Psychometric Properties of the Persian Version of the Emotion Regulation Checklist

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Abstract

Emotion Regulation Checklist (ERC) is a 24 item parent-report questionnaire that evaluates children's emotion regulation. The ERC includes two subscales: Emotion Regulation (ER) and Emotional Lability/negativity. This study aims to investigate the psychometric properties of the ERC for use in Iran. Using convenient sampling, 352 mothers with at least one child aged between 3 to 6 years were selected from 18 preschools in diverse socio-economic areas of Tehran during 2017. Mothers completed measure of the Emotion Regulation Checklist, the Child Behavior Checklist (CBCL), and the Eyberg Child Behavior Inventory (ECBI). Exploratory factor analysis, Cronbach's alpha, test-retest reliability and Pearson correlation coefficient were used to evaluate the psychometric properties of the ERC. The exploratory factor analysis indicated that the most adequate solution is the original two-factor explaining 31.74 % of the variance. The convergent validity was supported by the positive correlations between the Lability/Negativity subscale with mental health problems and disruptive behavior problems. The divergent validity was also supported by the negative correlation between the Emotion Regulation subscale with mental health problems and disruptive behavior problems. These findings provide the evidence of the validity and reliability of the ERC for use in Iran.

Key words: Validity and Reliability, Factor analysis, Emotion.

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Introduction

Emotion regulation is a capability to monitor and modify emotional experience in order to achieve personal goals (1). Emotion regulation skills are dependent on emotion expression and emotional knowledge (2). Emotional knowledge and emotion regulation skills develop in preschool years (3). Emotion competence is associated with pro-social behavior, appropriate response to conflicts and physical health (4). Children should be able to manage their emotions to develop adaptive functioning (5). Children with high emotion competence find more adaptive ways to communicate their feelings instead of acting them out (6). The role emotion regulation plays in developmental psychopathology has been documented (1, 7-9). Externalizing behaviors such as attention deficit hyperactivity disorder, oppositional defiant disorders and conduct disorders are associated with difficulties in emotion regulation (10).

Measurement is the main challenge in studying children's emotion regulation (11). There are different methods for assessing emotion regulation in children. Observational methods evaluate how children regulate their emotions provoked by an emotional story. Analyzing mother-child interactions, or children's reaction to emotional photos, drawing and facial expression is a common observing method that has been used in research (12). Some studies have used Interview and tasks including delayed gratification to investigate emotion regulation construct in children (13, 14). Self-report methods are used with school-aged children and adolescents. Researchers studying preschool children mostly use the hetero-evaluation method (parents, teacher or other informants) (15).

The Emotion Regulation Checklist (ERC; Shields &Cicchetti, 1997) is a 24 items questionnaire used for the hetero-evaluation of emotion regulation in preschool and school-aged children. The ERC includes two dimensions

of Emotion Regulation and Emotion Lability/Negativity. Emotion Regulation describes the child's emotional awareness, empathy and constructive emotional expression. Emotion lability/negativity (L/N) describes the child's emotion dysregulation, mood lability, negative affect and inflexibility.

The ERC has been widely used for evaluating emotion regulation in children. Different translated versions of the ERC have been cross-culturally adapted in Italy (16), Turkey (17), China (18) and Brazil (19). As a function of the ERC's extensive use, this study aims to evaluate the validity and reliability of a Persian version of ERC.

Method

Participants

This study was a cross-sectional study using a convenient sampling. The sample comprised 352 mothers with at least one child (girl =168, boy=185) aged between 3 to 6 years (M= 4.5; SD= 1.1). Recruitment occurred through 18 preschools in diverse lower- to upper-class socio-economic regions of Tehran during 2017. Approval was obtained from the research ethics committee of University of Welfare and Rehabilitation Sciences and mothers signed an informed consent form. Mothers who were interested in participating in the research completed measures of the Emotion Regulation Checklist (ERC) (20), the Child Behavior Checklist (CBCL) (21) and The Eyberg Child Behavior Inventory (ECBI) (22).

Instruments

The 24-item Emotion Regulation Checklist (ERC) (20) measures two aspects of children's emotion competence: Emotion Regulation (8 items) and Emotion Lability/ Negativity (15 items). The items are rated on a four point Likert scale (from 1= almost always to 4= never) evaluating the frequency of children's behavior. The Emotion Regulation subscale describes emotional self-awareness, appropriate emotional display and empathy. Emotion Lability/Negativity describes inflexibility, reactivity and mood lability. The ERC has shown a good convergent and divergent validity (20).

The Achenbach Child Behavior Checklist (CBCL) (21) evaluates the mental health of preschool children and includes three domains: externalizing, internalizing, and total problems. The CBCL also has a Syndrome scale including Emotionally Reactive, Anxious/ Depressed, Somatic Complaints, Withdrawn, Sleep Problems, Attention Problems and Aggressive Behavior. Higher scores indicate more mental health problems. The internal consistency of the Persian version has been shown ranging from 0.54 to 0.81 (23). In the present study, Cronbach's alpha was 0.89 for the externalizing subscale, 0.87 for the internalizing subscale and 0.91 for the total problems.

The Eyberg Child Behavior Inventory (ECBI) (22) is a 36-item parent-report scale that was used in the present study to measure disruptive behavior problems in preschool children. The inventory has two subscales: an Intensity score, measuring frequency of disruptive behaviors, and a Problem score, assessing whether (or not) the behavior is a problem. A higher score indicates more behavior problems. The test-retest reliability and internal consistency 0.74 and 0.93, respectively was reported in the Iranian population (24). In this study, Cronbach alpha's for the Intensity score and the problem score were 0.92 and 0.91, respectively.

Procedure

First, the English version of the ERC was translated into Persian by three independent translators. Secondly, a bilingual psychologist back-translated the Persian version to English. The back-translation version was approved equivalent to the original ERC. Three psychology professors experienced in emotion regulation checked the translation and some words were changed. The resulting version was applied to 15 mothers with a primary education to evaluate problems in the understanding of every item. Items that were not easily understood were changed to be more comprehensible.

Data analysis

The main purpose of the current study was to evaluate the factor structure of the Persian version of the ERC and its psychometric properties including test-retest reliability, internal consistency and convergent and divergent validity. Principal components factor analysis using varimax rotation was performed to evaluate the factor structure of the ERC.

Results

The Kaiser- Meyer-Olkin test of sampling adequacy (KMO =0.83) (25) and the Bartlett's test of sphericity (x^2= 1860 ; df = 276; p < .001) (26) suggested the factorability of correlation matrix. Explorative factor analysis showed that the two-factor solution explained 31.74 % of the variance. The 20.50 % of the variance was explained by the first factor (Lability/Negativity) and the second factor (Emotion Regulation) explained 11.24% of the variance.

According to Cattell's scree plot (See Figure 1) and the clearness of the item loadings, the two-factor solution was the best solution.

In contrast to the solution proposed by the Shields and Cicchetti (20) that item 12 loaded on no factor, this item loaded on the first factor (Lability/Negativity) for the Iranian sample. Items 23 showed positive loading on the first factor (Lability/Negativity) instead of the second factor (Emotion Regulation). As reported by Reis (19) some mothers interpreted "negative" in item 23 as unfavorable behavior and interpreted the item in reverse. Therefore, the item 23 was counted in the first factor (Lability/ Negativity). Consequently, the relationship between two factors rose from – 0.31 to -0.42. Cronbach's alpha was .81 for the Lability/Negativity factor and 0.57 for the Emotion Regulation factor. When item 23 moved to the Lability/Negativity factor, Cronbach's alpha for the Emotion Regulation factor became 0.68. The internal consistency coefficients are in acceptable range for Cronbach's alpha (27).

Table 1. Exploratory Factor Analysis for the Emotion Regulation Checklist

ERC items	EFA two Factors	
	Lability/ Negativity	Emotion Regulation
02: Exhibits wild mood swings (child's emotional state is difficult to expect because s/he moves quickly from a positive to a negative mood)	0.35	-.410
06: Is easily frustrated	0.34	-0.41
08: Is prone to angry outbursts/tantrums easily	0.60	
10: Takes pleasure in the distress of others (for example, laughs when another person gets hurt or punished; seems to enjoy teasing others)	0.34	
12: Is whiney or clingy with adults	0.40	
14: Responds angrily to limit-setting by adults	0.67	
19: Responds negatively to neutral or friendly attempts to interact by peers (for example, may speak in an angry tone or voice or respond fearfully)		-0.53
23: Displays appropriate negative emotions (anger, fear, frustration, distress) in response to hostile, aggressive or intrusive acts by peers	0.37	
24: Displays negative emotions when attempting to engage others in play	0.50	
04: Changes well from one activity to another; doesn't become angry, anxious, distressed or overly excited when moving from one activity to another	0.31	
05: Can recover quickly from upset or distress (for example doesn't pout or remain sullen, anxious or sad after emotionally distressing events)		-0.32
09: Is able to delay gratification (for example, can wait their turn)	0.51	
11: Can manage excitement (for example, doesn't get "carried away" in high energy play situations or over excited in inappropriate situations)	0.45	
13: Is prone to disruptive outbursts of energy and excitement	0.75	
17: Is overly energetic when attempting to engage others in play	0.55	
20: Is impulsive	0.65	
22: Intrusive enthusiasm	0.73	
01: Is a cheerful child		0.70
03: Responds positively to neutral or friendly attempts to interact by adults		0.63
07: Responds positively to neutral or friendly attempts to interact by peers		0.61
15: Can say when s/he is feeling sad, angry, fearful or afraid		0.37
16: Seems sad or listless		0.54
18: Displays flat affect (expression is vacant or inexpressive; child seems emotionally absent)		0.54
21: Is empathic towards others (for example, shows concern when others are upset or distressed)		0.35

Note. ERC = Emotion Regulation Checklist; EFA = Exploratory Factor Analysis. Lability/ Negativity = Factor 1; Emotion Regulation = Factor 2.

To evaluate the test-retest reliability of the ERC, 74 mothers completed the checklist at two-weekly intervals. Test-retest correlations for the Emotion Regulation was 0.84 and for the Lability/ Negativity was 0.68.

The correlation between the ERC, the CBCL and the ECBI scores was evaluated (see Table 2).

Figure 1: The scree plot for the ERC

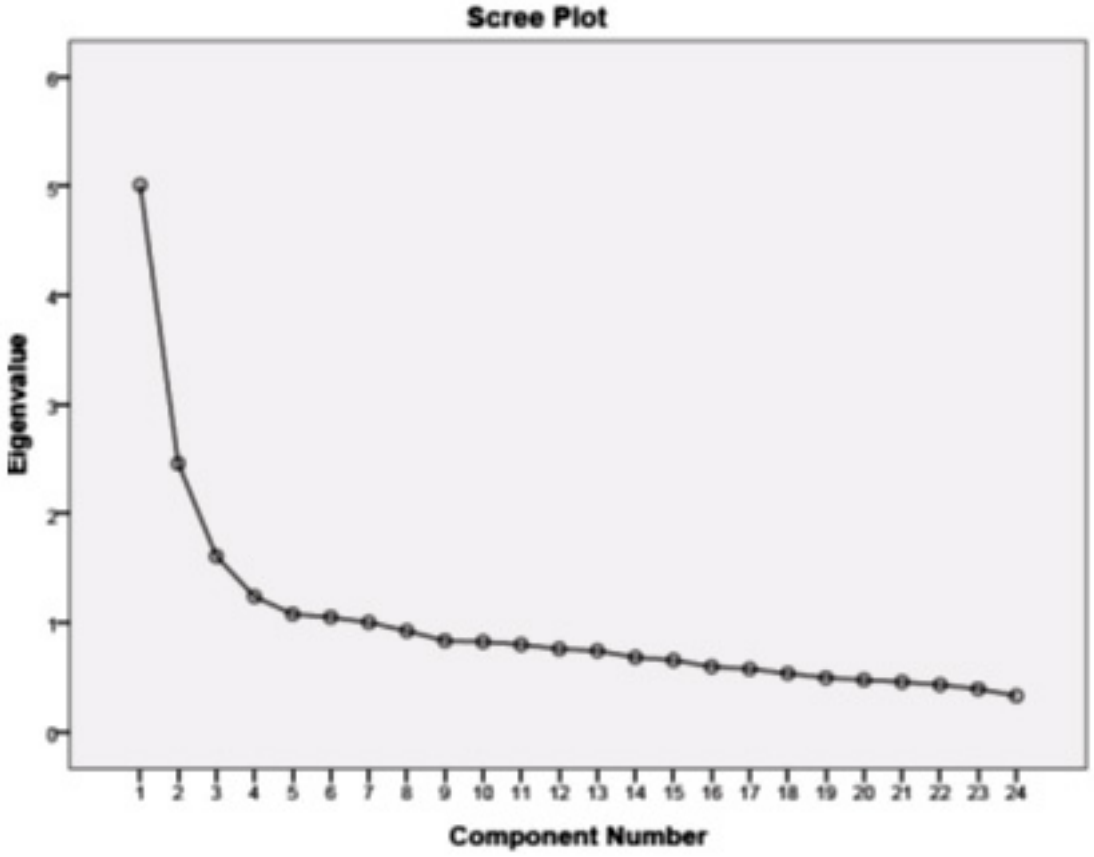

Table 2: Convergent and divergent validity of the Emotion Regulation Checklist

	Emotion Regulation	Lability/ Negativity
Emotionally Reactive	-0.37**	0.44**
Anxious/Depressed	-0.39**	0.37**
Somatic Complaints	-0.15**	0.20**
Withdrawn	-0.39**	0.30**
Sleep Problems	-0.12*	0.24**
Attention Problems	-0.08	0.43**
Aggressive Behaviors	-0.22**	0.53**
Internalizing	-0.25**	0.21**
Externalizing	-0.27**	0.65**
Total problems	-0.35**	0.57**
Intensity score	-0.22*	0.62**
Problem score	-0.33*	0.44**

Note. * P-value ≤ .05; ** p-value ≤ .01.

The Lability/ Negativity subscale had a significant and positive relation with all subscales of the CBCL and the ECBI. The ER subscale has negative relationship with the subscales of the ECBI and all subscales of the CBCL except the Attention Problems. No correlation between children's age and gender with the Emotion Regulation or the Emotional Lability/Negativity were found.

Discussion

The current study was designed to assess the factor structure, the reliability and validity of the Persian version of the ERC. The factor analysis of the Persian version of the ERC supported the theoretical model proposed by the authors of the original version (20). Studies investigating the psychometric properties and the factor structure of the ERC are limited. These findings are consistent with the two-factor model that is proved by previous studies (16, 19, 20, 28, 29).

The Lability/Negativity construct concerns inappropriate emotion displays, emotional intensity, over reactivity and emotions dysregulation. Children with high score on Emotional Lability/Negativity tend to be impulsive and inflexible with low tolerance to frustration and fast shifts from positive to negative emotions (20). The Emotion Regulation construct refers to emotional self-awareness, appropriate emotion expression and empathy. Children with adequate emotion regulation identify and express their emotions properly and manage negative emotions in relation to their goals (20).

As expected, the ERC subscales were associated with several dimensions of children's behaviors. Convergent validity was supported by the positive correlations between the Lability/Negativity subscale with externalizing and internalizing disorders, total mental health problems and disruptive behavior problems. The divergent validity was also supported by the negative correlation between the Emotion Regulation subscale with externalizing and internalizing disorders, total mental health problems and disruptive behavior problems. Emotion dysregulation is associated with developmental psychopathology, and has effects on children's social interactions (30). Children internalizing and externalizing problems tend to have more difficulties in emotion regulation (4).

The present study confirms the two-factor structure of the ERC, offering new evidence supporting the reliability and validity of the ERC and its usage for the assessment of children's emotion regulation in Iran.

Limitations

One of the main limitations of this study concerns sampling. This study investigated the ERC using convenient sampling method in a community sample. The non-randomized sampling limits the generalizability and interpretation of the findings. The findings would be strengthened with large size of clinical and community samples and using randomized sampling. All variables were measured by parent-report questionnaires. Evaluating children's emotion and behavior using observational methods would reduce the expectancy bias.

Conclusion

The present study indicated that the Persian version of the Emotion Regulation Checklist is explained by two-factor structure and has an acceptable validity and reliability. The internal consistency of the Emotion Regulation and the Lability/Negativity subscales was adequate. This study provides evidence for using a widely used instrument for evaluating emotion regulation and dysregulation in Iranian children.

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