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Peer Attachment and Self-Control: Implication on Social Anxiety in Young Adults

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Abstract: Peers emerge as emotionally present figures in the lives of young adults, capable of protecting them from the challenges that can cause the development of social anxiety. In the context of anxiety, self-control highlights a relevant potential, which is positively correlated with mental health and academic path. The present study aims to understand the role of peer attachment and self-control in the development of social anxiety in young adults in the university context. The sample comprised 407 young adults aged between 18 and 25 (M = 20.90; SD = 2.32). Self-report instruments were used: the Inventory of Parent and Peer Attachment (IPPA), the Scale of Anxiety and Avoidance in Performance and Social Interaction Situations (EAESDIS) and the Low Self-Control Scale. This study concludes that alienation from peers plays a positive role in anxiety and avoidance, as does short temper, with risk-taking and egocentricity negatively predicting social anxiety. The results are discussed, considering the importance of peer relationships in young university students' adaptive processes and mental health.

Keywords: peer attachment; social anxiety; self-control; young adult

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1. Introduction

In Western societies, adulthood begins at the age of eighteen and is characterized by ambivalence in the development of a stable and independent self, and the development of an identity profile in intimate relationships and professional life (Arnett 2007). According to Bowlby (1969) and Ainsworth (1989), the quality of the relationships established early with the parents plays an important role in the healthy development of the individual. Attachment relates to the intrinsic capacity of the human being to seek and develop affection bonds that can promote feelings of security and protection (Bowlby 1969). The responsiveness of significant figures of affection makes it possible to internalize feelings of trust and security in the child, which will allow the adolescent to continue building secure and positive internal models about themselves and others (Bowlby 1969; Klomek et al. 2016). In this way, it is assumed that young people develop attachment functions with significant others, namely peers. This transference is facilitated when the primary attachment figures constitute a secure basis for the adolescent (Pinheiro Mota et al. 2020).

The adolescent's contact with multiple contexts will lead to the expansion of affective relationships and, subsequently, the development of bonding relationships beyond the family environment, focusing his object relationships towards the peer group (Bronfenbrenner 1987). The choice of significant peers is also related to the quality of relationships with primary caregivers, which creates the basis for the exploration of relationships in the

context where peers emerge as important figures. Due to the similarity of characteristics and reciprocity of experiences, they are perceived as safe havens (Mota and Rocha 2012).

Peers thus play an important role in the life of young adults, enhancing a healthier development of the self (Mota and Rocha 2012; Ribeiro et al. 2012). Longitudinal studies provide evidence that young adults with secure patterns are more prevalent in the peer group, with more friends than insecure adolescents (Lieberman et al. 1999). Reciprocal relationships with peers provide feelings of closeness, which contribute to the personal and social development of the adolescent through the search for support, comfort and intimate sharing, and these relationships can be seen as attachment relationships (Meeus et al. 2002; Nickerson and Nagle 2005).

Young adults develop new social networks as they enter new social environments, such as university (Kendler et al. 2015). Although the transition to higher education encompasses acquisitions relevant to young adults' personal and professional roles, it also implies modifying the social support network for most young students, given the possible distance from family and the previous circle of interpersonal relationships (Kendler et al. 2015).

The demands of university life show that university students must present complex cognitive and emotional resources to manage the needs of this new environment from the moment they enter the institution. The academic environment can be stressful when there are no adequate conditions and norms that allow the healthy development of socialization and encourage students to communicate with teachers, parents, families and society (Padovani et al. 2014). Chiu et al. (2021) suggest that positive relationships with peers may be a protective factor against the development of social anxiety. Tillfors et al. (2012) argue that, on the other hand, troubled relationships with peers exacerbate symptoms of social anxiety. The literature has shown that females are more likely to have a broader view of the spectrum of friendships based on intimacy, social support and nurturance, while males, on the other hand, have a narrower circle of friends and tend to research intimacy for their romantic partner (e.g., Guerrero et al. 2022).

Entering university requires adapting to the new environment and academic demands and fostering concerns about building a new network of friends, future expectations and a professional identity. In this transition, in addition to the academic demands, students are faced with the possible change of city or house, having to learn to deal with financial issues, organize the logistics of the new environment (such as shopping and cleaning), live with people outside the family and miss family and old friends (Padovani et al. 2014; Soares and Prette 2015). Thus, anxiety and social interaction problems can manifest at university entrance, highlighting the new tasks of young adult development and the everyday challenges of university life.

Anxiety impairs the daily life of individuals, as it makes it impossible to carry out various daily activities, and it causes feelings of apprehension and unpleasant physical changes (Costa et al. 2019; Leão et al. 2018). In severe cases, anxiety can become so limiting to some people's quality of life that it causes them to refuse to leave the house for weeks or forgo various social, occupational or educational opportunities (Heimberg et al. 2000). In this way, intense feelings of anxiety are often associated with social interactions, as the perceived threat of social disapproval is critical in the development of social anxiety (Ayyash-Abdo et al. 2016). Social anxiety is highlighted as a severe mental health problem due to its high prevalence and the resulting impairments in performance and social interactions (Angélico et al. 2006). Several genetic factors and personal characteristics play a significant role in social anxiety, which, depending on all these factors, can predict its severity (Starcevic 2005).

A non-cognitive component with relevant potential in framing social anxiety is self-control, commonly conceptualized as the ability to alter one's responses or behaviors to achieve long-term personal goals (Baumeister et al. 2007; Muraven and Baumeister 2000). Self-control is the tendency or ability to behave consciously in opposition to internal or situational forces supporting a particular goal (Hoyle and Davisson 2016). It is pointed out as a fundamental competence for the proper functioning of the individual in health,

interpersonal relationships, work and education. The literature suggests that self-control correlates positively with college students' well-being, mental health and academic achievement (Galla and Duckworth 2015; Hofmann et al. 2014). Several studies have also been showing that university students with higher levels of self-control have better psychological adjustment and better performance in interpersonal relationships (Li et al. 2023; Tangney et al. 2004). Individual differences in self-control have been linked to anxiety in college students (Powers et al. 2020). In this sense, the results of the study by BlaCkhart et al. (2015) on university students suggest that low levels of self-control are a significant risk factor for a wide range of individual and interpersonal difficulties, with lower levels of self-control, namely explosive tempers, being associated with higher levels of social anxiety. The literature suggests that low levels of self-control can contribute to the exacerbation of social anxiety symptoms, thus highlighting the idea that self-control can play a relevant role in controlling anxiety, helping people to feel better, even in the specific situations that most frighten them (BlaCkhart et al. 2015; Kashdan et al. 2011). The present study is innovative, given the scarcity of national and international scientific research that reports the importance of peer attachment in the development of social anxiety in the context of adaptation to university.

2. Materials and Methods

2.1. Participants

A total of 407 subjects participated in this study; 145 were male (35%) and 262 were females (65%), aged between 18 and 25 years old (M = 20.90, SD = 2.32). Regarding the participants' lifestyle habits, the data reveal that 222 participants sleep less than 8 h a day (54.5%), and the remaining 185 sleep more than 8 h a day (45.5%). Regarding the practice of physical exercise, it was found that 106 of the participants never or almost never practice (26.04%), 206 practice with some frequency (50.61%) and the remaining 96 practice physical exercise very frequently (23.59%).

2.2. Instruments

In the present investigation, a Sociodemographic Questionnaire was used, where personal data were collected from the participants, such as the participant's sex and lifestyle habits, namely hours of sleep and physical exercise.

The Inventory of Parent and Peer Attachment (IPPA) is a self-report questionnaire constructed by Armsden and Greenberg (1987), translated into Portuguese by Ferreira and Costa (1998), to assess the quality of attachment to parents (28 items) and peers (25 items). In the present study, only the pair version was used, and the constituent items of the same type are distributed along three dimensions: confidence (10 items), e.g., "My friends understand me"; communication (8 items), e.g., "I like to have my friends' opinion on matters that concern me"; and alienation (7 items), e.g., "I feel lonely or left out when I'm with my friends." The response format is of the Likert type, em seis pontos, com alternância de "Discordo totalmente" (1) a "Concordo totalmente" (6). In the present study, there were adjusted internal consistency values, namely the communication $\alpha = 0.87$, confidence $\alpha = 0.90$ and alienation $\alpha = 0.78$. It should be noted that, through confirmatory analyses, items 4 (0.19) and 9 (0.28) were removed since they saturated in a negligible way in the model. The confirmatory factor analysis presents appropriate adjustment indices with the respective values: χi^2 (223) = 847.54; $\chi i^2/df = 3.80$; $p < 0.001$, CFI = 0.88; TLI = 0.87; RMR = 0.06; and RMSEA = 0.08.

The Anxiety and Avoidance Scale in Situations of Performance and Social Interaction (EAESDIS) concerns a self-report questionnaire developed and validated by Pinto-Gouveia et al. (2003), with 44 items to assess anxiety and avoidance in social situations. The items of the scale are distributed in 2 dimensions: Distress/Anxiety and Avoidance; both of these are composed of the same 44 items. This scale aims to assess Distress/Anxiety on a 4-point Likert scale, which changes between "None" (1) and "Severe" (4). Regarding avoidance, the options range from "None" (1) to "Severe" (4). What differs in both scales, which

share the same items, is the typology of response scales. In the present study, there was a high internal consistency in the dimensions of Distress/Anxiety ($\alpha = 0.97$) and Avoidance ($\alpha = 0.96$). Confirmatory factor analysis reveals appropriate adjustment values for anxiety and avoidance, respectively: χi^2 (2) = 11.23; $\chi i^2/df = 5.61$; $p < 0.001$; CFI = 1; TLI = 0.98; RMR = 0.01; RMSEA = 0.11; χi^2 (2) = 9.48; $\chi i^2/df = 4.74$; $p < 0.001$; CFI = 1; TLI = 0.99; RMR = 0.01; and RMSEA = 0.1.

The Low Self-Control Scale (EBA) consists of a self-report questionnaire, validated for the Portuguese population by Fonseca (2002), consisting in the original version (Grasmick et al. 1993) for a total of 24 items that aim to assess the level of self-control. The items are distributed in 6 dimensions: impulsivity, predisposition for simple tasks, tendency to take risks, preference for physical activities, self-centeredness and explosive temperament. In the present study, and by semantic choice, only three dimensions were used: tendency to take risks (4 items), e.g., "Sometimes I find it exciting to do things I might have trouble for"; self-centeredness (4 items), e.g., "I try to take care of myself first, even if it means making it difficult for other people"; and quick temper (4 items), e.g., "I lose my temper very easily." The answer alternatives for each item vary according to a 4-point Likert scale from "Strongly disagree" (1) to "Strongly agree" (4). In the present study, internal consistency was adjusted: tendency to take risks $\alpha = 0.79$; self-centeredness $\alpha = 0.71$; and explosive temper $\alpha = 0.79$. Confirmatory factor analysis indicates appropriate fit ratios with the following values: χi^2 (49) = 138.27; $\chi i^2/df = 2.82$; $p < 0.001$, CFI = 0.94; TLI = 0.92; RMR = 0.06; and RMSEA = 0.07.

2.3. Procedure and Data Analyses

Authorization to implement the research was requested, and the project was submitted to the Ethics Committee of the University of Trás-os-Montes and Alto Douro, Ref. Doc45-CE-UTAD-2021. The sample size was tested using G*Power 3.1.9.7, considering the type of analyses envisaged in this study, with an effect size of d = 0.5, a significance level of 0.05 and a power of 0.95, providing a minimum of 210 participants. Data were collected in person, through paper questionnaires and online through the LimeSurvey platform, ensuring the uniformity of responses. The sample comprised young adults between 18 and 25 years old attending higher education at the time of collection. This collection was carried out in several universities in Portugal from October 2021 to April 2022, and permission was requested from the directors of the various schools to disclose the research protocol. All participants signed an informed consent where the principles of voluntariness, ethics and confidentiality were guaranteed. The return rate of the questionnaire is around 70% of the requests. This research used a quantitative and cross-sectional methodology (Marôco 2007). The data were analyzed using the SPSS (Statistical Package for Social Sciences), version 27. Missing values in young people's reports were completely random. We used full information maximum likelihood (FIML) to deal with missing data. The statistical analysis did not consider participants identified as outliers. Outlier analyses were carried out to identify those participants who could affect the results. The Mahalanobis distance was analyzed to eliminate possible multivariate outliers (Field 2005). The factorial structure of all measures was assessed through confirmatory factor analysis (CFA), and internal consistency was tested. Structural equation models and CFA were performed through the AMOS program. All results were analyzed and interpreted based on a significance value of $p < 0.05$. CFA and the model were evaluated using the chi-square test, CFI and RMSEA. The reference values for acceptable adjustment values were CFI ≥ 0.90 and RMSEA < 0.10 (Kline 2016).

3. Results

3.1. Variance in Peer Attachment, Social Anxiety and Self-Control according to Sex, Sleep Time and Physical Exercise in Young Adults

In the present study, differential analysis was performed according to gender, sleep time and physical exercise. Regarding the sex variable, two groups were defined: group 1 (male, N = 145) and group 2 (female, N = 262).

Regarding peer attachment, there were statistically significant differences in the communication dimension, F (1, 405) = 13.71, $p < 0.001$ and $\eta^2 = 0.96$, and males (M = 4.22, SD = 0.82) had lower levels of communication compared to females (M = 4.53, SD = 0.83). There were also statistically significant differences in the alienation dimension, F (1, 405) = 4.59, $p = 0.03$ and $\eta^2 = 0.57$, which shows that male individuals (M = 2.76, SD = 0.95) have higher levels of alienation than females (M = 2.55, SD = 0.93). The results also provide evidence that there are statistically significant differences in the confidence dimension, F (1, 405) = 5.08, $p = 0.03$ and $\eta^2 = 0.61$, with males (M = 4.58, SD = 0.77) having higher levels of confidence than females (M = 4.77, SD = 0.79).

Regarding self-control, there were statistically significant differences in the self-centeredness dimension, F (1, 405) = 30.94, $p < 0.001$ and $\eta^2 = 1.00$, which shows that male participants (M =1.94, SD = 0.55) have higher levels of self-centeredness compared to female participants (M = 1.63, SD = 0.53).

Significant differences were also found in the dimension of risk-taking bias, F (1, 405) = 29.59, $p < 0.001$ and $\eta^2 = 1.00$, which shows that males (M = 2.44, SD = 0.62) have higher levels of risk-taking tendencies than females (M = 2.06, SD = 0.69). Finally, there were no significant differences in the explosive temperament dimension: F (1, 405) = 0.09, $p = 0.77$ and $\eta^2 = 0.06$. Regarding social anxiety, the results indicate statistically significant differences in both dimensions, namely anxiety, F (1, 405) = 26.84, $p < 0.001$ and $\eta^2 = 1$, and avoidance, F (1, 405) = 8.82, $p < 0.001$ and $\eta^2 = 0.84$. Thus, females show a higher level of anxiety (M = 2.41, DP = 0.64) and avoidance (M = 2.24, SD = 0.64) compared to males (M = 2.07, DP = 0.62; M = 2.04, SD = 0.60, respectively) (Table 1).

Table 1. Differential analysis of peer attachment, social anxiety and self-control according to sex.

Variables	Sex		IC 95%		Direction of Significant Differences
	1 = Male (N = 145) M ± SD	2 = Female (N = 262) M ± SD	1 = Male	2 = Female	
Attachment to Peers					
Communication	4.22 ± 0.82	4.53 ± 0.83	[4.08; 4.35]	[4.43; 4.63]	1 < 2
Alienation	2.76 ± 0.95	2.55 ± 0.93	[2.61; 2.91]	[2.44; 2.66]	1 > 2
Confidence	4.58 ± 0.77	4.77 ± 0.79	[4.46; 4.71]	[4.67; 4.86]	1 > 2
Social anxiety					
Anxiety	2.07 ± 0.62	2.41 ± 0.64	[1.97; 2.17]	[2.33; 2.49]	1 < 2
Avoidance	2.04 ± 0.60	2.17 ± 0.64	[1.94; 2.15]	[2.16; 2.31]	1 < 2
Self-control					
Self-centeredness	1.94 ± 0.55	1.63 ± 0.53	[1.86; 2.03]	[1.57; 1.70]	1 > 2
Tendency to take risks	2.44 ± 0.62	2.06 ± 0.69	[2.33; 2.55]	[1.98; 2.15]	1 > 2

Two groups were created regarding the participants' sleep time, group 1 (7 h or less, n = 222) and group 2 (8 h or more, n = 185), to perform differential analyses. Given this variable and this study's relevance, it was decided to analyze only self-control and social anxiety, as there is no evidence in the literature that hours of sleep can be related to the development of attachment, particularly with peers.

Regarding self-control, the results indicate the existence of significant differences in the dimension of risk-taking bias, F (1, 405) = 5.55, $p = 0.02$ and $\eta^2 = 0.65$, which shows

that individuals who report sleeping seven hours or less (M = 2.27, SD = 0.69) have higher levels of risk-taking tendencies compared to individuals who report sleeping eight hours or more (M = 2.11, SD = 0.68). There were also statistically significant differences in the explosive temper dimension: F (1, 405) = 6.05, p = 0.01 and η^2 = 0.69. It was found that individuals who report seven hours or less of sleep (M = 2.07, SD = 0.70) have higher levels of explosive temper compared to individuals who report eight hours or more of sleep (M = 1.89, SD = 0.73). Finally, there were no significant differences in the size of the self-centeredness: F (1, 405) = 0.53, p = 0.47 and η^2 = 0.11. Regarding social anxiety, the results reveal the existence of a higher prevalence of anxiety, F (1, 405) = 7.01, p = 0.01 and η^2 = 0.75, to the extent that individuals who report seven hours or less of sleep (M = 2.37, SD = 0.60) have higher levels of anxiety compared to individuals who report eight hours or more of sleep (M = 2.19, DP = 0.60). There were also statistically significant differences in the avoidance dimension, F (1, 405) = 4.96, p = 0.03 and η^2 = 0.60, which shows that participants with seven hours or less of sleep (M = 2.23, SD = 0.67) have higher levels of avoidance than participants who report eight hours or more of sleep (M = 2.09, SD = 0.59) (Table 2).

Table 2. Differential analysis of social anxiety and self-control according to sleep time.

Variables	Sleep Time		IC 95%		Direction of Significant Differences
	1 ≤7 h (N = 222) M ± SD	**2 ≥8 h (N = 185) M ± SD**	**1 = ≤7 h**	**2 = ≥8 h**	
Social anxiety					
Anxiety	2.37 ± 0.69	2.19 ± 0.60	[2.28; 2.45]	[2.10; 2.29]	1 > 2
Avoidance	2.23 ± 0.67	2.09 ± 0.59	[2.15; 2.31]	[2.00; 2.18]	1 > 2
Self-control					
Tendency to take risks	2.27 ± 0.69	2.11 ± 0.68	[2.18; 2.36]	[2.01; 2.21]	1 > 2
Explosive temper	2.07 ± 0.70	1.89 ± 0.73	[1.98; 2.16]	[1.79; 2.00]	1 > 2

Regarding the frequency of physical exercise of the participants, three groups were created, group 1 (Never or almost never, N = 106), group 2 (With some frequency, N = 206) and group 3 (Very often, N = 96), to perform differential analyses. As in the previous analysis, given this variable and this study's relevance, it was decided to analyze only self-control and social anxiety.

Regarding self-control, the results show statistically significant differences in the dimension of tendency to take risks, with individuals who never or almost never practice physical exercise (M = 2.00, SD = 0.72) having lower levels of risk-taking tendencies than individuals who exercise frequently (M = 2.21, SD = 0.66) and individuals who exercise very frequently (M = 2.39, SD = 0.65). Finally, there were no significant differences in the self-centeredness dimension, F (2, 404) = 0.93, p = 0.39 and η^2 = 0.21, and explosive temper, F (2, 404) = 1.89, p = 0.15 and η^2 = 0.39.

Regarding social anxiety, the results indicate that there are statistically significant differences in the anxiety dimension: F (2, 404) = 10.42, $p < 0.001$ and η^2 = 0.99; this shows that individuals who never or almost never practice physical exercise (M = 2.50, SD = 0.67) have higher levels of anxiety compared to individuals who practice physical exercise with some frequency (M = 2.28, SD = 0.65) and individuals who exercise very frequently (M = 2.08, SD = 0.60). The results also show significant differences in the avoidance dimension, F (2, 404) = 6.52, $p < 001$ and η^2 = 0.91, to the extent that participants who never or almost never engage in physical exercise (M = 2.33, SD = 0.66) have higher levels of avoidance than individuals who exercise very frequently (M = 2.01, SD = 0.56) (Table 3).

Table 3. Differential analysis of social anxiety and self-control according to physical exercise practice.

Variables	Physical Exercise Practice			IC 95%			Direction of Significant Differences
	1 = Never or Almost Never (N = 106) M ± SD	2 = With Some Frequency (N = 205) M ± SD	3 = Very Often (N = 96) M ± SD	1 = Never or Almost Never	2 = With Some Frequency	3 = Very Often	
Social anxiety							
Anxiety	2.50 ± 0.67	2.28 ± 0.65	2.08 ± 0.60	[2.37; 2.62]	[2.19; 2.37]	[1.96; 2.21]	1 > 2; 1 > 3
Avoidance	2.33 ± 0.66	2.16 ± 0.64	2.01 ± 0.56	[2.21; 2.45]	[2.07; 2.25]	[1.88; 2.13]	1 > 3
Self-control							
Self-centeredness	1.68 ± 0.55	1.76 ± 0.57	1.97 ± 0.55	[1.58; 1.79]	[1.69; 1.84]	[1.66; 1.89]	n.s.
Tendency to take risks	2.00 ± 0.72	2.21 ± 0.66	2.39 ± 0.65	[1.87; 2.12]	[2.12; 2.31]	[2.26; 2.53]	1 < 2; 1 < 3
Explosive temper	2.08 ± 0.77	1.99 ± 0.70	1.89 ± 0.69	[1.95; 2.22]	[1.89; 2.09]	[1.74; 2.03]	n.s.

3.2. Role of Peer Attachment and Self-Control in Social Anxiety

The present study also aimed to analyze the role of the quality of peer attachment and self-control in the anxiety of young adults who come from a university context. To this end, a model of structural equations was carried out through the AMOS program. The dimensions of alienation of the IPPA, as well as a tendency to take risks, self-centeredness, the explosive temper of the EBA, anxiety and avoidance were included in the model. It should be noted that the dimensions of trust and communication were removed from the model because there were no significant links with the dependent variables, which did not fit the model of the present sample (Figure 1).

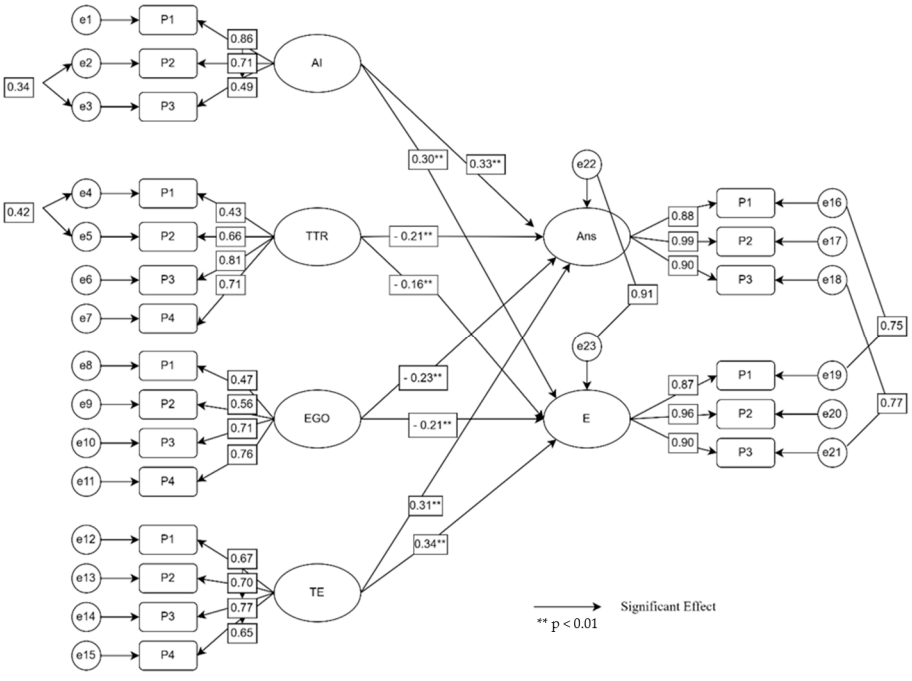

Figure 1. Representative model of the role of peer attachment and self-control in social anxiety. Note: Al = Alienation (peer attachment); TTR = Tendency to take risks (self-control); Ego = Self-centeredness (self-control); TE = Explosive temper (self-control); Ans = Anxiety; E = Avoidance; P = Parceling; χi^2 (170) = 403.84; $p < 0.001$; χi^2/df = 2.38; CFI = 0.96; TLI = 0.95; RMR = 0.07; and RMSEA = 0.06.

The results of the model indicate that alienation in peer bonding plays a positive role in anxiety (β = 0.33) and avoidance (β = 0.31).

Regarding self-control, the data indicate that the tendency to take risks has a negative effect on anxiety (β = −0.21) and on avoidance (β = −0.16). The results also show that self-centeredness plays a negative role in anxiety (β = −0.23) and avoidance (β = −0.21), and the explosive temper plays a positive role in anxiety (β = 0.31) and avoidance (β = 0.34). The model has appropriate adjustment ratios: χi^2 (170) = 403.84; $p < 0.001$; $\chi i^2/df = 2.38$; CFI = 0.96; TLI = 0.95; RMR = 0.07; and RMSEA = 0.06 (Figure 1).

4. Discussion

The purpose of this research was to analyze the role of peer attachment and self-control in the development of social anxiety in young adults who come from the university context.

The observed results indicate statistically significant differences as a function of gender. In this sense, males show lower levels of peer communication compared to females. Thus, higher levels of communication may be related in the present sample to the perception of responsive peers sensitive to their emotional states. Compared to men, women may be more likely to cope with the stress of work and family by turning to their peers for emotional support to help them cope constructively with stress and interpersonal conflict (McCormick and Shields 2016).

Conversely, males exhibit higher levels of alienation and trust in peers compared to females. The results suggest that men's perception of their representation with peers may depend on the quality of the relationship and closeness, so feelings of distancing and isolation can jeopardize some relationships with peers. On the other hand, they have relationships characterized by higher levels of trust, perceiving peers as understanding and respecting their needs and desires. The results suggest that males are more selective in choosing friendships, corroborating the literature, as women are more likely to have a broader view of friendships. In contrast, men have a more restricted circle of friends (Guerrero et al. 2022).

Regarding anxiety, it is found that young males have lower levels of anxiety and avoidance compared to young females. These differences may be because emotional expression is more restricted for males, given the sociocultural context, since a more rational posture is expected compared to females (McCormick and Shields 2016).

The results also indicate that males show higher self-centeredness and risk-taking tendencies than female participants. This result can be framed according to the gender roles still established in society, where sometimes it is still expected that the male sex shows a greater desire for power, as well as a greater tendency to seek authority and dominance (Skelly and Johnson 2011; Zhu and Chang 2019).

Regarding sleep time, the results indicate that young people who sleep seven or fewer hours show higher levels of anxiety and avoidance compared to young people who sleep more than eight hours a day. In addition, participants who sleep seven or fewer hours daily show higher risk-taking tendencies and levels of explosive temper when compared to participants who sleep eight or more hours. These results align with expectations, as sleep is a restorative factor that can protect against the development of mental pathology. According to Palmer and Alfano (2017), the inability to obtain enough sleep can lead to emotional consequences that put individuals at risk for a range of psychological disorders. Poor sleep duration in young people alters their routine and behavior and contributes to the decline in physical and mental health (Felden et al. 2016). Lack of rest and poor sleep quality are closely associated with the presence of anxiety symptoms (Duarte et al. 2020).

Regarding the practice of physical exercise, individuals who never or almost never practice physical exercise show higher levels of anxiety and avoidance compared to individuals who practice physical exercise with some frequency or very often. The results, also expected, can be justified by the fact that regular aerobic physical exercises can produce antidepressant and anxiolytic effects, protecting the body physically and mentally (Araújo et al. 2007). According to the literature, several studies have found significant differences between a sedentary lifestyle and physical exercise, to the extent that exercise is associated with lower levels of anxiety (Carmeli et al. 2009; Ströhle 2009; Thivel et al. 2018).

Finally, individuals who never or almost never exercise are less likely to take risks than participants who exercise frequently or very often. The results do not partially corroborate the literature, which indicates that the practice of physical exercise reduces the practice of risky behaviors (Culpepper and Killion 2017). In this sense, we can consider in the present sample that the perception of risk-taking is associated with young people with initiative and more significant activity, either in the development of physical activity or interaction with peers. Less predisposition to physical activity may be associated with less secure peer relationships, potentiating more inhibiting behaviors and anxiety and less tendency to take risks (Chiu et al. 2021; Gillespie et al. 2015).

Finally, the final model of the present study points out that alienation plays a positive role in anxiety and avoidance. In this sense, the importance of quality relationships with peers seems to be noticeable, to the extent that young adults who establish affective relationships in which they feel left out and misunderstood have a greater tendency to avoid going out or exposing themselves to others, thus showing higher levels of anxiety and avoidance. On the other hand, the tendency to take risks and self-centeredness negatively predict anxiety and avoidance. These results suggest that individuals with self-centered traits, predisposed to risk-taking, tend to seek authority and dominance, more often assuming leadership roles. These characteristics are not common in individuals with anxiety (Yip and Côté 2013).

Finally, the results show that explosive temper plays a positive role in anxiety and avoidance. Thus, young adults with explosive temper are more likely to manifest difficulties in dealing with stress and adverse situations, withdrawing or expressing their frustrations in a destructive way, which can lead to the development of anxiety and avoidance. Several studies demonstrate that university students with higher levels of self-control have better psychological adjustment and better performance in interpersonal relationships (Li et al. 2023). BlaCkhart et al. (2015) corroborate the importance of young people's personal development for their adaptation to the context, namely tolerance in the face of adversity and the capacity for self-control that can prevent the development of anxiety and social avoidance.

5. Practical Implications, Limitations and Future Studies

The present study provided a deeper understanding of the role of peer attachment and self-control in the development of social anxiety in young adults. The results show that positive relationships with peers based on trust, reciprocity and understanding are associated with lower levels of anxiety and avoidance. On the other hand, when peers are perceived as unavailable and unsupportive, there are higher levels of anxiety and avoidance in young adults. In addition, the results indicate that self-control is associated with lower levels of anxiety and avoidance, as the explosive temperament and the tendency to take risks contribute to the emergence of higher levels of anxiety and avoidance. Given the above, we highlight the importance of peer attachment and self-control when adapting young adults to a new context, such as university.

The relevance of this study is related to its approach to relational dynamics in the personal and adaptive development of young adults, which highlights the fundamental role of peers in adapting to new challenges. In addition, the concept of "emerging adults" is also known in the scientific community, which focuses on the importance of relational dynamics in the personal and adaptive development of young adults in a university context. The importance of sleep time is also highlighted since the present study concluded that young adults who sleep seven hours or less show higher levels of anxiety, avoidance, risk-taking tendencies and explosive temper than young adults with more than eight hours of sleep. In addition, the role of physical exercise in mental health is also highlighted, as individuals who never or almost never practice physical exercise manifested higher levels of anxiety, avoidance and tendency to take risks compared to individuals who practice physical exercise with some frequency or very often.

The present research has some limitations. First, the cross-sectional nature of the present study is emphasized, which constitutes a limitation, given the impossibility of establishing causal relationships. This procedure only contributes to an understanding of the results over time. The use of self-report questionnaires is also a limitation since the presence of social desirability on the part of young adults is more easily verified, which conditions their levels of sincerity in the response.

Regarding future studies, it would be interesting to carry out longitudinal studies in which it would be possible to analyze the emergence of social anxiety over time and at different stages of the subject's life. In this sense, considering the impact of the most recent COVID-19 pandemic, it would be interesting to assess the effects on the mental state of students over time, reinforcing that it is important to continue researching the subject. It is also evident that the university's role is to develop integrated actions for preventing and monitoring university students. Programs focused on raising awareness of the different manifestations of emotions, their expression and emotional differentiation are essential. In addition, it could be relevant to consider students from other European countries and universities in the future, to understand the influence of cultural factors on how individuals tolerate uncertainty, experience anxiety symptoms and adopt avoidance behaviors. In future studies, it would also be interesting to introduce the variable academic conditions and romantic partner (testing their protective effect) and the inclusion of other psychosocial and developmental variables, such as social skills and coping.

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