

# The Relation between Maternal Personality and Internalizing/ Externalizing Behaviors: Mediating Role of Maternal Alexithymia, Children's Alexithymia and Emotional Regulation

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## Abstract

**Objective:** Although many studies have investigated the effect of maternal personality on internalizing and externalizing behaviors of a child, the role of both mother and child's emotional mechanisms in these behaviors is little explored. The present study was focused on the relationship between the mother's personality, and internalizing and externalizing behaviors of children with the mediating role of children's alexithymia, mother's alexithymia, and children's emotion regulation (ER).

**Method:** 162 mothers and elementary school-aged children were recruited regarding their demographics and completed the NEO personality inventory, Child behavior checklist, Toronto alexithymia scale, Children's alexithymia measure, and Children's emotion regulation checklist. Data were analyzed using SPSS (ver.23), and AMOS (ver.23).

**Results:** Structural equations modeling demonstrated an acceptable model fit to data (CMIN/DF = 1.233, RSME = 0.038, GFI = 0.962). Mother's alexithymia predicted internalizing problems whereas it didn't predict externalizing problems in children. Also, the bootstrap results indicated that the mother and children's alexithymia and children's ER had mediating roles between mother's personality and externalizing and internalizing problems.

**Conclusion:** The present results demonstrated that mother's personality can indirectly, through mother and children's alexithymia and children's ER act as an important factor in development of mental problems. In other words, findings indicated that children's emotional development is not a one-way road, but it is a mutual process that involves both the mother and the child.

**Key words:** *Alexithymia; Child; Emotional Regulation; Mothers; Personality; Problem Behavior*

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Childhood problems are categorized into externalizing (e.g., aggression, defiance) and internalizing problems (e.g., anxiety, social withdrawal) (1). In other words, externalizing behavioral problems include aggressive (2) and disruptive behaviors (3), while internalizing behavioral problems mostly cause inner distress and affect the person itself (4).

Most of the prevalence studies conducted in the United States and the United Kingdom indicate that more than 40 percent of young people experience some sort of mental disorder during their lifetime (5). Both internalizing and externalizing disorders have negative effects on children during their development and possibly increase the risk of engagement in risky behaviors (6).

Different etiologies have been proposed regarding internalizing and externalizing behaviors in children. Many studies have shown that one of the most important factors is parental personality. For example, it has been shown that adolescents which have more conscientious parents display fewer externalizing behaviors (7). In a study on adolescents 12-14 years old, Thartori *et al.* showed that high levels of maternal irritability as a personality characteristic can predict higher occurrence of externalizing behaviors in adolescents (8). In another study on school-aged boys, Feng *et al.* concluded that maternal negative control has a mediating role in the relation between internalizing behaviors and emotional regulation in children (9). Although maternal personality has been considered an important factor in all of these behavioral problems, the mechanism involved is not yet clear. Since the importance of emotion is irrefutable, it could act as a mediator. Some researchers have shown that ER is one of the emotional mechanisms which can explain the connection between maternal personalities and children's behavioral problems. Parents with high levels of agreeableness have been found to exhibit better recognition and response regarding children's emotional needs and fewer behavioral problems (10).

Alexithymia is another significant component in ER. It is defined as a cognitive and emotional deficit in identifying and describing one's own emotions (11) and includes four components: 1) Difficulty in identifying and describing the feeling, 2) Difficulty in distinguishing between feeling and bodily sensations of emotional arousal, 3) Constricted imaginal processes, and 4) Externally oriented cognitive style (12). It has been estimated that the prevalence of alexithymia among adolescents is 7.3 to 29.9 percent (13). It seems that the role of alexithymia has been identified in many internalizing and externalizing behavioral problems (13, 14). Jellesma *et al.* reported that children with more somatic complaints had higher levels of alexithymia compared to children with lower somatic complaints (15). In a study on elementary school-aged children, Nasiri *et al.* found that alexithymia was positively correlated with negative emotions in children (16).

Many studies have investigated etiologies of alexithymia, including dysfunction and disturbance in the parent-child relationship. Meanwhile, some other studies have proposed that parental behaviors such as controlling or excessive care can be risk factors for alexithymia in children (17). Also, it has been elucidated that parents' alexithymia is significantly correlated with children's alexithymia in non-clinical populations (18). Mahler *et al.* demonstrated that alexithymia of biological parents can be a strong predictor of alexithymia in their children's adulthood (19); while in another study on children suffering from tension headaches, results revealed that there was no relation between mother's alexithymia and children's alexithymia (20). It can be concluded that alexithymia can lead to emotional dysregulation in children. Therefore, emotional regulation could be a crucial component in children's development and their response to adversities and following pathologies (21, 22).

Emotion regulation is the process of observing and modulating emotional responses. These responses could be internal or external (23). When children with better ER encounter dangerous situations, they can redefine the meaning of their experience to cope and adjust to their experience (24). Studies on normal and abnormal populations have shown that poor ER is correlated with many of the behavioral problems, social and psychological performances, and different forms of pathologies (21, 22).

Many studies have investigated the maternal role and also the role of emotional variables such as alexithymia and ER in development of internalizing and externalizing behaviors, but it is still not clear whether these emotional components also play the mediating role, and if they do, to what extent. In other words, it is not clear to what extent mediators explain the relationship between maternal personality and behavioral problems, and limited research has examined mediating processes simultaneously acting on development of internalizing and externalizing behavioral problems. Maternal contribution and children's vulnerabilities to behavioral problems - whether internalizing behavior problems or externalizing behavior problems- has not been properly determined. Thus, we need more studies to be able to address these issues.

In the current study, our conceptualization focuses on the mediating role of the child and mother's alexithymia in occurrence of internalizing and externalizing behaviors. On the other hand, to clarify ER contribution to psychopathology of internalizing and externalizing behaviors, the child's ER is examined in relation to maternal personality and the child's behavioral problems. The first aim was to examine any direct association between maternal and children's alexithymia and internalizing and externalizing behaviors. In this regard, it was expected that maternal alexithymia would be associated with internalizing and externalizing

behaviors. Concurrently, with evaluation of the mediating role of alexithymia in the relation between maternal personality and behavioral problems, the mediating role of the child's ER in the relationship between mother's personality and behavioral problems were deliberated. In this study, we expected that maternal personality would be associated with major behavioral problems in children, but this was mainly indirectly mediated by the children's ER. So the present study aims to explore the relationship between maternal personality and internalizing and externalizing behaviors with the mediating role of children's ER, children's alexithymia, and mother's alexithymia and to provide a structural model to explain this relationship.

## Materials and Methods

### Participants

162 mothers and elementary school-aged children were recruited between the years 2018-2019 in Tehran (female = 55.2% and male = 44.8%). Inclusion criteria for mothers were as follows: absence of serious mental problems such as dementia or psychotic disorders, no antipsychotic drug use, no hospitalization due to psychological disorders, and no history of substance abuse. Inclusion criteria for children were: between the ages of 6 to 12, parents not divorced, no history of drug use for internalizing or externalizing behaviors or other mental disorders, no history of autism or psychosis, no special somatic disease, and no history of hospitalization. Questionnaires that were completed randomly or incompletely were excluded from the study. Mothers completed the following questionnaires: NEO personality inventory (NEO-FFI), Child behavior checklist (CBCL), Toronto alexithymia scale (TAS-20), Children's alexithymia measure (CAM), and Children's emotion regulation checklist (ERC). The current study has been approved by the Shahid Beheshti University of Medical Sciences ethics committee (IR.SBMU.MSP.REC.1397.338) and informed consent has been obtained from the participants. Acquired data were analyzed using SPSS-23 and AMOS-23 (25). Then, descriptive information and information regarding the fitness of the primary models and modified models and also the results of the bootstrap were obtained.

### Measures

#### Toronto alexithymia scale (TAS-20)

This scale was first introduced by Bagby *et al.* in 1994 (26). This is a 20 item questionnaire that includes three subscales: 1) difficulty identifying feelings, 2) difficulty describing feelings, and 3) externally oriented thinking. It is scored on a 5 point Likert-type scale, from 1 (strongly disagree) to 5 (strongly agree). The overall score is calculated from these subscales and represents degree of alexithymia. Kooiman *et al.* reported Cronbach's alpha of 0.81 for this questionnaire (27). Another study reported internal consistency as 0.81 and test-retest reliability as 0.77 during three weeks (28).

Besharat reported the accuracy of the Persian version of Toronto Alexithymia scale (29). The overall alpha of the Persian version of the Toronto Alexithymia scale was reported as 0.85 and the test-retest reliability of this version was obtained at 0.87 (29).

#### Big five personality factors questionnaire (NEO-FFI)

This questionnaire was developed by McCrae and Costa in 1992, contains 60 items and is used to assess five major personality traits including neuroticism, extraversion, openness, conscientiousness, and agreeableness (30). It has a 5-score rating system from 1 (completely disagree) to 5 (completely agree). McCrae and Costa reported internal consistency as 0.68 to 0.86 for agreeableness and neuroticism subscales respectively (31). They also reported the validity of the shorter version to be more than 0.68 (31). The internal consistency of the Persian version for all subscales is between 0.39 to 0.66 (32).

#### Children's alexithymia measure (CAM)

This scale has been developed by Way and his colleagues in 2010. It has 14 items which are scored in a 4-point Likert-type scale and measure the children's difficulty in emotional expression. It should be completed by the child's parents or caregiver. It is applicable for children and adolescents from age 5 to 17. The higher scores are correlated with higher degrees of alexithymia. Way *et al.* found that Cronbach's alpha of internal consistency was reported as 0.92 (33). In the present study, we assessed its reliability and internal consistency by confirmatory factor analysis and varimax rotation. We obtained one factor from this scale. Items 1 and 13 had low factor loadings and also low standard values in confirmation models. Cronbach's alpha of the first model was 0.85, and if we deleted these two items, Cronbach's alpha was 0.87. The internal consistency was also increased following deletion of items 1 and 13. The low coefficient of determination in these two items had lowered the model variance, which increased following their deletion. The variance of the first model with a special value of 5.25 was 37.53 and the variance of the second model with a special value of 5.06 was 42.13. This can be caused by deletion of items 1 and 13 in the confirmatory analysis. In the second model, item 12 had the highest factor loading (0.74), and items 3 and 14 had the lowest factor loading (0.58). The goodness of fit indicators of the second model of this questionnaire was:  $\chi^2/df = 1.56$ , CFI = 0.98, and RMSEA = 0.059, which are acceptable. According to our results, it is a measure with good construct validity and acceptable internal consistency.

#### Children's emotion regulation checklist (ERC)

This checklist contains 24 items and was developed by Shields and Cicchetti in 1998 to assess emotional processes and their regulation in children (34). Items are scored on a 4-point Likert-type rating scale, from 1 (never) to 4 (always), and examine two subscales of emotional regulation and emotional lability/negativity. Emotional regulation/lability is assessed by 8 items and

focuses on the expression of emotions, empathy, and self-awareness. Higher scores indicate a better ability to manage and balance emotional expressiveness (34). The internal consistency of this scale for normal children was reported at 0.74 (35).

#### **Child behavior checklist (CBCL)**

This scale was developed by Achenbach in 1991 based on factor analysis methods. Two general factors, externalizing and internalizing, have been extracted from this scale which is suitable for children and adolescents between the ages of 6 to 18. It should be completed by parents or a caregiver (36). This checklist contains two groups of questions to detect a child's disorders and deficiencies and 113 questions for assessing the emotional, behavioral, and social problems of the child in the past 6 months. It is scored on a three-point Likert-type scale from absent = 0, sometimes = 1 to occurs often = 2. CBCL's subscales include two higher-order factors, including internalizing (depression/anxiety, depression, somatic complaints) and externalizing (rule-breaking behavior and aggressive behavior). There is a strong correlation between the diagnostic categories of this checklist with DSM-IV diagnostic categories. DSM-IV-oriented scales which are present in this checklist include emotional problems, anxiety problems, ADHD, conduct problems, oppositional defiant problems, and somatic problems. The reliability of this scale has been reported to be more than 0.90 (36).

#### **Results**

Mothers were between the ages of 25 to 51 ( $M = 36.38$ ,  $SD = 5.19$ ). The education level of mothers was as follows: 75.5% had no college education and 24.5% had a college education. Most of the children were between the ages of 7 to 10 ( $M = 8.98$ ,  $SD = 1.71$ ).

Table 1 represents the descriptive indices for mothers' psychological variables. We used Pearson's correlation coefficient to assess the correlation between neuroticism, extraversion, conscientiousness, agreeableness, openness, externalizing, internalizing, child's alexithymia, mother's alexithymia, and children's emotional regulation. The results are presented in Table 2. The correlation between neuroticism and other factors was elucidated, but the mother's neuroticism has the highest correlation with her children's internalization ( $r=0.59$ ,  $P < 0.01$ ). Openness showed a correlation with the mother's alexithymia. A child's alexithymia has the highest correlation with internalization (0.48). It was also correlated with emotional regulation, but it was not a significant correlation. Also, the correlation between maternal extraversion with her children's emotion regulation was not significant (Table 2).

Furthermore, the results of the structural equation modeling of data for assessment of the goodness of fit for internalizing and externalizing behaviors are presented in Table 3. Based on the information presented in Table 3, the result of the standard measure of the chi-

square test (CMIN/DF) (degrees of freedom = 31) was 4.424 with a significance level of  $P < 0.001$ . The Root Mean Square Error of Approximation (RMSEA) was 0.145. The goodness of fit (GFI) and comparative fit index (CFI) were 0.851 and 0.767, respectively (37). So, the first model did not show an acceptable fit. This could be explained by the small sample size.

Following the correction of the first model, a model with better goodness of fit was obtained (Table 3). The results of Table 3 indicate the following correction: CMIN/DF was 1.233 and the significance level of the goodness of fit indices was 0.195, which are less than 3, and thus favorable. RMSEA was 0.038 which is agreeable. The GFI was 0.962 and CFI was 0.987; both of these indices are more than 0.9 and this clearly shows that this model has an acceptable fitness (37). Generally, the goodness of fit indices for children's behavioral problems is appropriate. In other words, this model shows that maternal alexithymia, children's emotional regulation, and children's alexithymia make significant contributions to prediction of internalization and externalization in children (Figure 1).

Furthermore, the direct and indirect effects of the mother's personality on the internalizing and externalizing behaviors of the children with the mediating role of the maternal alexithymia, children's alexithymia, and children's emotional regulation was also investigated. To investigate the mediating roles of the children's and mother's alexithymia and children's emotional regulation, we conducted the bootstrap analysis with 2,000 samples with a significance level of 0.05. The results showed that the regression coefficient of the effect of the mother's personality on externalizing and internalizing behaviors is significant in direct, indirect, and overall conditions. These results supported the role of maternal and children's alexithymia and children's emotional regulation as mediators in the correlation between mother's personality and externalizing and internalizing behaviors (Table 4).

**Table 1. Descriptive Indices of Maternal Personality, Externalizing/Internalizing Behaviors, Alexithymia, and Emotion Regulation**

Index Variables	Amount	Lowest	Highest	Mean	Standard deviation	Skewness		Kurtosis	
						Standard criterion error	Statistical value	Standard criterion error	Statistical value
Neuroticism	162	18	57	36.86	8.20	0.19	-0.14	0.37	-0.32
Extraversion	162	15	46	28.98	6.34	0.19	0.22	0.37	-0.45
Openness	162	22	50	34.38	4.64	0.19	0.23	0.37	0.61
Agreeableness	162	19	46	29.63	5.12	0.19	0.12	0.37	0.21
Conscientiousness	162	12	37	22.55	5.78	0.19	0.29	0.37	-0.39
Internalizing	162	1	40	14.40	8.52	0.19	0.82	0.37	0.20
Externalizing	162	00	41	13.79	8.95	0.19	0.79	0.37	0.09
Children's alexithymia	162	00	32	8.62	6.49	0.19	1.12	0.37	0.97
Mother's alexithymia	162	20	79	50.60	12.41	0.19	-0.03	0.37	-0.31
Children's emotional regulation	162	39	72	53.64	6.08	0.19	0.32	0.37	0.17

**Table 2. Correlation Matrix of Maternal Personality, Externalizing/Internalizing Behaviors, Alexithymia, and Emotion Regulation**

Variables Correlation of variables	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness	Internalizing	Externalizing	Children's alexithymia	Mother's alexithymia	Children's emotional regulation
Neuroticism	1 162									
Extraversion	-0.49** 000 162	1 162								
Openness	-0.17** 0.026 162	0.13 0.088 162	1 162							
Agreeableness	-0.39** 0.00 162	0.38** 0.000 162	-0.02** 0.77 162	1 162						
Conscientiousness	-0.44** 0.00 162	0.60** 0.00 162	0.16* 0.036 162	0.32** 0.00 162	1 162					
Internalizing	-0.59** 0.00 162	0.32** 0.00 162	0.14 0.059 162	0.26** 0.001 162	0.35** 0.00 162	1 162				

Externalizing	-0.38**	0.32**	0.05	0.37**	0.31**	0.59**	1			
	0.00	0.00	0.51	0.00	0.00	0.00	162			
	162	162	162	162	162	162				
Children's alexithymia	-0.30**	0.15*	0.14	0.16*	0.16*	0.48**	0.42**	1		
	0.00	0.04	0.07	0.04	0.03	0.00	0.00	162		
	162	162	162	162	162	162	162			
Mother's alexithymia	-0.51**	0.26**	0.22**	0.26**	0.33**	0.46**	0.32**	0.44**	1	
	0.00	0.001	0.002	0.001	0.00	0.00	0.00	0.00	0.00	162
	162	162	162	162	162	162	162	162	162	
Children's emotional regulation	-0.19**	0.14	-0.06	0.14	0.12	0.26**	0.38**	0.02	0.09	1
	0.01	0.05	0.42	0.06	0.10	0.001	0.00	0.71	0.25	162
	162	162	162	162	162	162	162	162	162	

\*Correlation is significant at the 0.05 level

\*\*Correlation is significant at the 0.01 level (2-tailed)

**Table 3. Goodness of Fit Index for the First and Second Model of Mediation Role of Alexithymia in Relation between Maternal Personality and Children Behavioral Problems**

a. Goodness of fit index of the first model									
RMSEA	PCFI	PGFI	CFI	GFI	CMIN/DF	DF	CMIN	P-value	
0.145	0.529	0.480	0.767	0.851	4.242	31	137.138	0.000	
b. Adjusted goodness of fit index									
RMSEA	PCFI	PGFI	CFI	GFI	CMIN/DF	DF	CMIN	P-value	
0.038	0.548	0.437	0.987	0.962	1.233	25	30.829	0.195	

**Table 4. The Bootstrap Results for Determining the Mediating Role of Mother's Alexithymia, Children's Alexithymia and Children's Emotion Regulation**

	Indirect		Direct		Overall		Condition
	Coefficient	P value	Coefficient	P value	Coefficient	P value	
Effect of personality on extraversion	0.277	0.001	0.349	0.002	0.503	0.001	Partial mediation
Effect of personality on introversion	0.343	0.002	0.523	0.001	0.668	0.001	Partial mediation

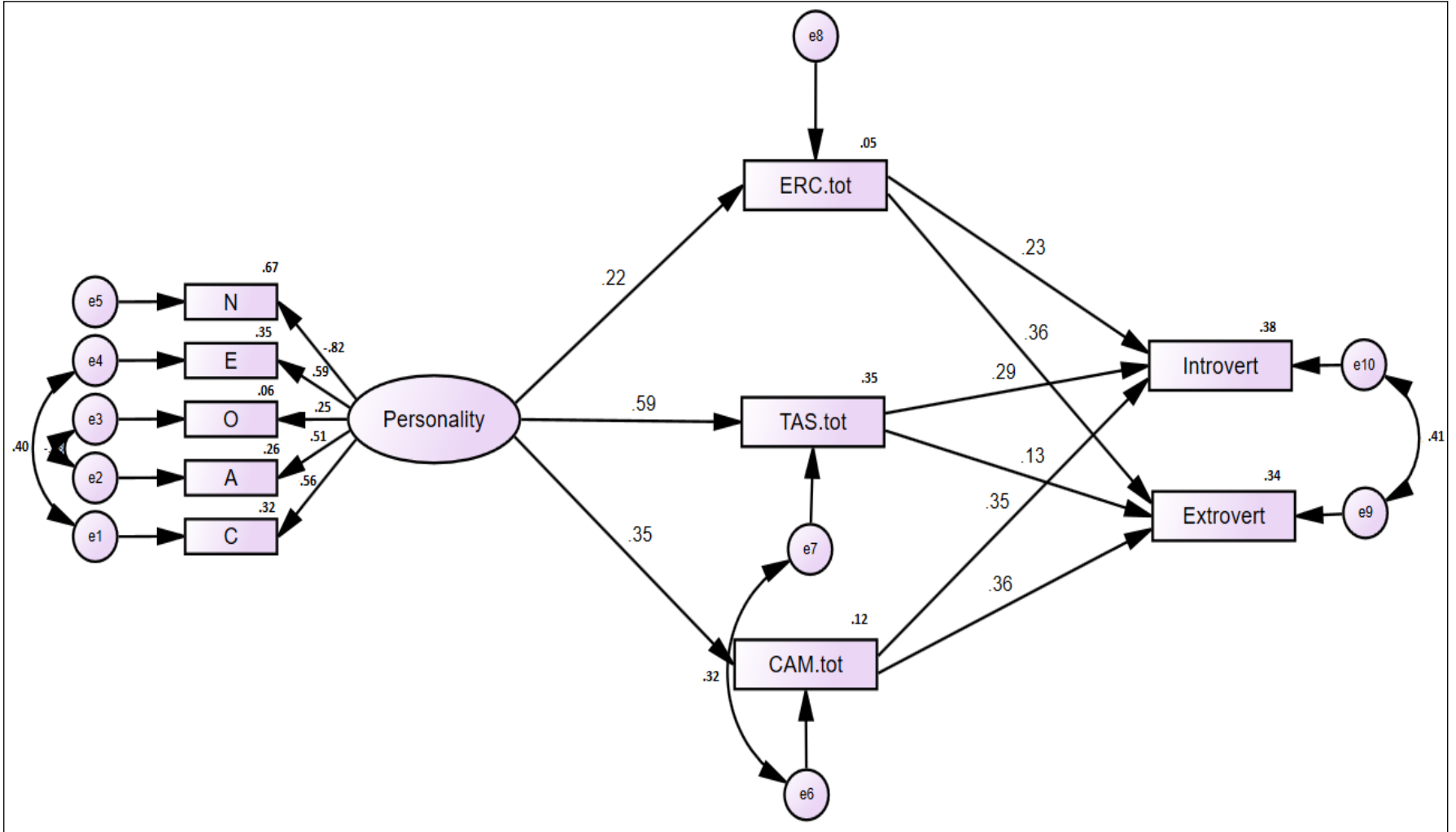


Figure 1. Modified Model of Mediation Role of Alexithymia in Relation between Maternal Personality and Children Behavioral Problems

## Discussion

This study elucidated the direct and indirect effects of maternal personality on development of internalizing and externalizing behaviors with the mediating role of the mother's and children's alexithymia and children's ER. In other words, these three factors are potential ways that mother's personality could affect development of behavioral problems in children. Based on the model, the mother's alexithymia could explain 0.29 of the variance in internalizing problems, but it could explain 0.13 of variance in externalizing problems. Indeed, the mother's alexithymia is more effective in causing internalizing problems. To further explain this, the mother's alexithymia can explain 0.29 of variance in 6 to 12 year-old children's internalizing problems. This rate is more than the beta coefficient of the mother's alexithymia effect on externalizing problems. This clearly shows that maternal alexithymia is a better predictor of internalizing behaviors rather than externalizing behaviors. Also, children's emotion regulation could explain 0.23 and 0.36 of variance in internalizing and externalizing behaviors, respectively. If we compare children's ER-beta coefficient, it could be concluded that children's ER is a better predictor of externalizing behaviors and a powerful predictor of internalizing problems is the mother's alexithymia. Mother's alexithymia could be regarded as a risk factor for development of internalizing behaviors in children, and poor ER could be regarded as a risk factor for externalizing behaviors. In short, children's alexithymia can explain development of both internalizing and externalizing behaviors equally. Thus, children's alexithymia is a strong risk factor for both internalizing and externalizing behaviors. These findings are following the results of DiTrani *et al.* and Manninen *et al.* (38, 39). Also, the findings of the present study are compatible with findings of Robin, Miels and Thomas. All of these studies emphasize the role of the family members, the emotional atmosphere of the family, children's attitudes, and the correlation between personality and textural factors of the family. For example, children's "emotion reactivity" could play an important role in the effect of the mother's personality on the development of externalizing behaviors (40, 41). It should be mentioned that the children's ability to regulate their emotions has significant effects on the development and manifestation of externalizing behaviors (8). Indeed, children's vulnerability towards negative emotions and their stronger reactivity increases the chance of behavioral and emotional problems (42, 43). Also, the adoption of different strategies for emotional regulation affects development of internalizing behaviors (44).

In line with this report, results of Rieff and Di Trani have shown that alexithymia is correlated with internalizing behaviors such as obsession, depression, anxiety, and negative thoughts such as worry and rumination in children (38, 45). Personality traits such as

controlling behaviors in parents are correlated with development of alexithymia, especially with emotional expression and difficulty in identifying feelings (46). It seems that children's alexithymia, with consequences such as isolation and not being able to identify others' feelings, play a mediating role in the connection between mother's personality and the degree of internalization in children (47). Also, following the study of De Gucht *et al.*, alexithymia as a vulnerability factor, could impact the individual's experience of negative feelings and ultimately exert its effects on positive feelings as well (48). Meanwhile, parental affect mirroring can teach children about their emotional experiences and how to express them (49). Thus, we can consider alexithymia as a risk factor against development of behavioral problems such as externalizing because it seems that if a child experiences low levels of alexithymia, the probability of the developing behavioral problems such as externalization will decrease (50).

For explaining the mediating role of mother's alexithymia in a correlation between mother's personality and internalizing and externalizing behaviors, the results of the present study are consistent with findings described in studies of Panishia *et al.* and Guttman and Laport. In Guttman and Laport's study, lack of direct emotional expression in mothers was not correlated with development of problems in daughters, but instead, it led to emotional distress and impulsive behaviors (51). In the same way, Panishia *et al.* indicated maternal alexithymia as a risk factor for development of deficit in emotional processing and therefore development of generalized anxiety in children and adolescents (52).

## Limitation

One of the distinguishing components of this study was the investigation of children's alexithymia as one of the primary factors in this study. Also, comparing two different spectrums of behavioral problems with different mediating variables can provide more valuable information. However, the present report also has some limitations; first, since prevalence of internalizing and externalizing behavior problems is different in girls and boys, it could be said that one of the limitations of the current study is that gender is not considered as a control variable. The second limitation of the present study is convenience sampling. Another limitation is that we did not consider the personality and emotional variables of the father. Based on the limitations listed, the present study suggests that in future studies, while considering gender of children, role of mediators should be examined. Furthermore, to overcome the limitation of convenience sampling, it is suggested that a different sampling method be used. As well, we suggest that future studies target personality variables of the father and also other related factors such as children's and parents' dependency, ER strategies, and emotional training methods of parents. On the other hand, we



examined the mother and child's alexithymia and child's ER in a non-clinical population; so, studying these variables in a clinical population and comparing the two with each other provides a deeper understanding of the mediators. It also could help to take a deeper look at the tripartite model of Morris (53) and understand the exact role of the mediating variables in emotional development of children.

### Conclusion

It seems that deficient ER in children and their mothers and children's alexithymia could explain part of the variance in externalizing and internalizing behaviors and have direct and indirect effects on development of these behavioral problems in children. Future investigations will benefit from considering other cognitive and emotional mother/father/child factors which play important roles in relation of maternal personality with child psychopathology.

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### Conflict of Interest

Authors have no conflict of interest to declare in this article.

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