

Research Paper

The Mediating Role of Attachment Styles in the Relationship of Parent-child Relationship and Parenting Styles With Children's Behavioral Problems After Divorce

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ABSTRACT

Objectives: After the divorce of their parents, children face various behavioral problems, and the attachment styles of the parents and their parenting styles will affect these problems. This research assesses the mediating role of attachment styles in the relationship between parent-child relationships and parenting styles with children's behavioral problems after divorce.

Methods: The investigation was classified as a descriptive-correlation type. The population consisted of mothers of children aged 6 to 10 years who had undergone divorce proceedings at the Shahid Bahonar Judicial Institute's Welfare Department in Tehran City, Iran, during the first half of 2022. A convenience sampling method was used to select 268 mothers based on a correlation plan. They completed the child behavior inventory (CBCL), parent-child relationships survey questionnaire (PCRS), parenting styles inventory (PSI), and revised attachment style survey (RAAS). The research hypotheses were tested using the smart partial least squares in structural equation modeling.

Results: The assessment of the research tools' reliability was conducted via the Cronbach α method and the composite reliability coefficient, with all variables showing a coefficient of above 0.7, indicating acceptable reliability. The validity of the questionnaire was evaluated using the average variance extracted, which exceeded 0.4, indicating relatively acceptable validity. The assessment of the adequacy of the structural model involved analyzing important coefficients of Z, R², and Q², with the obtained results indicating an appropriate fit. The results displayed that the mediating role of anxious-ambivalent attachment style and avoidant attachment style is evident in the association between authoritarian and permissive parenting styles and the parent-child relationship, particularly concerning children's behavioral problems ($\beta=0.184, P<0.05$; $\beta=0.019, P<0.01$). Secure attachment style serves as a mediating role (partial role) in the association between authoritarian, authoritative, and permissive parenting style and parent-child relationship with children's behavioral problems ($\beta=-0.364, P<0.05$; $\beta=-0.096, P<0.01$; $\beta=0.056, P<0.05$).

Discussion: Avoidant and secure attachment styles can mitigate the impact of permissive and authoritarian parenting styles by mediating roles in the association between parent-child relationships and parenting styles with children's behavioral problems after divorce. They also highlight the emphasis on maintaining positive parent-child relationships and implementing authoritative parenting styles to reduce children's behavioral problems following. Further research is needed to address and assess concerns regarding children's behavioral problems after divorce.

Keywords:

Child, Parenting, Divorce,
Mothers, Behavioral problem,
Parents, Questionnaire

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Highlights

- Children's behavioral problems are negatively correlated with parent-child relationships, authoritative parenting style, and both avoidant and secure attachment styles.
- Children's behavioral problems are strongly influenced by the permissive parenting style, authoritarian parenting style, and anxious-ambivalent attachment style.
- Anxious-ambivalent attachment style is negatively influenced by parent-child relationships and authoritarian parenting styles, while anxious-ambivalent attachment style is positively influenced by permissive and authoritarian parenting styles.

Plain Language Summary

When parents go through a divorce, it can disrupt the parent-child relationship and negatively affect behaviors in children. The study demonstrated that children who have undergone the process of divorce exhibit elevated levels of behavioral difficulties compared to children who come from families that have not experienced marital dissolution. Furthermore, the study highlighted the role of different parenting styles in influencing children's behavioral problems after divorce. Authoritative parenting, characterized by warmth, support, and clear boundaries, was found to be associated with lower levels of behavioral problems in children. On the other hand, the presence of permissive and authoritarian parenting styles, characterized by a lack of discipline or excessive control, is associated with elevated levels of behavioral problems. The examination further scrutinized diverse attachment styles, which pertain to the emotional connection between parents and their offspring. Anxious-ambivalent attachment style, characterized by fear of abandonment and clinginess, was found; accordingly, children who have permissive or authoritarian parents may develop an anxious-ambivalent attachment style, which in turn increases their behavioral problems. Additionally, the study found that children who possess a secure attachment style, characterized by trust and confidence in their parents, were found to have lower levels of behavioral problems. Conversely, children exhibiting an avoidant attachment style, which is characterized by emotional detachment and a tendency to avoid intimacy, demonstrated a greater propensity for experiencing elevated levels of behavioral difficulties. Overall, the research emphasizes the significance of upholding favorable parent-child connections and using authoritative parenting styles to mitigate the negative effects of divorce on behavioral difficulties. It also emphasizes the role of attachment styles in mediating these effects and suggests that following a divorce, the psychological well-being of children can be positively influenced by the establishment of a secure attachment style.

Introduction

Some of the short-term effects of divorce include emotional distress, confusion, and a sense of loss for both children and parents. Children may experience feelings of sadness, anger, and anxiety as they navigate the changes in their family structure. They may also struggle with adjusting to new routines and living arrangements. In the long term, children of divorce may face a higher risk of academic difficulties, lower educational attainment, and financial instability. They may also have a higher likelihood of engaging in risky behaviors, such as substance abuse and early sexual activity. These effects can persist into adulthood and impact their overall well-being and quality of life [1]. Divorce can also have social effects, as it often leads to changes

in social networks and support systems. Children may lose contact with extended family members or friends due to changes in living arrangements. They may also experience stigma or judgment from others, which can affect their self-esteem and social relationships [1]. Not all children of divorce will experience these negative effects. Various factors, such as the child's age, temperament, and level of parental conflict can influence how they are impacted by divorce. Additionally, the presence of supportive relationships, both within and outside the family, can help mitigate some of the negative effects. Overall, divorce is a complex and challenging experience for children and families. Understanding the potential effects and implementing strategies to support children's well-being is crucial in helping them navigate this difficult transition [1]. Behavioral and emotional problems are a wide range of children's psychological

problems. A range of psychological conditions are encompassed within this classification, such as disruptive behavior disorders, depression, anxiety, and pervasive developmental disorders. These conditions can be further categorized into two distinct groups known as internalizing and externalizing problems [2]. The result of the study confirmed that childhood adversities can expose successive generations of families to the consequences of poorer health and vulnerability to behavioral and mental health problems [3].

Epidemiological studies have shown that girls are more likely than boys to experience behavioral and emotional problems, and these differences tend to become more pronounced during adolescence. Girls also tend to develop these problems at a faster rate than boys. Specifically, girls are more prone to psychological aspects that implicate the development of anxiety, aggression, and depression. Additionally, there are gender disparities in the prevalence of anxiety disorders, with 15% of women and 11% of men reporting such problems associated with life events. Overall, 6.6% of women and 6.3% of men experience generalized behavioral and emotional problems [3].

The parent-child relationship is defined as a unique relationship that creates security and love [4]. It serves as the child's first introduction to the world of communication. Feelings of love, intimacy, and security are directly influenced by these relationships [4]. There is evidence that highlights the significant importance of the parent-child relationship in a child's development. The developmental trajectory of children can be significantly affected by maternal depression and the personality traits of the mother. Children with depressed parents are 2 to 5 times more likely to develop behavioral problems compared to children with non-depressed parents. Maternal depression also increases the risk of child harm and externalizing behaviors [5].

Studies in the domain of behavioral issues have frequently found that individuals who have encountered adversity during their childhood are more prone to having offspring who also face hardships in adulthood [6, 7]. Particularly, when considering the adversities experienced by mothers during their childhood, including instances of depression, such adversities are linked to internal and external challenges in their children [8].

Parenting is a multifaceted endeavor encompassing various specific behaviors employed by each parent individually or in collaboration with one another to shape their child's conduct [9]. Bamerind's preliminary

research primarily examined how different patterns of parental authority impact children's growth and development. Bamerind utilized the notion of parental control to describe the actions taken by parents to assimilate their child into both the family and society by fostering behavioral obedience [10]. Furthermore, Bamerind introduced three distinct parenting styles based on the two dimensions of acceptance and control. These styles include authoritative parenting categorized by high stages of control and responsiveness, authoritarian parenting characterized by high levels of control but low stages of responsiveness, and permissive parenting considered by low levels of control but high responsiveness [10].

Hazan and Shaver established that the process of attachment continues into adulthood, highlighting the importance of emotional love and the development of three distinct communication methods (secure, avoidant, and anxious-ambivalent [insecure]), which correspond to the three primary attachment styles [11]. Research has indicated that individuals with a secure internal pattern of action tend to exhibit low levels of avoidance in relationships but experience more conflicts within couples [11]. Conversely, those with an anxious-ambivalent attachment style display contradictory, unreliable, and invalid responses when faced with their child's stress. Meanwhile, persons with an avoidant attachment style consistently provide negative responses to their child, often appearing cold, unfriendly, and driven by anger. This avoidant attachment style is linked to less maternal sensitivity [12]. Moreover, the presence of a meaningful and noteworthy association can be observed between the authoritative parenting style and ambivalent and avoidant attachment styles. Conversely, easy and authoritarian parenting styles exhibit a positive and significant relationship with ambivalent and avoidant attachment styles [13]. Additionally, the differential neural responses of mothers toward positive and negative emotions are associated with their ability to provide sensitive caregiving. The experience of anxiety and depression is a psychological outcome that arises from insecure attachment styles in stressful circumstances, and the psychological significance of secure attachment styles in such situations is mental peace [14].

Based on the aforementioned information, certain characteristics and mental states of parents, such as personality traits, attachment styles, and educational approaches, have both positive and negative impacts on the mental well-being of their children. In recent times, the global divorce rate has been increasing steadily. According to reports published using UN data from 2022 onwards, Russia currently holds the highest divorce rate in the

world, with 4.8 divorces per 1000 individuals. On the other hand, Iran ranks 12th with a divorce rate of 2.3 per 1000 individuals. Overall, one of the most crucial factors influencing the psychological and social development of individuals is the parent-child relationship, which holds immense significance in a child's formative years. The quality of these relationships during early childhood serves as the foundation for future cognitive, social, and emotional development [15]. Inadequate parenting styles and inappropriate parent-child interactions during crucial developmental periods can lead to communication difficulties and ultimately render children susceptible to disorders, such as anxiety, behavioral problems, and psychological harm. Additionally, individuals with an anxious attachment style tend to provide inconsistent and unreliable responses to their child's stress, while those with an avoidant attachment style consistently respond negatively, often insincerely and angrily. The avoidant attachment style is closely linked to low maternal sensitivity. The education provided by those who spend the most time with the child and have the greatest influence on them increases the likelihood of reducing inappropriate behaviors in the child. Furthermore, the attachment style of parents also impacts the occurrence of behavioral issues in their children [16]. Based on the existing research literature, the Figure 1 illustrates the proposed study model in a visual format.

Therefore, the primary focus of the present investigation revolves around the crucial matter of acknowledging the absence of exploration into the mediating influence of parents' attachment styles in prior research studies. This study hypothesizes that attachment styles have a mediating role in the relationship between parent-child relationships and parents' parenting styles with children's behavioral problems after divorce.

Materials and Methods

This investigation was classified as a descriptive-correlation study. The population of this investigation included mothers of children aged 6 to 10 years who had a divorce statement in the Welfare Department of Shahid Bahonar Judicial Institute in the first half year 2022 in Tehran City, Iran. There were 413 files in the institute.

The questionnaires were provided to the families by the researcher and assistant of Bahonar Judicial Institute. Considering that to fix the sample size of the study, 15 people is acceptable for each observed parameter (according to Kline, 2015) [17]. Therefore, 270 participants have been included for the sample size, considering 4 variables and 18 parameters in this study. Out of the 270

initial participants, 2 individuals were excluded because of providing incomplete data. The Kaiser-Meyer-Olkin measure of sampling adequacy index is an index of sampling competence that tests the smallness of the partial correlation between the variables; accordingly, it tests the potential impact of underlying and essential factors on the variability of research variables is a subject of inquiry, determining whether these factors contribute to the variance. The index falls within a range of 0 to 1. If it approaches one, the data is appropriate for factor analysis. Conversely, if it is <0.6, the data is not suitable for factor analysis. This test shows whether the sample size is sufficient to perform confirmatory factor analysis. Since Kaiser-Meyer-Olkin was >0.6 (0.843) and Bartlett is significant, the adequacy of the sample size is confirmed. Significance is also recognized according to the value of significance (approximately, the chi-square=37284.750, df=3160, Sig.=0.000).

Study measures

Child behavior checklist

This inventory was developed for children between 6 to 18 years old based on Achenbach's experience-based measurement system (1991). The parent form (child behavior checklist) was utilized to measure children's behavior problems in this study [18]. The inventory has 113 items and 8 syndrome scales in two general categories of externalized problems and internalized problems, and children and adolescents encounter a range of challenges that can be categorized into eight distinct factors. These factors include anxiety and depression, isolation and depression, physical complaints, social problems, thinking problems, attention problems, rule-breaking behavior, and aggressive behavior. It is structured using a 3-point scale ranging from 0 to 2. Consequently, a rating of 0 is attributed to elements that are never exhibited in the child's behavior. A rating of 1 is assigned to situations and behaviors that are occasionally observed in the child, while a rating of 2 is designated for those that are consistently or always present in the child's behavior. In Minai's study (2015), the range from 0.63 to 0.95 was reported for internal consistency coefficients of the scales, as measured by the Cronbach α method [19]. A different study analyzed the reliability by examining the association between the subscales of the emotion-behavior sections and the overall score of this section. The results were obtained from three different sources: Parents, teachers, and children. The obtained validity coefficients were 0.62-0.88, 0.44 and -0.91 for parents, teachers, and children, respectively. Additionally, the correlation coefficients were 0.51 and -0.85 for parents and children,

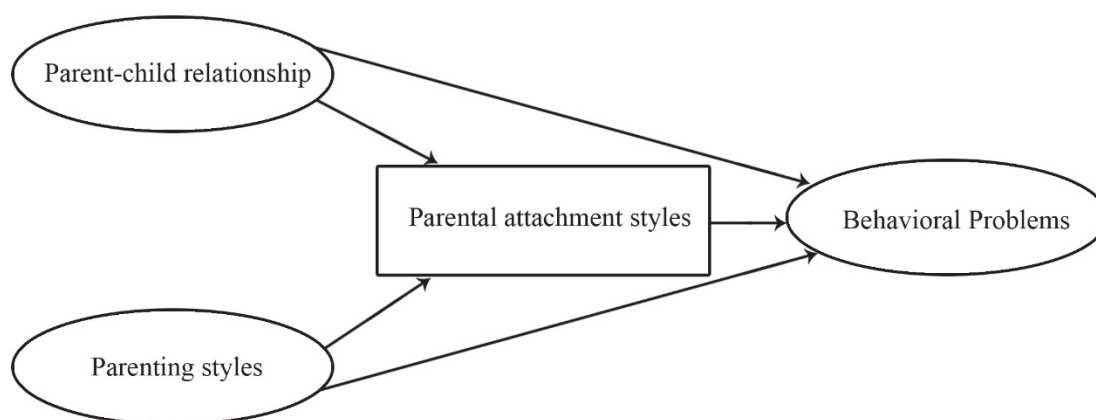


Figure 1. Conceptual model of the study

respectively. The association of the subscales for the competence part with the overall score was reported as 0.24, -0.82, 0.77, -0.93, and 0.64, -0.87, respectively, in three versions of parents, teachers and children [20]. The Cronbach α coefficients for externalizing disorders and internalizing behaviors were reported as 0.58 and 0.66, respectively in this investigation. This investigation also obtained the Cronbach α coefficients for the scales and subscales, ranging from 0.81 for the externalizing scale to 0.73 for behavioral problems (general problems).

Parent-child relationship survey questionnaire

The parent-child relationship questionnaire was developed by Fine et al. [21]. There are two forms of this scale, one to measure the child's bond with the mother and another to estimate the child's bond with the father. The mother form has been used in this study. It is scored based on a 7-point Likert scale. Items 9, 13 and 14 are scored inversely, and then the scores of the options are summed and divided by the number of options for each factor, resulting in the average score for each subscale. The overall score is determined by summing up the mean of the subscales. Fine et al. (1983) calculated the internal consistency criteria for each scale and the coefficients were obtained at 0.96 and 0.94 for the parent questionnaire, respectively [21]. Parent-child relationship questionnaire in an Iranian study was conducted on 151 female subjects (97 people) and male subjects (54 people) using a questionnaire with 48 questions (24 items for a relationship with the father and 24 items for a relationship with the mother). The Cronbach α of the 48-question mother and father questionnaire was 0.94 for male subjects and 0.93 for female subjects [22]. The reliability coefficient of the parent-child relationship scale obtained for all the questions on the scale was 0.78 in the present investigation (using the Cronbach α method).

Parenting styles inventory

Baumrind's parenting styles inventory was created by Baumrind in 1973 after long studies and she used it in many studies. This list is an adaptation of the theory of parental authority, which is based on the theory of Baumrind (1971), from three patterns of liberating (permissive), authoritarian and logical authority (authoritative) of parents to investigate patterns of influence and parenting methods. This list contains 30 articles, 10 of which are permissive and 10 of authoritarian style, and the other 10 are related to authoritative style. In this questionnaire, parents indicate their opinion based on a 5-point Likert scale (from completely agree to disagree) [23]. Every individual is expected to achieve a minimum score of 10 for each style listed and the maximum score is 50. Three separate scores are obtained by adding up the scores of the subjects related to each style, and the score corresponding to each method, which is higher, is considered as the parenting style. The reliability rate of parenting styles among mothers and fathers was assessed using the test-retest method. The permissive style exhibited a reliability rate of 0.69 for mothers and 0.73 for fathers, while the authoritarian style had a reliability rate of 0.77 for mothers and 0.71 for fathers. Additionally, the authoritative style demonstrated a reliability rate of 0.75 among fathers [24]. The reliability coefficient was found for authoritative, permissive, and authoritarian methods of 0.71, 0.74 and 0.64, respectively in the present research (via the Cronbach α method).

Revised adult attachment scale

The adult attachment scale, which was revised by Collins and Read in 1990, measures the skills of creating relationships and the way of forming attachment relationships, about the faces of attachment, in a self-report form, and the theoretical basis of this test is attachment

theory. This scale consists of three subscales of secure, avoidant, and anxious-ambivalent attachment styles [25]. This scale has 18 items and respondents express their opinion with each of the statements based on a 5-point Likert scale. The test-retest reliability coefficient of this test has been reported for each of the three subscales of closeness, dependence, and anxiety as 0.68, 0.71 and 0.52, respectively. In contrast, the Iranian study revealed varying levels of reliability when the Cronbach α was computed. Specifically, the subscale associated with the anxious-ambivalent style exhibited the highest reliability coefficient of 0.74. Conversely, the avoidant style demonstrated the lowest reliability with a coefficient of 0.28. The secure style, on the other hand, displayed an average level of reliability with a coefficient of 0.52 [26]. The reliability coefficients for the subscales varied from 0.69 to 0.79 in the present study (via the Cronbach α method).

Statistical analysis

The data analysis started with various preliminary analyses (i.e. frequency, Mean \pm SD, Pearson correlation) to obtain an initial insight into the data. Research hypotheses were investigated using structural equation modeling methods. The data analysis section employed the partial least squares (PLS-3) method, while the comprehensive examination of the investigation's theoretical model was conducted using the SmartPLS-3 software, version 3. The review of articles published in the last decade shows the wide use of this method by researchers to analyze research data. Researchers have mentioned many reasons for using this method. Among other things, this method is the best tool for analyzing research in which the relationships between variables are complex. In addition, the PLS approach is a suitable method to measure causal relationships. In the current study, due to the presence of mediating variables and many complex relationships between variables, as well as the presence of hidden variables, this method and the third version of the software have been used for data analysis, which has a high analytical power in these conditions. The reliability of the research tool was assessed and the composite reliability coefficient and the coefficient related to all variables are >0.7 and acceptable. To assess the questionnaire's validity, the average variance extracted was also used, which was >0.4 indicating a relatively acceptable value. Furthermore, the adequacy of the structural model has been assessed by examining the significance coefficients of Z and R^2 . The findings indicate that the model fits well. The level of significance in the tests was considered 0.05. The hypothetical mediation model was tested using the bootstrap method to examine the indirect effects.

Therefore, to ensure that the data of this research estimate the basic assumptions of structural equation modeling implementation, several main assumptions of structural equations were examined, including missing and outlier data, normality and multiple collinearities. In structural equation modeling, if raw input data is used for analysis, they must be complete and without missing values. There are several ad hoc solutions for working with incomplete data. One is the list-wise deletion, where all scores corresponding to missing data are deleted. Another empirical method for missing data is to replace such data with the mean of the variable. The method of replacing missing data with variable mean was used in this study. In the present study, to investigate univariate outlier data, the Z scores of the variables were calculated using the SPSS software, version 22. The results presented that the scores of no variable were 2 standard deviations above or below the mean. Also, to check multivariate outlier data, the Mahalanobis distance was calculated for predictor variables. If the maximum Mahalanobis distance was greater than the critical chi-square value with certain degrees of freedom (number of predictor variables), there was a multivariate outlier data problem at the $P<0.01$ level. The lowest and highest Mahalanobis distances in this research were obtained as 1.23 and 29.04, respectively. Considering that χ^2 of the table with a degree of freedom 7 at the $P=0.01$ level is equal to 18.48 and because the maximum value of Mahalanobis distance (29.04) is greater than χ^2 of the table 18.48, the presence of outlier data several variables are verified in the data. There are 2 subjects whose Mahalanobis distance is greater than 18.48 and they were considered outliers in multivariable data; hence, they were excluded from the analysis of the questions. The subjects who were excluded from the analysis of the questions were 168 and 157.

Results

The sample's demographic variables are summarized in Table 1, highlighting the unique features associated with each variable. According to the results, in the sample group, 106 individuals (36.9%) fall within the age range of 6.0-7.9 years. A total of 162 individuals, accounting for 63.1% of the population, fall within the age bracket of 8 to 0.10 years. Also, 151 people of children in the sample group (55.5%) were girls and 117 children (44.5%) were boys. A total of 86 mothers of the sample group (31.2%) have diplomas and sub-diploma education, 144 people (53.5%) have associate degrees and 38 people (15.3%) have doctorate education and above.

Table 1. Characteristics of demographic variables (n=268)

Variables	Property	No. (%)
Age category (y)	6.0-7.9	106(36.9)
	8.0-10.0	162(63.1)
Gender of the child	Boy	117(44.5)
	Girl	151(55.5)
Parents' education	≤ Diploma	86(31.2)
	Associate to master's degree	144(53.5)
	≥ PhD	38(15.3)

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In this section, the descriptive findings related to the main variables of the research hypothesis are reported in the sample group, and then the correlation coefficients are examined between the research variables in the sample group (Table 2).

Based on the findings, the Mean±SD of parent-child relationships of the parents of the children in the sample group was 61.54±13.14. In terms of parenting styles, the highest mean of the sample group is related to authoritarian parenting style (24.01±3.99) and the lowest mean in parenting styles is related to authoritative parenting style (27.77±3.81). In terms of attachment styles, the highest mean in the sample group is related to the anxious-ambivalent attachment style (19.29±8.57) and the lowest mean is related to the secure attachment style (17.92±8.94) in attachment styles. Different methods are used to evaluate the normality of data, one of which involves analyzing the shape of the distribution by cal-

culating skewness and kurtosis for the variables under study. Researchers argue that if the skewness and kurtosis values are between -2 and +2, it suggests that the variables follow a normal distribution (which the results of this study confirm).

The Pearson correlation coefficient results showed that parent-child relationships ($r=-0.38$, $P<0.01$), authoritative parenting style ($r=-0.29$, $P<0.01$), avoidant attachment style ($r=-0.16$, $P<0.01$) and secure attachment style ($r=-0.19$, $P<0.01$) have a significant negative relationship with children's behavioral problems.

The outcomes of the Kolmogorov-Smirnov test presented that the significance level for the variables of parent-child relationships, parenting styles, parental attachment styles, and children's behavioral problems is greater than the error value of 0.05 ($P>0.05$), the aforementioned details lead to the conclusion that the data

Table 2. Descriptive statistics and correlation coefficients between research variables

Variables	Mean±SD	1	2	3	4	5	6	7	8
Parent-child relationships	61.54±13.14	1							
Permissive parenting style	29.42±3.25	-0.27**	1						
Authoritative parenting style	27.77±3.81	0.34**	-0.42**	1					
Authoritarian parenting style	34.01±3.99	-0.28**	0.12*	-0.36**	1				
Avoidant attachment style	18.37±7.14	0.31**	-0.26**	0.23**	-0.20**	1			
Secure attachment style	17.92±8.94	0.34**	-0.21**	0.28**	-0.23**	0.43**	1		
Anxious-ambivalent Attachment style	19.29±8.57	-0.22**	0.18**	-0.32**	0.29**	-0.46**	-0.44**	1	
Behavioral problems of children	126.04±21.13	-0.38**	0.23**	-0.29**	0.27**	-0.16**	-0.19**	0.30**	1

* $P<0.05$, ** $P<0.01$.

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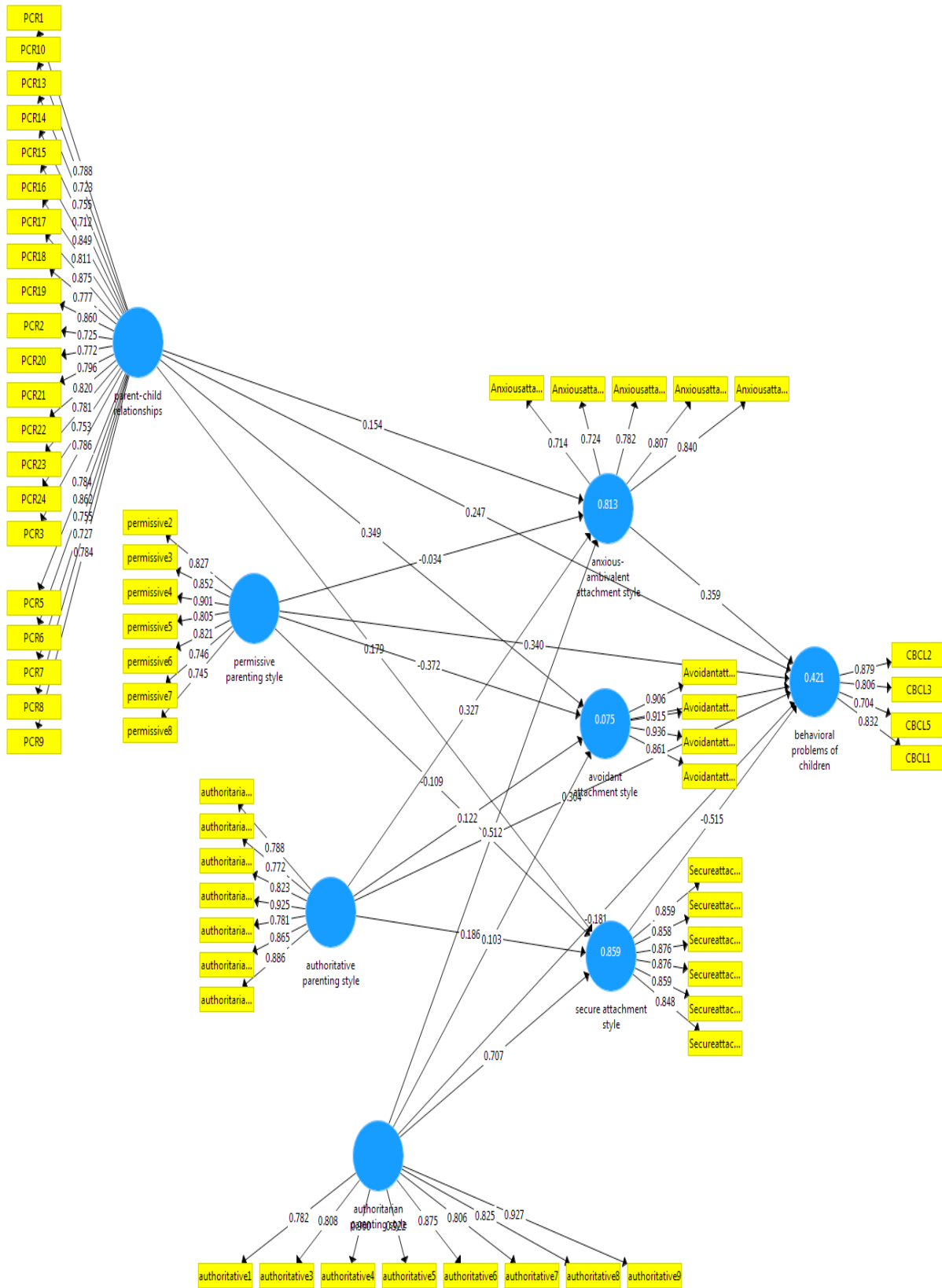


Figure 2. Corrective measurement model in standard coefficient estimation mode (factor loading)

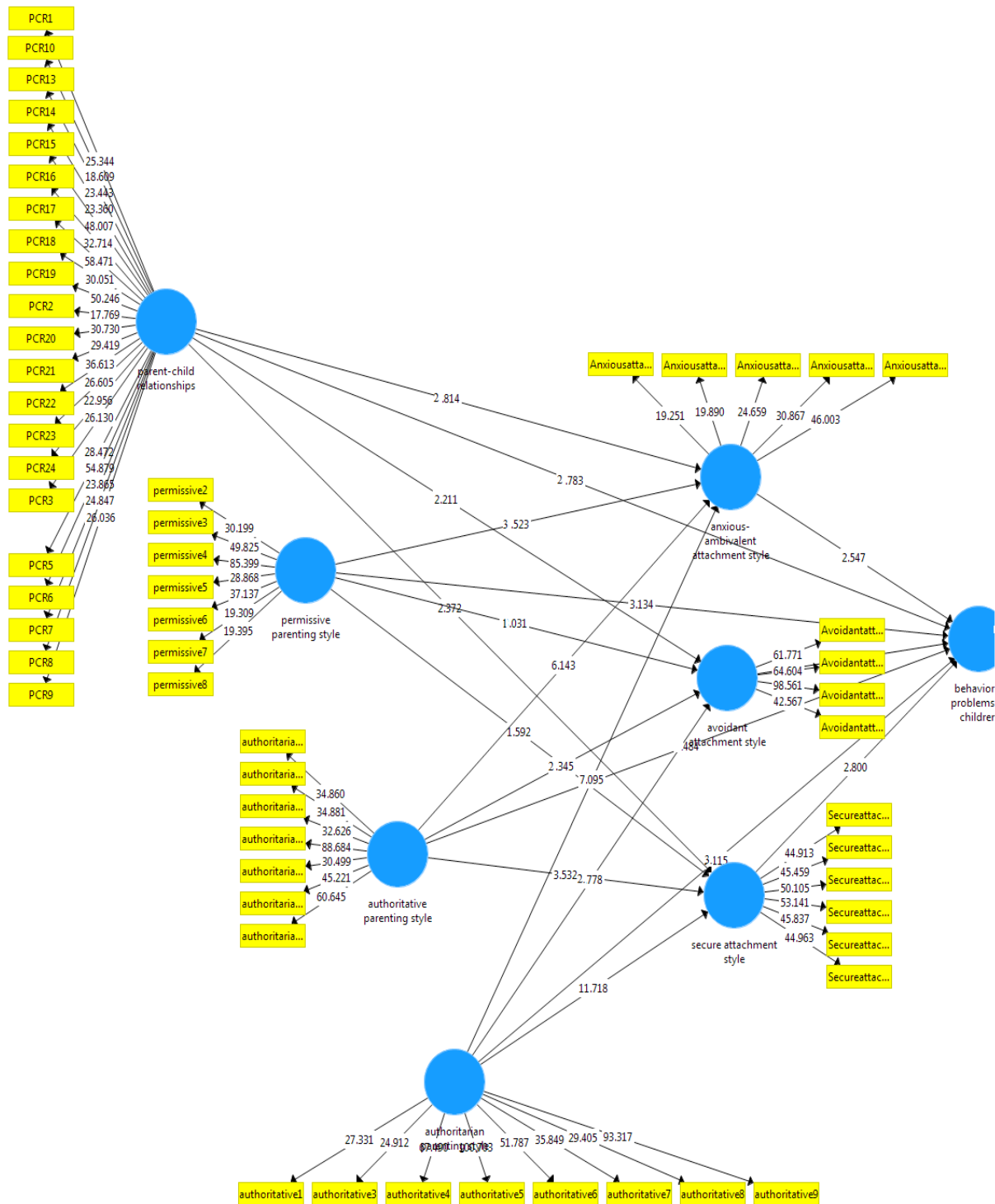


Figure 3. Corrective measurement model in non-standard coefficient estimation mode (significance of Z)

distribution of these variables is normal. After running the model in the software, given that some of the factor load values of the questions were <0.7 , these questions were removed from the calculation and the model was run again. Finally, the modified model was accepted be-

cause all factor loading values were >0.7 . The correction model is given in Figure 2 and Figure 3 in the form of path coefficient and significance coefficient.

Table 3. Model fit criteria

Variables	Saturated Model	Results
SRMR	0.097	Appropriate fit
d-ULS	19.119	Appropriate fit
d-G	23.522	Appropriate fit
Chi-square	18159.009	Appropriate fit
NFI	0.733	Appropriate fit

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Abbreviations: SRMR: Standardized root mean squared residual; NFI: Normed fit index; d-G: Geodesic discrepancy; d-ULS: Unweighted least squares discrepancy.

Table 4. Results of the hypotheses

Variables		T-statistics	β	Results
Anxious-ambivalent attachment style	Behavioral problems of children	2.547*	0.359	Accept
Authoritarian parenting style	Anxious-ambivalent attachment style	7.095**	0.512	Accept
Authoritarian parenting style	Avoidant attachment style	2.778**	0.103	Accept
Authoritarian parenting style	Behavioral problems of children	3.115**	0.181	Accept
Authoritarian parenting style	Secure attachment style	11.718**	0.707	Accept
Authoritative parenting style	Anxious-ambivalent attachment style	6.143**	0.327	Accept
Authoritative parenting style	Avoidant attachment style	2.345*	0.122	Accept
Authoritative parenting style	Behavioral problems of children	1.484	0.304	Not-accept
Authoritative parenting style	Secure attachment style	3.532**	0.186	Accept
Avoidant attachment style	Behavioral problems of children	3.370**	0.182	Accept
Parent-child relationships	Anxious-ambivalent attachment style	2.814**	0.154	Accept
Parent-child relationships	Avoidant attachment style	2.211*	0.349	Accept
Parent-child relationships	Behavioral problems of children	2.783**	0.247	Accept
Parent-child relationships	Secure attachment style	2.372*	0.179	Accept
Permissive parenting style	Anxious-ambivalent attachment style	3.523**	-0.034	Accept
Permissive parenting style	Avoidant attachment style	3.031**	-0.372	Accept
Permissive parenting style	Behavioral problems of children	3.134**	0.340	Accept
Permissive parenting style	Secure attachment style	1.592	-0.109	Not-accept
Secure attachment style	Behavioral problems of children	2.800**	-0.515	Accept

* $P < 0.05$, ** $P < 0.01$.

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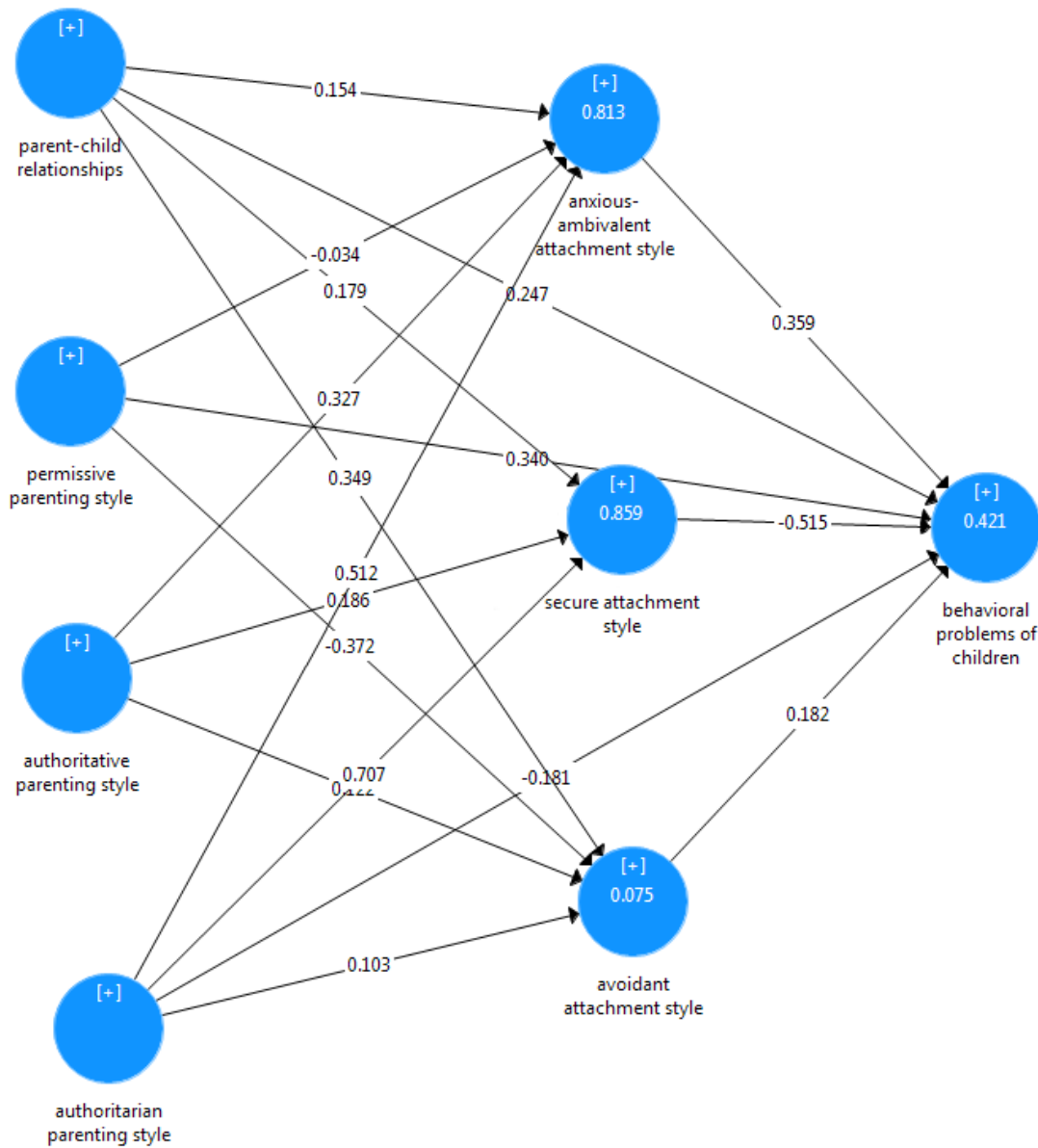


Figure 4. The modified figure

Validation of measurement tools

In this research, construct validity was investigated with convergent validity and divergent validity criteria. Convergent validity shows the degree of dependence of indicators with the relevant variable, and divergent validity compares the degree of correlation of a factor with its indicators against the correlation of that factor with other factors using the SmartPLS-3 software. To assess the reliability of the model, composite reliability and shared reliability indices were used in the partial least square method. Based on the results, the Cronbach α is greater than 0.8 for all of the variables. The obtained composite reliability indicates that the internal consistency is at its highest level, demonstrating optimal results. Also,

regarding the convergent validity, according to the outcomes of all factor loadings of the questions, after fitting, these fittings hold considerable significance, that is, the $T > 1.96$. On the other hand, the average variance extracted is > 0.5 and in the comparison of the composite reliability with the average variance extracted for each of the factors, composite reliability is greater than the average variance extracted; therefore, the study findings suggest that the research model possesses a desirable level of convergent validity.

Fornell and locker test

In this test, the correlation of hidden variables is examined. To draw the Fornell-Larker table, the average vari-

Table 5. Mediation hypothesis test results

Variables			T-statistics	β	VAF	Result
Authoritarian parenting style	Anxious-ambivalent attachment style	Behavioral problems of children	2.256*	0.184	0.5038	Accept
Authoritative parenting style	Anxious-ambivalent attachment style	Behavioral problems of children	1.342	0.118	-	Not-accept
Parent-child relationships	Anxious-ambivalent attachment style	Behavioral problems of children	2.425**	0.055	0.2828	Accept
Permissive parenting style	Anxious-ambivalent attachment style	Behavioral problems of children	3.469**	-0.012	0.2820	Accept
Authoritarian parenting style	Avoidant attachment style	Behavioral problems of children	2.745**	0.019	0.6806	Accept
Authoritative parenting style	Avoidant attachment style	Behavioral problems of children	2.227*	0.022	0.0691	Accept
Parent-child relationships	Avoidant attachment style	Behavioral problems of children	2.130*	0.161	0.5124	Accept
Permissive parenting style	Avoidant attachment style	Behavioral problems of children	2.164*	-0.068	0.2931	Accept
Authoritarian parenting style	Secure attachment style	Behavioral problems of children	2.559*	-0.364	0.6321	Accept
Authoritative parenting style	Secure attachment style	Behavioral problems of children	2.841**	-0.096	0.2981	Accept
Parent-child relationships	Secure attachment style	Behavioral problems of children	2.754**	0.092	0.3142	Accept
Permissive parenting style	Secure attachment style	Behavioral problems of children	2.137*	0.056	0.2813	Accept

* $P < 0.05$, ** $P < 0.01$.

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VAF: Variance accounted for.

ance extracted and the correlation table of the variables are needed, and all the numbers of the main diameter must be greater than the numbers of their sub-columns, which indicates correlation. It is between hidden variables.

Z significance coefficients

The Z significance index is used to fit the structural model. To establish their significance at the 95% confidence level, the coefficients must exceed 1.96. However, not all instances exhibit coefficients that surpass the threshold of 1.96, indicating a lack of statistical significance.

R² criterion

The impact of an external variable on an internal variable is shown by the R² criterion. R² values of 0.19, 0.33, and 0.67 indicate weak, moderate, and strong values, respectively. The values of the coefficients for the variable of avoidant attachment (0.075) are weak, anxious (0.813), and secure attachment (0.859) are strong, and behavioral problems (0.421) are moderate.

Q² criterion

The predictive power of a model is determined by the Q² criterion. If the Q² value for an endogenous structure is 0.02, 0.15 and 0.35, it signifies weak, medium, and strong predictive power, respectively, in terms of the external structures associated with it. The predictive power's value for the variable of avoidant attachment (0.055) is weak, anxious (0.488), secure attachment (0.639) is strong, and behavioral problems (0.257) are moderate.

Model evaluation criteria

The evaluation criteria of the software output model are shown in Table 3. The standardized root mean squared residual is desirable because it is < 0.1 . The normed fit index is also > 0.7 ; therefore, it is an appropriate fit.

Table 4 presents the outcomes of the hypothesis test, as indicated by the acquired results.

Children's behavioral problems are significantly impacted by anxious-ambivalent attachment with a significance coefficient of 2.547 ($P < 0.05$). The value of the path coefficient is 0.359, which means that with the increase in anxious attachment, children's behavioral

problems increase by 36.7%. Authoritarian parenting style has a significant consequence on anxious attachment with a significance coefficient of 7.095 ($P < 0.01$). The path coefficient is equal to 0.512, which means that authoritarian parenting style explains 51.2% of the changes in anxious attachment (if the value obtained for the significance coefficient (t) is between 1.96 and 2.58 with a probability of 95% ($\alpha = 0.05$), if it is greater than 2.58 and 5, the hypothesis is confirmed with a probability of 99% ($\alpha = 0.01$), and higher values are accepted with a probability of 99.9% ($\alpha = 0.001$). The impact of authoritative parenting style on behavioral difficulties is not significant, as indicated by a significance coefficient of 1.484, and the research hypothesis is not confirmed. A permissive parenting style with a significance coefficient of 1.592 does not have a significant effect on secure attachment and the research hypothesis is rejected. After removing these paths, Figure 4 shows the result.

The study's findings suggest that the anxious-ambivalent attachment style and the avoidant attachment style have a mediating effect on the relationship between authoritarian and permissive parenting styles and the parent-child relationship. There is a partial mediating effect for secure attachment style. The value of variance accounted for obtained for all indicators consistently falls within the range of 20% to 80%, further confirming the partial nature of this mediating role Table 5.

Discussion

This research assessed the mediating effect of attachment styles in the relationship between parent-child relationships and parenting styles with children's behavioral problems. In brief, the main conclusions are as follows. The primary findings of this study propose that the secure attachment style acts as a mediator in the association between authoritarian parenting style and behavioral difficulties in children. The research hypothesis put forward in this study has been validated, providing support for the proposed relationship between these variables. The secondary findings of the study showed that the occurrence of behavioral problems in children is significantly influenced by the quality of parent-child relationships and the research hypothesis is confirmed in this issue. Meanwhile, this study highlights the adverse association between secure attachment style and child behavioral problems. On the other hand, the avoidant and anxious-ambivalent attachment styles were also found to be significantly correlated with children's behavioral issues positively.

The primary findings of the study indicate that the presence of a secure attachment style acts as a mediator in the connection between authoritative parenting style and the occurrence of behavioral difficulties, and the research hypothesis is confirmed. The mediating effect of secure attachment style can be observed in the association between parent-child relationships and the manifestation of behavioral difficulties, and the research hypothesis is confirmed in this issue. The mediating role of secure attachment style is evident in the association between permissive parenting style and the manifestation of behavioral difficulties, and the research hypothesis is confirmed in this issue.

The mediating impact of anxious-ambivalent attachment was revealed between authoritarian parenting style and the manifestation of behavioral issues and the research hypothesis is confirmed in this issue. This study shows that an anxious-ambivalent attachment style cannot reduce the effect of parent-child relationships and authoritative parenting style on reducing behavioral problems. Anxious-ambivalent style attachment acts as a mediator in the association between parent-child relationships and behavioral issues, and the research hypothesis is confirmed in this issue. The mediating effect of anxious-ambivalent attachment was presented in the association between permissive parenting style and behavioral issues, and the research hypothesis is confirmed in this issue.

Avoidant attachment style had a mediating effect in the connection between authoritarian parenting style and children's behavioral issues, and the research hypothesis is confirmed in this issue. A mediating effect of avoidant attachment style was shown in the association between authoritative parenting style and children's behavioral issues, and the research hypothesis is confirmed in this issue. Avoidant attachment style does have a mediating effect on the impact of parent-child relationships on children's behavioral issues, and the research hypothesis is rejected in this issue. Avoidant attachment style has a mediating effect in the association between permissive parenting style and behavioral issues, and the research hypothesis is confirmed in this issue.

So far, there has been no research that has investigated the mediation of parental attachment styles in the relationship between parent-child relationships and parenting styles with behavioral problems after divorce, the results of which are comparable to the conclusions drawn from the research conducted. The role of the anxious-ambivalent attachment style is important in mediating the effect of permissive and authoritarian parenting styles

on the increase of behavioral issues after a divorce. This suggests that the anxious-ambivalent attachment style effectively sustains the encouragement of these parenting styles on the progress of behavioral issues.

This attachment style cannot have the effect of parent-child relationships and authoritative parenting style on reducing behavioral issues in children after divorce, and the effect of parent-child relationships and authoritative parenting style has been preserved on reducing children's behavioral problems [28-30]. Additionally, the existence of avoidant and secure attachment styles has been shown to lessen the effects of permissive and authoritarian parenting styles. This occurs by mediating the complex interactions between parent-child relationships and parenting styles, ultimately resulting in a decrease in behavioral issues among children, while maintaining the effect of parent-child relationships and authoritative parenting styles on reducing behavioral issues after divorce to neutralize the increase in behavioral issues after divorce [31-34].

The behavioral issues of children are greatly influenced by the relationships they have with their parents, and the research hypothesis is confirmed in this issue. The outcomes of this investigation align with earlier investigations that have examined the significance of parent-child relationships and their positive engagement as a critical element in reducing misbehavior [28-30]. The findings of this investigation demonstrate a direct correlation between the way parents interact with their children and the emotional and behavioral development of children during their early childhood, middle childhood, and adolescence stages. Furthermore, the quality of parent-child interaction often serves as a reliable indicator for predicting children's behavioral problems. According to Bamerind's theory, parents who exhibit high levels of responsiveness foster their children's individuality, courage, social competence, psychological performance, and self-regulation. Conversely, parents who exert high levels of control encourage family unity by consistently monitoring their children's activities [10].

The outcomes of the study presented that there exists a detrimental association between the authoritative parenting style and children's behavioral issues. Conversely, permissive and authoritarian parenting styles exhibited a noteworthy positive correlation with children's behavioral issues. Research conducted in the field of behavioral problems has often concluded that people with a history of childhood adversity may be more likely to have children who experience adversity as adults. The mother's history of childhood adversities, that is, adver-

sities experienced by mothers in childhood (specifically), despite depression, has been associated with internal and external problems in their children [8].

The study found that secure attachment style was linked to fewer behavioral issues in children, while both avoidant and anxious-ambivalent attachment styles were associated with more behavioral issues. The conclusions drawn from this investigation are in line with the results obtained from other studies conducted in this field [14, 31, 32]. The quality of communication between friends and peers is a reflection of the quality of communication between parents and children. Typically, a child who has a secure attachment experiences responsive and receptive behavior from their parents, as well as valuable and loving behavior from themselves. These children have a positive outlook on communication with their peers and anticipate positive responses. In contrast, children with insecure attachments may have parents who either reject them or respond inconsistently, both of which can harm their social relationships with peers [33].

According to Bowlby's attachment theory, childhood events, and maternal deprivation play a significant role in delinquent behavior. This theory emphasizes the importance of a warm, close and continuous relationship between a mother (or a permanent substitute) and a child for their mental well-being. Separation from or rejection by the mother is commonly observed in individuals with delinquent or behaviorally disordered tendencies. It should be emphasized that mothers of securely attached children demonstrate increased communication patterns and involvement with their children. Parents exhibit a higher level of attentiveness and responsiveness towards their children's needs, provide appropriate responses, exhibit positive behaviors, and display fewer negative behaviors compared to mothers of children with anxious and insecure attachments [34].

Therefore, one of the factors that can reduce children's behavioral problems after divorce is the parents' secure attachment style, because numerous extensive investigations have consistently demonstrated a significant correlation between the presence of a secure attachment in parents and children's externalized behavioral problems. These problems include externalized issues such as theft and substance abuse, as well as internalized problems like anxiety and depression. Conversely, there is a negative association between drugs and delinquency, aggressive behavior, and risky behavior. Therefore, parental attachment plays a fundamental function in protecting children from developing both internal and external problems.

Furthermore, a secure attachment relationship between parents and children is connected to an increased capacity for empathy and a decreased capacity for aggressive behavior. On the other hand, an insecure attachment, specifically the anxious-ambivalent type, acts as a mediating factor in transmitting parental anxiety to children. This anxiety increases both externalized and internalized behavioral problems in children. Insecure attachment is consistently associated with anger, lack of trust, anxiety, and fear. A secure attachment fosters positive and enduring social relationships, which are evident across various levels of socialization. Warm and intimate relationships with parents increase the likelihood of adhering to parental controls and guidelines. Additionally, these relationships serve as a preventive measure against misbehavior and deviance. They also contribute to the formation of positive social bonds, both at a societal and individual level, which discourage children from violating social and personal boundaries [35].

Conclusion

This study's findings suggest that the presence of anxious-ambivalent and avoidant attachment styles act as mediators in the association between authoritarian and permissive parenting styles and the quality of the parent-child relationship, particularly when it comes to children's behavioral difficulties. Secure attachment style acts as a mediator in the association between authoritarian, authoritative, and permissive parenting style and parent-child relationship with behavioral issues in children. The higher the level of parents' use of authoritative style and the lower their use of permissive and authoritarian styles, the fewer children's behavioral problems will be after divorce.

Study limitations

The present study had some limitations that need to be acknowledged. One limitation was related to the statistical population, the group was comprised entirely of youngsters aged 6 to 10 whose parents had undergone divorce and had a case in the support department of Shahid Bahonar Judicial Institute. This limited scope of participants restricts the generalizability of the findings. Hence, it is crucial to be cautious when applying these outcomes to other ethnic and cultural populations, as they may not necessarily hold. To enhance the generalizability of the results, it is recommended to not only employ random sampling methods but also conduct similar studies with diverse demographic characteristics. By doing so, a broader range of samples can be included, leading to more comprehensive and applicable outcomes. Con-

sidering the significant impact of parent-child relationships, parenting styles, and parental attachment styles on children's behavioral problems following divorce, it is advised to implement therapeutic training courses based on attachment style and parent-child relationships. These courses should be designed specifically for parents experiencing marital issues or on the verge of divorce. Such courses would enhance their parenting skills and reduce the incidence of children's behavioral problems post-divorce. Consequently, this would improve their educational achievements and overall societal functionality.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of **Islamic Azad University, Central Tehran Branch** (Code: IR.IAU.CTB.REC.1401.013).

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Authors' contributions

All authors equally contributed to preparing this article.

Conflict of interest

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