of the Family Quality of Life Scale, indicating good concurrent validity. Task accomplishment and role performance were correlated with physical/material well-being, communication and affective expression were correlated with all the dimensions of the Family Quality of Life Scale, involvement was correlated with parenting and physical/material well-being, while control and values and norms did not exhibit any correlation with any of the subscales of the Family Quality of Life Scale. The explanation may be the fact that these two scales measure related but different constructs. Moderate correlations were also previously found between FAM III subscales and the subscales of a parental stress scale.⁸ Correlations were also reported between FAM III and the Family Adaptability and Cohesion Evaluation Scale (FACES),²⁶ and between FAM III and the Family Assessment Device (FAD).^{27,28}

This study has some limitations. First, the study used a convenience sample method which is not ideal for generalizability of findings. Second, the sample was of the general population; future studies should investigate the psychometric properties of the scale using families with clinical members. Third, the study involved only the General Scale of FAM III; future studies should examine the Self-Rating and Dyadic Scales to capture the dynamics of Arabic families.

Conclusion

This study has investigated the psychometric properties of the FAM III General Scale. A good construct validity using confirmatory factor analysis was achieved after the deletion of items whose factor loadings were below .30 and after accounting for correlated errors, which could implicate cultural differences. Future studies should examine this in depth. The scale exhibited moderate internal consistency reliability and acceptable concurrent validity. In sum, the FAM III General Scale is a valid and reliable measure that can be used to examine Arabic families. However, this needs to be done with caution, given that half of the items were deleted due to poor factor loading.

Acknowledgments

None.

Conflict of interest

None.

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