Published online 2024 January 29.

# Factor Structure of Parental Reflective Functioning Questionnaire for Mothers Working at Qazvin University of Medical Sciences

Mahmoud Bahramkhani 💿¹, Sara Mohammad Hoseini 💿² and Mohammad Ebrahim Sarichloo 💿¹, \*

<sup>1</sup>Clinical Research Development Unit, 22 Bahman Hospital, Qazvin University of Medical Science, Qazvin, Iran <sup>2</sup>MS Clinical Research Development Unit, 22 Bahman Hospital, Qazvin University of Medical Science, Qazvin, Iran

corresponding author: Clinical Research Development Unit, 22 Bahman Hospital, Qazvin University of Medical Science, Qazvin, Iran. Email: mesarichloo@qums.ac.ir

Received 2023 March 18; Revised 2023 December 18; Accepted 2023 December 19.

#### Abstract

**Background:** Maternal reflective functioning refers to a mother's ability to understand the mental states of herself and her child. This capacity is related to the attachment styles of the mother and child, as well as the mentalizing capacity of the child and his/her behavioral problems. The Parental Reflective Functioning Questionnaire (PRFQ) was developed to evaluate the capacity of mothers. **Objectives:** This study aimed to determine the factor structure, structural validity, and psychometric properties of PRFQ in mothers working at Qazvin University of Medical Sciences.

**Methods:** The study was a methodological one conducted by structural equation modeling to investigate the factor structure of PRFQ designed by Luyten et al. in 2017. Two samples, including 183 and 120 mothers working at Qazvin University of Medical Sciences in 2021, were selected using convenience sampling for exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), respectively. For data collection, the participants completed PRFQ, Adult Attachment Inventory (AAI), Symptom Checklist-25 (SCL-25), RFQ, and Emotional Availability Self-Report (EA-SR). For data analysis, statistical methods, including EFA, CFA, and correlation analysis, were used in SPSS and AMOS software packages.

**Results:** The Cronbach's alpha for the total questionnaire was equal to 0.6. The exploratory factor analysis showed that PRFQ had a 3-factor structure with a shared variance of 38.03%. Item 11 loaded on all factors, and items 6 and 18 loaded on the pre-mentalization factor. The developed model was approved by removing item 11 and loading items 6 and 18 on the pre-mentalization factor in CFA (comparative fit index [CFI] = 0.93, normed fit index [NFI] = 0.82, Tucker-Lewis index [TLI] = 0.92, and root mean square error of approximation [RMSEA] = 0.05). The results also revealed that the developed questionnaire had adequate concurrent and predictive validity.

Conclusions: Overall, the 3-factor structure of PRFQ for mothers showed adequate validity and reliability.

Keywords: Attachment Styles, Factor Structure, Mentalization, Parental Reflective Function, Validity

#### 1. Background

Parenting is not a simple task, as it is always associated with various conflicts, doubts, and learning about child care, and it can raise several questions in the parents' minds, such as "What do children like?" "Does my lifestyle affect my child's happiness?" "Do parents' decisions, such as breastfeeding, affect them?" "How much time should I spend on my job?" (1). Generally, mother-child interactions and relationships play a fundamental role in the development of secure attachment (2). Substantial evidence suggests that the parents' ability to deliver sensitive care to their children contributes to their psychological development, long-term health, and emotional well-being (3). In other words, if the parents understand the meaning of their children's behaviors, they can respond to them sympathetically (4).

One of the essential skills of the parents, especially mothers, is the reflective functioning capacity (Parental Reflective Functioning [PRF]), which helps them understand their child's intra-psychic experiences, including their emotions and mental states, and consequently understand their behaviors. Parental Reflective Functioning represents the essential human capacity to understand behaviors in light of the underlying mental states. This construct was first introduced by Fonagy et al. in 1991 (5). In the following

Copyright © 2024, Bahramkhani et al. This open-access article is available under the Creative Commons Attribution 4.0 (CC BY 4.0) International License (https://creativecommons.org/licenses/by/4.0/), which allows for unrestricted use, distribution, and reproduction in any medium, provided that the original work is properly cited.

decade, it was expanded by Fonagy et al. (as cited in Slade), who made major contributions to developmental theory and clinical practice (6). Overall, reflective functioning or mentalization refers to an individual's ability to be aware of the mental states of others in his/her mind (7-9). This capacity allows an individual to understand the mental states of themselves and others, making them meaningful, intelligible, and predictable; it is also a tool for us to guide the world surrounding us (9).

Early infant relationship with a caregiver, especially the mother, has always been of interest to psychologists, especially developmental psychologists. Researchers, in the past few years, have reported that PRF is a remarkable construct in the development of child attachment, with advantages for lifetime physical and mental health (10). Concepts such as attachment styles, mentalization, and reflective functioning are key concepts in psychology, particularly in psychoanalysis, based on the object relations theory. Following the expansion of these concepts in recent years, some important questions have been raised: "How are these characteristics measured?" "Do the existing tools have the required validity?" "Are the existing questionnaires consistent with the native culture of each country?" Most importantly, "Does this tool measure what it is supposed to measure?"

In recent years, multiple tools have been designed to measure the mentioned constructs in mothers and caregivers, including the Attachment Style Questionnaire (ASQ), Mentalization Scale (MentS), and Reflective Functioning Questionnaire (RFQ). Psychologists have recently developed a tool called the Parental RFQ (PRFQ) to measure maternal reflective functioning (1). The present study aimed to assess the psychometric properties and factor structure of this questionnaire. So far, few studies have assessed the reliability and validity of PRFQ. In 2017, Luyten et al. published 3 studies pertaining to the development and initial validation of PRFQ (10), the results of which are described next.

In the first study, which was carried out to evaluate the factor structure, validation, and association of PRFQ with various characteristics, such as demographic characteristics, attachment styles, symptomatic distress, emotional availability, and attachment dimensions, in a sample of 299 mothers with children aged 0 - 3 years, a 3-factor structure (pre-mentalization, certainty about mental states, and interest and curiosity about mental states) was clearly extracted using the Scree test. The Oblimin and Varimax rotated solutions also yielded similar results, and the 3 extracted factors were simply interpretable and closely consistent with the theoretical framework of the main characteristics of PRFQ (10). In the second study, which was carried out to conduct a variance analysis of PRFQ in a sample of 153 first-time parents (mothers and fathers separately), as well as to evaluate its relationship with the factors described in the first study, a slight difference was observed in the PRF between mothers and fathers (10). Finally, in the third study, which was conducted to investigate the relationship between PRFQ and attachment styles using the Strange Situation Procedure (SSP) in a sample of 136 mothers and their newborns, none of the PRFQ scales were associated with impaired attachment (10).

According to the results of numerous studies on PRFQ and the concept of maternal reflexive functioning, the factors and scales of this questionnaire are closely related to other factors, such as parental sex, being a first-time parent, and a newborn's sex. Therefore, extensive and comprehensive reviews are needed in this area. Also, researchers have emphasized the necessity of evaluating differences in reflective functioning between mothers and fathers in future studies (10).

To apply a certain tool in a certain culture, it is necessary to ensure its cultural compatibility, psychometric properties, and factor structure.

#### 2. Objectives

The present study aimed to examine the cross-cultural characteristics of PRFQ. Due to the lack of appropriate tools adapted for culture and other possibly influential factors, the validity and reliability of PRFQ were evaluated in this study based on a factor structure analysis in Iran.

#### 3. Methods

The aim of this study was to evaluate the validity and reliability of PRFQ. The questionnaire was first translated into Persian by 2 experts. One of them was an expert in psychology, and the other in English. Then, 2 translations were compared, the differences were corrected, and 1 translation was extracted. Then, the questionnaire was re-translated into English by 2 experts in the field. The translated version in English was matched with the Persian version, and the ambiguities of vague sentences were corrected. In the next step, the questionnaire was given to 3 child psychologists to check its content validity. Then, the final version was prepared by a specialized committee consisting of 3 psychologists, English language experts, translators, and the researchers of this study. To make the questions and items understandable, the questionnaire was implemented in a group of 40 mothers of the target group. Then, an interview was held with the participants, and they were asked about the questionnaire and its ambiguities. These ambiguities were resolved, and the final form of the questionnaire was extracted. The target study sample was selected using the convenience sampling method among employees of Qazvin University of Medical Sciences, Qazvin, Iran. Inclusion criteria were as follows: (1) Mothers employed in Qazvin University of Medical Sciences; (2) mothers having children between 0 to 5 years of age; and (3) mothers having at least reading and writing literacy. Exclusion criteria were as follow: (1) Children afflicted with a special illness; (2) children who were adopted; and (3) children who were mentally retarded or disabled. The questionnaires were implemented individually for 30 min at maximum. Since the current study was performed using a survey method, the data collected from the questionnaires were analyzed via statistical methods, such as factor structure analysis and correlation analysis. The statistical population consisted of all mothers of children aged 0 - 5 years working at Qazvin University of Medical Sciences in 2021.

According to the common methods of test standardization, a sample of 183 people was selected from this population through convenience sampling. An explanatory factor analysis was performed to assess the structure of the questionnaire. Next, a sample of 120 people was selected from the same statistical population using the convenience sampling method. The factor structure of the questionnaire was reassessed using confirmatory factor analysis (CFA). Pearson's correlation method was also used to examine the association between the components of PRFQ and other questionnaires. The present study was carried out after obtaining ethical approval from the Vice Chancellor of Qazvin University of Medical Sciences (IR.QUMS.REC.1399.520).

#### 3.1. Parental Reflective Functioning Questionnaire

The PRFQ was designed by Luyten et al. to assess the parents' general orientation toward parenting and their beliefs about the child's emotions and mental experiences (10). Because of the great importance of PRF in intergenerational attachment transmission in early childhood, this questionnaire was primarily designed for the parents of children aged 0 - 5 years when the mother-infant relationship is predominantly non-verbal, and the ability to be sensitive and responsive to the newborn's emotional signs can be important in the child's future social-emotional development. This questionnaire, containing 18 items, is a short multidimensional tool to evaluate the 3 subscales of PRFQ, including (1) pre-mentalization, (2) certainty about mental states, and (3) interest in and curiosity about mental states. Luyten et al. (10) reported Cronbach's alpha coefficients of 0.7, 0.82, and 0.75 for these 3 factors, respectively.

Each subscale of PRFQ consists of 6 items, and each item is scored on a 7-point Likert scale; items 11 and 6 are scored in reverse (11).

# 3.2. Adult Attachment Inventory

The Adult Attachment Inventory (AAI) was developed based on the components of Hazan and Shaver's attachment test in 1987 (12) and was normalized by Besharat in Iran among students and in the general population (13). This inventory consists of 15 items to measure 3 attachment styles, that is, secure, avoidant, and ambivalent attachment, on a 5-point Likert scale (very low: 1, low: 2, medium: 3, high: 4, and very high: 5). The Cronbach's alpha coefficients of questions related to secure, avoidant, and ambivalent attachment styles were calculated to be 85%, 84%, and 85%, respectively (13).

## 3.3. Symptom Checklist-25

The Symptom Checklist-25 (SCL-25) was developed by Najarian and Davoodi in 2001 to develop a shortened version of the Symptom Checklist-90-R (SCL-90-R) for evaluating general psychopathologies. The scoring method of this checklist is based on a 5-point Likert scale, ranging from 0 ("none") to 4 ("extremely"). The results of preliminary investigations showed that SCL-25 (25 items) was strongly correlated (0.95) with 90 items of the SCL-90-R. The internal consistency was measured to be 0.97 in females and 0.98 in males (14).

## 3.4. Reflective Functioning Questionnaire

The RFQ was developed by Fonagy et al. in 2016 to evaluate the mentalization capacity in 3 studies. This questionnaire contains 2 scales of certainty and uncertainty about one's mental state and that of others. The scoring method is based on a direct 7-point Likert scale for the certainty scale, while scoring is reversed for the uncertainty scale. In a non-clinical sample, Fonagy et al. reported an internal consistency of 0.63 for the certainty scale and 0.67 for the uncertainty scale (15). Also, in a sample of students in Iran, Drogar et al. reported a Cronbach's alpha coefficient of 0.88 for the certainty scale and 0.66 for the uncertainty scale (16).

#### 3.5. Emotional Availability Self-report

The Emotional Availability Self-Report (EA-SR) (17, 18) evaluates the emotional availability of the parents and children and examines different aspects of parent-child coordination. This scale contains 36 items pertaining to 6 subscales. Each scale is scored on a 5-point Likert scale (0 - 4). The developers of this questionnaire measured Cronbach's alpha coefficients of 0.71 to 0.84 for this questionnaire, except for emotional quality (r=0.490)(18). This questionnaire has not been normalized in Iran so far.

# 4. Results

The age range of children was 1 - 60 months (mean, 34 months), and the maternal age ranged from 33 to 51 years, with a mean of 35 years. Other demographic characteristics of the study sample are presented in Table 1. According to this table, about 96% of children lived with both parents, and their parents mostly had a bachelor's degree.

According to the present results, the reliability coefficient of the total 18-item scale was 0.64. Cronbach's alpha was 0.6 for the total questionnaire. The Cronbach's alpha coefficient for the total score of the questionnaire after removing each item showed that when items 6, 9, 11, 16, and 18 were removed, Cronbach's alpha increased from 0.54, 0.53, 0.6, 0.58, and 0.53 to 0.58, 0.58, 0.64, 0.62, and 0.64, respectively.

To assess the factor structure of the questionnaire, exploratory factor analysis (EFA) was performed using the maximum likelihood technique. The Kaiser-Meyer-Olkin (KMO) value was equal to 0.765, and Bartlett's test of sphericity was significant at 0.0001. Based on the Scree plot and the table of eigenvalues (Table 2), first, 5 factors with eigenvalues > 1 were obtained.

The percentage of shared variance between variables was 45.31% for the 5 factors. However, items that loaded

Fable 1. The Demographic Information of the Participants					
Category and Subcategory	Frequency (%)				
Mother's education					
Under diploma	4 (2.2)				
Diploma	16 (8.7)				
Associate's degree	8(4.4)				
Bachelor's degree	133 (72.7)				
Master's degree	22 (12)				
Father's education					
Under diploma	9 (4.9)				
Diploma	26 (14.2)				
Associate's degree	23 (12.6)				
Bachelor's degree	84 (45.9)				
Master's degree	41 (22.9)				
Child's living status					
Living with father	2 (1.1)				
Living with mother	4 (2.2)				
Living with both	177 (96.7)				
Child's sex					
Female	91 (49.7)				
Male	92 (50.3)				

on the third and fourth factors overlapped with the other factors; in addition, they loaded on the third and fourth factors with a poor factor loading. Accordingly, the 3-factor model was re-implemented, and the total shared variance between variables was measured to be 38.03%.

According to Table 3, items 6 and 18, pertaining to the factor of interest and curiosity, loaded on the pre-mentalization factor, while item 11, pertaining to the factor of certainty, loaded on the scale of interest and curiosity. Item 11 also loaded on all 3 factors. We decided to remove item 11. The factor matrix based on the Varimax rotation method is presented in Table 3.

Next, the 3-factor structure of the questionnaire was evaluated using CFA. The questionnaire was first designed and implemented as a 3-factor model with the same main components and items proposed by the developers (model 1). For this model, poor fit indices were obtained. The fit indices of model 1 are presented in Table 4.

The primary model was reviewed and modified based on the findings of EFA and modification indices suggested by the software, according to the findings of EFA, items 6 and 18 pertaining to the factor of interest and curiosity

Item	Total	Variance %	Cumulative %
1	3.95	21.95	21.95
2	2.78	15.48	37.43
3	1.85	10.32	47.76
4	1.11	6.17	53.94
5	1.03	5.72	59.66
6	0.90	5.03	64.69
7	0.83	4.66	69.35
8	0.74	4.11	73.47
9	0.69	3.38	77.30
10	0.65	3.62	80.92
11	0.58	3.26	84.19
12	0.52	2.92	87.11
13	0.49	2.77	89.89
14	0.48	2.70	92.59
15	0.37	2.09	94.69
16	0.33	1.85	96.54
17	0.31	1.77	98.31
18	0.30	1.68	100.00

Table 3. The Rotated Component Matrix of the 3-Factor Scale

Table 2 Initial Figenvalues

Item	Certainty About Mental States	Pre-mentalization	Interest and Curiosity About Mental States	
5	0.79			
2	0.71			
8	0.62			
17	0.59			
14	0.53			
16		0.65		
13		0.62		
18		-0.56		
6		0.51		
10		0.50		
7		0.39		
1		0.35		
4		0.31		
9			0.70	
12			0.53	
3			0.51	
15			0.49	

loaded on the pre-mentalization factor. The modification indices in the CFA also suggested that these items were more related to the pre-mentalization factor. In the primary model, items 6 and 18 had factor loadings of 0.08 and 0.32 for the interest and curiosity factor, respectively. Nevertheless, in the modified model (model 2), these items had factor loadings of 0.32 and 0.75 for pre-mentalization, respectively; therefore, these items pertained to the pre-mentalization factor in the modified model.

Moreover, item 11 was removed from the model because it was related to all factors, with a poor factor loading for all factors. Additionally, the modification indices indicated that there was covariance between error terms 2 and 16, between 4 and 5, and between 14 and 15. The mentioned changes were made in the model, and it was implemented again. The final model had acceptable fit indices. The fit indices of the final model are presented in Table 3. The final model with standard factor loadings is shown in Figure 1.

The association between the components of PRFQ and RFQ was assessed. The results indicated that factors of pre-mentalization, certainty about mental states, and interest and curiosity in PRFQ were significantly related to uncertainty (P=0.04; r=0.15), certainty (P=0.0001; r=0.3), and uncertainty (P=0.04; r=-0.16) in RFQ, respectively.

Moreover, the relationship between maternal reflective functioning and maternal attachment styles was examined. The results indicated a significant association between pre-mentalization and avoidant (P = 0.001; r = 0.24) and ambivalent (P = 0.005; r = 0.21) attachment styles, between certainty about mental states and secure style (P = 0.03; r = 0.16), and between interest and curiosity in mental states and secure attachment style (P = 0.002; r = 0.23).

Assessment of the relationship between maternal reflective functioning and maternal emotional availability showed significant associations between pre-mentalization and mutual coordination (r = -0.46; P = 0.0001) and hostility (r = 0.33; P = 0.0001), between certainty about mental states and coordination (r = 0.3; P = 0.006) and quality of emotion (r = 0.3; P = 0.005), and between interest and curiosity about mental states and coordination (r = 0.3; P = 0.006) and quality of emotion (r = 0.3; P = 0.005), and between interest and curiosity about mental states and coordination (r = 0.3; P = 0.0001), child-mother conflict (r = 0.3; P = 0.001), emotion quality (r = 0.15; P = 0.02), and intervention (r = 0.17; P = 0.02). The relationship between maternal reflective functioning and the signs and symptoms of the disorder was also investigated.

Table 4. The Fit Indices of the Primary and Final Models								
Model	Chi-Square/Degree of Freedom	Significance Level	CFI	NFI	TLI	RMSEA		
1	2.59	0.0001	0.73	0.63	0.73	0.09		
2	1.4	0.001	0.93	0.82	0.92	0.05		

Abbreviations: CFI, comparative fit index; NFI, normed fit index; TLI, Tucker-Lewis index; RMSEA, root mean square error of approximation.



Figure 1. The final model of the Parental Reflective Functioning Questionnaire for mothers

The results showed that the total score of SCL-25 was significantly related to pre-mentalization (r = 0.19; P = 0.01), certainty about mental states (r = -0.18; P = 0.01), and interest and curiosity about mental states (r = 0.15; P = 0.04).

## 5. Discussion

The current study was conducted to assess the factor structure of PRFQ in mothers working at Qazvin University of Medical Sciences, Qazvin, Iran. As explained earlier, the internal consistency of this questionnaire was first calculated using Cronbach's alpha. According to the results, the Cronbach's alpha coefficient was acceptable for the total questionnaire. Generally, a high Cronbach's alpha represents the adequate homogeneity and internal consistency of a questionnaire. However, by examining each item individually and investigating their effects on the internal consistency of the questionnaire, it was found that by removing items 6, 9, 11, and 18, the value of Cronbach's alpha sometimes increases to 0.11; therefore, these items were of more interest to the researchers and investigated.

To assess the factor structure of the questionnaire, an EFA was carried out via principal component analysis. Four factors were first extracted, which explained an appropriate total variance. However, a limited number of items were loaded on the fourth factor, and some items overlapped with other factors. Therefore, a 3-factor analysis was conducted, and the total variance was acceptable. Based on the results, item 11 loaded on all factors, items 6 and 18 loaded on the pre-mentalization factor, and item 11 loaded on the interest and curiosity factor. In contrast, in the original questionnaire, items 6 and 18 loaded on the interest and curiosity factor, and item 11 loaded on the certainty factor. The 3-factor structure of the questionnaire was examined using CFA. The model was developed according to the suggestions of its designers.

As shown in Table 4, poor fit indices were obtained for the developed model. Accordingly, the model was reviewed and assessed. It was then modified based on the findings of internal consistency and EFA, as well as the proposed modification indices. Items 6 and 18 pertained to the pre-mentalization factor, and item 11 was removed from the model. Following these modifications, the 3-factor model of the questionnaire showed adequate fit. The findings revealed that the questionnaire structure was saturated with 3 factors, which is consistent with the results of previous research (10, 19-22).

In this regard, De Roo et al. (21) evaluated the factor structure of PRFQ in a Canadian community. A 4-stage CFA was performed to evaluate the validity of the proposed model. In the first stage, the model was designed with 3 factors according to the suggestions of its developers; the primary model lacked adequate validity. In the second stage, item 11 was removed from the model. The chi-square value was significant, but the model did not show adequate fit. In the third stage, item 18 was removed from the model because of its low factor loading, resulting in higher fit indices. In the final stage, according to the modification indices, a covariance line was created between error terms 6 and 9. At this stage, after making the required revisions, the final model showed adequate validity, and the fit indices were acceptable.

Additionally, Mousawi and Bahrami Ehsan (19) proposed a 3-factor structure for PRFQ in Iran. By assessing the internal consistency of the factors, Cronbach's alpha coefficients were measured to be 0.68, 0.72, and 0.68, respectively. First, based on EFA, 4 factors were obtained with an eigenvalue >1; the fourth factor was removed from the model. The 3-factor model explained 43.48% of variance. In this study, item 18 pertained to the factors of pre-mentalization and interest and curiosity about mental states, with coefficients of -0.58 and 0.38, respectively; item 11 was related to the factor of certainty about mental states with a coefficient of 0.51 and item 6 pertained to the interest and curiosity factor with a coefficient of 0.76.

Generally, based on the results of the present study and previous research, it can be concluded that PRFQ has a 3-factor structure, and its items have good internal consistency. However, item 11 was poorly related to the questionnaire. Unlike the original model designed by the developers, items 6 and 18 also loaded on the pre-mentalization factor. In line with the results of the current study conducted on an Iranian population, similar findings have been reported in other countries.

Several points should be noted to explain these findings. First, the scoring of items 11 and 18 were reversed; it should be noted that negative items may not represent the same factors measured by the positive items (23). Besides, low factor loadings have been reported for both items (10). Moreover, cultural differences and different experiences of mothers in different parenting cultures make their understanding of mental states different. We should also consider the importance of word selection and translation, as well as the impact of words and their meanings in different languages.

By assessing the content of items 6 and 18, they appeared to be more related to the concept of pre-mentalization rather than interest and curiosity, especially item 6. The content of item 6 was related to the mother's surprise at the child's thoughts and emotions. A mother who is interested and curious about her child's mental state is not surprised by them because she has previously perceived them and is familiar with them. Item 18 also dealt with the mother's disappointment in perceiving the child's mental state. This item appears to be more related to the pre-mentalization factor, where the mother has not yet mentally reached a state to understand the mental states of her and others.

The concurrent validity of the questionnaire was investigated by evaluating its correlation with RFQ and ASQ. The developed questionnaire showed adequate concurrent validity. Its predictive validity was also assessed by evaluating its correlation with the EA-SR and SCL-25. The current results showed that the developed questionnaire had acceptable predictive validity.

# 5.1. Limitations

The present study had some limitations. For example, due to the COVID-19 pandemic, we had to provide the questionnaires online to mothers. This made it impossible for us to observe the behavior of the participants while completing the questionnaires, and it also made it difficult to follow the process. The next limitation was that since the questionnaire is designed for the age range of 0 to 5 years, it cannot be generalized to other age groups.

#### 5.2. Conclusions

Finally, it can be concluded that PRFQ has a strong 3-factor structure, and the items of the questionnaire have good internal consistency. However, some of its items (items 11, 6, and 18) are not well organized in relation to the factors of the questionnaire. It seems that using items with reverse scoring is not very effective in this questionnaire. In addition, it seems that the reflective function of mothers is greatly influenced by the culture of a society. Therefore, to use this questionnaire, it is necessary to adapt it to every culture. The results of the research indicated that PRFQ had a high power in predicting the level of emotional accessibility of mothers and disorder symptoms and evaluating their reflective function ability.

#### Acknowledgments

We express our gratitude to the Research Vice-Chancellor of Qazvin University of Medical Sciences for their support in conducting this research. We would also like to extend our appreciation to all the participants who took part in this study. Additionally, we are thankful to everyone who provided assistance and support throughout the research process.

#### Footnotes

**Authors' Contribution:** The executive of this project is M.B. The role of each of the authors in this research is as follows: M.B: data analysis, writing methodology, findings, discussion and conclusion parts, translating and editing the questionnaire. S.M.H: writing the introduction, preparing the questionnaire, translating and editing the questionnaire, collecting data, and arranging the references. M.E.S: setting the format of the article for the journal, submitting and tracking the publication of the article, and translating and editing the questionnaire.

**Conflict of Interests:** There is no conflict of interest in this research.

**Data Availability:** The dataset presented in the study is available on request from the corresponding author during submission or after publication.

**Ethical Approval:** The present study was carried out after obtaining ethical approval from the Vice Chancellor of Qazvin University of Medical Sciences under the ethical code of IR.QUMS.REC.1399.520.

**Funding/Support:** This paper had not received any funding from any institute or organization.

#### References

- 1. Dhingra A. Examining Parental Reflective Functioning and Breastfeeding Patterns. University of Oregon; 2019.
- Benoit D. Infant-parent attachment: Definition, types, antecedents, measurement and outcome. *Paediatr Child Health*. 2004;9(8):541–5. [PubMed ID: 19680481]. [PubMed Central ID: PMC2724160]. https://doi. org/10.1093/pch/9.8.541.
- Kiff CJ, Lengua LJ, Zalewski M. Nature and nurturing: parenting in the context of child temperament. *Clin Child Fam Psychol Rev.* 2011;14(3):251-301. [PubMed ID: 21461681]. [PubMed Central ID: PMC3163750]. https://doi.org/10.1007/s10567-011-0093-4.
- Fonagy P, Target M. Attachment and reflective function: their role in self-organization. *Dev Psychopathol*. 1997;9(4):679–700. [PubMed ID: 9449001]. https://doi.org/10.1017/s0954579497001399.
- Fonagy P, Steele M, Steele H, Moran GS, Higgitt AC. The capacity for understanding mental states: The reflective self in parent and child and its significance for security of attachment. *Infant Ment Health* J. 1991;12(3):201-18. https://doi.org/10.1002/1097-0355(199123)12:3(201:: AID-IMHJ2280120307)3.0.CO;2-7.
- Slade A. Parental reflective functioning: an introduction. *Attach Hum Dev*. 2005;7(3):269–81. [PubMed ID: 16210239]. https://doi.org/10.1080/14616730500245906.
- 7. Allen JG, Fonagy P, Bateman AW. *Mentalizing in clinical practice*. Washington DC, USA: American Psychiatric Press; 2008.
- 8. Fonagy P, Gergely G, Jurist E, Target M. *Affect regulation, mentalization, and the development of the self.* New York, USA: Other Press; 2002.
- Luyten P, Fonagy P, Lowyck B, Vermote R. The assessment of mentalization. In: Bateman A, Fonagy P, editors. *Handbook of mentalizing in mental health practice*. Washington DC, USA: American Psychiatric Association; 2012. p. 43–65.
- Luyten P, Mayes LC, Nijssens L, Fonagy P. The parental reflective functioning questionnaire: Development and preliminary validation. *PLoS One*. 2017;**12**(5). e0176218. [PubMed ID: 28472162]. [PubMed Central ID: PMC5417431]. https://doi.org/10.1371/journal. pone.0176218.
- Parental Reflective Function Questionnaire. London, UK: University College London; 2020. Available from: https://www.ucl.ac. uk/psychoanalysis/research/parental-reflective-functioningquestionnaire-prfq.
- Hazan C, Shaver P. Romantic love conceptualized as an attachment process. J Pers Soc Psychol. 1987;52(3):511–24. [PubMed ID: 3572722]. https://doi.org/10.1037//0022-3514.52.3.511.
- Besharat MA. Development and Validation of Adult Attachment Inventory. Procedia Soc Behav Sci. 2011;30:475–9. https://doi.org/10.1016/ j.sbspro.2011.10.093.
- Najarian B, Davoodi I. [Construction and validation of a short form of the SCL-90-r (SCL-25)]. J Psychol. 2001;2(18):136–49. Persian.
- Fonagy P, Luyten P, Moulton-Perkins A, Lee YW, Warren F, Howard S, et al. Development and Validation of a Self-Report Measure of Mentalizing: The Reflective Functioning Questionnaire. *PLoS One*. 2016;**11**(7). e0158678. [PubMed ID: 27392018]. [PubMed Central ID: PMC4938585]. https://doi.org/10.1371/journal.pone.0158678.

- Drogar E, Fathi-Ashtiani A, Ashrafi E. [Validation and Reliability of the Persian Version of the Mentalization Questionnaire]. J Clin Psychol. 2020;12(1):1–12. Persian. https://doi.org/10.22075/jcp.2020.18897.1745.
- 17. Biringen Z, Vliegen N, Bijttebier P, Cluckers G. The Emotional Availability—Dutch Self-Report. 2002.
- Vliegen N, Luyten P, Biringen Z. A multimethod perspective on emotional availability in the postpartum period. *Parenting Sci Pract.* 2009;9(3-4):228-43. https://doi.org/10.1080/15295190902844514.
- Mousawi W, Bahrami Ehsan H. [A preliminary study of psychometric properties of the parental reflective functioning questionnaire (prfq) on an iranian sample]. J Appl Psychol Res. 2020;11(3):55–68. Persian. https://doi.org/10.22059/japr.2020.297614.643446.
- 20. Pazzagli C, Germani A, Buratta L, Luyten P, Mazzeschi C. Childhood obesity and parental reflective functioning: Is there a relation? *Int J*

*Clin Health Psychol.* 2019;**19**(3):209–17. [PubMed ID: 31516499]. [PubMed Central ID: PMC6732769]. https://doi.org/10.1016/j.ijchp.2019.06.002.

- De Roo M, Wong G, Rempel GR, Fraser SN. Advancing Optimal Development in Children: Examining the Construct Validity of a Parent Reflective Functioning Questionnaire. *JMIR Pediatr Parent*. 2019;2(1). e11561. [PubMed ID: 31518301]. [PubMed Central ID: PMC6716429]. https://doi.org/10.2196/11561.
- Cooke D, Priddis L, Luyten P, Kendall G, Cavanagh R. Paternal and Maternal Reflective Functioning in the Western Australian Peel Child Health Study. *Infant Ment Health J.* 2017;**38**(5):561–74. [PubMed ID: 28833359]. https://doi.org/10.1002/imhj.21664.
- Weems GH, Onwuegbuzie AJ. The Impact of Midpoint Responses and Reverse Coding on Survey Data. *Meas Eval Couns Dev.* 2019;34(3):166–76. https://doi.org/10.1080/07481756.2002.12069033.