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Emotional awareness mediates the relationship between attachment and anxiety symptoms in adolescents

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ABSTRACT

Attachment influences the experience of anxiety symptoms in adolescence and emotion regulation seems to mediate this influence. Nevertheless, studies of the role of emotional awareness are lacking. The aim of this study is to examine the direct and indirect effects of adolescents' attachment patterns on anxiety regarding the mediatory role of two emotion awareness dimensions, namely body awareness and differentiating emotions. The participants completed self-report instruments on attachment, emotion awareness, and anxiety, and serial mediation models were used to analyse the data. Both secure and anxious/ambivalent attachment have a positive indirect effect on anxiety through body unawareness, and avoidant attachment shows a unique positive direct effect on anxiety. Attachment was not a predictor of differentiating emotions and this was not a predictor of anxiety. The results are discussed and implications for practice highlight the core role of body awareness in preventive interventions of adolescents' anxiety problems.

1. Introduction

Anxiety problems are prevalent in adolescents worldwide (United Nations Children's Fund, 2021) and have increased in recent generations (Bor et al., 2014). In addition to poor quality of life (Raknes et al., 2017), anxiety problems can threaten adolescents' adaptive functioning and the accomplishment of developmental tasks, such as school failure, withdrawal from peer relationships, or low self-esteem (e.g., Gómez-Ortiz et al., 2018; Riglin et al., 2014). Moreover, adolescent anxiety problems can lead to serious long-term consequences, such as adult poor adjustment at work and family relationships, poor coping skills, and more chronic stress, substance and alcohol-related problems, and anxiety problems (Essau et al., 2014). Research on the aetiology of anxiety, and the associated risk and protective factors is now providing some clues to inform the design of better prevention and treatment programmes to face these public health challenges (e.g., Cabral & Patel, 2020). Therefore, this article focuses on the possible contribution of attachment and two specific emotion awareness dimensions to anxiety in adolescents.

According to Bowlby's (1969) attachment theory, adaptive child development and mental health depend heavily on early relationships with caregivers. From the repeated interactions with the caregiver, the child builds internal working models, which are "mental representation of the self, significant others, and the self in relation to others that guide affect, cognitions, and behaviour in intimate relationships" (Sutton, 2019, p.1), and also in times of distress (Fearon et al., 2016). Despite being open to change, these attachment representations are moderately stable across the lifespan (Allen et al., 2018; Fraley, 2002). The secure and insecure attachment patterns that are identified in early relationships can also be described in middle childhood, adolescence and adulthood (Fearon et al., 2016). Secure attachment is the outcome of the child's repeated interaction with available and responsive caregivers. It also gives a sense of personal worthiness, safety, and trust when relating to others (Ainsworth et al., 1978; Bowlby, 1969). The insecure anxious/ambivalent attachment emerges from early interactions with inconsistently available and responsive caregivers, and is characterised by continually looking for others' proximity and concern about relationships, particularly rejection (Ainsworth et al., 1978; Mikulincer & Shaver, 2019). The insecure avoidant attachment emerges from interactions with consistently unavailable caregivers, which promotes

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self-reliance and a tendency to be emotionally distant from others (Ainsworth et al., 1978; Mikulincer & Shaver, 2019).

As Bowlby (1973)) suggested, a child's repeated concern about the availability of caregivers can open a pathway for anxiety problems. Accordingly, recent research has focused on adolescents, which showed that insecure attachment (and more consistently, the anxious/-ambivalent attachment), both to parents and peers, is related to a higher severity of anxiety problems in clinical and non-clinical adolescents (Lacasa et al., 2015; Lam et al., 2019; see the reviews of Brumariu & Kerns, 2010; Colonnesi et al., 2011; Dagan et al., 2020; Esbjørn et al., 2012; Gorrese, 2016; Madigan et al., 2016). Moreover, secure attachment has been related to several positive adjustment indicators, including less anxiety, depression and fewer externalising problems (e.g., Gorrese, 2016; Lacasa et al., 2015).

Emotion regulation seems to play a critical role in the pathway between attachment and maladjustment indicators in adolescents, such as depression (Carapeto et al., 2022; Cortés-García et al., 2020) and anxiety (Esbjørn et al., 2012). It has been argued that early-attachment relationships influence emotion-regulation development (Bowlby, 1967, 1973; Fearon et al., 2016; Mikulincer & Shaver, 2019). In particular, different patterns of attachment have been related to specific emotion-regulation strategies throughout the lifespan (e.g., Long et al., 2020; Mikulincer & Shaver, 2019). While secure attachment-related emotion-regulation strategies manage distress with the effective help of the attachment figures (actual or representations), insecure attachment-related strategies intensify or deactivate proximity-seeking to attachment figures (Mikulincer & Shaver, 2019). Previous studies have shown that anxious/ambivalent attachment gives rise to hyper-activating strategies in response to distress (e.g., intensive seeking and depending on others to alleviate distress), whereas avoidant attachment seems to favour deactivating strategies (e.g., try to suppress emotions and their expression; Long et al., 2020; Mikulincer & Shaver, 2019; Stevens, 2014). Both of these strategies emerge first as adaptive efforts of a child dealing with inconsistently available or consistently unavailable caregivers, respectively, but ultimately do not seem effective in alleviating distress and can indeed intensify suffering and anxiety symptoms (Mikulincer & Shaver, 2019). Meanwhile, secure attachment has been related to the balanced use of hyper-activating and deactivation strategies (Long et al., 2020; Mikulincer & Shaver, 2019), and also to the use of more adaptive emotion-regulation skills (e.g., Laible, 2007; Long et al., 2020). Furthermore, research supports the link between emotion-regulation difficulties and an adolescent's anxiety (Mónaco et al., 2019; see reviews by Brumariu & Kerns, 2010; Esbjørn et al., 2012; Golombek et al., 2020; Mathews et al., 2016; Schäfer et al., 2017).

Some aspects of emotion regulation may not have been yet addressed. According to Gross (2015), emotion regulation encompasses three stages: (a) identify an occurring emotion and set a goal to change it if regulation is needed; (b) select an emotion-regulation strategy; and (c) implement the strategy in the current situation. The cyclical sequence of identification-selection-implementation stages allows a continuous monitoring of the emotional response and new decisions on continue, stop or change implementing strategies to down- or up-regulate emotion (Gross, 2015; Thompson, 2011).

Studies about the mediation role of emotion regulation in the relation between attachment and anxiety symptoms in adolescence (Bender et al., 2015; Mónaco et al., 2019; see also reviews by Brumariu & Kerns, 2010; Esbjørn et al., 2012) mainly address the second (selection) and the third (implementation) stages (Gross, 2015). Therefore, research on the role of the abilities that are involved in the identification stage, such as emotional awareness, is lacking. Emotional awareness is an attentional process that "not only enables us to monitor our emotions but also to differentiate between various emotions in a qualitative sense; to locate their antecedents; and to acknowledge the physiological correlates of the emotional experience for what they are" (Rieffe et al., 2008, p. 756). The ability to identify emotions and their causes is critical to activating the most appropriate strategies to modify emotional states if needed (Eastabrook et al., 2014; Kranzler et al., 2016). Although most research is correlational (Klemanski et al., 2017; see meta-analysis by Mathews et al., 2016; Sendzik et al., 2017), longitudinal studies (e.g., Kranzler et al., 2016; Nook et al., 2017; Schneider et al., 2018) have shown that a lack of emotional awareness predicted later anxiety symptoms. For adolescent's attachment, studies have shown that there is a relationship between the adolescent's secure attachment to their parents and peers and better emotional awareness (Laible, 2007), and between insecure attachment and emotional awareness difficulties (Mikulincer & Shaver, 2019; Stevens, 2014). Nevertheless, the correlational design of most of these studies does not allow them to infer causality.

Emotional awareness is a multidimensional construct. Two main dimensions have been highlighted and have been found to be differently related to anxiety problems—body awareness and differentiation of emotions (Rieffe et al., 2008; Trevisan et al., 2019). Body awareness of emotions refers to the attention to physiological aspects of emotions and the notion that these somatic sensations are part of the emotional response, therefore providing an internal focus on the emotional experience (Rieffe et al., 2008). In contrast, differentiation of emotions involves differentiating between different emotions (e.g., sad vs angry) and identifying the emotion-evoking situations. Therefore, it is more closely orientated to the external aspects of the emotional experience (Rieffe et al., 2008). Lower differentiation of emotions has been consistently related to higher severity of anxiety symptoms (e.g., Kashdan & Farmer, 2014; Rieffe et al., 2008). Some researchers have shown that body awareness plays a role in amplifying ongoing anxiety responses (Rossignol et al., 2016; Rieffe et al., 2008), while others highlight its role in identifying the first somatic sensations of an anxiety response. This allows a ready implementation of the most adequate strategies to down-regulate and prevent anxiety from escalating (Gross, 2015; Roemer et al., 2015).

The relationship between emotional awareness dimensions (i.e., body awareness and differentiation of emotions) and attachment is not yet clear. Attachment insecurity has been inconsistently related to lower awareness of internal body sensations (i.e., interoceptive awareness; Ferraro et al., 2021; Oldroyd et al., 2019) and lower differentiation of emotions (Starr et al., 2020). For instance, the concern regarding other's love and acceptance, which is characteristic of insecure anxious/-ambivalent attachment, might lead to a hypervigilant attention and check of own's body states as a way of maximising threat signal detection (Oldroyd et al., 2019).

Although previous studies have found that emotional awareness plays a mediatory role in the relationship between attachment security and anxiety in children (Brumariu et al., 2012) and adults (Marques et al., 2018; Radetski et al., 2021), to the best of our knowledge no study has yet addressed this relationship in adolescents or considered the different dimensions of emotional awareness.

1.1. The present study

Considering the findings from the previous section, emotional awareness seems to be a good candidate to mediate the possible effect of adolescent's attachment to anxiety symptoms. The present study aims to disentangle the role of different attachment patterns and different emotional awareness dimensions in an adolescent's anxiety. Using serial mediation analysis, the goals of this study are to examine: (a) the direct effect of three attachment patterns (i.e., secure, anxious/ambivalent, and avoidant) on anxiety; and (b) the indirect effects of each attachment pattern on anxiety via three alternative pathways, namely body awareness of emotions, differentiation of emotions, and the sequence of body awareness and differentiation of emotions. Previous studies have shown the effect of gender and age on anxiety (United Nations Children's Fund, 2021; Cohen et al., 2018) and on emotional-awareness dimensions (Kranzler et al.,2016; Van der Veek et al., 2012). Therefore, the possible effects of gender and age will be controlled in this study. Likewise, considering that previous studies (e.g., Anderson &

Hope, 2008) have shown that there is a link between anxiety and depression, the possible effects of depression will be also controlled.

2. Method

2.1. Participants

In total, this study includes 223 students (127 female, 57%), whose average age was 13.51 years (SD = 1.13; 12–16 years old) and who were attending the 7th grade ($N = 83$, 37.2%), 8th grade ($N = 69$, 30.9%) and 9th grade ($N = 71$, 31.8%) in three public schools in the south of Portugal. Some of the participants reported to have no brothers or sisters (14.8%), while the majority (63.7%) reported to have a single brother or sister. Most participants reported that they had always lived in their parents' house (74.9%) and to currently live with both parents (76.7%). The majority reported that their mothers (46.6%) and fathers (35.9%) had received a higher education, while some reported that mothers (30.5%) and fathers (26.9%) had secondary education

2.2. Instruments and measures

The Childhood and Adolescence Attachment Inventory **(**CAAI; Carvalho, 2007) is a self-report questionnaire that measures representations and behaviours of three attachment patterns. The secure attachment scale measures issues of trust in the other and one's own abilities (e.g., "I like feeling close to other people"*;* $\alpha = 0.73$). The anxious/ambivalent scale measures the apprehension and concerns about relationships (e.g., "I am concerned about the possibility of being alone"*;* $\alpha = 0.84$), while the avoidant attachment scale measures dependence and avoidance (e.g., "I am concerned if I have to depend on other people"; $\alpha = 0.63$) (Carvalho, 2007). Each scale includes eight items to be answered on a five-point Likert scale, ranging from 1 (never) to 5 (always), and its score is the sum of its item scores. Higher scores reflect higher level of behaviours and representations in an attachment scale (Carvalho, 2007). The validation of the CAAI showed good psychometric qualities (Carvalho, 2007), which were confirmed in the present study.

The Emotion Awareness Questionnaire (EAQ; Rieffe et al., 2008; Veiga et al., 2019) was used to measure body unawareness of emotions (or lack of body awareness; five items; e.g., "When I am scared or nervous, I feel something in my tummy"; $\alpha = 0.68$) and differentiating emotions (seven items; e.g., "I am often confused or puzzled about what I am feeling"; $\alpha = 0.71$). Items are rated on a three-point Likert scale from 1 (not true) to 3 (often true). Each scale score is the average score of its items. Higher scores indicate better emotional awareness and are associated with less negative affective states. The original validation of the Portuguese version showed good psychometric qualities (Veiga et al., 2019), which was confirmed in the present study. In line with the original version of the EAQ, the term body unawareness was maintained in the results section. However, for reasons of clarity and in line with the conceptual framework, we interpret the results as reversed and refer to body awareness in the discussion section.

Anxiety and depression were measured with the respective scales of the Depression, Anxiety, Stress Scales – 21 (Lovibond & Lovibond, 1995; Portuguese version, Leal et al., 2009). In this self-report questionnaire, each scale comprises eight items scored from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). The anxiety (e.g., "I was aware of dryness of my mouth"; $\alpha = 0.81$) and the depression (e.g., "I couldn't seem to experience any positive feeling at all"; $\alpha = 0.85$) scores were obtained by adding the scores of the respective items and multiplied by two. Higher results are associated with higher severity of symptoms. The original validation of the Portuguese version showed good psychometric qualities (Leal et al., 2009), as confirmed in the present study.

2.3. Procedure

This research was approved by the Ethics Committee of the University and permission to collect the data in the schools was obtained from the Portuguese Ministry of the Education. A convenience sampling method was used to compose the sample. Schools were selected according to geographical proximity and the agreement of the principals to allow data collection in their schools. The inclusion criteria for the participants were: (a) to be a student in 7th to 9th grade; (b) ability to read and understand the self-report instruments questions, and to register written answers; and (c) parents (or other legal guardians) and students have provided written informed consent to participate in the study. A form with information about the study and informed consent was delivered to a total of 307 7th to 9th grade students and their parents (or legal guardians), of which 227 were returned as valid informed consent. Between April and June 2018, a trained collaborator administered the questionnaires in the classrooms during class time to 224 students who had returned signed informed consents. One student did not provide information about age and was excluded. Two students missed the administration date.

2.4. Data analysis strategy

The statistical analysis was conducted with the Statistical Package for the Social Sciences (SPSS) v. 24. A small portion of missing values (0.52%) was found in the response to the self-report instrument items, which were replaced using the median of nearby points technique. The values of the variables were then computed. Despite unfavourable normality tests (Kolmogorov-Smirnov), the skewness and kurtosis values, and Q-Q plots were consistent with normal distribution for all of the measures. Mean and standard deviations were computed for age, attachment (secure, anxious/ambivalent and avoidant), emotional awareness dimensions (body unawareness of emotions and differentiating emotions) and internalising problems (anxiety and depression), as well as Pearson correlations between the variables (point biserial, for correlations with gender).

The multiple serial mediation analyses were performed with the Hayes (2018) Process v. 3.5 macro for SPSS, which is based on the regression ordinary least squares method that uses a path analyses approach. As illustrated in Fig. 1, the serial mediation analyses were based on model 6 and followed Hayes's (2018) guidelines. Overall, the models included eight predictors: three attachment patterns (secure, anxious/ambivalent and avoidant), two mediators (body unawareness and differentiating emotions, in this sequence), and three other covariates (gender, age and depression). Anxiety was the outcome variable. Model fit statistics were provided (R^2 and F-Tests) for each path.

The estimates of the direct and indirect effects of each attachment pattern were obtained by running the model one time for each attachment pattern as an independent variable (the other two as covariates). The serial mediation analysis computed regression coefficients for each

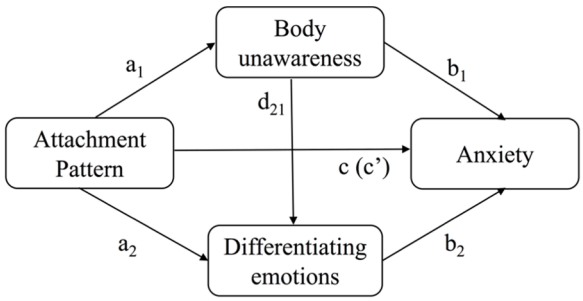

Fig. 1. General serial multiple mediation model
Note. Gender, age and depression are used as covariates (in addition to the other two attachment patterns).

path in the models (e.g., a_1, a_2, b_1, b_2, d_{21}; Fig. 1) and estimates of the total (c path; mediators not in the model), direct (c' path; mediators in the model) and indirect (a_1b_1, a_2b_2, and a_1d_{21} b_2 paths) effects of attachment on anxiety symptoms. To test the significance of the effects, 95% percentile bootstrap confidence intervals and bootstrap standard errors were computed (10.000 bootstrap samples). In addition, a heteroscedasticity-consistent method (i.e., HC3) was used to compute standard errors. Bootstrap resampling and heteroscedasticity-consistent methods assure more robust inference and are especially useful in the presence of violations of normality and homoscedasticity, respectively (Hayes, 2018). An effect was considered significant when the confidence interval contains zero. Otherwise, the threshold for statistical significancy was $p < .05$.

3. Results

Table 1 gives the mean and standard deviation values and the correlation coefficients of the variables. The estimates for the total, direct and indirect effects of attachment on anxiety are presented in Table 2, as well as the coefficients for the remaining paths in the models. Fig. 2 illustrates the relationships between the variables.

3.1. Preliminary analysis

Gender differences were found for anxious/ambivalent attachment, higher in girls ($p = .019$), and emotional awareness dimensions, such that males reported higher body unawareness ($p = .019$) and greater ability to differentiate emotions ($p = .017$).

Secure attachment was negatively associated with anxiety ($p = .001$), while both insecure attachment patterns were positively associated ($p < .001$). Anxious/ambivalent attachment ($p < .001$) and avoidant attachment ($p = .004$) were negatively related to differentiating emotions. However, anxious/ambivalent attachment was the only attachment pattern that was associated with body unawareness, such that adolescents with higher scores on anxious/ambivalent attachment present lower body unawareness ($p < .001$). Both emotional awareness dimensions (i.e., body unawareness and differentiating emotions) were negatively associated with anxiety and depression ($p < .001$). Positive associations were found between anxious/ambivalent and avoidant attachment ($p < .001$), and between depression and anxiety ($p < .001$).

3.2. Total and direct effects of attachment on anxiety

The total effect models revealed that the attachment patterns (together with the covariates gender, age and depression) explained 54% of the variance of anxiety, $R^2 = 0.54$, F (6, 216) = 25.21, $p = .000$, and the direct effects models (which included the mediators) explained 57%, $R^2 = 0.57$, F (8214) = 23.78, $p = .000$. However, as indicated in Table 2, only avoidant attachment showed a positive direct effect on anxiety (c' path). In other words, more avoidant attachment predicted higher levels of anxiety, even when the emotion awareness dimensions were included in the model. Secure and anxious/ambivalent attachment were not predictors of anxiety, either in the total (c path) or direct (c' path) effects models.

3.3. Effect of attachment on emotional awareness dimensions

The models with the attachment patterns (and the covariates gender, age and depression) as predictors were able to explain 18% of the variance of body unawareness (a_1 paths), $R^2 = 0.18$, $F(6216) = 8.92$, $p = .000$, and (adding body unawareness as covariate) 30% of differentiating emotions (a_2 and d_{21} paths), $R^2 = 0.30$, $F(7215) = 13.00$, $p = .000$.

The results in Table 2 show that both secure and anxious/ambivalent attachment negatively predicted body unawareness but not differentiating emotions. Avoidant attachment was not related to body unawareness or to differentiating emotions. In addition, body unawareness appeared as a negative predictor of differentiating emotions.

3.4. Indirect effects of attachment on anxiety

Secure attachment and, similarly anxious/ambivalent attachment, presented a unique effect on anxiety; that is, the positive indirect effect via body unawareness (a_1b_1 path): more secure (or more anxious/ambivalent) attachment predicted lower body unawareness, while lower body unawareness predicted higher levels of anxiety. Avoidant attachment was not a predictor of emotional awareness, and thus no indirect path to anxiety is significant. Regarding the two emotion awareness dimensions, only body unawareness was shown to be a negative predictor of anxiety.

4. Discussion

Anxiety symptoms have a significant impact on an adolescent's present and future well-being. Therefore, understanding the underlying mechanisms of their formation is of paramount importance for improving preventive and treatment interventions. Overall, the goal of this study was twofold. First, we aimed to analyse the influence of secure and insecure attachment patterns on an adolescent's anxiety symptoms. Second, we wanted to examine the mediatory role of two emotional awareness dimensions: body awareness and differentiation of emotions. Despite the specificity found, the three attachment patterns were related to anxiety symptoms and body awareness of emotions had a core role in these mechanisms.

Table 1
Means and Standard Deviations, and Pearson correlations.

	M	*SD*	Correlations							
			Gender	1	2	3	4	5	6	7
1 - Age	13.51	1,13	.12							
Attachment										
2 - Secure	33.56	4.25	−0.08	−0.13						
3 – Anxious/Ambivalent	21.00	7.92	−0.16*	.02	.02					.
4 - Avoidant	24.42	5.10	.03	.04	−0.13	.30**				
Emotional Awareness										
5 – Body Unawareness	1.88	0.54	.16*	−0.03	−0.09	−0.35**	−0.08			
6 - Differentiation	2.15	0.44	.16*	.04	.02	−0.39**	−0.19**	.35**		
Internalising										
7 - Depression	10.21	9.65	−0.04	.04	−0.27**	.44**	.27**	−0.31**	−0.46**	
8 - Anxiety	7.96	8.60	.05	−0.06	−0.22**	.37**	.31**	−0.36**	−0.38**	.71**

Note. $N_{total} = 223$, $N_{Female} = 127$; $N_{Male} = 96$. Female = 0, Male = 1.
* Significant at the 0.05 level (2-tailed).
** Significant at the 0.001 level (2-tailed).

Table 2
Total, direct and indirect (via body unawareness and differentiating emotions) effects of each attachment pattern on anxiety (serial mediation analysis).

Attachment (X)/path	Anxiety (Y)		
	Effect	*SE*	95% *CI*
Secure			
→ Body unawareness (a_1)	−0.019	.008	[−0.036, −0.003]
→ Differentiating (b_1)	−0.005	.007	[−0.019, 0.008]
→ Anxiety (total effect, c)	−0.064	.107	[−0.275, 0.147]
→ Anxiety (direct effect, c')	−0.121	.105	[−0.328, 0.080]
Indirect effects			
Total	.057	.030	[.008, 0.125]
→ Body unawareness → Anxiety (a_1b_1)	.054	.029	[.007, 0.120]
→ Differentiating → Anxiety (a_2b_2)	.002	.010	[−0.012, 0.028]
→ Body unawareness → Differentiating → Anxiety ($a_1d_{21}b_2$)	.001	.003	[−0.006, 0.009]
Anxious-ambivalent			
→ Body unawareness (a_1)	−0.015	.005	[−0.024, −0.006]
→ Differentiating (a_2)	−0.008	.004	[−0.017, 0.001]
→ Anxiety (total effect, c)	.074	.061	[−0.046, 0.194]
→ Anxiety (direct effect, c')	.026	.060	[−0.092, 0.148]
Indirect effects			
Total	.048	.021	[.011, 0.094]
→ Body unawareness → Anxiety (a_1b_1)	.044	.019	[.012, 0.087]
→ Differentiating → Anxiety (a_2b_2)	.004	.010	[−0.015, 0.028]
→ Body unawareness → Differentiating → Anxiety ($a_1d_{21}b_2$)	.001	.003	[−0.004, 0.007]
Avoidant			
→ Body unawareness (a_1)	.004	.008	[−0.010, 0.019]
→ Differentiating (a_2)	−0.005	.006	[−0.016, 0.007]
→ Anxiety (total effect, c)	.177	.091	[−0.002, 0.356]
→ Anxiety (direct effect, c')	.188	.086	[.022, 0.359]
Indirect effects			
Total	−0.011	.023	[−0.059, 0.034]
→ Body unawareness → Anxiety (a_1b_1)	−0.013	.022	[−0.057, 0.030]
→ Differentiating → Anxiety (a_2b_2)	.002	.008	[−0.0015, 0.020]
→ Body unawareness → Differentiating → Anxiety ($a_1d_{21}b_2$)	−0.000	.001	[−0.004, 0.002]
Remaining paths			
Body unawareness → Anxiety (b_1)	−2.858	.788	[−4.432, −1.318]
Differentiating → Anxiety (b_2)	−0.457	1.055	[−2.508, 1.633]
Body unawareness → Differentiating (d_{21})	.142	.052	[.041, 0.241]

Note. Unstandardised estimates. Standard error and 95% confidence intervals calculated by bootstrap, except for total effects. Covariates: gender, age and depression. An effect is significant when the confidence interval does not include zero.

Although indirect, secure attachment is positively related to anxiety. This indirect pathway through body awareness suggests that adolescents' secure attachment representations, which are characterised by a greater trust in others and the self, favour the attention to the somatic sensations of the emotional response, as previously suggested by others (e.g., Brumariu et al., 2012). Meanwhile, monitoring body correlates of emotions results in somatosensory amplification and overestimation of the physiological arousal, therefore intensifying the anxiety response (Ginzburg et al., 2014; Paulus & Stein, 2010; Siess et al., 2014) and compromising its management. This focus on the internal experience of emotions also undermines the adaptive external focus on the emotion-evoking situation, hence contributing to a lack of emotional regulation and increased anxiety (e.g., Rieffe et al., 2008). This indirect pathway through body awareness supports a more nuanced view of the relationship between secure attachment and anxiety. However, it is important to note that, although not significant, the direct path from secure attachment to anxiety was positive, which suggests the same protective role of secure attachment that is found in other studies (Brumariu et al., 2012; Brumariu & Kerns, 2010; Dagan et al., 2020; Gorrese, 2016; Lacasa et al., 2015). Further research is needed to replicate our results and clarify the interplay of secure attachment, emotion regulation (including body awareness and other emotional awareness dimensions) and anxiety. For instance, some recent dynamic models of attachment propose that the internal working models can be perceived not only as a trait but also as a state, and that emotion regulation use, interpersonal communication in close relationships, psychopathology, and so on, can produce transitory fluctuations in secure attachment (e.g., Kobak & Bosmans, 2019; Tammilehto et al., 2022). In addition, the high level of change and novelty that characterises adolescents' lives (e.g., Coleman, 2011) could promote the experience of anxiety, especially for the more securely attached adolescents who possibly feel more confident to explore (Allen & Miga, 2010).

The indirect pathway from anxious/ambivalent attachment to anxiety is consistent with other research that has shown that this attachment pattern is related to a higher interoceptive awareness (Mikulincer & Shaver, 2019; Oldroyd et al., 2019), which is in turn related to anxiety (Ginzbourg et al., 2014; Rieffe et al., 2008; Rossignol et al., 2022; Van der Veek et al., 2012). Altogether, these findings support the idea that in anxious/ambivalent attachment, "people's responsivity to bodily cues may mirror their responsivity to interpersonal cues" (Oldroyd et al., 2019, p. 5). In other words, the chronic concern that others reject or dislike themself promotes hyper-activating emotion-regulation strategies (Mikulincer & Shave, 2019), such as the permanent monitoring of body sensations. This body monitoring results in somatosensory amplification, and prevents the adaptive external focus and adequate emotion regulation, as mentioned earlier (Rieffe et al., 2008).

Together, these findings suggest that attachment and body awareness play complex roles in adolescents' mental health. Body awareness of emotional experience possibly acts through different pathways. While secure attachment promotes trust in somatic signals to guide adaptive responses (using somatic signs for this propose can be considered a healthier approach; e.g., Damásio, 1999; Ginzburg, 2014), anxious/-ambivalent attachment promotes a chronic concern and therefore hypervigilance on the somatic emotional experience (which is possibly a maladjustment approach; Ginzburg et al., 2014). Hence, a higher focus on the physiological signs of emotional experience ends up increasing and maintaining anxiety symptoms. This could be an example of equifinality, which is an important concept in developmental psychopathology that refers to different developmental pathways that lead to similar adjustment outcomes (Cichetti & Rogosh, 2002).

Regarding avoidant attachment, the significant direct effect on anxiety suggests that the concerns about dependency on others, the tendency to be self-reliant, and the social withdrawal that characterise avoidant attachment representations are related to symptoms of anxiety in adolescents, which is in line with previous studies (Brumariu & Kerns, 2010; Colonnesi et al., 2011; Dagan et al., 2020; Esbjørn et al., 2012; Gorrese, 2016; Madigan et al., 2016). Possibly, adolescents' higher avoidant internal working models promote a tendency to be self-reliant but do not provide the scripts and guidance that are required to deal with the challenges of adolescence (e.g., new social contexts, peers affiliation, intimacy, autonomy, identity formation; e.g., Coleman, 2011). This uncertainty about how to cope along with the exposure to stressful interpersonal events that one cannot avoid may surpass the expected ability to use de-activation regulation strategies (Mikulincer & Shaver, 2019) or forces the adolescent to rely on others' support (e.g.,

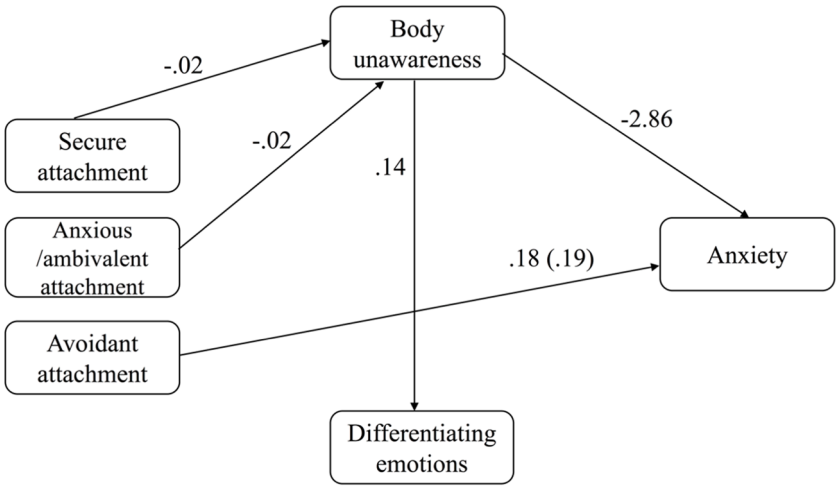

Fig. 2. Serial multiple mediation models for predicting anxiety
Note. Unstandardised coefficients. Covariates: gender, age, and depression.

parents) (Khan et al., 2020), and therefore increase anxiety. Meanwhile, avoidant attachment was not related to the emotional awareness dimensions, which is in line with previous research (Oldroyd et al., 2019; Stevens, 2014).

Differentiating emotions was revealed not to be an important predictor of anxiety. This emotional awareness ability may be more related to other internalised problems, such as depression (Carapeto et al., 2022; Nook et al., 2021), than to anxiety. However, the lack of body awareness is negatively related to the differentiation of emotions, which suggests that the internal focus on emotion-related physiological signs restrains the identification of different emotions and the external focus on possible triggering situations (Rieffe et al., 2008).

4.1. Limitations of this study and implications for research and practice

This serial mediation study supports the role of insecure attachment and body awareness of emotions in the emergence of anxiety problems. However, the cross-sectional design of the study has limited the assertion of causality and developmental claims. The perspective that secure attachment might contribute to adolescents' anxiety symptoms via the promotion of body awareness is a novel result and needs further research. Overall, longitudinal studies are needed to replicate the present findings with alternative measures and participants from the same and other developmental stages and cultures. Moreover, future studies should analyse body awareness through a multidimensional lens, focusing on other important aspects such as paying attention or trusting own body states for self-regulation. Recent multidimensional questionnaires such as the Multidimensional Assessment for Interoceptive Awareness for Youth (Jones et al., 2021) could be used in future studies. In addition, future studies could examine the differentiated role of externally/internally focused emotion-regulation strategies in the pathway between attachment and anxiety.

The current findings reinforce that assessment and interventions to prevent and treat anxiety should target the adolescent's attachment patterns and emotional awareness, particularly body awareness. Preventive interventions, which are frequently implemented in schools by teachers or other facilitators, can improve the adolescent's anxiety symptoms (Carsley et al., 2018; Shelemy et al., 2020). Although attachment is not a common target in such preventive programmes (see for instance, Foa et al., 2017; Shelemy et al., 2020), the improvement in attachment security (e.g., more positive expectancies and trust in mother's support) provided by some new attachment-focused interventions is promising (e.g., Bosmans, 2016; Kobak et al., 2015). However, more research is needed to ascertain the impact on anxiety symptoms. Meanwhile, some preventive interventions (e.g., psychomotor interventions; mindfulness interventions) can teach adolescents to focus their attention on body signs of emotional responses and show positive effects on the adolescent's mental health—and anxiety symptoms in particular (e.g., Carsley et al., 2018). Psychomotor intervention involves the awareness and regulation of somatic (i.e., interoceptive, proprioceptive, and exteroceptive) sensations and the contextualisation of these sensations; that is, discovering and gaining awareness of the link between the body, emotions, and situations (Veiga & Rieffe, 2015). Meanwhile, mindfulness implies attention but also the acceptance of the arising emotional states and the ability to down-regulate them (Roemer et al., 2015). Altogether, these findings suggest that rather than trying to reduce the attention to the emotion-somatic correlates, adolescents should learn to contextualise and accept emotional responses (Ma & Fang, 2019; Roemer et al., 2015) and to implement effective emotion-regulation strategies (Ma & Fang, 2019).

5. Conclusions

The current findings suggest that adolescents' attachment representations are related to anxiety symptoms and that higher body awareness of emotions mediates this relationship for secure and anxious/ambivalent attachment. Preventive interventions could improve attachment security, and favour the interplay of body awareness and other adaptive emotion-regulation strategies. However, more research is needed to bring light to the interplay between attachment and a diversity of emotion-regulation abilities, including emotional awareness, in promoting the adolescent's well-being.

CRediT authorship contribution statement

Maria João Carapeto: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing. **Guida Veiga:** Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Writing – review & editing.

Declaration of Competing Interest

The authors declare no conflict of interest.

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