Family Functioning and Internalizing and Externalizing Disorders in Children: Examining the Quality of Attachment as a Mediator and Moderator

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Abstract: This study was conducted to examine the mediating and moderating role of the quality of child-parent attachment in correlation between the family functioning and internalized and externalized disorders in children. The participants included 702 children who were selected from the 19 districts of Tehran's Education Department, using multistage cluster random sampling method. The children answered the inventory of parent and peer attachment (IPPA) and the parents answered McMaster family assessment device (FAD) and the child behavior checklist (CBCL). The data were analyzed using SPSS and LISREL software. The linearity and normality prerequisites were taken into account, and then the methods of correlation, path analysis, and hierarchical regression were applied. The results showed that there was a significant correlation between family functioning and quality of attachment, and quality of attachment and children's disorders. Hence, the more favorable the family functioning, the safer the attachment, and the safer the attachment, the less the internalized and externalized disorder. There was also a significant correlation between family functioning and internalized and externalized disorders. The safer the family functioning, the less the incidence of the disorders in children. The path analysis, hierarchical regression, and Baron and Kenny's procedures showed that the quality of attachment did not have a mediating role in the relationship between family functioning and internalized and externalized disorders (separately). However, it had a moderating role in that relationship.

Introduction

The behavioral-emotional disorders are relatively common during childhood. When these disorders are severe enough during the school age, they will last up to the next years and cause more disorders and problems in the next developmental periods especially the adolescence and adulthood (Kroneman, 2009). There are various types of disorders including fear and anxiety, depression, disruptive behavior, attention deficit disorder/ hyperactivity, conduct disorder and somatization disorder (Campell, Shaw, & Gilliom, 2000), internalizing disorders (withdrawing, somatic complaints, anxiety / depression, social problems, thought problems, attention problems), and externalizing disorders (delinquent behavior, aggressive behavior) (Carr. 1999). Internalizing disorders in children include self-destructive behaviors such as drug abuse, suicidal ideas and attempts (Dodge & Petit, 2003), and anxiety and depression (Rohde, Seeley, Kaufman, Clarke, & Stice, 2006). The externalizing disorders usually start with aggressive behaviors and get severe with the child's experiences in family, peers, the school, and the society. The destructive behaviors result in feeling rejected, and ultimately, anti-social behavior (Miller & Prinz, 1990).

An important point in studying children's disorders is the study of factors affecting it. A review of psychology literature shows that various factors are involved in incidence and formation of these disorders. Kiesner & Kerr (2004) believe that most of human's behaviors are multi factorial. Family, peers, and different cultural contexts such as the school are the influential factors in incidence of the problematic behaviors. This is also true for children's behavioral disorders. Some researchers introduce three major dimensions involving in formation of behavioral-emotional problems as follows: A) characteristics of children including mood, inflexibility, impulsiveness, emotional and behavioral instability, and negative affection (Deater-deckard, Dodge, Bates, & Pettit,
of family problems including parental stress and depression, poor social support, maladjustment and separation in family, and economical problems (Campbell and et al., 2000; Owens, & Shaw, 2003); and C) parenting techniques including violence and punishment, negligence, and unfriendly relationships (Campbell and et al., 2000; Kim, & Cicchetti, 2004; Lecher and et al., 2004). Among these dimensions, family plays the most important role in incidence of children's problems. The reason is that family is a social system with a social framework with the highest influence on formation of behavior in each family member and is the first system a child enters (Naghavi, 2011).

According to Sheeber, Hops, Albert, Davis, & Andrews (1997), factors such as lack of cordiality and affection, conflict and hostility, and low cohesion in family establish an inefficient environment which associates with the internalizing problems in adolescents. Fava and King (2008) showed that when cordiality, acceptance, and expression of feelings increase in family, internalized signs and symptoms decrease in children. Moreover, a strong correlation has been reported between family functioning and optimum parenting and incidence of internalized symptoms and behavioral-emotional disorders in children (Murray, Woolleyrum, & Cooper, 2007; Forman, O’ Har, 2007; Patrik, Snyder, Schrepferman, 2005). Some studies also examined the externalized behaviors like drug abuse (Prange, Greenbaum, Silver, Friedman, Kutash, & Duchnoski, 1992; clarke, Neighbors, Lesnich, Lynch, & Donovan, 1998), adolescents' deliberate self-harm (Sourander, Aromaa, Pihlakoski, Haavisto, Rautava, Helenius, & Sillanpaa, 2006), and violations in childhood and adolescence (Millikan, Wamoidt, & Bihun, 2002). Kroneman (2009) and Huh, Tristan, & Wade (2006) showed a high correlation between parents' behavior and externalized behaviors of children and believe that more cordiality and acceptance in parents result in less externalized behaviors. This has also been confirmed by Hipwell, Keenan, Kusza, & Loeber's study (2008).

Studies show that family is influential in mental and physical health of family members. Family therapists also believe that the interactions in family and dynamics of the system and structure governing family must be studied in examining psychological, behavioral, and emotional problems of family members (Franklin, & Hafer-bray, 2000). Various models have been proposed for studying those interactions that measure the roles, responsibilities, expression of emotions, members' attitude toward problems, and meeting the emotional needs. Among the models, Beavers' model shows that there are more internalized disorders in centripetal families which have little expression of emotions and more externalized disorders in centrifugal families which have less behavioral control (Barker, 1996). The structural family assessment model also explains that high levels of insecurity in parenting relationships and signs of internalizing and externalizing in children are observed in close-knit and disengaged families which have a high level of conflicts, poor stability of family support and boundaries, and inappropriate psychological control (Davies, Harold, Goecke-Morey, & Gumings, 2002).

Another factor affecting children's disorders is the child's attachment to parents. The theory of attachment was first introduced by Bowlby who believed that children are born with behaviors whose purpose is to maintain the close relation with figures of attachment. These behaviors protect children from the physical and mental threats and reduce their distress (Muris, Meesters, & Van den berg, 2003). Gottmann (1994) and Johnson (1996) explained that certain agitated behaviors of children arise from child's anxiety about the availability of parents and accountability of figures of attachment. According to the theory of attachment, child's use of strategies of helplessness denial and acceptance of a hostile and defensive attitude toward figures of attachment causes externalizing disorders. On the contrary, the use of maximizing strategies results in internalizing disorders since children strongly focus on their helplessness and show a strong need to the love and support of their caregiver (Pakdaman, Seyed Mousavi, Ghanbari, & Malahi, 2011).

Some studies showed that attachment to parents had a negative correlation with internalizing and externalizing disorders and the quality of attachment to parents had a protective role in development of internalizing and externalizing behaviors (Duchense & Larose, 2007). In their study, Tambelli, Laghi, Odorisio, & Notari (2012) found that the quality of attachment can predict children's internalized and externalized problems and that the correlation between externalizing disorders and attachment was more significant than correlation between internalizing disorders and attachment. A study by Pakdaman and et al (2011) also showed that more and safer attachment to parents had a negative correlation with internalization and externalization symptoms in children.

Certain models have studied the mediating role of secure attachment in path between family factors and the child adjustment variables and concluded that family problems in the form of emotional unavailability and lack of security in parent-child attachment relation can increase the adjustment problems in children. Frosch, Mangelsdorf, & McHale (2000) identified that poor functioning of family may
influence parent-child attachment and destroy the child's trust on parents as the source of security and protection. Gummings and Davies (2002) also found that poor family functioning may cause insecurity in child-parent relationship and they also determined a correlation between the internalized and externalized symptoms in children and insecurity.

In short, the present study examined the role of the quality of child-parent attachment as a mediating and/or moderating variable in correlation between the family functioning and children's disorders. The study of whether a variable has a mediating or moderating role between two variables was first carried out by Baron and Kenny (1986). According to them, a mediating variable plays the role of a mediator between two variables and has a significant correlation both with the predictor variable and the criterion variable as the correlation between the two variables weakens with controlling the effect of the mediating variable. The moderating variable is also a qualitative or quantitative variable which changes either the direction or intensity or both of them between the criterion and predictor variables (oreizi & Khalilian, 2008). Therefore, major questions was discussed in this study: Can the quality of child-parent attachment play the mediating and/or moderating role in the family functioning and children's internalized and externalized disorders?

**Method**

**Sample:** The statistical population of this study included all the fourth grade and fifth grade students of the school year 2011-2012 of elementary schools in 19 districts of Tehran's Education Department comprising 191419 students. The research sample included 702 fourth grade and fifth grade elementary students selected using multistage cluster random sampling method. In this respect, 6 districts were selected randomly from the 19 districts which included 5 areas of north, east, west, south, and center, regarding the extent of each area. Several schools were selected randomly from the elementary school list of each district and several classes were selected randomly from the fourth grade and fifth grade classes in those schools. All the students of the selected classes were considered as the clusters. Parents of the students answered the McMaster Family assessment device (FAD) and the child behavior checklist (CBCL) and the students answered the inventory of parent and peer attachment (IPPA).

**Instruments:** McMaster Family assessment device (FAD): "Family Assessment Device" is a 60-item questionnaire developed by Epstein, Baldwin, and Bishop in 1938 based on McMaster's model. The model determines the structural, occupational, and interactional characteristics of family and specifies six dimensions of family functioning. The dimensions are as follows: problem solving, communication, roles, affective responsiveness, affective involvement, and behavior control. Thus, proportional to the six dimensions, the "Family Assessment Device" comprises six subscales for measuring those dimensions and also another subscale related to the total family functioning (Sanayi, 2008). Although the present questionnaire has 60 items, the initial studies were based on 53-item scale. However, seven items were added to the initial questionnaire in order to increase validity of the subscales. In Amini's study (2000), the Cronbach's alpha for the total scale and subscales problem solving, communication, roles, affective responsiveness, affective involvement, and behavior control was 0.92, 0.61, 0.38, 0.72, 0.64, 0.65, 0.61, and 0.81, respectively. Those figures were reported as 0.91, 0.66, 0.67, 0.63, 0.42, 0.61, 0.38, and 0.73 in Rezayi's study (1999). The "Family Assessment Device" has concurrent validity and predictive value to some extent. This instrument has a medium correlation with "Locke - Wallace Marital Satisfaction Scale" and a relatively favorable power for predicting scores of "Philadelphia Geriatric Morale Scale" (Sanayi, 2008). In the present study, the Cronbach's alpha for the above subscales comprised 0.94, 0.75, 0.66, 0.69, 0.70, 0.78, 0.54, and 0.87, respectively.

**Child behavior checklist (CBCL) – the parents' form:** the child behavior checklist is a questionnaire designed on the basis of Achenbach's experience (Achenbach, 1978). The measurement system on the basis of Achenbach's experience consists of a set of forms for measuring competency, and behavioral-emotional problems. The behavioral-emotional problem item which is applied in this study consists of two total scales including eight clinical scales as follows: externalizing behaviors (delinquent behavior, aggressive behavior) and internalizing behaviors (withdrawal/depression, somatic complaints, anxiety / depression, social problems, thought problems, attention problems) (Schroeder & Gordon, 2005). The validity of the questionnaire through test-retest with a one-week interval and also the reliability between interviewers in the child behavior checklist were 0.93-1. This reliability for behavioral-emotional syndrome scale for the parents' behavior checklist was 0.90 (Achenbach & Rescorla, 2001). In Iran, Minayi (2005) examined the checklist using cluster sampling method on 1438 boys and girls from northern, southern, and central Tehran and obtained the internal consistency of internalizing and externalizing scales as 0.87 and 0.86, respectively. Bayat (2008) also reported the Cronbach's alpha for externalizing disorders as 0.89 and aggressive behavior and lawbreaking behavior as 0.79 and 0.61, respectively, and for internalizing disorders as 0.67.
and anxiety/depression, withdrawing/depression, and body complaints as 0.60, 0.56, and 0.37, respectively. In the present study, the Cronbach's alpha was obtained as follows: 0.87 for internalizing disorders and 0.76, 0.68, and 0.78 for anxiety/depression, withdrawing/depression, and somatic complaints, respectively, and 0.89 for externalizing disorders and 0.74 and 0.86 for delinquent behavior and aggressive behavior, respectively.

The inventory of parent and peer attachment (IPPA), the revised version for children: In this study, the revised child-parent attachment scale was used. This questionnaire was developed by Armsden, McCauly, & Greenberg (1987) in order to assess child's positive and negative perception of cognitive and affective dimensions of the communication with parents and close friends. Three main dimensions of this questionnaire include degree of mutual trust, quality of communication, and alienation (anger and nervousness). The total score of each person in the attachment dimension shows how the quality of child-parent attachment is. Higher score of the people in the trust and communication dimensions and lower score of the people in alienation dimension show that the people have better communication with his/her parents. The attachment total score indicates the individual's quality of attachment and, in fact, his/her secure attachment. In Tambelli et al.'s study (2012), the Cronbach's alpha for trust, communication, and alienation subscales was reported as 0.77, 0.83, and 0.82. In Pakdaman et al.'s study (2011), the total Cronbach's alpha was obtained as 0.90. In this study, the total Cronbach's alpha was obtained as 0.86 and the Cronbach's alpha for trust, communication, and alienation subscales was obtained as 0.82, 0.51, and 0.75.

Results

The linearity F-test and Kolomogrove – Smirinov test were performed in order to prove the linearity and normality of the research variables. The results showed that P-value < 0.05 was significant and a sign of linearity of the research variables in the linearity test. Kolomogrove – Smirinov test was conducted and P-value > 0.05 showed the normality of the variables.

Table 1 shows the correlation matrix of variables. The results indicated a significant correlation between family functioning and quality of attachment, family functioning and internalizing and externalizing disorders, and the quality of attachment and internalizing and externalizing disorders. Based on the results, the more secure the family functioning, the more secure the quality of attachment and the less the internalized and externalized disorder. Moreover, the more secure the quality of attachment, the less the internalized and externalized disorders.

Table 1: Zero order correlation between study variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Attachment quality</th>
<th>Internalizing disorder</th>
<th>Externalizing disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family functioning</td>
<td>-0.201***</td>
<td>0.289**</td>
<td>0.293**</td>
</tr>
<tr>
<td>Attachment quality</td>
<td>1</td>
<td>-0.115*</td>
<td>-0.164**</td>
</tr>
</tbody>
</table>

Table 2: First order correlation between study variables

<table>
<thead>
<tr>
<th>Control variables (Attachment quality)</th>
<th>Internalizing disorder</th>
<th>Externalizing disorder</th>
</tr>
</thead>
<tbody>
<tr>
<td>family functioning</td>
<td>0.272</td>
<td>0.276</td>
</tr>
</tbody>
</table>

The results of the relative correlation of variables (Table 2) showed that when the quality of attachment was controlled, the correlation between family functioning and children's disorders did not decrease significantly. According to Baron and Kenny's procedures, as the correlation between the two variables did not only reach zero, but also decreased insignificantly after controlling the attachment variable, it can be concluded that the attachment variable cannot be considered as a mediator between family functioning and children's disorders. However, it mostly had a moderating role. To answer the research questions and determine the mediating and/or moderating role of the quality of attachment, between family functioning and internalized disorders and between family functioning and externalized disorders, the path diagram of a three-variable causal model adopted from Baron and Kenny (1986) was drawn and the calculated path coefficients are shown in the following figures. Given that the path coefficient of the quality of attachment to the internalized disorders (0.06) was not significant, the path was excluded from the model and the rest of the coefficients were statistically significant. As the indirect effect was less than the direct effect in each model, the quality of attachment cannot be considered as a mediating variable. The fit measures of the structural equation model for the two models showed that both models are verifiable (Table 3).
A series of regression equations was calculated in order to determine the mediating and/or moderating role of the quality of attachment. According to Judd and Kenny (1981), 4 conditions must exist to consider a variable as a mediator: 1) The independent variable must influence the dependent variable; 2) The independent variable must influence the mediator; 3) The mediator must influence the dependent variable provided that the effect of the independent variable is controlled; and 4) The direct effect of the independent variable would become less than the total intervention in Equation 1 provided that the effect of the mediator is controlled.

Tables 4 and 5 show the regression equations for both models. Regarding the calculated P-value (less than 0.05) in Table 6, the conditions 1 to 3 existed and as the first order path and correlation coefficients did not determine a mediating role for the quality of attachment in Model 1, this variable was considered as a moderator between family functioning and internalized disorders. Furthermore, regarding the calculated P-value (less than 0.05) in Table 5, the conditions 1 to 3 existed, yet the fourth condition did not exist due to the fact that the calculated absolute value B for the fourth equation (0.103) was not less than the absolute value B for the first equation (0.096), and the quality of attachment was considered not as a mediating variable, but a moderating variable, between family functioning and externalized disorders in children.

Table 4: the regression equations for model 1

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>R square</th>
<th>B</th>
<th>b</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression 1</td>
<td>0.289</td>
<td>0.084</td>
<td>0.088</td>
<td>0.289</td>
<td>5.712</td>
<td>0.0001</td>
</tr>
<tr>
<td>Regression 2</td>
<td>0.201</td>
<td>0.041</td>
<td>-0.078</td>
<td>-0.201</td>
<td>-4.832</td>
<td>0.0001</td>
</tr>
<tr>
<td>Regression 3</td>
<td>0.285</td>
<td>0.081</td>
<td>0.085</td>
<td>0.285</td>
<td>5.359</td>
<td>0.0001</td>
</tr>
</tbody>
</table>
1-Predictors: family functioning  
Dependent: Internalizing Disorder  
2-predictors: Family Functioning  
Dependent: attachment Quality  
3- Predictors: Family Functioning  
Dependent: Internalizing disorders.

Table 5: the regression equations for model 2

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>R square</th>
<th>B</th>
<th>b</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Regression 1</td>
<td>0.293</td>
<td>0.086</td>
<td>0.096</td>
<td>0.293</td>
<td>5.434</td>
<td>0.0001</td>
</tr>
<tr>
<td>Regression 2</td>
<td>0.201</td>
<td>0.041</td>
<td>-0.078</td>
<td>-0.201</td>
<td>-4.832</td>
<td>0.0001</td>
</tr>
<tr>
<td>Regression 3-a</td>
<td>0.296</td>
<td>0.087</td>
<td>0.097</td>
<td>0.296</td>
<td>5.215</td>
<td>0.0001</td>
</tr>
<tr>
<td>Regression 3-b</td>
<td>0.323</td>
<td>0.104</td>
<td>0.090</td>
<td>0.275</td>
<td>4.825</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

1-Predictors: family functioning  
Dependent: Externalizing Disorder  
2-predictors: Family Functioning  
Dependent: attachment Quality  
3- a. Predictors: Family Functioning  
b. Predictors: Family Functioning x attachment Quality  
Dependent: Externalizing disorders.

Discussion
The main objective of this study was to examine the mediating and moderating role of the quality of child-parent attachment in correlation between the family functioning and internalized and externalized disorders in children. In other words, this study examined the concurrent and independent role of family functioning and the quality of child-parent attachment in incidence of internalized and externalized disorders in children. Assumptions were tested in order to answer the research questions.

In determining the correlation between variables, the results showed that there was a significant correlation between family functioning and disorders in children, between the quality of child-parent attachment and disorders in children, and also between family functioning and the quality of child-parent attachment. The above result conforms to that of studies in this regard. Rensik, Ireland, & Borowsky (2004) believe that family conflicts, tense relations, divorce, and poverty along with negligence lead to internalized disorders in children. The studies by Fava and King (2008), Murray and et al (2007), Possel, Seemann, Hautzinger (2008) also associate the externalized behaviors of children to rejection, conflict, and problems related to family functioning. Tambelli and et al (2012) obtained a significant correlation between the quality of attachment and children's disorders. In their study, Pakdaman and et al (2011) also showed that more and safer attachment to parents had a negative correlation with internalized and externalized symptoms in children.

Figures of attachment are less available in families with more insecure functioning in emotional empathy, cordiality and affection, and expressing emotions and feelings, i.e., they cannot express their positive emotions such as love, kindness, and happiness, and also negative emotions such as fear, anger, and horror. Therefore, the attachment would be more insecure and the children are more likely to suffer internalizing disorders. Bowlby believes that the empathic behavior arises from the attachment instinctive behavior which plays a significant role in behavioral-emotional disorders. In respect to the externalizing disorders, the more unhealthy the behavioral control in a family, i.e., the more insecure the regulation which makes the behavioral standards and freedoms in a family, the higher the probability of the lawbreaking and aggressive behaviors in children. Davis, Gummings, & Winter's study (2006) also showed that children experience more stress when facing with their parents' anger or aggressive communications and this stress increases with continuous confrontation with the parents' anger and lack of behavioral control, and the child's use of strategies of helplessness denial and acceptance of a hostile and defensive attitude towards figures of attachment causes the incidence of aggressive and irregular behavior and externalizing disorders.

The results of the relative correlation showed that when the quality of attachment was controlled, the correlation between family functioning and children's internalized and externalized disorders did not decrease. Thus, the variable can have an independent role in incidence of children's disorders and does not
act much like a mediator. The two conceptual models were fitted and proved. The results of the regression analysis for the two models proved the moderating role of the quality of attachment.

The study by Gummings and Davise (2002) verified the hypothesis that parent-child attachment can be a mediator between family functioning and children's disorders. However, they showed that the attachment did not have a complete mediating role, but a relatively moderating role, between those two variables. The mediating role is particularly less complete in the externalized disorders model. In the present study, the quality of attachment had a moderating role in both models for children's disorders as the role was more obvious for the internalized disorders.

Bowlby (1982) believes that attachment is based on instinctive behaviors and the child is born with behaviors whose purpose is to achieve or maintain the closeness with figures of attachment and in this respect, the attachment system is formed in the child as this system is active throughout life and reaches its maximum when facing with fear, distress, and discomfort and makes the child seek more support on the part of caregivers. In case the child interacts with caregivers who are not responsive, feelings of insecurity and uncertainty, and consequently, the insecure attachment will appear. Therefore, attachment is a need which is formed since birth in the child and can be secure or insecure and finally makes the ground for the incidence of behavioral and emotional disorders. Although this pattern is represented again in the family environment, its main root is formed in childhood. Thus, the quality of parent-child attachment itself can play an independent role in the incidence of behavioral and emotional disorders.

In short, it is concluded that family is the first and the most durable growth environment and refers to the communication among all members. Therefore, it is considered as the most influential entity in behavior and emotion of child. According to the theory of family systems, family is a set of interrelated systems as dysfunction of a system is transferred to the other systems and the total family and the presence of problems and dysfunctions in a family would become a threat to the integration of the total family. In this respect, identification of family risk factors and their mechanism can be useful in interventional programs for reducing pathological symptoms of children or protecting them against family risk factors as the identification of individual risk factors and protective factors in children can be useful.

**Application:** As the incidence of disorders in children during early years of growth can last up to the next periods, risk and protective factors can be identified in order to design programs for preventing incidence of children's disorders. Moreover, the incidence or durability of disorders can be reduced by teaching these to parents.

**Limitations and Recommendations:** The samples of this study included 11-12 years old children, so that, the results could not be generalized to other age groups. Therefore, it is suggested to perform similar research on other age groups in order to able to use the adolescent self-report questionnaire and the samples themselves can complete the behavioral-emotional disorder questionnaire. Future studies are recommended to examine other risk and protective factors for children's disorders in order to present a model on children's disorders and design more enhanced interventional programs for treating families.

**References**

of Akhenbach's experience. *Family and Child Specialized.*


