

**Parental Attachment Insecurity and Parenting Stress: The Mediating Role of
Parents' Perceived Impact of Children's Diabetes on the Family**

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Abstract

Introduction. Caring for a child with diabetes is a demanding and potentially stressful task for parents. Although secure attachment can be considered a resilience factor that helps an individual to cope with stressful life events, the idea that secure parents are better able to cope with a child's chronic health condition, such as diabetes, has rarely been investigated. Therefore, the aim of this study was to investigate whether attachment-related anxiety and avoidance are associated with parenting stress in parents of children and adolescents with diabetes and whether this association is mediated by parents' perception of the impact of diabetes on the family and moderated by children's age and duration of diabetes. **Methods.** A sample of 105 parents (92.4% mothers) completed self-report measures of attachment, parenting stress, and perceived impact. **Results.** Higher levels of attachment avoidance (but not anxiety) were associated with higher levels of parenting stress through an increased negative perception of the impact of diabetes. **Discussion.** This study suggests that parents with higher levels of avoidance are at higher risk of experiencing greater parenting stress and perceiving their child's condition as more burdensome.

Keywords: attachment anxiety; attachment avoidance; parenting stress; perceived impact; pediatric diabetes.

Introduction

Type 1 diabetes is one of the most common and demanding chronic health conditions in childhood (Tuomilehto, 2013). Medical regimens are intense, complex and time-consuming and include daily insulin administration by injection or pump, blood glucose monitoring several times a day, attention to dietary intake and physical activity, prevention of and intervention for hyperglycemia or hypoglycemia, and regular medical appointments (Wysocki, Buckloh, & Greco, 2009). Because parents usually take considerable responsibility for treatment management, particularly during the preadolescent years (Drotar, 2006), caring for a child with diabetes is particularly demanding and may result in substantial levels of parenting stress (Cousino & Hazan, 2013; Moreira, Frontini, Bullinger, & Canavarro, 2013; Schaaijk, Roeleveld-Versteegh, & Baar, 2013; Streisand et al., 2008; Streisand, Swift, Wickmark, Chen, & Holmes, 2005). Some studies have demonstrated that the parenting stress of parents of children with diabetes is even higher than the stress of parents of children with severe diseases, including cystic fibrosis and cancer (Hullmann et al., 2010).

Experiencing high levels of parenting stress has important repercussions not only for parents' adjustment but also for children's adjustment (Cousino & Hazen, 2013), metabolic control (Hansen, Schwartz, Weissbrod, & Taylor, 2012) and adherence to treatment (Smith, Kugler, Lewin, Duke, & Storch, 2014). Therefore, it is essential to investigate the predictors of parenting stress and its correlates to design more targeted and efficacious interventions. Previous studies have provided important information by showing that parenting stress is associated, for instance, with lower parental self-efficacy (Mitchell et al., 2009; Streisand et al., 2008), greater fear of a child's hypoglycemia (Mitchell et al., 2009; Streisand et al., 2005), and greater parental overprotection and perceived child vulnerability (Mullins et al., 2004). In the current study, we focus on the role of parental attachment insecurity and cognitive appraisals.

Individual Differences in Parenting Stress and the Role of Attachment (In)security and Cognitive Appraisals

According to adult attachment theory (Mikulincer & Shaver, 2007), the way people appraise and cope with life's adversities and stressful events and even their biological responses to stress are influenced by their levels of attachment (in)security (Berant, Mikulincer, & Florian, 2001, 2003, 2008; Diamond, 2015; Mikulincer & Florian, 1995; Mikulincer & Florian, 2001; Pietromonaco, DeBuse, & Powers, 2013; Simpson & Rholes, 2017). It is widely accepted that two dimensions of attachment (in)security underlie individual differences in the organization of the adult attachment system: attachment-related anxiety (the extent to which people worry about another person's availability or support in times of need) and attachment-related avoidance (the degree to which individuals attempt to maintain emotional distance and independence from others). A prototypically secure individual presents low scores on both dimensions (Brennan, Clark, & Shaver, 1998). According to adult attachment theory, romantic relationships are considered prototypical adult attachment relationships (Mikulincer & Shaver, 2007). Consequently, several studies on adult attachment, including those focused on parenting issues, assess individuals' attachment through the evaluation of their romantic attachment orientations (e.g., Edelstein et al., 2004; Rholes, Simpson, & Friedman, 2006; Selcuk et al., 2010).

Secure attachment seems to function as an inner psychological resource or resilience factor that helps individuals cope with life's adversities (Mikulincer & Florian, 2001). More secure individuals tend to appraise stressful circumstances positively, employ problem-solving and support-seeking coping strategies, and maintain adequate psychological well-being during stressful events (Berant et al., 2001, 2003; Schmidt, Nachtigall, Wuethrich-Martone, & Strauss, 2002). In contrast, more insecure individuals (i.e., those with higher levels of avoidance or anxiety) have been found to experience difficulties in handling life

adversities (Berant et al., 2001, 2003; Mikulincer & Florian, 1995, 2001). In general, individuals with higher levels of avoidance tend to distance themselves behaviorally and cognitively from stressful situations and to rely exclusively on themselves to cope with the situation (Mikulincer & Florian, 2001). In contrast, individuals with higher levels of anxiety tend to focus excessively on stressful situations, directing all of their attention to the situation and constantly ruminating on its causes and consequences (Mikulincer & Florian, 2001).

When the stressful event is the disease of a child, individual differences in the way parents cope with the situation are intrinsically associated with individual differences in their ability to provide care. Individuals with higher levels of avoidance have greater difficulty assuming caregiving roles (Gillath, Shaver, & Mikulincer, 2005; Rholes et al., 2006), namely in the parenting context (Mills-Koonce et al., 2011; Jones & Cassidy, 2014; Jones, Cassidy, & Shaver, 2015). They are less sensitive and responsive toward their children (Jones et al., 2015; Selcuk et al., 2010), such as when teaching a new task (Rholes, Simpson, & Blakely, 1995) or during an inoculation procedure (Edelstein et al., 2004). Higher levels of avoidance have also been found to be associated with higher levels of parenting stress (Fernandes, Muller, & Rodin, 2012; Kor, Mikulincer, & Pirutinsky, 2012; Moreira, Gouveia, Carona, Silva, & Canavarro, 2015; Rholes et al., 2006). Parents with higher levels of anxiety may also struggle to provide effective care to others and to their children. They are usually focused on and worried about their own attachment needs (Mikulincer & Shaver, 2007) and feel very anxious when other people need their support (Mikulincer, Shaver, Gillath, & Nitzberg, 2005). In the parenting context, their fear of abandonment and strong desire for closeness usually interfere with the provision of a secure base for their child's exploratory behaviors (Adam, Gunner, & Tanaka, 2004; Mikulincer & Shaver, 2007; Selcuk et al., 2010). In addition, their high self-focus frequently leads them to miss their child's signals of need and

to be unresponsive (Selcuk et al., 2010). These parents were also found to experience higher levels of parenting stress (e.g., Fernandes et al., 2012; Kor et al., 2012; Moreira et al., 2015).

Although the diagnosis and treatment of a child's chronic health condition is one of the most stressful events in parents' lives, the role of attachment (in)security in the way parents cope with a child's disease has rarely been investigated. Berant et al. (2001, 2003, 2008) conducted a 7-year longitudinal study with mothers of children with congenital heart disease and found that attachment orientations are key predictors of the way mothers cope with their child's disease. In their initial studies, Berant et al. (2001, 2003) found that attachment anxiety and avoidance measured at the time of the diagnosis predicted poor mental health, lower marital satisfaction, more threatening appraisals of motherhood tasks, and poor coping abilities one year after the child's diagnosis. Interestingly, the link between mothers' avoidance and their mental health was mediated by their appraisal of their coping abilities and their reliance on emotion-focused coping (Berant et al., 2003). In a later study (Berant et al., 2008), attachment avoidance at the time of the diagnosis was found to be the best predictor of deterioration in the mothers' marital satisfaction and mental health seven years later.

The Present Study

This study adds to the scarce literature on the implications of attachment (in)security for parents' psychological adjustment when their child has a chronic health condition. To the best of our knowledge, no previous study has investigated this issue among parents of children with diabetes, a chronic and particularly demanding condition. Therefore, the goal of this study is to investigate whether attachment anxiety and avoidance are associated with parenting stress and whether this link is mediated by parents' perception of the impact of diabetes on the family. We hypothesized that higher levels of anxiety and avoidance would be associated with increased levels of parenting stress through a more negative appraisal of the impact of diabetes. In addition, because parenting stress and perceived impact may correlate

with the disease duration (Mullins et al., 2004) and may vary according to the child's developmental stage (Moreira et al., 2013), this study also aims to examine whether the proposed indirect effects of attachment dimensions on parenting stress are moderated by children's age and duration of diabetes.

Methods

Participants and Procedure

The sample included 105 parents of children and adolescents diagnosed with type 1 diabetes. To be included in the current study, (1) parents had to be the primary caregivers of a child or adolescent diagnosed with type 1 diabetes; (2) the child/adolescent had to have received the diagnosis at least 6 months prior to the study; and (3) the child/adolescent could not have a comorbid chronic health condition other than asthma, thyroid disorders, or celiac disease. The sample was collected in the pediatric departments of two public and urban hospitals in the central region of Portugal after approval from the hospitals' Ethics Committee and Board of Directors. Parents were invited to participate during a visit to the hospital. After assessing the inclusion criteria and obtaining written informed consent, the researchers provided the parents with a battery of self-report questionnaires. The parents completed the questionnaires before or after their children's diabetes medical appointments. Participation in the study was voluntary, and no monetary or other compensation was given to the participants. Participants' sociodemographic and clinical characteristics are presented in Table 1.

(Insert Table_1)

Measures

Attachment dimensions. The Experiences in Close Relationships–Relationship Structures questionnaire (ECR-RS; Moreira, Martins, Gouveia, & Canavarro, 2015; Fraley, Heffernan, Vicary, & Brumbaugh, 2011) assesses attachment-related anxiety and avoidance

in romantic relationships. The ECR-RS is composed of nine items (e.g., “I often worry that this person doesn't really care for me”) rated on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The subscale scores consist of the mean of the items, with higher scores indicating higher avoidance and anxiety. The original ECR-RS has shown good psychometric properties, including adequate reliability ($\alpha > .80$) and construct validity. The Portuguese version revealed adequate reliability ($\alpha > .72$) and construct validity.

Perceived impact of diabetes. The Impact on Family Scale–Revised (IOF-R; Stein & Jessop, 2003; Albuquerque, Fonseca, Pereira, Nazaré, & Canavarro, 2011) assessed the parents’ appraisals of the negative impact of diabetes on the family. This measure has a unidimensional structure and comprises 15 items (e.g., “We have little desire to go out because of my child’s illness”) answered on a 4-point Likert scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The total score consists of the sum of the 15 items, with higher scores indicating a greater perception of the negative impact of the chronic condition. The original IOF-R is a reliable ($\alpha > .83$) and valid measure. The Portuguese version presented adequate internal consistency ($\alpha = .91$), temporal stability ($r = .80$) and construct validity.

Parenting stress. The Parental Distress subscale of the Parenting Stress Index–Short Form (PSI-SF; Abidin, 1995; Santos, 2008) assesses several aspects related to the distress of parenting (e.g., “I feel trapped by my responsibilities as a parent”). This subscale has 12 items answered on a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*), and the total score consists of the sum of the items, with higher scores indicating higher levels of parenting stress. The original PSI-SF has good psychometric properties, including adequate internal consistency ($\alpha = .78$) and test-retest stability ($r = .61$) in the parental distress subscale, as well as adequate construct and predictive validity (Abidin 1995; Haskett, Ahern, Ward, &

Allaire, 2006). The Portuguese version presents good psychometric properties, with adequate internal consistency in the parental distress subscale ($\alpha = .82$).

Data Analyses

Differences between parents of children (3-12 years) and parents of adolescents (13-19 years) in the study variables were examined through univariate (perceived impact and parenting stress) and multivariate analyses of variance (attachment dimensions). The duration of diabetes was included as a covariate to ensure that potential differences between age groups were due to children's age and not to the amount of time since diagnosis. Regression-based path analyses were performed with the PROCESS (Hayes, 2013) to examine whether attachment anxiety and avoidance were associated with parenting stress through the perceived impact on the family and whether this indirect effect was moderated by the child's age and the duration of diabetes. The moderators were hypothesized to affect the path linking perceived impact and parenting stress (Model 16, Hayes, 2013). Prior to the estimation of the moderated mediation model, correlations between sociodemographic and clinical variables and parenting stress were analyzed to identify variables that should be controlled in the model. All dichotomous variables were coded as 0 and 1 (see Table 1). The variables used in the construction of the products were mean-centered. In the absence of significant interactions, the model was re-estimated after the removal of nonsignificant interactions (simple mediation model; Model 4 in Hayes, 2013). A bootstrapping procedure using 10000 resamples was used to assess the indirect effects. This procedure creates 95% bias-corrected and accelerated confidence intervals (95% BCaCIs) of the indirect effects, which are considered significant if zero is not contained within the lower and upper CIs.

Results

Descriptive Statistics and Correlations

Table 2 presents the descriptive statistics of the study variables according to the child's age categories and the Pearson's correlations for the study variables. No significant differences were found in any variable.

Insert Table_2

Moderated Mediation Analyses

Correlations between parenting stress and sociodemographic and clinical variables were analyzed to identify potential covariates that should be introduced in the model. A significant association was found only between parents' educational level and parenting stress ($r = -.26, p = .008$). Nonsignificant correlations were found between parenting stress and parents' gender ($r = .10, p = .317$), parents' age ($r = .16, p = .103$), parents' marital status ($r = .00, p = .996$), area of residence ($r = .12, p = .216$), children's age ($r = .11, p = .253$), children's gender ($r = -.15, p = .136$), duration of T1D ($r = .10, p = .319$), HbA1C ($r = -.03, p = .828$), insulin regimen ($r = .09, p = .370$), and the presence of a comorbid health condition ($r = .12, p = .225$). Therefore, only parents' education was introduced as a covariate in the model to remove its influence on the quantification of the associations in the mediation model.

The moderated mediation analyses demonstrated that the indirect effect of attachment dimensions on parenting stress via perceived impact was not moderated by the child's age and the duration of diabetes. Specifically, the interaction between perceived impact and age ($b = -0.02, p = .492$) and the interaction between perceived impact and duration of diabetes ($b = 0.01, p = .751$) were not significant.

Because no significant interactions were found, a simple mediation model was examined (see Figure 1). As presented in Figure 1, attachment avoidance was significantly associated with perceived impact ($b = 1.87, p = .005$) in contrast to attachment anxiety, which was not significantly associated with this variable ($b = 0.40, p = .359$), in a model explaining 16.65% of the perceived impact variance, $F(3,101) = 6.73, p < .001$. With regard to the direct

effects of attachment dimensions on parenting stress, whereas higher levels of avoidance were significantly associated with higher levels of parenting stress ($b = 3.48, p < .001$), the association between anxiety and parenting stress was not significant ($b = 0.35, p = .335$). In addition, a more negative perception of the impact of diabetes on the family was significantly associated with higher levels of parenting stress ($b = 0.44, p < .001$). These variables explained 57.75% of the parenting stress variance, $F(4,100) = 34.17, p < .001$. With regard to the indirect effects, whereas attachment avoidance was found to be indirectly associated with parenting stress (point estimate = 0.83, $SE = 0.33$, 95%BCaCI = 0.27/1.57), the indirect effect of attachment anxiety on parenting stress was not significant (point estimate = 0.18, $SE = 0.20$, 95%BCaCI = -0.19/0.55).

Insert Figure_1

Discussion

The main finding of this study was that higher levels of attachment avoidance (but not anxiety) were associated with higher levels of parenting stress, both directly and through an increased negative perception of the impact of diabetes on the family. This result partially corroborates our hypothesis and is in line with previous studies that found a significant link between avoidance and parenting stress in nonclinical populations (Moreira, Gouveia, et al., 2015; Rholes et al., 2006) as well as between avoidance and mental health in parents of children with a congenital heart disease (Berant et al., 2001, 2002, 2008). Caring for a child with diabetes may be extremely stressful for parents with higher levels of avoidance because of their greater difficulty in coping effectively with stressful circumstances (Mikulincer & Florian, 2001) and in assuming caregiving roles (Jones et al., 2015; Rholes et al., 2006). Rholes et al. (2006) argued that more avoidant parents usually experience an “approach-avoidance conflict” (p. 282) because although they want to detach from others and avoid the activation of their attachment system, their parental role implies the provision of sensitive and

responsive care to their children. Having a child with a chronic condition that requires intensive care and constant monitoring may amplify this conflict and lead parents to feel increased levels of stress as well as to experience their child's disease as a significant burden in their lives. Moreover, it is important to consider that individuals with higher levels of avoidance have negative caregiving representations. Therefore, they usually perceive themselves as less able to provide effective care to others, and they tend to evaluate others as less worthy of help (Reizer & Mikulincer, 2007; Moreira & Canavarro, 2015), which may also explain our results.

According to our hypothesis and corroborating previous studies (Berant et al., 2001, 2003), this association between avoidance and parenting stress was mediated by parents' perception of the impact of diabetes on the family. For the reasons presented, parents with higher levels of avoidance are likely to perceive their child's diabetes as interfering more with their lives and to appraise it in more threatening and negative terms (Mikulincer & Florian, 2001). Therefore, the stress parents feel is explained not only by their levels of avoidance but also by their negative appraisals of the repercussions of diabetes on their lives. Moreover, we found that this indirect effect is independent of the duration of the disease and of the child's age. Therefore, notwithstanding the cross-sectional design of our study, we may assume that the relationships among the study variables are relatively stable and, therefore, that the associations among parents' attachment orientations, their appraisals of the impact of the disease, and their levels of stress are significant regardless of the disease phase or developmental stage of the child. However, given the cross-sectional design, it is important to note that these associations may be bidirectional. Therefore, it is also possible that parenting stress influences parents' cognitive appraisals and, consequently, their perceptions of security in the relationship with their partners.

Although we found a significant correlation between attachment anxiety and parenting stress, in contrast to our hypotheses, no significant direct or indirect effects were found between these variables in the mediation model. One possible explanation is that caring for a child who requires constant and intense assistance can promote a sense of intimacy and closeness that these individuals desire in close relationships. A similar argument was presented by Jones, Brett, Ehrlich, Lejuez, and Cassidy (2014) to explain the absence of significant associations between attachment anxiety and negative maternal responses to adolescents' negative emotions. These authors suggested that more anxious parents might not have perceived the negative emotions as particularly distressing because the distressed person was their own child and because the adolescent's negative emotions might have promoted a greater sense of intimacy and closeness in the relationship rather than promoting distress or harsh responses.

Limitations and Clinical Implications

The current study presents some limitations that should be noted. The first limitation is its cross-sectional design, which impedes the determination of causal relationships between variables. Second, 92.4% of the primary caregivers were mothers. Although we intended to recruit primary caregivers regardless of gender, it would be interesting to increase the number of fathers and to assess role differences. Third, the majority of parents had only completed basic or secondary education. Given that the parents' educational levels were found to be correlated with their levels of parenting stress, it would be relevant for future studies to include a larger number of participants with higher education. Fourth, the representativeness of the sample cannot be guaranteed because the parents were recruited from a convenience sample at only two public hospitals in the central region of Portugal. Finally, we assessed parents' attachment orientations only in romantic relationships. Although romantic relationships are considered prototypical adult attachment relationships, it is important to note

that people's attachment orientations may differ depending on the relationship (Fraley et al., 2011; Moreira, Martins, et al., 2015). Therefore, it would be interesting for future studies to analyze attachment to different figures with regard to the associations explored in this study.

Despite these limitations, our findings have important clinical implications. They suggest that parents with high levels of avoidance are at particularly high risk of experiencing their child's diabetes as interfering more in their lives and, consequently, may feel higher levels of parenting stress. Therefore, it is important for health professionals to assess levels of parenting stress as well as attachment orientations and cognitive appraisals. Parenting interventions aimed at reducing parenting stress may be particularly useful for parents with higher levels of avoidance and should focus on parents' appraisals of the degree to which family life is affected by the child's diabetes, either to change those perceptions or to empower parents to cope better with the demands and strains of caring for a child with this chronic condition. Additionally, these parents should be encouraged to seek and accept social support and to share their concerns and feelings about their parenting role and the demands of their child's disease with significant others, particularly their partners.

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Table 1. *Participants' sociodemographic and clinical characteristics*

N = 105	
Child's characteristics	
Age (years) <i>M (SD)</i>	12.40 (3.85)
Duration of T1D (months) <i>M (SD)</i>	64.74 (46.67)
Age group	
3-12 years	48.6%
13-18 years	51.4%
Gender	
Male	41.3%
Female	58.7%
HbA1C <i>M (SD)</i>	7.67 (1.15)
Insulin regimen	
Multiple daily injections	91.8%
Insulin pump	8.2%
Comorbid health condition	
None	81%
Asthma, celiac disease, or thyroid disorder	19%
Parents' characteristics	
Age (years) <i>M (SD)</i>	41.93 (6.22)
Parent gender	
Male	7.6%
Female	92.4%
Marital status	
Living with a partner	91.3%
Not living with a partner	8.7%
Education	
Basic or secondary studies	78.1%
University or post-graduate studies	21.9%
Area of residence	
Urban	48.6%
Rural	51.4%
<p><i>Note.</i> Age group: 0 = 3-12 years, 1 = 13-18 years; Child's gender: 0 = male, 1 = female; Insulin regimen: 0 = insulin pump, 1 = multiple injections; Comorbid condition: 0 = none, 1 = comorbid condition; Parent's gender: 0 = male, 1 = female; Marital status: 0 = not living with a partner, 1 = living with a partner; Parents' educational: 0 = basic/secondary studies, 1 = university/post-graduate studies; Area of residence: 0 = rural, 1 = urban.</p>	

Table 2. *Descriptive statistics, comparison analyses, Cronbach's alphas, and correlations among study variables*

	Parents of children <i>n</i> = 51	Parents of adolescents <i>n</i> = 54	Comparison analyses	α	1	2	3
	<i>M</i> (<i>SD</i>)						
1. Perceived impact	28.88 (7.78)	26.52 (7.91)	$F(1, 102) = 2.18, p = .143, \eta^2 = .02$.90	---		
2. Parenting stress	25.96 (8.85)	29.78 (9.41)	$F(1, 102) = 3.52, p = .064, \eta^2 = .03$.89	.59**	---	
3. Attachment anxiety	2.53 (1.69)	3.18 (2.01)	Wilk's lambda = .980,	.89	.25*	.39**	---
4. Attachment avoidance	2.09 (1.10)	2.57 (1.32)	$F(2, 101) = 1.01, p = .368, \eta^2 = .02$.84	.35**	.64**	.45**

* $p < .05$; ** $p < .01$

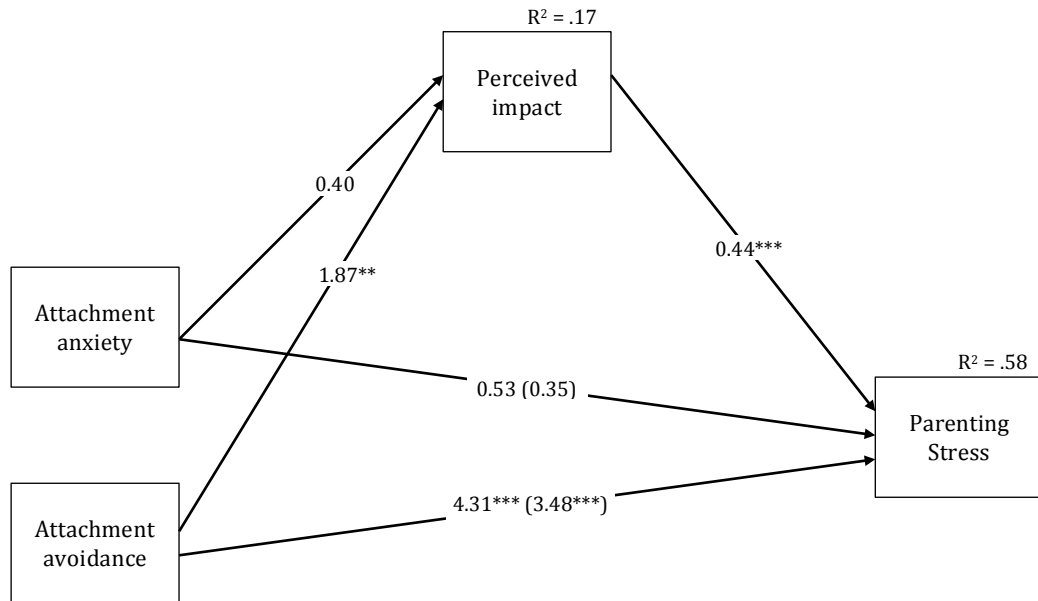


Figure 1. *Statistical diagram of the mediation model for the presumed influence of parents' perceived impact of diabetes on the family on the association between attachment dimensions and parenting stress.*

Note. Path values represent unstandardized regression coefficients. In the arrow linking attachment dimensions and parenting stress, the value outside the parentheses represents the total effect of attachment dimensions and parenting stress. The value in the parentheses represents the direct effect, from the bootstrapping analysis, of attachment dimensions on parenting stress after inclusion of the mediator.

* $p < .05$; ** $p < .01$; *** $p < .001$.