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Exploring the relationship between psychopathy and close relationships in a sample of young Portuguese adults

Carolina Queirós Monteiro[1] · Margarida Simões[1,2,3] · Inês Carvalho Relva[1,2,3,4]

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Abstract
The literature reveals that psychopathy is strongly associated with attachment avoidance, based on the denial of the importance of close relationships and the absence of anxiety related to rejection. These dimensions can be evaluated in the scope of parental relationships, and given the scarcity of literature that deals with the relationship between these and psychopathy, the present study arises, which aims to: analyze the associations between the dimensions of psychopathy and experiences in close relationships; to verify the existence of differences in the dimensions of experiences in close relationships according to gender and to test the mediating effect of psychopathy on the association between gender and experiences in close relationships. The sample consisted of 319 young adults aged between 18 and 30 years (M = 23.19; SD = 2.40). A sociodemographic questionnaire, the Self-Report Psycopathy Scale-III (SRP-III) and The Experiences in Close Relationships–Relationship Structures Questionnaire (ECR-RS) were used as instruments. The main results suggest that psychopathy is positively associated with avoidance and negatively with attachment anxiety and that it demonstrates a total mediation and an absence of mediation in the relationship between gender and the dimensions of attachment experienced in close relationships. That said, the importance of promoting programs that alert to the importance of positive interaction in parent–child relationships is verified and the innovative character of the present study is highlighted.

Keywords Psychopathy · Close relationships · Attachment · Young adults · SRP-III · ECR-RS

Introduction

Psychopathy, also known as psychopathic personality, refers to a pathological character syndrome marked by a prominent behavioral deviation, as well as distinct emotional and interpersonal characteristics (Hare, 1996). The interest and research surrounding the topic are due to the reference it offers, contributing to the study of basic affective and behavioral control processes, as individuals with psychopathy exhibit deficient inhibitory control and emotional reactivity (Patrick et al., 2009). This author states that the attention given to psychopathy by researchers is also explained by the impact its development and manifestation have on society: offenders diagnosed with the disorder are responsible for a disproportionate amount of particularly violent crimes. Englebert (2015) states that psychopathic personality can be considered as a way of adapting to the world through interpersonal and affective experiences; in contrast, the antisocial dimension is essentially a set of transgressive behaviors of laws and social standards.

Psychopathy is usually evaluated based on two groups of personality traits. The first group, known as Factor 1 or primary psychopathy, involves interpersonal and emotional characteristics. The second group, called Factor 2 or secondary psychopathy, consists of traits associated with a parasitic lifestyle and antisocial behavior (Beaver et al., 2016). Both factors capture the elements of psychopathy, but its core focuses on personality traits, such fearlessness,

✉ Margarida Simões
margaridas@utad.pt

[1] Departament of Education and Psychology, University of Trás-os-Montes and Alto Douro, Quinta de Prados, 5000-801 Vila Real, Portugal

[2] Centre for Research and Intervention in Education (CIIE), 4200-135 Porto, Portugal

[3] Research Center in Sports Sciences, Health Sciences and Human Development (CIDESD), Edifício Ciências de Desporto, 5001-801 Vila Real, Portugal

[4] Center for Psychology at the University of Porto (CPUP), Rua Alfredo Allen, 4200-135 Porto, Portugal

callousness, manipulativeness and deceitfulness (Saltoğlu & Uysal Irak, 2022). Moreover, according to Marcus et al. (2004) and Poythress and Hall (2011), psychopathic traits exist on a continuum, along with normal personality, implying that there are individuals in the general population who exhibit psychopathic characteristics to varying degrees.

One of the fundamental characteristics of psychopathy is based on an egocentric orientation towards others, as well as a failure to form true connections with them. This can then be understood through attachment theory, which focuses on the mechanisms underlying the bonds maintained with others (Conradi et al., 2016). Attachment theory is reported as "a way of conceptualizing the propensity of human beings to make strong affectional bonds to particular others and of explaining the many forms of emotional distress and personality disturbance, including anxiety, anger, depression and emotional detachment, to which unwilling separation and loss give rise" (Bowlby, 1977, p. 201).

In 1978, Ainsworth and her colleagues developed an experiment—The Strange Situation—to study the attachment between a baby and their caregiver. In this experiment, 12-month-old babies and their mothers were systematically separated and reunited. The observed results showed that approximately 60% of the babies were upset when the mother left the room, but after her return, they sought her out and were easily comforted by her—these children were called secure. Others, approximately 20%, were initially uncomfortable and, after separation, very distressed, consequently demonstrating difficulty in being comforted and exhibiting a punishing behavior because the mother had abandoned them, but also the desire to be consoled—these were classified as insecure-resistant or anxious-ambivalent. The rest of the children observed in this experiment did not seem very distressed by the separation, and after it, they avoided contact with the caregiver, diverting their attention to their toys—these were classified by Ainsworth as insecure-avoidant. A fourth classification was added by Mary Main (1990)—disorganized/disoriented attachment—used to describe children who exhibited behavior incongruent with the goals of the attachment system. Disorganized attachment is characteristic of individuals exposed to interpersonal infant abuse, and they may present unresolved traumas and conflicting attributes of anxious and avoidant attachment, along with an inconsistent pattern of responses to attachment-related stimuli (Di Carlo et al., 2011; Main, 1990).

Attachment theory, in addition to its aid in understanding infant-caregiver relationships, has also become a prominent framework for understanding personality processes and close relationships in adulthood. One of its unique features is the assumption that the same types of dynamics that occur in parent–child relationships also govern the way adults behave in their close relationships: adults, like children, have more confidence to explore the world if they know there is someone who supports and encourages them, and become restless and anxious when separated from those they love for a long period of time (Gillath et al., 2016).

The idea that behavior inherent to the attachment system continues to play a role in adulthood was also explored by Hazan and Shaver (1987), who addressed the concept of romantic love considering attachment theory. Today, in addition to the triarchic model emphasized by Ainsworth et al. (1978) and Hazan and Shaver (1987), a commonly applied method comes from the model originally proposed by Bartholomew and Horowitz (1991), who describe the prototypical forms of adult attachment by dichotomizing the abstract image that one constructs of oneself and the image that the person constructs of the other as positive and negative, identifying four main styles of adult attachment: adults with a secure attachment have positive beliefs about themselves and about the availability and responsiveness of those close to them; adults with a fearful-avoidant attachment are characterized by negative expectations regarding the availability and responsiveness of those who are significant to them, as well as low self-esteem; adults with a preoccupied attachment are hypervigilant about attachment and generally feel that others do not invest in them as much as they invest in others, and finally, adults with a dismissing-avoidant attachment deny the importance of close relationships and maintain a strong commitment to their independence and self-confidence.

Given what has been previously reported, it is hypothesized that both factors of psychopathy, affective-interpersonal and behavioral and lifestyle-related, are positively related to attachment avoidance, given that psychopathic individuals are characterized by their coldness, interpersonal deception, and antisocial posture (Hare & Neumann, 2008). This posture suggests a preference for not seeking the proximity of attachment figures, choosing to remain emotionally distant and relying on oneself instead of depending on these figures (Conradi et al., 2016).

Conradi et al. (2016) found that the affective-interpersonal facet of psychopathy obtained a positive correlation with attachment avoidance and a negative correlation with attachment anxiety. Craig et al. (2013) also showed differential relationships between the dimensions of insecure attachment and psychopathic traits, with anxiety negatively correlated with boldness (boldness, interpersonal dominance) and positively with disinhibition (disinhibition, impulsivity, and poor emotional regulation), while avoidance correlated negatively with boldness and positively with meanness (meanness, insensitivity, and lack of empathy) and disinhibition (Patrick et al.'s (2009) triarchic model). In the study by Christian et al. (2017), the affective domain

of psychopathy was consistently associated with attachment avoidance, and the behavioral domain of psychopathy was associated with insecure attachment, particularly anxious attachment. Furthermore, results by Mack et al. (2011) revealed that individuals with high scores on both attachment dimensions (avoidance and anxiety) obtained equally high scores on primary psychopathy, and that both dimensions were positively related to secondary psychopathy.

The study by Alzeer et al. (2019) showed a positive correlation between primary and secondary psychopathic traits and parental relationships characterized by avoidant attachment, both dismissive and fearful, as well as a negative correlation between these traits and an anxious but also secure attachment. Blanchard and Lyons (2016) found that individuals with primary psychopathic traits exhibited an avoidant attachment to their father, but also an anxious attachment to the same figure. Furthermore, individuals with these traits also exhibited relationships based on avoidant attachment to their mother. In the study by Gao et al. (2010), a low level of maternal care was the variable most strongly associated with both factors of adult psychopathy, reflecting a relatively greater impact of the maternal figure. This study also concluded that a low level of paternal protection was associated with higher scores on characteristics such as emotional insensitivity, superficial charm, and grandiosity.

The relationship between the avoidant dimension of attachment and primary psychopathy is strengthened, from an evolutionary point of view, by the male sex, whose main function throughout human development was to promote mating, preferably with multiple partners, minimizing investment and commitment. in relationships. These strategies are therefore considered avoidant, while females sought to maximize the continued investment of partners, even at the expense of the couple's well-being and satisfaction, thus responding with anxious strategies (Del Giudice, 2009). The study by Chopik et al. (2013) revealed that women scored slightly higher on attachment anxiety, especially in early adulthood, results consistent with analysis by Del Giudice (2009).

Objectives

The present study aims to: analyze the associations between psychopathy and experiences in close relationships; examine the differences in experiences in close relationships based on gender; test the mediating role of psychopathy in the association between gender and experiences in close relationships.

Hypotheses

Hypothesis 1: It is expected that psychopathy will be positively associated with avoidance in close relationship experiences and negatively associated with anxiety in these relationships.

Hypothesis 2: It is expected that there will be statistically significant differences in experiences in close relationships based on gender, specifically that males will score higher on avoidance and females will score higher on anxiety in close relationship experiences.

Hypothesis 3: It is expected that psychopathy will mediate the association between gender and experiences in close relationships.

Method

Procedure

In the first stage, a literature review was carried out in online scientific libraries to provide a complete theoretical framework and obtain a better understanding of the studied topic, which helped to define the sample and objectives. Next, the assessment instruments for the variables were chosen, and permission was requested from their validation authors to apply them. After this process, the research protocol was elaborated and sent to the Ethics Committee of the University of Trás-os-Montes and Alto Douro, along with informed consent and questionnaires, to request their opinion.

After receiving a favorable opinion, an online questionnaire was elaborated in Limesurvey and disseminated on social networks, with a maximum participation time of 20 min. The sample collection took place between November 2021 and April 2022 and ensured the informed consent of the participants, as well as the ethical assumptions underlying investigative practice, such as confidentiality, voluntariness, and anonymity.

Participants

In this study, the sample was initially composed of 319 participants, and the results presented and subsequently discussed were focused only on the group of young adults, aged between 18 and 30 years ($M = 23.19$; $SD = 2.40$), of which 205 were female (64.3%) and 114 (35.7%) were male. They were non-randomly selected for convenience. Regarding marital status, 177 participants were single (55.5%), 135 were in a relationship (42.3%), 3 were married (0.9%), and 4 were in a common-law marriage (1.3%). In terms of

educational level, 5 participants had less than a 12th-grade education (1.6%), 72 had completed high school (22.6%), 177 had a bachelor's degree (55.5%), and 65 had a master's degree (20.4%). Finally, regarding their employment status, 199 participants were students (62.4%), 98 were employed (30.7%), and 22 were unemployed (6.9%) (Table 1).

Instruments

In this investigation, a Sociodemographic Questionnaire was used, constructed with the objective of obtaining information about the gender, age, marital status, educational level, and employment status of the participants.

The Self-Report Psychopathy Scale (SRP-III) (Paulhus et al., 2013), validated for the Portuguese population by Sousa et al. (2017), consists of 64 items that refer to four psychopathy traits from the Hare model (16 items in each dimension): Interpersonal Manipulation (e.g., "We should take advantage of others before they take advantage of us"), Callous Affect (e.g., "People cry too much at funerals"), Erratic Lifestyle (e.g., "I have often done dangerous things just for the thrill of it") and Criminal Tendencies (e.g., "I have tried to hit someone with a vehicle I was driving"). The SRP-III is used to assess adult individuals and has been investigated in community samples, criminals, and university students. Responses to each item are given on a five-point scale, where 1 indicates complete disagreement and 5 complete agreement with what is stated. The version by Sousa et al. (2017) had a Cronbach's alpha of 0.91 for the overall scale and 0.80 for the Interpersonal Manipulation dimension, 0.70 for the Callous Affect dimension, 0.80 for the Erratic Lifestyle dimension, and 0.84 for the Criminal Tendencies dimension. For the present study, the instrument presented adequate psychometric characteristics, with the overall scale having a Cronbach's alpha of 0.90 and 0.80 for the Interpersonal Manipulation dimension, 0.71 for the Callous Affect dimension, 0.84 for the Erratic Lifestyle dimension, and 0.74 for the Criminal Tendencies dimension.

Table 1 Summary of sociodemographic data of the sample

	N 319	% 100
Gender		
Female	205	64.3%
Male	114	35.7%
Marital Status		
Single	177	55.5%
In a relationship	135	42.3%
Married	3	0.9%
Common-law marriage	4	1.3%
Education Level		
Less than 12th grade	5	1.6%
12th grade	72	22.6%
Bachelor's degree	177	55.5%
Master's degree	65	20.4%
Employment Status		
Student	199	62.4%
Employed	98	30.7%
Unemployed	22	6.9%

Confirmatory factor analysis showed adequate fit indices, $\chi^2/df = 1.96$; $p < .001$; GFI = 0.98; CFI = 0.91; RMSEA = 0.06.

The Experiences in Close Relationships – Relationship Structures Questionnaire (ECR-RS) (Fraley et al., 2011), validated for the Portuguese population by Moreira et al. (2015), consists of 36 self-report items and allows for the evaluation of anxiety (3 items) (e.g., "I'm afraid others might abandon me") and avoidance (6 items) (e.g., "It's easy for me to trust others") dimensions of attachment in different close relationships (mother or maternal figure, father or paternal figure, partner, and best friend) or in close relationships in general. Items are rated on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree), with higher scores indicating greater attachment anxiety or avoidance. For theoretical reasons, the global, maternal, and paternal relational domains (mother and father) were used. Moreira et al.'s (2015) version had a Cronbach's alpha of 0.91 for Global Anxiety, 0.88 for Global Avoidance, 0.75 for Mother Anxiety, 0.89 for Mother Avoidance, 0.86 for Father Anxiety, and 0.91 for Father Avoidance. In the present study, the instrument presented adequate psychometric characteristics, with a Cronbach's alpha of 0.85 for Global Anxiety, 0.76 for Global Avoidance, 0.87 for Mother Anxiety, 0.89 for Mother Avoidance, 0.89 for Father Anxiety, and 0.89 for Father Avoidance.

The confirmatory factor analysis presented adequate fit indices, $\chi^2/df = 2.45$; $p < .001$; GFI = 0.99; CFI = 0.97; RMSEA = 0.07 (Global Version), $\chi^2/df = 2.50$; $p < .001$; GFI = 0.98; CFI = 0.98; RMSEA = 0.07 (Mother/Maternal Figure) and $\chi^2/df = 3.10$; $p < .001$; GFI = 0.98; CFI = 0.97; RMSEA = 0.08 (Father/Paternal Figure).

Data analysis strategies

This study has a quantitative, cross-sectional, and correlational methodology, with the general objective of verifying the relationship between the variables under study, corroborating the results with previously studied conclusions (Marôco, 2018).

Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 23. After entering the data into the database, sample cleaning was performed by excluding outliers and missing values, as well as analyzing the internal consistency of the instruments, using Cronbach's alpha values.

Subsequently, using the AMOS program (IBM SPSS AMOS, version 25), confirmatory factor analyses of the

models of the instruments used were performed to confirm their adequacy. The maximum likelihood estimation method was used for the tested models. To verify the adequacy of the model to the data, the following adjustment evaluation measures were used: Chi-square statistics/degrees of freedom ratio (χ^2/df), Comparative Fit Index (CFI), Goodness of Fit Index (GFI), and Root Mean Square Error of Approximation (RMSEA).

Subsequently, the variables of each instrument were categorized, considering possible inverted items. Next, the assumptions of normality of the data were verified, observing the values of skewness and kurtosis, and statistical information was analyzed regarding the Kolmogorov–Smirnov test. After verifying and ensuring these assumptions, statistical analyses were performed using parametric statistics (Marôco, 2018).

Regarding the statistical analysis of the data, it was carried out through descriptive analysis (calculating frequencies, means, and standard deviations). Subsequently, mean comparison analyses (t-tests) and univariate and multivariate differential analyses (ANOVA and MANOVA) were performed to evaluate significant differences between sociodemographic variables and dimensions of the instruments used in this study. To understand the proportion of variance of the dependent variable explained by the independent variable, the value of Partial Eta-Square was used, and the intervals for interpreting this value were defined by Cohen (1988): between 0.1 and 0.6, it is considered a small effect, between 0.7 and 0.14 a moderate effect, and above 0.14 it is a high effect. Correlational analyses were also performed using Pearson's *r*, in order to determine the degree of association between the variables used. The interpretation of the intensity of the correlations was based on Cohen's *d* dimension intervals. Cohen (1988) also considers $d = 0.2$ as a small effect, $d = 0.5$ as moderate, and $d = 0.8$ as large. This author also established classifications to interpret the intensity of the correlations found, with values of 0.10 to 0.29 being considered a small correlation, 0.30 to 0.49 a moderate correlation, and 0.50 to 1 a strong correlation.

Finally, the Process Model 4 (Preacher & Hayes, 2008) was used, in which a mediation analysis was performed using the bootstrapping method to assess the indirect effect of the independent variable (gender) on the dependent variable (experiences in close relationships) through the mediator variable (psychopathy), understanding how the latter intervenes and influences the previously existing relationship of the other variables.

Results

Association between dimensions of psychopathy and dimensions of experiences in close relationships

To analyze the association between dimensions of psychopathy and dimensions of experiences in close relationships, correlational analyses were performed between the different variables. Regarding the association between the Interpersonal Manipulation dimension and the Global Avoidance dimension ($r = .229$, $p < .01$), Mother Avoidance dimension ($r = .304$, $p < .01$), and Father Avoidance dimension ($r = .205$, $p < .01$), significant positive correlations of low to moderate magnitude were observed. As for the Callous Affect dimension, it is possible to observe the presence of significant positive correlations of low and moderate magnitude with the Global Avoidance dimension ($r = .304$, $p < .01$), Mother Avoidance dimension ($r = .219$, $p < .01$), and Father Avoidance dimension ($r = .203$, $p < .01$), and a significant negative correlation of low magnitude with the Global Anxiety dimension ($r = -.229$, $p < .01$). In turn, the Erratic Lifestyle dimension presents a significant negative correlation of low magnitude with the Global Anxiety dimension ($r = .151$, $p < .01$) and a significant positive correlation of equally low magnitude with the Mother Avoidance dimension ($r = .227$, $p < .01$). Finally, in the Criminal Tendencies dimension, it is possible to observe, once again, the presence of a significant positive correlation of low magnitude with the Mother Avoidance dimension ($r = .151$, $p < .01$) (Table 2).

Variance of the dimensions of experiences in close relationships by gender

The results of multivariate analyses (MANOVA) showed statistically significant differences in the overall version of experiences in close relationships by gender, $F(2, 316) = 16.501$, $p < .001$, $\eta p^2 = 0.10$, Wilks' $\lambda = 0.905$. There were statistically significant differences in both the Global Avoidance dimension, $F(1, 317) = 5.408$, $p = .021$, $\eta p^2 = 0.017$, and the Global Anxiety dimension, $F(1, 317) = 28.041$, $p < .001$, $\eta p^2 = 0.081$. Therefore, it was possible to observe that in Global Avoidance, males showed a higher mean ($M = 3.58$; $SD = 1.00$) compared to females ($M = 3.31$; $SD = 1.01$), while in Global Anxiety, females showed a higher mean ($M = 4.90$; $SD = 1.59$) compared to males ($M = 3.93$; $SD = 1.53$) (Table 3).

Regarding relational domains, the results of the multivariate analyses (MANOVA) showed statistically significant differences according to gender, $F(8, 310) = 2.653$, $p = .008$, $\eta p^2 = 0.064$, Wilks' $\lambda = 0.936$. In particular, statistically significant differences were observed in the Mother Avoidance

Table 2 Correlational analysis between dimensions of SRP-III and ECR-RS

Variables	N	*M*	*SD*	Skewness	Kurtosis	1	2	3	4	5	6	7	8	9	10
1. Interpersonal Manipulation	319	36.45	8.00	0.315	-0.076	-									
2. Callous Affect	319	36.18	7.19	0.366	-0.111	**0.570****	-								
3. Erratic Lifestyle	319	41.37	9.98	0.122	-0.368	**0.548****	**0.463****	-							
4. Criminal Tendencies	319	24.35	7.65	1.042	0.867	**0.368****	**0.371****	**0.515****	-						
5. Avoidance Global	319	3.41	1.02	0.255	0.044	**0.229****	**0.304****	-0.087	0.090	-					
6. Anxiety Global	319	4.56	1.63	-0.293	-0.795	-0.088	**-0.229****	**-0.151****	-0.102	-0.050	-				
7. Avoidance Mother	319	2.88	1.38	0.664	-0.242	**0.304****	**0.219****	**0.227****	**0.151****	**0.356****	-0.005	-			
8. Anxiety Mother	319	2.38	1.71	1.193	0.412	0.103	0.084	0.038	0.075	-0.024	**0.172****	0.067	-		
9. Avoidance Father	319	3.59	1.54	0.372	-0.571	**0.205****	**0.203****	0.125*	0.067	**0.277****	0.125*	**0.398****	0.054	-	
10. Anxiety Father	319	2.48	1.76	1.066	0.109	0.049	0.058	0.014	0.105	0.020	**0.216****	0.023	**0.703****	0.141*	-

**Significance level of $p < .01$; the bolds represent significant values

Table 3 Differential analysis of the global version of experiences in close relationships by gender

	Gender	*M* ± *SD*	*p*	Direction of differences
Global				
Avoidance	0 – Male	(3.58 ± 1.00)	**0.021**	0 > 1
	1 – Female	(3.31 ± 1.01)		
Anxiety	0 – Male	(3.93 ± 1.53)	**< 0.001**	1 > 0
	1 – Female	(4.90 ± 1.59)		

M mean, *SD* standard deviation, *p* *p*-value, *n.s.* not significant; bold values indicate significant values

dimension, and it was possible to perceive that males presented a higher mean in this dimension ($M = 3.12$, $SD = 1.27$) compared to females ($M = 2.75$, $SD = 1.43$) (Table 4).

Mediating effect of psychopathy on the association between gender and experiences in close relationships

To understand the predictive effect of gender on experiences in close relationships, as well as the mediating role of psychopathy in this association, Model 4 of Process (Preacher & Hayes, 2008) was used. In the model regarding gender, psychopathy, and avoidance in experiences in close relationships, some prediction effects were observed. It was found that male gender predicts psychopathy (β = -0.55; $p < 0.001$) and significantly predicts avoidance in close relationships (β = -0.27; $p = .021$), and that psychopathy positively predicts avoidance in experiences in close relationships (β = 0.22; $p < .001$).

Using the bootstrapping procedure, it was possible to verify that, after introducing the mediator variable psychopathy, the relationship between gender and avoidance in close relationships was no longer significant (β = -0.03, $p = .831$). Additionally, the indirect effect was statistically significant

Table 4 Differential analysis of the relational domains of experiences in close relationships by gender

	Gender	*M* ± *SD*	*p*	Direction of differences
Mother				
Avoidance	0 – Male	(3.12 ± 1.27)	**0.021**	0 > 1
	1 – Female	(2.75 ± 1.43)		
Anxiety	0 – Male	(2.42 ± 1.68)	0.771	n.s
	1 – Female	(2.36 ± 1.73)		
Father				
Avoidance	0 – Male	(3.70 ± 1.45)	0.339	n.s
	1 – Female	(3.53 ± 1.59)		
Anxiety	0 – Male	(2.50 ± 1.65)	0.870	n.s
	1 – Female	(2.46 ± 1.82)		

M mean, *SD* standard deviation, *p* *p*-value, *n.s.* not significant; bold values indicate significant values

(β = -0.24, SE = 0.07, 95% CI [-0.39,-0.10]), indicating a total mediation with a positive effect of psychopathy in the association between gender and avoidance in close relationship experiences (Table 5) (Fig. 1).

In the model referring to gender, psychopathy, and anxiety in experiences in close relationships, some predictive effects were observed. It was found that males predict psychopathy (β = -0.55; $p < .001$) and females predict anxiety in close relationships (β = 0.59; $p < .001$). Additionally, psychopathy significantly and negatively predicts anxiety in experiences in close relationships (β = -0.18; $p = .001$).

In this sense, using the bootstrapping procedure, it was possible to verify that the indirect effect is not statistically significant (β = 0.04, SE = 0.07, 95% CI [-0.10, 0.19]), indicating the absence of a mediating effect of psychopathy in the association between gender and anxiety in experiences in close relationships (Table 6) (Fig. 2).

Discussion

Regarding Hypothesis 1, it was observed that all dimensions of psychopathy are positively associated with one or more dimensions of avoidance in experiences in close relationships and negatively associated with one dimension of anxiety in the same scale. It was possible to verify that the interpersonal and affective dimension of psychopathy, namely Interpersonal Manipulation and Callous Affect, is positively associated with the Global Avoidance dimension and Avoidance towards the father figure, leading to the conclusion that in the presence of psychopathy, these forms of avoidance tend to increase. Regarding the global form of avoidance, the results of the present study are in line with the literature. In Conradi et al.'s (2016) study, the affective-interpersonal facet of psychopathy obtained a positive correlation with attachment avoidance, and the results obtained by Mack et al. (2011) revealed that individuals with high scores on both attachment dimensions (avoidance and anxiety) also had high scores on primary psychopathy. Given that individuals who exhibit a high level of attachment avoidance rely only on themselves for the satisfaction of personal needs, suppress feelings and thoughts of vulnerability, and consider others unreliable in the context of interpersonal relationships, it is conjectured that they would show higher levels of primary psychopathy, which is characterized by insensitive, arrogant, and deceitful interpersonal behavior (Mack et al., 2011). In Craig et al.'s (2013) investigation, avoidance was positively correlated with meanness and disinhibition. The concept of meanness (Patrick et al.'s (2009) triarchic model), central to the conceptualizations of psychopathy in criminal and delinquent samples, refers to an aggregation of various phenotypic attributes that include, in addition to empathy deficit, thrill-seeking, rebelliousness, and empowerment through cruelty and strategic exploitation of others, contempt and lack of close relationships with others. In the study by Christian et al. (2017), the affective domain of psychopathy was consistently associated with attachment avoidance, and according to Alzeer et al. (2019), both primary and secondary psychopathic traits were positively correlated with parental relationships characterized by avoidant attachment, including dismissing and fearful attachment styles (Bartholomew and Horowitz's (1991) model). Regarding avoidance towards the father, the data reported by correlational analyses are also consistent with the existing literature. Blanchard and Lyons (2016) demonstrated that individuals with primary psychopathic traits exhibited avoidance attachment to their father, but also anxious attachment to the same figure, and Gao et al.'s (2010) study concluded that low levels of paternal protection associated with a lack of involvement, monitoring, and supervision by this figure were associated with higher scores on Factor 1 (emotional detachment) of the Self-Report Psychopathy Scale (SRP-II; Williams & Paulhus, 2004). According to these authors, a lack of involvement and monitoring by the father can impair the child's ability to form attachments, and conversely, the active presence of this figure can increase the emotional connection between them, providing some protection against the development of affective characteristics of psychopathy.

Additionally, it was found that all dimensions of psychopathy were positively related to the Avoidance dimension towards the mother, meaning that in the presence of an increase in psychopathic traits, avoidance towards the mother also increases. Although this avoidant dimension was positively correlated with both factors of psychopathy, the literature highlights the primacy of the primary factor of psychopathy regarding the relationship with the mother

Table 5 Model coefficients regarding the relationship between gender and avoidance in close relationships: the mediational role of psychopathy

Direct effects	Estimate	S.E	C.R	*p*-value
Gender » Psychopathy	29.402	2.506	-11.731	< 0.001
Gender » Avoidance	-0.030	0.139	-0.214	0.830
Psychopathy » Avoidance	0.008	0.003	3.191	0.002
Indirect effects				
Gender » Avoidance	0.064	0.118	-	-

Table 6 Model coefficients regarding the relationship between gender and anxiety in close relationships: the mediational role of psychopathy

Direct effects	Estimate	S.E	C.R	*p*-value
Gender » Psychopathy	29.402	2.506	-11.731	< 0.001
Gender » Anxiety	0.906	0.220	4.126	< 0.001
Psychopathy » Anxiety	-0.002	0.004	-0.529	0.597
Indirect effects				
Gender » Anxiety	-0.245	0.078	-	-

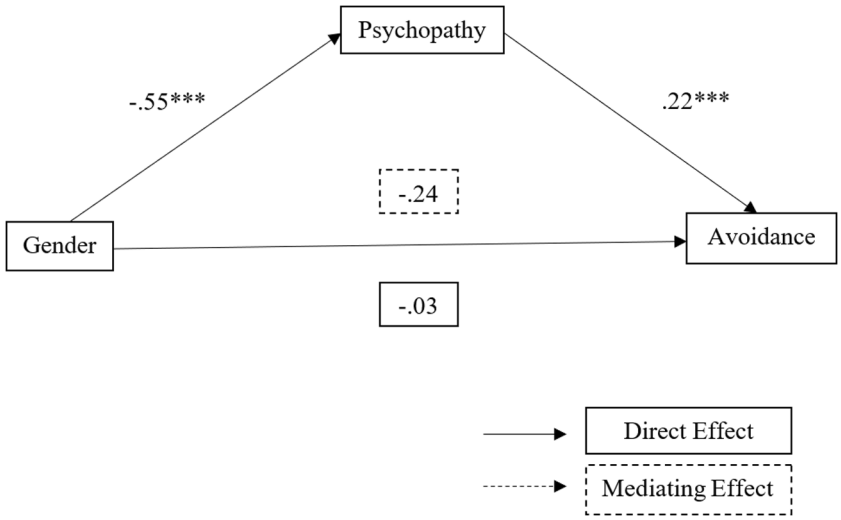

Fig. 1 Mediating role of psychopathy in the association between gender and avoidance in close relationship experiences

figure. The results reported by Blanchard and Lyons (2016) revealed that individuals with primary psychopathic traits exhibited relationships characterized by avoidant attachment to their mother. Consistent with the importance given to maternal care and the role it plays in attachment processes (e.g., Ainsworth et al., 1978), the study by Gao et al. (2010) showed that low maternal care was the most strongly associated variable with both factors of adult psychopathy, reflecting a relatively greater impact of the mother figure. The results from Kimonis et al. (2013) also indicated that low maternal care was associated with higher scores on callous-unemotional traits, characterized by lack of empathy, guilt, and remorse, as well as shallow or deficient affectivity and similarly, Pasalich et al. (2011) found that adolescents with conduct problems and high scores on the traits were exposed to low levels of parental affection, particularly maternal warmth, as well as high levels of anxious and avoidant attachment representations towards the mother figure.

Finally, contrary to the other results, the Callous Affect and Erratic Lifestyle dimensions show a significant negative correlation with the Global Anxiety dimension. In this situation, it can be said that when these psychopathic traits are present, anxiety tends to decrease in general. Since the theoretical rationale indicates that an increase in psychopathic traits corresponds to an equal increase in attachment avoidance, it would be plausible to assume that a decrease in attachment anxiety, its opposite, would be observed. The study by Craig et al. (2013), which explored differential relationships between insecure attachment dimensions and psychopathic traits, reported that attachment anxiety was negatively correlated with boldness. Boldness describes the phenotypic style that encompasses the ability to quickly recover after a stressful situation, the ability to remain calm and focused on threatening situations, high self-confidence, social efficacy, and tolerance for danger and the unknown; some manifestations of bold behavior include composure, persuasion, assertiveness, courage, and a taste for adventure (Patrick et al., 2009). Given these characteristics, it would

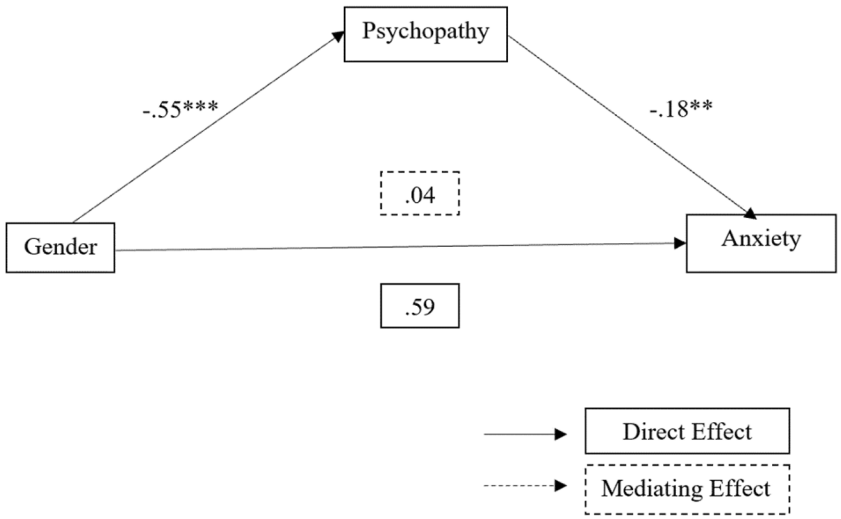

Fig. 2 Mediating role of psychopathy in the association between gender and anxiety in close relationship experiences

make sense for boldness to be negatively associated with an attachment style characterized by feelings of vulnerability and concern (Hazan & Shaver, 1987), fear of abandonment, a negative view of the self, and behaviors seeking proximity to potential partners (Christian et al., 2017). Moreover, the study by Alzeer et al. (2019) found a negative correlation between primary and secondary psychopathic traits and both anxious and secure attachment. The behavioral domain of psychopathy, according to Christian et al. (2017), has consistently been associated with insecure attachment, particularly anxious attachment. Additionally, in Conradi et al.'s (2016) study, the affective-interpersonal facet of psychopathy obtained an equally negative correlation with attachment anxiety, and Schimmenti et al. (2014) corroborate these results, stating that insensitive and cold individuals are deceptive and devalue or avoid intimate relationships without experiencing anxiety regarding rejection.

Regarding Hypothesis 2, the results point to the existence of statistically significant differences regarding the participant's gender in the dimensions of Global Avoidance and Global Anxiety, with the male participants obtaining higher scores in the Global Avoidance dimension, and the female participants showing a higher average in the Global Anxiety dimension. Although several early studies did not find significant differences in attachment styles regarding gender (e.g., Collins & Read, 1990; Hazan & Shaver, 1987), more recently, Chopik et al.'s (2013) study revealed that females scored slightly higher in attachment anxiety, especially in early adulthood, consistent with Del Giudice's (2009) analysis. Del Giudice's (2009) integrative model is the first to explain the development of gender differences in attachment styles, as it allows for integration between attachment theory, human reproductive ecology, and behavioral endocrinology. The author states that, given the asymmetries in parental investment and sexual selection, males and females face different decisions in their trajectory: briefly, males make an optional parental investment if the costs of raising a child are supported by the mother and her alloparental network, something that is strengthened by uncertainty about paternity and, consequently, by compensation for additional matings; for females, this strategy is not viable since they are usually the primary caregivers of babies, and they do not benefit as much from mating with additional partners given the strong limitations of the female maximum reproductive rate (Del Giudice, 2009). Thus, the author's model emphasizes the existence of a marked imbalance between parental effort and mating effort between the sexes. Taking these considerations into account and framing them within attachment theory, males readily adopt avoidant strategies, while females preferentially adopt anxious and caring strategies. In a relationship context (couple), anxious behaviors such as dependence and concern with partner intimacy and availability can help maintain closeness with the partner, especially if they show an avoidant attachment, maximizing parental investment and thus playing a kind of "counter-strategy" to male avoidance. Avoidant attachment is additionally more beneficial and adaptive for younger males who need to defend themselves and position themselves regarding their social status and competition against other individuals, with these characteristics being attractive to the opposite sex, contributing to partner choice (Del Giudice, 2009). In other words, stress tends to induce aggression and/or avoidance in male individuals, and the search for social support and affiliation in female individuals, reflecting the sex differences observed in avoidant and anxious attachment styles. Finally, at the relational level, it was possible to detect the presence of statistically significant differences according to gender in the Avoidance dimension towards the mother, with the male participants showing a higher score. Despite the association between the male gender and avoidant attachment mentioned above (e.g., Bartholomew & Horowitz, 1991; Chopik et al., 2013; Del Giudice, 2009), there is a shortage of empirical evidence supporting the association between the male gender and avoidance towards the mother figure. However, Lewis and Tooley (2009) highlight the strong association between disorganized attachment, associated with environments characterized by extreme conditions such as abuse, neglect, or even chronic psychopathology, and its higher prevalence in males. Since mothers are typically the primary caregivers of babies, they may demonstrate a more disorganized posture in caring for their children, which may explain a higher level of avoidance towards this figure by males.

Finally, regarding Hypothesis 3, following the mediation analyses, it was possible to perceive that the male gender has a predictive effect on avoidance, as well as a predictive effect on psychopathy, and, in turn, that psychopathy has a positive predictive effect on avoidance in close relationships. In this sense, it is possible to understand that the male gender seems to contribute to a greater predisposition to the development of psychopathic traits and an avoidant attachment. The fact that the male gender functions as a predictor for the development of psychopathic traits is supported by the existing literature, as most studies point to a manifestation of higher levels of psychopathy by males (e.g., Chiorri et al., 2017; Falkenbach et al., 2017). Regarding avoidance, as previously mentioned, the male gender predicts this attachment style, which is in line with Del Giudice's theory (2009). In fact, this author suggests that due to the sex differences found in the context of mating and parenting throughout human history, males tend to adopt avoidant strategies that, through aggressive and competitive traits, have become favorable and adaptive in competition against other individuals and in the pursuit of social status.

In relation to the relationship between the male gender and avoidance, there is total mediation exerted by psychopathy in the association between both, which reflects that psychopathy fully explains this relationship. Several studies, already explored in this research, solidify the idea that an increase in psychopathy levels corresponds to an increase in avoidant attachment levels (Alzeer et al., 2019; Christian et al., 2017; Conradi et al., 2016; Craig et al., 2013; Mack et al., 2011). Given the egocentric, impulsive, and emotionally superficial nature of psychopathic personality (Hare, 1996), as well as the negative orientation towards others and the insensitive, hostile, and exploitative posture characteristic of it, it is understood that it explains the discomfort with proximity or dependence on others, as well as the denial of the importance of close relationships and a strong commitment to independence and self-confidence (Bartholomew & Horowitz, 1991). It was also possible to perceive that female gender has a predictive effect on anxiety, and in turn, that psychopathy has a negative predictive effect on anxiety in close relationships. In this sense, it is possible to perceive that in females and in the presence of psychopathic traits, there is a tendency to reduce levels of anxiety in close relationships. The fact that the female gender functions as a predictor of anxiety in close relationships can be explained, once again, through Del Giudice's analysis (2009), which theorizes that the female gender, throughout evolution, adopted anxious strategies to maximize investment from partners, however, adhered to avoidant patterns in the face of serious environmental risks. This increase in the avoidant dimension of attachment by females is also argued by Chopik et al. (2013), who add that this attachment anxiety reaches its peak in early adulthood. Regarding the negative predictive effect exerted by psychopathy on attachment anxiety, the results exposed throughout this article consistently explore the negative association between psychopathic traits and this attachment style (Alzeer et al., 2019; Christian et al., 2017; Conradi et al., 2016; Craig et al., 2013). Once again, it is relevant to assume that this disturbance, characterized by high self-confidence, coldness, and insensitivity, does not reinforce behaviors of seeking proximity, feelings of vulnerability, and fear of abandonment, but rather contributes to a devaluation of interpersonal relationships, allied to the absence of concern regarding separation (Schimmenti et al., 2014). Regarding the relationship between female gender and attachment anxiety, the absence of the mediating effect exerted by psychopathy in the association between both is noted, which reflects the direct relationship between these two variables and strengthens the above data.

Practical implications, limitations, and future directions

The present study aims to provide a positive contribution to the expansion of knowledge about psychopathy and experiences in close relationships in general, as well as with maternal and paternal figures, and to clarify the association between these variables. This research is innovative given the scarcity of empirical evidence, particularly regarding attachment to parental figures and its association with different types of variables, namely psychopathy.

Previous studies suggest that psychopathic personality may stem from a failure to develop a secure attachment system in childhood, triggering various negative effects on the self and close relationships. Severe experiences of loss, abuse, and neglect by parental figures can combine with insensitive temperamental traits, severely impairing the ability to feel and share positive affective states. Considering this, this study highlights the practical implications of better understanding the interpersonal traits and other possible contributions of psychopathic individuals through the projection and implementation of interventions directed at improving their behavior and posture in relationships, while still maintaining a realistic attitude about how much change can be achieved.

Thus, it would also be pertinent to promote educational programs that raise awareness about the significant role of parent–child relationships in mental health and well-being for children, youth, and older age groups. Furthermore, there is a need for planned interventions to act as a protective environmental factor, aiming to increase empathy capacity and promote interpersonal relationships, reducing the long-term effects of psychopathy.

In this way, it is hoped that this study can serve as a catalyst for investigating the influence of psychopathy on experiences in close relationships, as well as assisting in the understanding of other variables that may allow for an expansion of the theoretical rationale and future practical applications.

Therefore, it is pertinent to point out some limitations of the present investigation. Firstly, the research is cross-sectional in nature, which prevents the analysis of causal relationships between variables. Furthermore, this study focused on the young adult age group, which reduced the sample size and cannot be considered representative of the population, thus preventing the generalization of results. We should also emphasize the discrepancy between the number of female and male participants in the compared to males in the sample. Future studies should endeavor to collect a more balanced sample. Additionally, the use of two considerably long self-report questionnaires may have caused participants to lose interest, leading to some bias in the results, coupled

with the fact that they were conducted online, which did not allow for the control of possible doubts. The self-report nature of the questionnaires may raise validity issues, as participants may respond for social desirability, not corresponding to reality; to address this situation, Moreira et al. (2015) suggest that it would be relevant to cross-check the data obtained with the scale used in this study with the Adult Attachment Interview (AAI; George et al., 1985) in order to evaluate adults' attachment representations and the degree of convergence between methods.

Despite the empirical support provided by this research, in terms of future directions, it would be pertinent to have a greater flow of research that focuses on the explored theme, encouraging studies that aim to observe the relationship between psychopathic traits and attachment styles in childhood and adolescence, as well as their longitudinal development. It would also be beneficial for these future studies to include or highlight the impact of culture on the relationship between the variables explored in our study, since national culture profoundly affects people's attitudes and behaviors, with cultural contexts shaping how they respond to various situations (Malik, 2021; Reiss et al., 2013).

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Declarations

Competing interests The authors declare none.

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