

Alexithymia mediates the relationship between insecure attachment and eating disorder
symptoms

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Abstract

Objective: Insecure attachment and alexithymia have traditionally been associated with eating disorders. However, research has recently started to examine the specific mechanisms by which attachment insecurity affect disordered eating. The aim of this study was therefore to investigate the hypothesis that alexithymia mediates the relationships between insecure attachment patterns and eating disorders (EDs) and to test the relative contribution of each component of alexithymia. Method: 323 female university students and 38 anorexic patients completed questionnaires on attachment, alexithymia and ED symptoms within a Structural Equation Modeling approach. Results: Insecure attachment was related to alexithymia, specifically Difficulty Identifying Feelings (DIF) and Difficulty Describing Feelings (DDF) subscales of the Toronto Alexithymia Scale. Furthermore, alexithymia scores were associated with Eating Disorder symptoms. However, only DIF mediated the relationship between attachment insecurity and ED symptoms. Discussion: Despite the limitations of the cross-section design, attachment and alexithymia seem to be an important focus when preventing and treating EDs.

Keywords: Attachment, Alexithymia, Eating Disorders, Anorexia, Mediation

Eating disorders (EDs) are one of the most common chronic mental health conditions among adolescents and young adults, with studies showing a lifetime prevalence of around 0.9% for anorexia nervosa, 0.9-1.5% for bulimia nervosa and 1.9% for binge eating disorder (Smink, Van Hoeken, & Hoeken, 2012). The negative health correlates associated with EDs such as its high mortality rate (Arcelus, Mitchell, Wales, & Nielsen, 2011) and the high cost of their treatments (Bardach et al., 2014) ask for further investigation of factors implicated in their etiology and maintenance of EDs (Keating, Tasca, & Hill, 2013).

Several theoretical approaches in relation to EDs have received empirical support (Stein, Saelens, Douchis, Lewczyk, Swenson, & Wilfrey, 2001). Over the past decades, attachment theory (Bowlby, 1973) has emerged as one of the most important frameworks for those seeking a cognitive-affective and relational understanding of eating disorders (Kuipers & Bekker, 2012; O'Shaughnessy & Dallos, 2009). Attachment theory asserts that the quality of the interactions between the children and the caregiver become encoded in the implicit memory system and these develop into internal working models of attachment (Fariborz et al., 1996). Internal working models become the bases for consistent ways in which children and adults interact with the world, experience themselves and others, and regulate affect. Internal working models can be characterized as secure or insecure (anxious or avoidant) and tend to be stable across the lifetime (Waters, Merrick, Treboux, Crowell, & Albersheim, 2000).

Individuals with higher attachment anxiety tend to be highly preoccupied with attachment relationships, especially regarding potential loss or abandonment (Mallinckrodt & Wei, 2005). As a result of this, they hyperactivate their affective system and experience difficulty with self-regulating affect, being more vulnerable to affect instability and distress (Kobak, 1999; Pearlman, 2005). On the other hand, those characterized by higher attachment avoidance avoid intimacy and have difficulty trusting others (Hazan & Shaver, 1987).

Consequently, they cut-off emotions from experience (deactivate them) and usually have difficulty expressing their feelings (Fuendeling, 1998).

The assumption that attachment issues are implicated in EDs is supported by studies showing that individuals with EDs have higher levels of attachment insecurity compared to normal controls (Kuipers & Bekker, 2012). In a recent meta-analysis Caglar Nazali et al. (2014) reported that eating disordered individuals had higher levels of attachment insecurity than healthy controls and that the effect size was large ($d=1.31$). Similarly, one recent review that included 32 studies highlighted this result and concluded that type of attachment insecurity is not necessarily related to a specific eating disorder diagnosis, although attachment insecurity may be related to severity of eating disorder symptoms across diagnostic groups (Tasca & Balfour, 2014).

Although 96-100% of the samples with clinical levels of EDs report attachment insecurity, the nature of the connection between attachment insecurity and ED symptomatology remains largely unexplored (Kuipers & Bekker, 2012; Zachrisson & Skårderud, 2010). One approach that can be used by researchers to gain insight into the specific mechanisms by which insecure attachment affects ED symptoms is to shift from a simple examination of linear bivariate relationships to multivariate interactional models examining the roles of mediators and moderators. To date, these mediators and moderators have been mainly grouped into 3 differentiated blocks when trying to explore their contribution to general psychopathology: the role of self representation (including variables related to self-cohesion, self esteem, dysfunctional beliefs, personality traits etc.) emotion regulation strategies (such as awareness of emotions, ways of coping them) and problems in interpersonal relations (e.g. loneliness, social isolation, relationship breakups etc.) (Mikulincer & Shaver, 2013). However, and in the case of EDs, only few studies to date have evaluated the possible mediators that play a role in this relationship.

Research to date shows that personality characteristics and affect regulation strategies are potential mechanisms that may serve to explain the relationship between attachment insecurity and eating disorder psychopathology (Dakanalis et al., 2014; Tasca & Balfour, 2014). With regard to personality characteristics, one study that used an undergraduate sample showed that the anxious attachment and disordered eating relationship was fully mediated by neuroticism (Dakanalis, Zanetti, Timko, Madeddu, Riva, & Clerici, 2013). Similarly, a second study reported that narcissism fully mediated the relationship between attachment avoidance and disordered eating, even when controlling for gender (Eggert, Levendosky, & Klump, 2007). In a third study, Dakanalis et al. (2014) found in a large, clinical treatment seeking sample that maladaptive perfectionism served as a mediator between both insecure attachment patterns (attachment anxiety and attachment avoidance) and ED symptomatology. All these findings suggest that those with anxious or avoidant attachment may be at risk for developing eating disorder behaviors if some personality characteristics are present (Cavanna, Delogu, & Zavattini, 2012).

Affect regulation strategies have also been pointed as a key mechanism that could shed light into the dynamics between insecure attachment and eating disorder symptoms. Affect regulation is considered a wide-ranging term that describes explicit and implicit processes that involve monitoring, evaluating, altering and modulating emotions (Eisenberg & Spinrad, 2004; Gross, 1998; Gyurak, Gross, & Etkin, 2011). Research has shown that it has implications for eating disorder psychopathology (Tasca & Balfour, 2014). In terms of its mediating effects, Tasca et al (2009) found in a large mixed diagnostic sample, that emotional hyperactivation mediated the relationship between attachment anxiety and depressive and eating disorder symptoms; however, attachment avoidance was directly related to eating disorder symptoms and not mediated by deactivation strategies.

Although affect regulation is a separate construct to alexithymia, one might expect the two to be linked somehow. Indeed, the process of affect regulation involves being aware, understanding and identifying one's thoughts and feelings, prior to, during and after the refining and modulating of the emotion (Greenberg, Kolasi, Hegsted, Berkowitz, & Jurist, 2017). Alexithymia refers to the inability to explore and represent inner emotional states (Bagby, Parker, & Taylor, 1994) and it literally means "the inability to find words for moods". It is typically defined as comprising (a) difficulty in identifying feelings and differentiating feelings from the sensations of emotional arousal, (b) difficulty in describing feelings to others, (c) scarcity of fantasies, and (d) externally oriented thinking (Taylor, Bagby, & Parker, 1997). Alexithymia is thought to underlie emotional difficulties in individuals with eating disorders (Brewer, Cook, Cardi, Treasure, & Bird, 2015) and has been implicated in both the development and maintenance of EDs (Treasure & Schmidt, 2013). It is also related to poorer treatment outcome, making it a relevant treatment target (Pinna, Sanna, & Carpiniello, 2014). Moreover, women with eating disorders tend to be higher in alexithymia than females in control samples (Westwood, Kerr-Gaffney, Stahl, & Tchanturia, 2017).

In the only study that investigated the role of alexithymia as a mediator between insecure attachment and body esteem, Keating et al., (2013) found in a large mixed eating disordered diagnostic sample that alexithymia fully mediated the relationship between attachment avoidance and body esteem. However, contrary to their expectations, attachment avoidance was not directly related to body esteem.

Moreover, also unexpectedly, attachment anxiety was only directly and negatively related to body esteem (and not through alexithymia). In this line, the authors reported that bivariate correlations found in their study indicated that participants higher in attachment anxiety experienced lower levels of alexithymia (Keating et al., 2013). This last result goes

against the common idea that those high in attachment anxiety tend to have overwhelmed affective structures (Slade, 1999), which compromises such individuals' ability to identify and differentiate specific emotions.

Given the paucity of studies that have examined empirically the indirect influence of attachment insecurity on disordered eating and the fact that the evidence obtained in the only study testing the role of alexithymia partially contravenes the common expectations about the role of attachment and affect regulation strategies, there is a need to replicate these findings. Moreover, in this study, alexithymia was assessed as a unitary construct; however, the contribution of the different subscales to the total variance of eating disorder symptoms would be of prime interest to clarify what the specific difficulties these individuals have. In addition, including a multifaceted evaluation of eating pathology and controlling for some of the possible intervening variables with regard to the sample could help to obtain clearer and more specific results. Finally, to date, no studies about mediating factors have been runned with Spanish population.

Hence, in this study the following hypotheses were tested:

- 1) Insecure attachment patterns (anxious and avoidant) would show a significant relationship with alexithymia and its subscales
- 2) Insecure attachment patterns (anxious and avoidant) would correlate with eating disorder symptoms
- 3) Alexithymia and all its subscales would be related to eating disorder symptoms
- 4) Alexithymia (and its subscales) would mediate the relationships between insecure attachment patterns and eating disorder symptoms

The theoretical model guiding this study is depicted in Figure 1.

Methods

Participants and Procedures

The *ED sample* comprised 38 women aged 13 to 30 years. The mean age was 21.9 ($SD=5.30$). All them were receiving outpatient psychological treatment in the Basque Public Health System and in different national treatment associations. To be included the patients had to be diagnosed with anorexia (AN- restrictive or purgative) according to the *DSM-IV-TR* (American Psychiatric Association, 2000) when referred to the inpatient treatments for ED. Furthermore, to take part in the study they should be in a stable enough physical and psychological condition (based on medical examination and team judgment). Body mass index (BMI) was calculated by asking their psychotherapists their current height and weight.

The *non-clinical sample* was composed of 323 female university students from different faculties at the University of the Basque Country (Spain). The mean age of participants was 19.1 ($SD=1.94$), and 97.5% had Spanish nationality. All participants were Caucasian and from middle-class backgrounds.

A comparison of the 2 study groups' demographic characteristics revealed no significant differences for a number of relevant variables such as nationality (ED sample: 97.4% Spanish, non-patients: 97.7%), familial composition (ED sample: 86.8% intact families, 10.5% divorced parents, 2.7% parental loss, nonpatients: 83.3% intact families, 10.5% divorced parents, 5% parental loss), father's education (ED sample: $M= 3.97\pm 1.62$, nonpatients: $M= 4.12\pm 1.50$), mother's education (ED sample: $M= 4.00\pm 1.39$, nonpatients: $M= 4.03\pm 1.44$) and number of siblings (ED sample: $M= 1.71\pm 1.18$, nonpatients: $M= 1.84\pm 0.95$),

However, differences were observed in terms of age (ED sample: $M= 21.90\pm 5.30$, nonpatients: $M= 19.91\pm 1.95$), $t(359)= 4.6$, $p=.027$) and academic education (ED sample: $M= 5.00\pm 1.40$, nonpatients: $M= 6\pm 0.00$), $t(359)= - 5.42$, $p<.000$. As expected, a

significant between-group difference emerged for body mass index BMI (AN sample: $M=19.19\pm 2.58$, nonpatients: $M=21.32\pm 2.90$), $t(358)=-4.3$, $p<.000$.

Study procedures were approved by the Research Ethics Board of the University of Deusto (Ref: EKT-8/13-14). Participants in the non-clinical sample completed the packet of questionnaires during regular classes. The study was presented as a study on health and emotions. The information was neutral and did not disclose anything about the aims of the study. Informed consent was obtained from all the participants. Students had the opportunity to withhold participation at any moment during the assessment. Only two participants dropped out during the course of it.

All participants in the ED sample and their parents in the case of minors under age 18, gave their written informed consent to participate in the study. The study protocol was presented to the Scientific Ethical Committees and the Supervising Boards of the centres in which they were having treatment, neither of whom had further remarks on the subject.

Materials

Participants completed the following questionnaires as part of a broader assessment package:

Attachment. Attachment was assessed by the Spanish version (Versión reducida del cuestionario CaMir; Balluerka, Lacasa, Gorostiaga, Muela, & Pierrehumbert, 2011) of the Cartes, Modèles Individuels de Relation (CAMIR; Pierrehumbert, Karmaniola, Sieye, Meister, Mijkovitch, & Halfon, 1996). The questionnaire comprises 32 items evaluating 5 dimensions of attachment and 2 dimensions of family functioning. Because in the study we were only interested in the insecure attachment itself, only Preoccupation, Parental Interference, Self-Sufficiency and Childhood Trauma were included:

(a) *Preoccupation* involves separation anxiety from the loved ones and an excessive preoccupation for attachment figures (e.g. “I’m always afraid of hurting those who are close to me when I leave them”); (b) *Parental Interference* refers to the memory of being overprotected in childhood, to having been a fearful child, and to having been concerned about being abandoned (e.g., “My parents couldn’t help themselves from controlling everything: my appearance, my performance at school or even my friends”); (c) *Self-Sufficiency and Resentment towards the parents* involves rejection of feelings of dependence and reciprocity, and anger towards loved ones (e.g., “ I only count on myself to solve the problems I have”); and (d) *Childhood Trauma* includes memories of having experienced unavailability, violence, and threats from attachment figures during childhood (e.g., “When I was a child, there were unbearable fights at home”), taking into account past and present attachment experiences and family functioning. Participants were asked to rate on a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) to what extent they agreed with each item. The first and the second subscales are theoretically related to descriptions of preoccupied attachment, the third subscale overlaps with avoidant attachment and the fourth describes descriptions of disorganized attachment (Balluerka et al., 2011).

The questionnaire has acceptable psychometric properties (Balluerka et al., 2011); Cronbach alpha values ranged from 0.60 to 0.85 for the dimensions used in our study and test-retest reliability ranged from 0.60 to 0.70. With regard to convergent validity, correlations between the subscales and the secure, anxious, and avoidant profiles defined by six expert judges in attachment theory were found (Lacasa, 2008). Moreover, as expected, correlations between the CaMir subscales and psychopathological symptoms assessed by the Youth Self Report (YSR; Achenbach, 1991) were encountered.

In the present study Cronbach's alpha values were .73 for Preoccupation, .60 for Parental Interference, .60 for Self-Sufficiency and Resentment towards the parents and .81 for Childhood Trauma.

Alexythimia. Alexithymia was assessed with the 20-item self-reported Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994). The TAS scale consists of three subscales: Difficulty Identifying Feelings (DIF) refers to the ability to understand one's own feelings (e.g., "I am often confused about what emotion I am feeling"), Difficulty Describing Feelings (DDF) refers to representing one's own feelings in words (e.g., "It is difficult for me to find the right words for my feelings"), and Externally Oriented Thinking (EOT) refers to a lack of focus on internal emotional experiences (e.g., "I prefer to just let things happen rather than to understand why they turned out that way") (Parker, Taylor, & Bagby, 2003). Each item is ranked on a five-point Likert scale and a higher score indicates higher levels of alexithymia. The Spanish version of the TAS-20 (Martínez-Sánchez, 1996) has shown similar psychometric qualities to the original TAS-20, high internal consistency (Cronbach= 0.78) and test retest reliability ($r= 0.71$, $p<0,001$) after a period of 19 weeks. With regard to validity, the TAS-20 correlated highly and significantly ($r= .508$; $p< .001$) with the level of alexithymia measured with the BIQ (Sifneos, 1973) and with some other constructs in the expected direction.

In the present study the Cronbach's alpha values were .85 for DIF, .80 for DDF and .61 for EOT.

Eating Disorder Symptoms. ED symptoms were evaluated with the short version of the Eating Attitudes Test (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982), a 26-item screening measure developed to assess eating problems in nonclinical settings. The EAT is also used as an index of severity of typical concerns among women with EDs (Williamson, 1990). The items assess three types of ED symptoms: Dieting, (e.g., "I am terrified about

being overweight”), Bulimia and food preoccupation (e.g., “I have gone on eating binges where I feel I may not be able to stop”), and Oral control (e.g., “I avoid eating when I am hungry”). Participants are asked to rate on a six-point Likert scale from 1 (*never*) to 6 (*always*) to what extent they experience each of the symptoms. The EAT-26 has been found to exhibit strong psychometric properties and correlates highly with eating disorder status and other widely used eating disorder measures (Miller, Schmidt, Vaillancourt, McDougall, & Laliberte, 2006). The Spanish version of the EAT-26 showed an alpha reliability coefficient of .93 and a global validity coefficient of .61. The factor analysis showed 3 factors that explained 41% of the variance and significant correlation with the Beck Depression Inventory was established (Castro, Toro, Salamero, & Guimara, 1991). In the present sample, Cronbach’s alpha was .90 for Dieting, .78 for Bulimia and food preoccupation and .75 for Oral control.

Statistical Analysis

Zero-order correlations were calculated to explore the relationships among the study variables. Next, Structural Equation Modeling (SEM) was used to investigate the model presented in Figure 1 following state-of-the-art recommendations for the testing of mediation models (Fairchild & MacKinnon, 2009; Hayes, 2009; Hoyle & Smith, 1994). This entailed that, in a first step, we tested a base model with only the indirect paths included, in which TAS subscales thus fully mediated the relationship between the attachment dimensions of Parental Interference, Self-Sufficiency, and Childhood Trauma, and ED symptoms (see Figure 1).

[Figure 1]

Non-significant paths were deleted, yielding the final base model (see Figure 2).

[Figure 2]

In a second step we then tested a model adding the direct paths from the different attachment dimensions to EDs. Non-significant paths were deleted too, obtaining the final model (see Figure 3).

[Figure 3]

If the final base model (the more parsimonious one) does not provide a significantly worse fit than the final model (model with the indirect and direct effects), this indicates full mediation; else, the TAS subscales are a partial mediator in the association between attachment and eating disorder symptoms. The following fit indices were used: Satorra Bentler χ^2 , Comparative Fit Index (CFI), Non-Normed Fit Index (NNFI) and Root Mean Square Error of Approximation (RMSEA) with its 90% confidence interval. The following cut-off values were used: $\chi^2/df \leq 3$, CFI and NNFI $> .90$ indicating acceptable fit and $> .95$ indicating good fit (Hu & Bentler, 1999; Kline, 1998) and RMSEA < 0.08 (acceptable fit) and < 0.06 (good fit) (Byrne, 1998; Hu & Bentler, 1999). To compare the fit of the nested models (e.g., with and without direct effects), we used the Akaike Information Criterion (AIC) comparison test so the lower is the AIC value, the better is the model fit. Lagrange multiplier test was conducted also to improve the fit of the models by letting covariances between pairs of errors. Given that the multivariate normality was violated in all the models according to Mardia's coefficient, the robust maximum likelihood method for parameters estimation was used. All analyses were done with EQS 6.1.

Results

Zero order correlations

As Table 1 indicates, all insecure attachment dimensions (i.e., Preoccupation, Interference, Self-Sufficiency, and Childhood Trauma) were, as expected, positively related to both DIF and DDF subscales. However, only Preoccupation was related to EOT and correlation was small. Furthermore, all insecure attachment dimensions were positively related to eating disorder symptoms (Dieting, Bulimia and Food Preoccupation and Oral Control).

Finally, DIF and DDF showed medium-size correlations with eating disorder symptoms. However, small correlations were observed between EOT and two of the eating disorder symptom subscales, namely Dieting and Oral Control, and no correlation with the Bulimia subscale. Therefore, EOT was removed from further analysis.

Hence, overall, conditions for mediating were met for all insecure attachment dimensions (Preoccupation, Interference, Self-Sufficiency, and Childhood Trauma) and DIF and DDF subscales.

[Table 1]

Structural Equation Modeling

The theoretical model (Figure 1) did not provide a good fit to the data; Satorra-Bentler $\chi^2 = 396.25$ $p < .001$; $df = 29$; $\chi^2/df = 13.66$, CFI = .499, NNFI=.050, RMSEA = .188 (90% CI: .171-.204), AIC=338.25. Lagrange multiplier test furthermore suggested adding three error covariance, namely between the errors of Dieting and Bulimia, Bulimia and Oral Control and Dieting and Oral Control. In this model, several paths were not significant,

namely, from Childhood Trauma to DDF, from age to Oral Control, from BMI to Dieting, from BMI to Bulimia, from DDF to Dieting, DDF to Bulimia and DDF to Oral Control. As a result, DDF was removed from further analysis. This led to the Final base model (Figure 2) which already provided a good fit to the data, Satorra-Bentler $\chi^2 = 35.16$, $p < .108$; $df = 26$; $\chi^2/df = 1.35$, CFI = .984, NNFI = .972, RMSEA = .031 (90% CI: .000-.055), AIC = -16.84.

The model adding all the direct paths also provided a good fit to the data; Satorra-Bentler $\chi^2 = 20.00$, $p < .130$; $df = 14$; $\chi^2/df = 1.43$, CFI = .989, NNFI = .966, RMSEA = .035 (90% CI: .000-.066), AIC = -7.99. In this model, some paths were not significant, namely, from Parental Interference to Oral Control, from Preoccupation to all ED symptom subscales from Self-Sufficiency to all ED symptom subscales and finally, from Childhood Trauma to all ED symptom subscales. We therefore dropped these paths. This led to the Final model (Figure 3) with both direct and indirect effects, which had a good fit too: Satorra-Bentler $\chi^2 = 31.26$, $p < .146$; $df = 24$; $\chi^2/df = 1.30$, CFI = .987, NNFI = .976, RMSEA = .029 (90% CI: .000-.055), AIC = -16.74.

Finally, we compared the Final base model (Figure 2), that with only indirect paths with the Final Model (Figure 3), with indirect and some direct paths. The AIC showed very close values for both models, suggesting no significant differences and implying that the most parsimonious model (Final base model) explained the data better (see Figure 2).

Discussion

Although insecure adult attachment styles have consistently been linked to eating disorder pathology the mechanisms by which insecure attachment affects ED symptomatology remain largely unknown (Kuipers & Bekker, 2012; Zachrisson & Skårderud, 2010). The only study that used SEM to model associations between attachment insecurity, alexithymia, and EDs obtained some unexpected results (Keating et al., 2013).

This study aimed to investigate if alexithymia and particularly its subscales mediated the relationship between insecure attachment and ED symptomatology in a clinical and non clinical sample.

Bivariate correlations provided support for the assumption that insecure attachment styles are positively related to alexithymia. More specifically, in the current study, attachment insecurity was correlated with the Difficulty Identifying Feelings subscale and, to a somewhat lesser extent, with the Difficulty Describing Feelings subscale of the TAS. These findings are also in line with other investigations showing that insecure attachment experiences are related to alexithymia (Keating et al., 2013). For example Thorberg, Young, Sullivan, and Lyvers (2011) found in their meta-analysis moderate to strong relationships between maternal care and alexithymia, and between maternal care and two of the three TAS-20 alexithymia facets, in particular Difficulties Describing Feelings and Difficulties Identifying Feelings subscales. Additional data from clinical samples indicate significant negative associations among the same variables (Kooiman, van Rees Vellinga, Spinhoven, Draijer, Trijsburg, & Rooijmans, 2004).

Second, as expected, alexithymia was positively associated with ED symptoms. The results of this study are in line with others that have found alexithymia to be a core symptom in these disorders, considered a negative prognostic indicator (Speranza, Loas, Guilbaud, & Corcos, 2011), and a highly implicated factor in the severity of eating symptoms (Courty, Godart, Lalanne, & Berthoz, 2015). Furthermore, there is a robust body of literature documenting that alexithymia levels are elevated in individuals with anorexia nervosa compared to healthy controls (Caglar-Nazali et al., 2014; Oldershaw, Lavender, Sallis, Stahl, & Schmidt, 2015; Westwood et al., 2017), which has been demonstrated for the DIF subscale (Montebarocci, Codispoti, Surcinelly, Franzoni, Baldaro, & Roisi, 2006).

However, results of these analyses showed that only the Difficulty Identifying Feelings subscale, and not the Difficulty Describing Feelings subscale, fully mediated the relationship between attachment insecurity (Preoccupation, Parental Interference Self Sufficiency and Childhood Trauma), and all ED subscales (Dieting, Bulimia and Oral Control). These results are partially different from those reported by Keating et al., (2013) who found that only avoidant attachment (and not anxious attachment) had an indirect effect on body esteem through alexithymia.

Several interpretations of these findings are possible. Some authors have hypothesized that in the absence of secure attachment, the capacity to mentalize and specifically to reflect, label and express feelings develops inadequately. In their view, this happens as a result of an insufficient marked mirroring of mental states (Fonagy, Gergely, Jurist, & Target, 2002). According to this theory, these mentalizing deficits may play an important role in the onset of psychiatric disorders such as EDs (Kuipers & Bekker, 2012; Rothschild-Yakar, Waniel, & Stein, 2013; Skårderud & Fonagy, 2012; Skårderud, 2007). Other compatible theories highlight that the process of early communication between infants and caregivers regulates the infant brain's release of neurohormones, which influence the infant's ability to process and regulate his or her affective states (Schoore, 2015).

Consistent with attachment approach, Preoccupation and Parental Interference scales were indirectly related to eating disorder symptoms through the Difficulty Identifying Feelings subscale. One could argue that anxiously attached individuals that up-regulate emotions and magnify their expressions of distress in an attempt to maintain an engagement with inconsistent caregivers (Shaver & Mikulincer, 2002; Wei, Vogel, Ku, & Zakalik, 2005) may not have the best setting to be stimulated and interested in the identification and understanding of their feelings. Alternatively, avoidant-attached individuals tend to use emotional distancing strategies characterized by deactivation or downregulation of emotions

in order to distance themselves and their emotions from others (Mikulincer, Shaver, & Pereg, 2003). This defensive retreatment from the mental world may clearly limit their ability to identify and label emotions. All this gives a tentative explanation about why the Difficulty Identifying Feelings subscale also mediated the relationship between Self Sufficiency, Childhood Trauma and disordered eating in our study.

In line with these all these explanations, some authors have suggested that when children are chronically deprived of an emotional attuned connection with a primary caregiver may attempt to disengage from them by redirecting their goals to more attainable appearance-related outcomes (Cole-Detke & Kobak, 1996); in other words, that the onset and/or maintenance of an ED may serve a socio-emotional avoidant function by refocusing attention from interpersonal relationships to food and weight (Bamford & Halliwell, 2009).

Finally and importantly, the Difficulty Describing Feelings subscale did not mediate between attachment insecurity and ED symptoms. This result is consistent with studies showing that Difficulty Describing Feelings remained insignificant to differentiate ED and healthy control groups (Montebarocci et al., 2006) or to predict treatment outcome with ED patients (Speranza, Loas, Wallier, & Corcos, 2007). Although this may seem paradoxical, due to the fact that according to common expectations naming and labeling an emotion is rooted into the previous and necessary capacity to identify it, they do not necessarily act together (Torres et al., 2019) this could be explained by the use of the some authors called “hypermentalizing” modes, a tendency usually observed in these and other disordered individuals to commonly use words referring to inner states or to describe internal states with excessive length, detail, and complexity, although with no real connection to underlying affective experiences (Sharp et al., 2013). In any case, this is only a tentative explanation, and it is still necessary to further investigate the specific step-by-step ways in which attachment insecurities are related to ED psychopathology in order to reach clearer conclusions (either by

investigating the role of mediators belonging to the same block as explained in the introduction, or by combining mediators from different blocks, e.g. emotional regulation strategies and dysfunctional beliefs)

The present study has some notable limitations. First, the structural equation modeling results imply the possibility of causality but the design was cross sectional and correlational in nature, which limits our ability to draw causal conclusions. It may well be that alexithymia and attachment insecurity are negatively influenced by ED symptoms and/or are exacerbated by them. For example, although certain facets of alexithymia may function as factors that increase the likelihood that an individual will develop eating disorder attitudes and behaviors, it may also be that individuals who develop eating pathology become more alexithymic in response to suppress unpleasant eating-related cognitions and emotions. Although, for the moment some experimental studies have supported the proposed direction of similar variables included in our model (Admoni, 2006; Mikulincer, Hirschberger, Nachmias, & Gillath 2001; Mikulincer & Shaver, 2001; Mikulincer, Shaver, & Horesh, 2006). more longitudinal research is needed in this context in order to examine dynamic and potentially reciprocal associations between these factors.

Moreover, our findings are entirely based on self-report measures and reporting bias may have influenced the results. Self-report measures such as the TAS may not be reliable in that the very nature of alexithymia may make it difficult for individuals to reflect on their emotions, thus giving inaccurate report. For this reason, using more objective measures which accurately assess the nature of difficulties with emotion recognition would be beneficial (Keating et al., 2013) CaMir reflects consciously available self-evaluation of attachment, whereas attachment interviews assess less consciously available states of mind (Shaver & Mikulincer, 2002). Replication of these results with other methods of data

collection, such as the adult attachment interview (Main, Goldwyn, & Hesse, 1998) would strengthen the validity of the findings.

Additionally, the majority of the sample were Caucasian women. Future research may examine whether the processes underlying eating disorders differ for males or for different ethnic groups, as some researchers argue that the expression of affect regulation depends on culture (Wei et al., 2005). Furthermore, more uniformity in terms of age and educational level between the ED sample and the nonpatient sample would have been desirable, or even replicating the study with a larger ED sample would strengthen the results. Although experienced psychiatrists and physicians had assessed the patients both before and after the inpatient treatment, lack of a structured and psychometrically sound interviews such as the EDE (Cooper & Fairburn, 1987) constitute a limitation. Future studies should also account for time under treatment in the ED sample. Some may maintain that those who have been under therapy, may have lower levels of alexithymia and higher introspection.

Finally, including some measures to control for negative affect would have been appropriate, as anxiety and depression seem to be key factors when explaining differences in alexithymia between EDs and normal controls (Corcos et al., 2000; Parling, Mortazavi, & Ghaderi, 2010).

Despite the limitations the strength of this study is in the use of a clinical sample and its contribution to a relatively small literature on the association between attachment, affect regulation and eating pathology.

Overall, this study's results indicate that when treating patients with eating disorders, psychotherapists may attend to such patients' relational patterns and emotion recognition and emotional regulation strategies. In particular, creating a secure base and a safe therapeutic relationship may be especially appropriate for them (O'Shaughnessy & Dallos, 2009). Treatment approaches that focus on managing impulse regulation problems (Steiger and

Bruce, 2007) and on increasing reflecting functioning capacities (Fonagy et al., 2002) may be successful by reducing drop-out rates and improving general outcomes (Tasca, Ritchie, & Balfour, 2011).

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