

Reliability, Validity, and Factor Structure of Experiences in Close Relationships Scale –Revised for Using in Children and Adolescents (ECR-RC)

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Abstract

Introduction: The investigation of attachment processes during middle childhood and early adolescence has been hampered by a relative lack of measures for this age group.

The aim of this study was to investigate the psychometric properties of the Experiences in Close Relationships Scale- Revised for using in children and adolescents (ECR-RC). This scale is a self-report questionnaire for measuring attachment anxiety and avoidance.

Method: The sample size of 430 students was selected by a stratified multistage cluster sampling in Tehran. The Attachment Security Scale (ASS) was implemented to calculate the divergent validity of ECR-RC.

Results: The results of factor analysis indicated that two factor model of ECR-RC fit in Iranian sample in each relational domain (Mother-Father). Cronbach's alpha coefficient of ECR-RC was above 0.80 and the limit was satisfactory. Furthermore, the test-retest reliability of ECR-RC over a four week period was more than .69. The correlation coefficient analysis showed that ECR-RC has a significant negative relationship with ASS which shows the divergent validity.

Conclusion: Factor structure, reliability and validity of the ECR-RC for research applications and clinical diagnostics were within acceptable limits. It can be noted that ECR-RC is a useful and reliable tool for attachment researches in different domains of relationships.

Keywords: Children, Adolescent, Factor analysis, Validity, Reliability

Introduction

The relationship between parents and children is one of the most important components of social life and plays an important role in the mental health of both parents and children (1). Bowlby mentioned this issue for the first time in order to explain the relationship between children and the main caregivers. The attachment theory is not only a child evolution theory, but is also an evolution theory through life span as well (2).

Attachment styles are sustainable patterns regarding the experiences in relationships, emotions, and behavior. These patterns impress individuals' behaviors throughout their lives. Attachment styles emerged of early experiences with caregivers and impressed into the underlying interpersonal behavior in a person's lifetime (3). Individual differences in attachment occurs in two basic dimensions of anxiety and avoidance appearance (4). Primary studies in the children attachment clearly conceptualize attachment and

distinguishes among the secure, avoidant, and anxious styles (5). According to the results of different studies, secure attachment connects with the characteristics of the positive relationship including the intimacy and satisfaction in social relationships. Insecure-avoidant attachment connects with the lower levels of intimacy and commitment in social relations. Insecure anxious attachment connects with concern in social relationships, jealousy, fear and vigilance on the release and rejection. Secure attachment style reflects a sense of confidence and security in relation to others in Bowlby's theory (6).

Despite the social changes, the main attachment figures (parents) still keep their importance. However, a changing balance is observed between attachment and exploratory behavior at this time (7). Children in middle childhood and early adolescence need fewer emotional support from their parents in comparison with early childhood. Children mostly use their parents as a secure base for greater recognition of interpersonal environments (such as peer). In addition, although physical proximity is very important in early childhood, parents' availability is psychologically important in middle childhood and early adolescence (8, 9). Attachment's transfer of adolescents identified three stages (10). The first phase is proximity seeking (i.e. in search of proximity to attachment figures), the second phase is safe haven (the relationship with attachment figures in facing fear or threat) and the third phase is secure base (i.e., the use of attachment figures as a safe resource from which to explore the social world) respectively. While adolescents experience remarkable intimate relationships outside the family, the support of the family is extremely important as well. The attachment theory emphasizes the importance of constant and close parent-child relationship in the development of social skills in adulthood (11, 8, 12).

Ainsworth showed a discrimination between people who have avoidant and ambivalent attachment styles in infancy, adolescence and adulthood in his study. Anxiety attachment contains lack of confidence in the availability of others. It mainly shows communication disorders in the evolution of the individual. On the other hand, the avoidant attachment has too much emphasis on the individuality and self-confidence of the individual. So, anxiety and avoidance are characterized as the two major disorders in the evolution of the individual. Thus it affects the welfare and safety of a person's lifetime (5). Studies have shown that male adolescents with avoidant attachment have more aggressive behavior and behavioral disorders. The girls who have an avoidant attachment, internalize their aggression and become depressed. Behavioral problems in adolescence are predictable by a turbulent childhood avoidant attachment style (13). Many studies have mentioned that secure attachment to parents has a negative relationship with externalizing behavior problems such as theft, drug use and delinquency, aggression and risk behavior, internalizing behavioral problems such as anxiety and depressed mood (14). As a result, the quality of attachment to parents may be functioned as a protection against the development of internalized and externalized

problems (15).

Although the attachment theory is a theory of the individual's life (2, 11), this study has been usually conducted in infancy, early childhood, youth and adults. Actually, fewer studies have been conducted on the quality of attachment in the middle infancy and early adolescents. These studies have mostly focused on secure attachment in comparison with insecure attachment. There is a quite tangible need for a tool that directly examines anxious and avoidant attachments in middle childhood and early adolescence (16). Therefore, the aim of this study was to determine the psychometric properties of the revised version of the close relationship experiences questionnaire for children and adolescents.

Methods

This study was a cross-sectional study. The population included all male and female high school students in Tehran in the academic year of 2015-2016. At first, the sample size of 450 students was selected through the multistage stratified cluster method. After on, Tehran was divided into 5 parts of: North, South, East, West and Center. Then, one of the 19 zones of the Ministry of Education was selected from each part (1, 2, 4, 6, and 16). Then two schools were randomly selected from each zone. Then one class was randomly selected from each school and all the students of the class were examined in the study. The number of participants decreased to 430 after eliminating incomplete questionnaires. The participants were asked to carefully read each item and choose the item that seemed more appropriate for them. In addition, they were informed that their data will be kept confidential. Participants were aged between 12 and 15 years. In terms of gender, 278 of the students were girls (64.7%) and 152 of the students were boys (35.3%). In terms of the grade of the students, 169 were in grade seven (39.31%), 155 students in grade eight (36.04%) and 106 students in grade nine (24.65%), respectively.

The tools used in this study are explained as follows.

Experiences in Close Relationships –Revised-Scale used in children and adolescents (ECR-RS)

This scale consists of 36 questions for parents in two forms. Each form contains the anxiety dimension and 18 questions to measure the avoidant dimension. Each form is scored in 7 points from 1 (strongly disagree) to 7 (strongly agree). Each individual earns a score between (36-18) on the avoidant and anxiety dimensions in every field of relationship. The questions 4, 8, 16, 17, 18, 20, 21, 22, 24, 26, 30, 32, 34 and 36 are scored reversely. Higher scores indicate greater amounts of anxiety or avoidant attachments (5). The main findings of the study indicated a good reliability and validity of the questionnaire. The Cronbach's alpha of internal consistency coefficient reported 0.89 for each dimension.

Attachment Security Scale (ASS)

This scale was designed for the first time in 1996 and was then revised in 2015. The number of questions increased from 15 to 21. This scale measured secure attachment in a parent-child relationship. It had two subscales of a secure base and safe heaven (9). Participants were asked to choose one of two options provided and then had to show their

agreement with an option. Cronbach's alpha showed a good internal consistency of the scale: safe haven 0.89 and secure base 0.73 (9). The Cronbach's alpha for Iranian adolescents was calculated to be more than 0.72 in another study (17).

Results

To determine the validity of the questionnaire, the ECR-RS questionnaire was translated from English to Persian. Then, the Persian translation was returned by someone else into English. Both English versions were compared by the test's manufacturer in terms of the differences with each other. The final translation was examined by two experts of psychology and counseling. They went through the concept of the questions, and examined whether the questionnaire covered all the aspects of the subject and also the appearance of the questionnaire. Then, all the items of the questionnaires were read in the focused group consisting of 12 students, one by one. At the end, any ambiguity of the items were reviewed and modified.

The items of the questionnaire were evaluated by exploratory factor analysis. The KMO sampling adequacy test- that investigated being small for partial correlation between the variables- and Bartlett test used to assess the suitability of the sample size. The principal component analysis and Ghyrmtamd Promax Rotation- because of the correlation with each other- were used to analyze the factors' scale. The internal consistency and Cronbach's alpha coefficient method were used to calculate the reliability of the questionnaire.

The KMO sampling adequacy test for parents was at an optimum level (more than 0.70) which showed an appropriate correlation among the items for data analysis (Table 1). Also, as shown in Table 1, the Bartlett's test was statistically significant. So, the implementation of factor analysis was justified based on the studied correlation in addition to the sampling adequacy.

A principal component analysis was performed with promax rotation. The two main factors in each relationship area (mother and father) were obtained.

Table 1. Results KMO and Bartlett's test

	χ^2	df	P	KMO
Mother	18956.254	630	0.0001	0.96
Father	10932.185	630	0.0001	0.96

The vertical rotation of the factors leded to factor structure which can be seen in Table 2. The first factor is avoidant attachment and the second factor is anxious attachment.

The two main factors with values higher than one clarified 44.12% and 10.62% (in maternal questions) and 54.53% of total variance respectively.

The two factors in paternal questions clarified 44.22% and 10.44%, and 54.5% of total variance respectively.

The Cronbach's alpha coefficient for avoidant attachment were 0.89 (in the relationship with mother) and 0.83 (in the relationship with parents) respectively. According to Table 3 and 4, if any of the test questions were eliminated, the alpha coefficient would not increase. So it is not necessary to remove any of the questions. The

correlation of each proposition with the total- which indicates the degree of proposition correlation with the subscales in which the propositions are located- is presented in these two tables.

In this study, 57 subjects were selected to evaluate the reliability with the test - retest method. The temporal stability of the ECR-RC was examined by calculating Pearson correlations. The test-retest interval was approximately 4 weeks. Overall, the reliability was reasonable (ranging from .69 to .72).

Validity

Construct validity was used for evaluating the validity of this test. So, the secure attachment scale was used for this purpose. The amounts of the divergent validity is presented in Table 5.

Table 5 demonstrates that ECR-RC questionnaire has a negative divergent validity with ASS subscales.

Discussion

Bowlby believes that anxiety and depression during adulthood and psychopathology conditions is associated with anxiety, hopelessness, and lack of attachment in childhood and adolescence (18). People with an anxious attachment are associated with depression by social self-efficacy and emotional reactivity. Individuals with avoidant attachment are associated with depression through self-disclosure and emotional deactivation. Avoidant attachment style in the context of a relationship is formed which is usually threatened by fear of rejection or aggressiveness of the mother (19). In fact, some of the emotions, in this case, are inactive. This fragmentation, distance, and inactive emotions can be a precursor of isolation, depression, undermining its value and guilt (20). Also, when avoidant individuals assess themselves in social relationships, they usually experience stress, anxiety and mental instability. They actually feel a fear of rejection by others and try to help themselves with their feelings of frustration and anxiety by avoiding communicating with others (19). People who are interested in the anxious attachment spectrum may have less self-confident than ordinary people and negatively react towards others. These people do not easily trust others, show negative impulsive behavior towards others and experience anxiety and conflict in their relationships (19).

The main objective of this study was to evaluate the psychometric properties of a self-report questionnaire that assesses anxious and avoidant attachment in middle childhood and adolescents. Once a tool is translated from one culture or language to another culture or language, it is necessary to examine its psychometric properties. The results of this study indicated a good reliability and validity of the questionnaire in order to assess attachment in middle childhood and early adolescence in Iran.

The exploratory factor analysis showed avoidant and anxiety factors in both the fathers and mothers. The results of factor analysis demonstrated that this questionnaire has a satisfied factor structure.

The results of the internal consistency of ECR-RC using Cronbach's alpha is estimated between 0.83 (an avoidant aspect of the father) to 0.89 (an avoidant aspect of the

mother). This finding confirms the fact that this instrument has a good internal consistency. These findings were consistent with the main study which investigated the reliability of the tool between 0.89 (the anxious aspect of the mother) and 0.94 (an anxious aspect of the father). The retest reliability coefficient was obtained between 0.69-0.72, which is desirable and satisfying.

The correlation between the ECR-RC and ASS subscales was used to investigate the divergent validity. As expected, the anxious and avoidant attachment anxiety and avoidance which measured with ECR-RC had a significantly negative correlation with the subscales of ASS.

Table 2. Promax rotation factor on attachment to mother and father

Items	Mother		Father	
	Avoidance	Anxiety	Avoidance	Anxiety
1. I'm afraid my mother will stop loving me		0.73		0.58
2. I don't like telling my mother how I feel deep down inside	0.73		0.73	
3. I'm worried that my mother might want to leave me		0.47		0.50
4. I find it easy to tell my mother what I think and how I feel	0.66		0.74	
5. I'm worried that my mother doesn't really love me		0.71		0.62
6. I find it difficult to admit I need help from my mother	0.57		0.55	
7. I'm worried that my mother doesn't love me as much as I love her		0.69		0.58
8. I am very comfortable feeling close to my mother	0.65		0.67	
9. I wish my mother would love me just as much as I love her		0.43		0.44
10. It's not easy for me to tell my mother a lot about myself	0.72		0.75	
11. I worry a lot about my relationship with my mother		0.50		0.65
12. I prefer not to get too close to my mother	0.63		0.52	
13. When I don't see my mother, I worry she may stop thinking about me		0.68		0.68
14. I don't feel comfortable when my mother cuddles up to me too much	0.48		0.48	
15. When I show my mother I love her, I'm afraid she doesn't love me as just as much		0.60		0.73
16. Feeling close to my mother comes easily to me	0.67		0.67	
17. I do not often worry that my mother would abandon me		0.53		0.49
18. It's not difficult for me to feel close to my mother	0.62		0.46	
19. The things my mother says and does make me unsure about myself		0.46		0.63
20. I usually talk to my mother about my problems and worries	77/0		82/0	
21. I do not worry that my mother would abandon me		0.46		0.43
22. When I feel bad, it helps to talk to my mother	0.80		0.81	
23. I feel that my mother does not want to get as close to me as I'd like		0.57		0.67
24. I tell my mother nearly everything	0.80		0.85	
25. I sometimes think my mother has changed her feelings about me without any reason		0.61		0.73
26. I talk things through with my mother	0.79		0.83	
27. I'm afraid that I want to feel too close to my mother and she does not like it		0.68		0.75
28. I get nervous when my mother wants me to share really close moments	0.57		0.53	
29. I'm afraid my mother wouldn't love me any more if she found out how I really feel and what I really think		0.57		0.63
30. I find it easy to ask my mother for help	0.74		0.50	
31. I get angry because my mother doesn't give me enough love and support		0.59		0.44
32. I find it easy to rely on my mother	0.61		0.55	
33. I'm afraid my mother thinks less of me than she does of other children		0.56		0.50
34. I find it easy to show my mother I love her	0.64		0.43	
35. I think my mother only pays attention to me when I make a fuss		0.56		0.63
36. I feel that my mother understands me well.	0.75		0.74	
Special Amounts	15.92	3.82	11.01	2.51
Percent of Explained Variance	44.21	10.62	44.02	10.04
Density Percent of explained variance	44.21	54.83	44.02	54.06

Table 3. Cronbach's alpha, Correlation's scale with total score of scale, Cronbach's alpha coefficient for the elimination of proposition (mother)

	Anxious attachment			Avoidant attachment		
	Proposition	Correlation with the total score	Cronbach's alpha for the removal of propositions	Proposition	Correlation with the total score	Cronbach's alpha for the removal of propositions
	1	0.60	0.73	2	0.47	0.70
	3	0.34	0.75	4	0.42	0.59
	5	0.61	0.73	6	0.40	0.69
	7	0.58	0.74	8	0.47	0.58
	9	0.57	0.76	10	0.41	0.70
	11	0.47	0.74	12	0.41	0.68
	13	0.55	0.74	14	0.33	0.62
	15	0.54	0.74	16	0.58	0.56
	17	0.40	0.84	18	0.47	0.58
	19	0.50	0.74	20	0.58	0.56
	21	0.36	0.71	22	0.59	0.56
	23	0.53	0.74	24	0.62	0.56
	25	0.57	0.73	26	0.59	0.56
	27	0.60	0.73	28	0.38	0.68
	29	0.53	0.74	30	0.56	0.57
	31	0.50	0.74	32	0.52	0.58
	33	0.47	0.75	34	0.45	0.58
	35	0.49	0.74	36	0.54	0.58

Table 4. Cronbach's alpha, Correlation's scale with total score of scale, Cronbach's alpha coefficient for the elimination of proposition (father)

	Anxious attachment			Avoidant attachment		
	Proposition	Correlation with the total score	Cronbach's alpha for the removal of propositions	Proposition	Correlation with the total score	Cronbach's alpha for the removal of propositions
	1	0.60	0.80	2	0.70	0.90
	3	0.41	0.80	4	0.67	0.91
	5	0.62	0.80	6	0.70	0.91
	7	0.58	0.80	8	0.70	0.91
	9	0.50	0.83	10	0.74	0.92
	11	0.56	0.80	12	0.63	0.94
	13	0.58	0.80	14	0.57	0.94
	15	0.61	0.80	16	0.76	0.90
	17	0.56	0.84	18	0.65	0.91
	19	0.58	0.80	20	0.79	0.93
	21	0.48	0.84	22	0.79	0.91
	23	0.56	0.80	24	0.80	0.91
	25	0.60	0.80	26	0.76	0.93
	27	0.65	0.80	28	.052	0.94
	29	0.56	0.80	30	0.73	0.91
	31	0.45	0.81	32	0.62	0.91
	33	0.53	0.80	34	0.68	0.94
	35	0.50	0.80	36	0.74	0.91

Table 5. The validity of ECR-RC questionnaire with the subscale of secure attachment

	Mother		Father	
	Avoidance	Anxiety	Avoidance	Anxiety
Secure base	** -0.65	** -0.50	** -0.57	** -0.44
Safe Haven	** -0.67	** -0.54	** -0.58	** -0.51
Overall score of secure attachment	** -0.73	** -0.58	** -0.63	** -0.53

** p < 0.01

Conclusion

Exploratory factor structure, reliability, and validity of Experiences in Close Relationships –Revised-Scale was acceptable to clinical research applications and diagnosis. Based on the obtained results, the ECR-RC is a reliable measure which can be used to assess attachment in the Iranian society and the results are reliable and stable.

It should be noted that some of the limitations of the present study limited the generalization of the results. Firstly, the results of this study may pursue the participants to use social approval ways due to the self-report instruments (instead of studying the actual behavior). Secondly, the sample of the study was the students in Tehran. This means generalization should be

taken with caution.

In the end, according to the results of the present study, it can be concluded that the reliability and validity of the present scale is appropriate and can be used in assessing attachment.

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