

Psychometric Properties of Relationship Scales Questionnaire in Iranian Female Students

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ABSTRACT

Objective: In recent decades, researchers have designed various tools for assessment and study of the interpersonal relationships from an attachment perspective. The purpose of this study was to evaluate the psychometric properties of the relationship scales questionnaire (RSQ), which is one of these tools.

Methods: A total of 368 female undergraduate students of Ferdowsi University of Mashhad (academic year 2012-13) were selected by quota sampling method from all colleges of the university and were tested by RSQ. Internal consistency method was used to check the reliability of the questionnaire and exploratory factor analysis to assess its construct validity by SPSS 19.

Results: The exploratory factorial analysis of RSQ showed 2 different patterns. The Collins and Read 3-factor model showed 40.16% of the total variance, and Simpson 2-factor model determined 35.36% of the total variance. The Cronbach α coefficients were 0.67 for 2-factor model, and 0.57 for 3-factor model.

Conclusion: Both analyzed models showed a relatively average validity for the Iranian version of this questionnaire. Moreover, the 3-factor model had a higher acceptable validity.

1. Introduction

Bowlby attachment theory was introduced to explain the formation of the relationship between child and his primary caregiver that was extended by Ainsworth experimental observations (Rholes & Simpson, 2004).

Based on the information obtained from children and adolescents with mental damage, Bowlby formed the foundations of his theory. His basic premise is the existence of a common need for a close emotional bond (attachment) in all humans (Çelik, 2004; Morsünbül, 2009). Bowlby and Ainsworth believed that baby, as a result of frequent in-

teractions with mother, has gradually begun to predict his mother's behavior. The interactions cause the baby to form mental representations of himself/herself, and others. The relationship between these two representations is called internal working models (Cassidy & Shaver, 2008; Daniel, 2006; Egeland, 2004; Hammond & Marmarosh, 2011). These working models are considered as a set of cognitive-emotional structures that include the objective memories of the interaction with attachment representations, beliefs, and attitudes about self and others (Mikulincer & Shaver, 2007).

Ainsworth, by designing the Strange Situation test, found that baby considers mother a secure base, so that

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baby can rely on her to explore his or her environment. This sense of trust and confidence towards the mother depends on her accessibility and accountability. In this experiment, when mother leaves the room, the child is left alone with a stranger. The type of child reactions to the separation and return of mother is considered the base for determining attachment style (Rietzschel, 2012). By observing child's responses to maternal separation and return, Ainsworth classified infants into 3 groups of secure (B), insecure ambivalent (C), and insecure avoidant (A) (Armbruster, 2008; Fraley & Waller, 1998; Mikulincer & Shaver, 2007). These observations led to a large volume of research. Some of those studies were conducted to investigate the similarity of different kinds of attachments in other cultures (like those carried out by Grossmann, Grossmann, Huber, & Wartner, 1981; Takahashi, 1986) and some to investigate the stability or instability of attachment styles in different ages and situations (like Main & Cassidy, 1988; Takahashi, 1990).

Bowlby believed that primary attachment relationships can be a model and sample for later relations in life (Collins & Read, 1990). In other words, the emotional bond between mother and child can be extended to other relationships in adulthood (Alhusen, Hayat, & Gross, 2013; Pietromonaco, Uchino, & Dunkel Schetter, 2013). This is the subject of much research to determine the attachment relationships in various courses of life, including adulthood.

Despite the creation of new tools, investigations on Ainsworth's et al. research by Brennan, Clark and Shaver (1998) revealed remarkable points which affected the research process in this field. Considering the results of continuous gradation of infants behavioral observations in the Strange Situation experiment, they have argued that 3 attachment patterns are based on 2 dimensions of anxiety (crying, failure in restoring confidence in absence of mother, and showing anger towards mother when she returns) and avoidance (discomfort with closeness and dependence). What is shown in Figure 1, confirms the expansion of Ainsworth et al. diagram by Brennan, Clark, and Shaver et al. (1998).

By continuing research on the attachment relationships, the need for better tools, which determine the attachment patterns in more detail and more acceptable psychometric properties, was felt. This has led some researchers, e.g. Simpson, to begin making multi-item questionnaires based on Hazan and Shaver polynomial scale. To examine the effects of attachment style in romantic relationships, Simpson used his scale on 144 couples (Simpson, 1990). He found that attachment style plays an important role in understanding and experiencing these rela-

tionships. Besides Simpson, Collins and Reid designed an adult attachment scale as well. Factor analysis of the scale determined its 3 important dimensions: Intimacy, dependence, and anxiety. These 3 dimensions were considered as the cornerstones of attachment styles. They believed that the 3D model is the guide to determine the development of adult attachment relationships (Collins & Read, 1990). Many studies have been done based on the 3D pattern. For instance, Kassel, Wardle, and Roberts (2007) examined the relationship between attachment and medication use. Tasso, Brown, Griffo, and Maxwell (2012) pointed out the male violence in close relationships. And Ragaai, Nayyeri, and Sedaghati (2007) investigated the relationship between attachment styles and marital satisfaction in couples.

Bartholomew (1990) reviewed the results of the studies conducted by Main et al. (1987) and Hazan and Shaver (1988). They figured out that in adult attachment interview, people with avoidance style (dismissing style) deny their mental attachment and distress needs, while in self-report method, avoidant individuals are those who raise their distress and discomfort of approaching others. Due to this difference, he concluded that there might be 2 types of avoidance style in adult attachment relationships. In order to justify this matter, he offered a new interpretation of 2 work patterns of self and others, raised by Bowlby, and also different dimensions of Ainsworth diagram. He defined 4 attachment styles based on 2 fundamental dimensions of self and others model. Self-model is the rate of internalized self-value of each person and thus is linked to the rate of anxiety and dependency in close relationships. Others model also shows the rate of others' accessibility and support, so it is related to tendency towards approaching or avoiding others. Accordingly, 4 attachment styles are created: secure (2 positive work models), preoccupied (negative self and positive others model), indifference (positive self and negative others model), and fearful (negative for both models) (Bartholomew & Horowitz, 1991; Bartholomew & Shaver, 1998; Carr, Colthurst, Coyle, & Elliott, 2013; Çelik, 2004; Griffin & Bartholomew, 1994).

Unlike the class view, in the dimensional approach to attachment, each person is assumed to have different degrees of attachment styles. This change of perspective leads to designing dimensional approach-based tools, among them self-report relationship questionnaire (Bartholomew & Horowitz, 1991), relationship scales questionnaire (RSQ) (Griffin & Bartholomew, 1994), and revised version of close relationship experience (Fraley & Shaver, 2000) could be referred to. Despite many questionnaires in the field of attachment that deal with

romantic relations, RSQ deals with the totality of relationships of persons. Therefore it can be considered an important tool.

Among the mentioned questionnaires, psychometric characteristics of RSQ has been less analyzed. This questionnaire which is designed by Griffin and Bartholomew (1994) includes 30 items for measuring feelings about close relationships (Stein et al., 2002). The items of this questionnaire and Shaver's (1987) questionnaire, as well as relationship questionnaire of Bartholomew are made based on Hazan and Horowitz's scales (1991) and the revised scale of adult attachment style by Collins and Read (1990). Siegert, Ward, and Hudson (1995) examined the factor structure of this questionnaire on New Zealand students. First, they examined 4-factor model (secure, preoccupied, dismissing, fearful), then 3-factor model (anxiety, avoidance, secure) and finally 2-factor model (anxiety and avoidance).

The results did not confirm the 4-factor model, but factor loads could justify underlying 2-factor structure (closeness/independence or avoidance and security/anxiety or anxiety) of this tool. Examining the validity of the Turkish version of the questionnaire on a sample of students also gave similar results (Sümer & Güngör, 1999). Backström and Holmes (2001) assessed the validity of the Swedish version using exploratory and confirmatory factor analysis that was conducted on the obtained data from 515 students. They found that the infrastructure of RSQ could be justified by 3-factor model. To calculate the reliability of the subscales, the Cronbach α was used which showed the low stability of secure concerned subscales and acceptable reliability of the avoidance, fearful, and apathetical avoidance subscales. In addition, the credibility of their low work pattern (anxiety) and others' working model (avoidance) was acceptable (0.68). Similar results were obtained in a study of factor analysis French version (Guédény, Fermanian, & Bifulco, 2008). Data exploratory factor analysis revealed that 3-factor structure (anxiety, avoidance, and safety) explains 48% of the total variance of the questionnaire items. The Cronbach α coefficient of the secure, concerned, and fearful avoidance subscales was low and apathetical avoidance subscale was medium (0.64). But 3 obtained factors (avoidance, anxiety, and safe) had an average reliability and internal consistency of the primary subscales (4-factor) was relatively low (less than 0.70), while the 3-factor model had high internal consistency.

Kurdek (2002) examined the confirmatory factor analysis of the questionnaire based on questions of the Hazan and Shaver scale (secure, anxious, and avoidance), adult

attachment scale of Collins and Read (closeness, dependency, anxiety), Simpson, Rolls and Nelligan anxiety and avoidant styles, and 4 styles of Bartholomew and Horowitz (safe, concerned, apathetical, and fearful). Finally, he concluded that the factor analysis based on the adult attachment questionnaire (AAQ) of Simpson et al. (2D model of anxiety and avoidance) justifies the underlying aspects of RSQ to a more acceptable level.

Therefore, different results are obtained through the study of the RSQ based on theoretical models of attachment style. In other words, the validity and reliability of a few studies that have been done on the psychometric properties of this tool are reported differently.

Because this important questionnaire has not already been used in Iran, we aimed to evaluate the psychometric properties of the RSQ in a sample of Iranian population. Also using dimensional approach, recently used in the research on adult attachment (and lack of research on this subject in Iranian population), seems to enrich our research knowledge. In addition, students in our community are at a period of life that seek new relationships, and considering the significant role of attachment style in these relationships, the use of a tool that considers the whole relationship (not just romantic relationships) can be very useful.

Because the inventory has not been used in Iran, this study aimed at evaluating the psychometric characteristics of the RSQ in a sample of Iranian population. In this study, the Cronbach α was used to assess the reliability of questionnaire and exploratory factor analysis to assess its validity.

2. Methods

The method of this study was correlational with exploratory factor analysis. The study population involved all undergraduate students of Ferdowsi University of Mashhad, Iran. Due to the size of the population in academic year 2012-2013, (6733 students) the sample size was calculated according to Morgan table about 364 people who were selected by quota sampling method (It should be noted because of the possibility of being corrupted data, 375 people were questioned). On the whole questionnaire 7 were removed and the data analyzed 368 questionnaires were analyzed. Of them, 375 students were selected via quota sampling. Since the RSQ has not been used in Iran before, it was first translated to Persian and then back to English by specialists in English. After evaluating it by professors, its translated version was sent to the questionnaire designer. Finally, after removing the problems which were raised by the designer,

the final copy was prepared. Afterwards, the number of female students of each faculty of Ferdowsi University in academic year of 2012-2013 was obtained. Then, by considering the proportion of students in each faculty, the sample was selected. Because the majority of students at Ferdowsi University are female and time constraints, this study was limited to female students. Inclusion criterion was female students at undergraduate level of Ferdowsi University. A brief description of the research purpose was presented to each participant (in a way that it did not affect the participant's answers). Participants voluntarily answered the questions, and they were assured that the information would remain confidential. Because of the altered responses or unanswered questions, 7 questionnaires were discarded and finally the data of 368 questionnaires were statistically analyzed.

Relationship Scales Questionnaire (RSQ), designed by Griffin and Bartholomew (1994) includes 30 items for measuring the feelings about close relationships (Stein et al., 2002). The items of this questionnaire are based on scales of Hazan and Shaver (1987), relationship questionnaire of Bartholomew and Horowitz (1991), and the revised scale of adult attachment style of Collins and Read (1990). By evaluating 2 dimensions of anxiety and avoidance, RSQ examines attachment styles of secure (questions 3, 9, 10, 15, 28), preoccupied (6, 8, 16, 25), dismissing avoidance (2, 6, 19, 22, 28), and fearful avoidance (1, 5, 12, 24). Meanwhile, questions 9, 28, and 6 have reversed grading. The answer to each item is scored based on Likert-type scale from 1 (not at all) to 5 (very much). By calculating the means of the items of each style, the score of that style is obtained (Backström

& Holmes, 2001). With regard to dimensional perspective of Bartholomew, for determining individuals' attachment style, the highest score should be considered if necessary. In studies conducted outside of Iran, the internal consistencies of 2 dimensions of anxiety and avoidance were obtained ranging from 0.85 to 0.90 (Shvil, 2011). Retest reliability of the questionnaire ranged from 0.54 to 0.78 and correlation coefficients of RSQ and relationships questionnaire (RQ) ranged from 0.41 to 0.61 (Bartholomew & Horowitz, 1991; cited in Dereli & Karakuş, 2011). In the research, to evaluate reliability of RSQ, internal consistency and to evaluate validity, exploratory factor analysis with SPSS 19.

3. Results

Since this research investigates psychometric properties of relationship scales questionnaire for Iranian students, all the models in previous studies were noticed with an emphasis on Kurdek research (2002). Therefore, the reliability of RSQ was evaluated, considering 2-factor model (anxiety and avoidance by Simpson), 3-factor model (dependence, closeness, and anxiety by Collins and Read) and for styles resulting from 2 dimensions of anxiety (self-work model) and avoidance (others work model) by Bartholomew. To verify the reliability of RSQ, the internal consistency method (the Cronbach α coefficient) was used. The results are presented in Table 2.

According to Table 2, the coefficients of Cronbach α are generally more satisfactory for the 2-factor model in terms of psychometric characteristics, but all 3 models have moderate reliabilities. Furthermore, the subscales

Table 1. Demographic information of participants.

| Faculty | Number | Percentage | Mean age, y |
|--------------------|--------|------------|-------------|
| Theology | 33 | 8.96 | 20 |
| Economy | 41 | 11.14 | 20 |
| Mathematics | 23 | 6.25 | 20 |
| Basic sciences | 28 | 7.60 | 20 |
| Literature | 65 | 17.66 | 21 |
| Natural resources | 15 | 4.07 | 19 |
| Natural resources | 55 | 14.94 | 20 |
| Agriculture | 42 | 11.41 | 21 |
| Engineering | 49 | 13.31 | 20 |
| Architecture | 15 | 4.07 | 19 |
| Physical education | 2 | 0.54 | 23 |

Table 2. The Cronbach α for 2-factor, 3-factor, and 4-factor models.

| Models | Subscales | Cronbach α | |
|--------------|-------------|-------------------|--------|
| | | Subscales | Total |
| Two-factor | Anxiety | 0.72 | 0.67 |
| | Avoidance | 0.61 | |
| Three-factor | Dependence | 0.57 | 0.57 |
| | Closeness | 0.60 | |
| | Anxiety | 0.68 | |
| Four-factor | Secure | 0.26 | 0.63** |
| | Preoccupied | 0.46 | |
| | Dismissing | 0.46* | |
| | Fearful | 0.48 | |

*By eliminating question number 6.

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**By eliminating question number 9.

of 3-factor model have acceptable reliability. To test the validity of RSQ, the heuristic factor analysis was used analyzing the principle components with varimax rotation on the surface of material. Test results of Kaiser-Maier-Olkin sampling adequacy (2-factor model: 0.71,

3-factor model: 0.76) and Bartlett's test of sphericity (for 2-factor model, $P < 0.001$, and the Chi-square₁₅₃ = 739.25; for 3-factor model $P < 0.001$ and the Chi-square₇₈ = 436.02) indicate the optimal sample size and operation ability of scales items for both models.

Table 3. Rotated component matrices for all model.

| Two-factor | | | | Three-factor | | | | | |
|------------|----------|-------|----------|--------------|----------|-------|----------|-------|----------|
| Items | Factor 1 | Items | Factor 2 | Items | Factor 1 | Items | Factor 2 | Items | Factor 3 |
| 1 | 0.75 | 12 | 0.43 | 4 | 0.44 | 13 | 0.72 | 1 | 0.65 |
| 1 | 0.72 | 13 | 0.71 | 11 | 0.75 | 20 | 0.71 | 7 | 0.40 |
| 3 | 0.72 | 15 | 0.36 | 18 | 0.51 | 24 | 0.63 | 10 | 0.72 |
| 5 | 0.61 | 20 | 0.63 | 21 | 0.71 | 29 | 0.43 | 12 | 0.48 |
| | | 24 | 0.60 | 23 | 0.72 | 30 | 0.43 | 17 | 0.40 |
| | | 29 | 0.37 | 25 | 0.69 | | | 27 | 0.45 |
| | | 30 | 0.51 | | | | | | |

| Four-factor | | | | | | | |
|-------------|----------|-------|----------|-------|----------|-------|----------|
| Items | Factor 1 | Items | Factor 2 | Items | Factor 3 | Items | Factor 4 |
| 1 | 0.57 | 6 | 0.47 | 15 | 0.60 | 1 | 0.42 |
| 2 | 0.59 | 9 | 0.71 | 22 | 0.78 | 3 | 0.70 |
| 5 | 0.51 | 16 | 0.59 | 24 | 0.65 | 8 | 0.61 |
| 10 | 0.38 | 25 | 0.65 | | | 10 | 0.59 |
| 12 | 0.57 | 28 | 0.68 | | | | |
| 19 | 0.62 | | | | | | |
| 26 | 0.67 | | | | | | |

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Table 4. Rotation sums of squared loadings for 2 and 3 factors.

| Models | Factors | Total | % of variance | % of cumulative |
|--------------|----------|-------|---------------|-----------------|
| Two-factor | Factor 1 | 2.38 | 18.30 | 18.30 |
| | Factor 2 | 2.21 | 17.05 | 35.36 |
| Three-factor | Factor 1 | 2.88 | 16.05 | 16.05 |
| | Factor 2 | 2.24 | 12.46 | 28.51 |
| | Factor 3 | 2.09 | 11.65 | 40.16 |
| Four-factor | Factor 1 | 2.45 | 14.43 | 14.43 |
| | Factor 2 | 2.25 | 13.25 | 27.69 |
| | Factor 3 | 1.79 | 10.53 | 38.23 |
| | Factor 4 | 1.78 | 10.49 | 48.73 |

Table 3 shows the factor loads after varimax rotation. As it is seen, a series of questions have some common factors. These factors in 3-factor model include anxiety (factor 1), closeness (factor 2), and dependency (factor 3) and in 2-factor model they are anxiety (factor 1) and avoidance (factor 2). It should be noted that factor loadings less than 0.3 were ignored and consequently question 15 in 3-factor model and questions 10 and 18 in 2-factor model were discarded. In the 4-factor model, factor loadings were not correlated with factors considered by Bartholomew. Also, factor loadings are not considered less than 0.3 and therefore, question 15 in the 3-factor model and questions 10 and 18 in the 2-factor model were removed.

Table 4 shows that 2-factor model and 3-factor model explain 35.39% and 40.16% of variance, respectively. As a result, 3-factor model has greater explanatory power. Also, factor structure of Bartholomew's 4 styles showed its ability to explain infrastructures of RSQ.

4. Discussion

Over the past few decades, intensive studies have been done to evaluate individuals' attachment styles. One of the scales designed in this field is RSQ. The present research was also conducted to investigate the reliability and factor structure of this questionnaire in a sample of Iranian students. The coefficients of Cronbach α showed the relatively moderate reliability of Iranian version of this questionnaire for all the analyzed models. However, the coefficients of Cronbach α for most subscales, in a few studies such as Backstrom and Holmes (2001) and Guédeney, et al. (2008) have been more than those of the present study. In the meantime, the reliability of the subscales of RSQ is generally ranged from moderate to low due to the small number of items in each subscale.

In order to assess the validity of the structure of this questionnaire, its factor structure was examined using exploratory factor analysis with an emphasis on Kurdek study (2002). The results showed that the 3-factor model of Collins and Read explained 40.16% of the total variance, while the 2-factor model of Simpson explained 35.36% of it. In 3-factor model, the first factor indicates anxiety, the second one closeness, and the third one dependency/dimension; however, in 2-factor model, the first factor represents anxiety (self-work model) and the factors of closeness and dependency together represent avoidance dimension (others work model). These results are consistent with the findings of Backstrom and Holmes

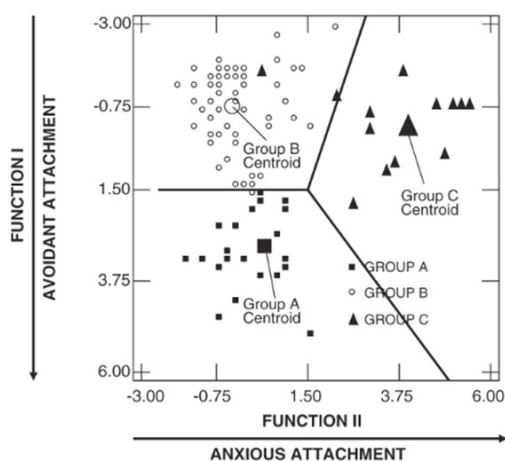


Figure 1. An adaptation of Figure 10 from Ainsworth, Blehar, Waters, and Wall (1978), with the names of the 2 attachment dimensions (cited in Mikulincer and Shaver, 2007).

(2001) and Guédénéy et al. (2008). In investigating the factor structure of Swedish version of RSQ, Backstrom and Holmes (2001) found that even though both models are acceptable, the 3-factor model has more explanatory ability than the 2-factor one. Besides, Guédénéy et al. (2008), who investigated the French version of RSQ, stated that 3-factor structure (anxiety, avoidance, security) would explain 48% of the total variance of the questionnaire items and provide different explanations from the 2-factor model. They believed that recent studies have shown that 1 factor is related to security and 2 factors (anxiety and avoidance) are related to insecurity.

Our research shows that the analysis of RSQ based on 3D model of attachment can be considered a good justification for attachment style. Furthermore, as mentioned in the results, the 4-factor structure was not much supported. This result is consistent with the findings of Siegret, Ward, and Hudson (1995) on New Zealand students. In other words, there was no evidence that certain items (questions) were related to a particular scale. They concluded that 2-factor structure could explain the infrastructures of RSQ. Moreover, the factor analysis of Turkish version of this questionnaire by Sumer and Gungor (1999) provided similar results. In addition to these studies, Kurdek (2002) stated that 2 factors of anxiety and avoidance can explain better the factor structure of these questionnaire items.

Because the present research has been conducted on a small sample of Iranian students, more extensive studies on different Iranian samples and populations could be helpful in expanding the obtained results. Moreover, this study was facing some other restrictions; for instance due to its implementation on female students, its results cannot be generalized to men or other populations.

Based on this research and other previous studies on RSQ, the 4-factor model of Bartholomew (secure, preoccupied, dismissing, fearful) cannot be considered a proper justifier for evaluating its underlying structures, while the 2-factor model (anxiety and avoidance) and 3-factor model (anxiety, avoidance, security) identify properly the underlying dimensions of the Persian version of RSQ.

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