

## **A controlled study of attachment representations and emotion regulation in female adolescents with anorexia nervosa**

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**Abstract:** *Background:* Several recent studies highlighted that both attachment insecurity and emotion regulation difficulties form a key part of conceptual models of anorexia nervosa (AN), but they had never been analyzed in the same controlled study. *Method:* This study examined the attachment states of mind, assessed by the Adult Attachment Interview (AAI), and emotion regulation difficulties, measured by the Difficulties in Emotion Regulation Scale (DERS), among 25 girls with AN diagnosis aged 14-18 years (M age=16.52, SD= 1.23), and 25 general population controls, matched for gender, age, years of education and SES. *Results.* The AN group reported both significantly higher attachment insecurity (75% vs 46%, Fisher Exact Test,  $p=.04$ ), dismissing (Ds) in particular ( $\chi^2=6.41$ ,  $df=2$ ,  $p=.03$ ), and difficulties with emotion regulation than non-clinical controls. Two AAI's scales connected to Ds classification – idealization of mother and lack of recall – were significantly correlated to lack of emotional awareness and clarity *Conclusions.* Our results provide support for conceptualization of AN emphasizing the role of attachment insecurity and emotional dysregulation in the development and maintenance of this restrictive type of eating disorder. These findings may have implications for treatment programs which may

prove more fruitful integrating attachment-based intervention with clinical work focused on development of emotion regulation abilities.

**Key words:** Anorexia nervosa; attachment; emotion regulation; adolescence; eating disorders.

**Key Practitioner Message** Female adolescents with anorexia nervosa showed both more insecure attachment states of mind (mostly dismissing and unresolved) and difficulties in emotion regulation than non clinical controls, matched for gender, age, years of education and SES. In addition, attachment insecurity and emotional dysregulation seem to be connected in the development and maintenance of anorexia nervosa that would help these patients to avoid painful emotional experiences and focus on control of external goals, like weight reduction. Clinical treatment able to integrate, on one hand, elaboration of attachment-related themes and, on the other hand, improvement of emotion awareness, could be useful with girls with anorexia nervosa.

## INTRODUCTION

The core symptomatology of anorexia nervosa (AN) consists of an intertwining of primary behavioral features and cognitions with mental and physical symptoms due to starvation. Patients with AN show significantly low body weight in the context of age, sex, developmental trajectory, and physical health, such as intense fear of gaining weight and disturbance in the way in which one's body weight or shape is experienced (APA, 2013; Laghi et al., 2015a). These symptoms are stressed both in the fourth edition of diagnostic and statistical manual of mental disorders (DSM-IV) actually used in Italy, and in the new fifth edition DSM-5 (Föcker, Knoll & Hebebrand, 2013).

AN is a severe eating disorder affecting around 1.12% of young women and the peak age of onset is between 10 and 20 years of age (Bühren et al., 2014; Pace, Cavanna, Guiducci, & Bizzi, 2015; Smink, van Hoeken, & Hoek, 2012). Most of anorexic girls can be severely impaired by the disorder, sometimes to the point it can lead to death (Laghi et al., 2012; Laghi et al., 2015b; Pace, Guiducci, & Cavanna, 2016; Preti et al., 2009; Swanson et al., 2011).

In the last 20 years, attachment theory and emotion regulation have been two research lines that have tried to improve the information on the development and maintenance of different patterns of psychopathology, as some recent meta-analyses have highlighted (Aldao, Nolen-Hoeksema, Schweizer, 2010; Bakermans-Kranenburg & van IJzendoorn, 2009; Cassibba, Sette, Bakermans-Kranenburg, & van IJzendoorn, 2013). However, they have never been considered together with respect to eating disorders.

From the attachment perspective, many studies have specifically highlighted the role played by the *attachment representations* assessed by the *Adult Attachment Interview* (AAI, George, Kaplan, & Main, 1985) on the development of different psychopathologies (Steele & Steele, 2008). The AAI coding system is not limited to assess the content of positive or negative early childhood attachment experience, but it also aims at evaluating the *states of mind with respect to attachment* throughout the style of discourse of interviewee, mostly captured by *coherence of transcript* scale. In other word, highly coherent narratives could report a positive or

very loving childhood, recalling biographical episodes that are fresh and authentic and that support their claims, or they could report negative or even traumatic childhood experience, but in a contained and consistent manner, relating events truthfully and being neither excessively blaming nor dismissing of the import of adverse events. Three patterns of attachment representations can be revealed by the AAI: 1) *secure* or *free/autonomous (F/A)* when interviewees are able to tell their attachment past experiences in a fresh, truthful, coherent and balanced manner, regardless they lived a positive or a negative childhood, 2) *insecure/dismissing (Ds)* characterized by a discourse style tending to minimize, derogate and normalize attachment experiences and relationships, and 3) *insecure/entangled (E)* characterized by a discourse style tending to emphasize attachment experiences and relationships in an angry, passive, or preoccupied manner. Moreover, two further additional attachment states of mind can be captured by the AAI: *unresolved with respect to loss and abuse (U)* when interviewees show local and trauma-specific disorganized speech regarding these distressing events, such as collapse of the reasoning and discourse monitoring abilities, and *cannot classify (U/CC)* when globally contradictory discourse patterns (e.g. Ds and E) make impossible to capture a single state of mind (Main, Goldwyn & Hesse, 2002).

Although other specific measures for teenagers' attachment were developed and the AAI was initially created for adults, it was successively and widely used with adolescent populations (Pace, 2014; Pace, San Martini, & Zavattini, 2011; Stievenart, Casonato, Muntean, & van de Schoot, 2012).

From the AAI meta-analysis, the non-clinical adolescent AAI distribution was: 44% F/A, 34% Ds, 11% E, and 11% U/CC showing an over-representation of dismissing attachments ( $sr = 9.74$ ), and at the same time fewer unresolved attachments ( $sr = -3.78$ ) than expected,  $\chi^2(3, N = 503) = 124.61, p < .01$  (Bakermans-Kranenburg & van IJzendoorn 2009).

Up to now, studies with AN' patients showed that their attachment representations were characterized by an under-representation of security ranging from 0 to 30%, together with an over-representation of insecurity, ranging from 70% to over 90% (Barone & Guiducci, 2009; Dias, Soares, Klein, Cunha, & Roisman, 2011; Ward, Ramsay, Turnbull, Steele, Steele, & Treasure, 2001; Zachrisson & Kulbotten, 2006). In terms of dismissing *vs* entangled representations, most studies reported high prevalence of the Ds type, although some studies found both Ds and E patterns, or a high proportion of entangled subjects specifically associated with the purging sub-type of AN (Cole-Detke & Kobak, 1996; Del Vecchio, Di Riso, Salcuni, Lis, & George, 2014; Pace et al., 2015; Ramacciotti, Sorbello, Pazzagli, Vismara, Mancone & Pallanti, 2001). Lastly, an over-representation of lack of resolution of loss or abuse emerged (Ringer, Crittenden, 2007; Ward et al., 2001).

From the emotion regulation perspective, a wide number of recent studies have begun to address the role of difficulties in emotion regulation - conceptualized in terms of negative affect, identification of emotional states, and generation of adaptive coping strategies- in the development and maintenance of eating disorders (Harrison, Sullivan, Tchanturia, & Treasure,

2009; Lavender & Anderson, 2010; McEwen & Flouri, 2009; Sim & Zeman, 2006; Whiteside, Chen, Neighbors, Hunter, & Larimer, 2007). Anorexic patients showed, compared to healthy controls, higher difficulty in identifying their emotions and describing their feelings to others, higher difficulty recognizing other emotions from facial expression and vocal tone, attentional biases toward faces in general but specifically to angry faces over neutral faces, and a poor performance for the emotion recognition task (Gilboa-Schechtman, Avnon, Zubery, Jeczmiem, & 2006; Harrison, Sullivan, Tchanturia, & Treasure, 2010; Kucharska-Pietura, Nikolaou, Masiak, & Treasure, 2004). Recently Racine and Wildes (2013) found that eating disorder cognitions of patients with AN were significantly associated with multiple forms of emotion dysregulation; however, only *lack of* emotional awareness was independently related to these symptoms. In contrast, impulse control difficulties when upset was the only emotion regulation impairment associated with the presence of recurrent objective binge eating and recurrent purging in AN. Lastly a meta-analysis about emotion-regulation strategies across psychopathology reported that emotion dysregulation, in the form of rumination, avoidance, and difficulties with reappraisal and problem solving, showed a medium effect size for eating disorders, a weaker effect compared to that found for depression and anxiety (Aldao et al., 2010).

Although clinical disorders were associated both with compromised attachment representations and emotion dysregulation, there are few

empirical studies exploring clinically relevant processes that may relate one to the other, and none of them focused specifically on adolescents with AN (e.g. on PTSD patients see Cloitre, Stovall-McClough, Zorbas, & Charuvastra, 2008). Moreover, many studies on eating disordered patients showed some methodological issues including clinical samples with high internal variability, and lack of non-clinical controls matched for demographic variables.

This study aimed to make a modest contribution to addressing this gap. Firstly, we verified whether female adolescents with AN diagnosis would show more frequent insecure attachment patterns -specifically dismissing and/or unresolved- and greater difficulties regarding emotional regulation than non-clinical controls matched on age, gender, years of education and socio-economic status. Secondly, we tested whether an association between attachment representations and emotional regulation could be observed among anorexic adolescents.

## **Method**

### *Participants*

The final sample consisted of 50 girls between 14-18 years old: 25 were consecutive out-patients with AN (M age=16.52, SD=1.23) and Body Mass Index (BMI) under 17.5, and 25 were healthy controls matched with respect to gender (all females), age (M age= 16.56, SD=1.04), years of education (respectively M=10.04 SD=2.25, and M=10.96, SD=1.86), and socio-economic status (SES), coded using the Four-Factor Index of Social

Position (Hollingshead, 1975, respectively  $M=57.20$ ,  $SD=13.38$ ;  $M=59.2$ ,  $SD=14.7$ ). Further inclusion criteria for clinical group were: the onset of eating disorders symptoms not before two years ( $M=14.96$ ,  $SD=1.59$ ), no psychotic disorders, no previous/current psychotherapeutic or medical treatment.

Non clinical participants were voluntarily recruited from community high-school and matched for above-mentioned demographic variables. The exclusion criteria for control group were: being over or underweight, history of psychiatric disorders both in participants and family's members, and clinical treatment for psychiatric disorders.

All the participants were Caucasian, Italian speaking, and all the families presented a medium level of socio-economic status at least.

### *Measures*

*Attachment representations.* The *Adult Attachment Interview* (AAI, George et al., 1985) is an hour-long semi-structured interview composed of 20 questions focused on interviewees' relationships with their attachment figures during childhood and early attachment experiences, such as illness, upset, separation, loss, etc, asking them to provide specific episodes to support their general memories. They were also asked to reflect both on how attachment experiences had influenced their adult personality and the reasons of parents' behaviours towards them during childhood.



The AAIs were transcribed verbatim and coded on the corollary Adult Attachment Scoring and Classification System designed by Main, Goldwyn and Hesse (2002) by certified and expert coders.

The AAI coding system employs 17 ordinal scales of 1-9 points each, organized into two groups: 1) *subject's inferred childhood experience* (loving, rejecting, neglecting, role reversal and pressure to achieve, each one related both to the mother and father), 2) *current attachment mental states* both related to the parents (idealization, anger, derogation) and global (coherence of transcript, coherence of mind, lack of memory, metacognition, passivity, fear of loss, unresolved loss, unresolved abuse).

Therefore, five attachment classifications are obtained: three organized – free/autonomous (F/A), dismissing (Ds), entangled (E)- and two not organized –unresolved with respect to loss/abuse (U) and cannot classify (CC)- that could be added to the three main ones. These latter were often considered together in a not-organized (U/CC) group (Bakermans–Kranenburg & van IJzendoorn, 2009).

With regard to the psychometric properties of the AAI classifications, both the reliability (e.g., short-term stability, inter-rater consistency) and the discriminating validity with respect to gender, verbal intelligence, memory, cognitive complexity, social desirability, and overall social adjustment have been demonstrated (Bakermans–Kranenburg & van IJzendoorn, 1993; Crowell et al., 1996). As mentioned above the AAI was widely used with adolescent samples (Bakermans–Kranenburg & van IJzendoorn, 2009).

In this study, all AAIs were assessed by a skilled coder, blind to the diagnosis and the clinical status of the participants. In order to obtain a reliability assessment, a second expert coder rated independently a random sample of 40% of the AAIs ( $n=20$ ), yielding a significant kappa coefficient ( $k=.80$ ;  $p<.001$ ) for four-way classifications (F/A, Ds, E, U/CC).

*Emotion regulation. Difficulties in Emotion Regulation Scale* (DERS, Gratz & Roemer, 2004) is a 36-item, self-report questionnaire on 1-to-5 Likert scale, already validated with Italian sample (Giromini, Velotti, De Campora, Bonalume, Zavattini, 2012). The DERS comprehensively assesses the multidimensional construct of emotion regulation that includes modulating emotional arousal and maintaining behavioural control despite one's emotional state as well as emotional understanding, acceptance, and awareness.

Items are summed into a composite score (DERS Total), with higher total scores reflecting greater difficulties regulating emotions. Six sub-scale scores can also be computed:

1. *Non-acceptance of emotional responses*: a tendency towards having negative secondary responses to one's own negative emotions or not accepting emotional reactions to distress (e.g. "when I'm upset, I feel guilty for feeling that way").
2. *Difficulties in engaging in goal-directed behaviour*: difficulties accomplishing tasks when experiencing negative emotions (e.g. "when I'm upset, I have difficulty concentrating").

3. *Impulse control difficulties*: difficulties with remaining in control of behaviour when experiencing negative emotions (e.g. “when I’m upset, I lose control over my behaviours”).
4. *Lack of emotional awareness*: difficulties associated with attending to and acknowledging emotions (e.g. “I am attentive to my feelings”, reversed item).
5. *Limited access to emotion regulation strategies*: a belief that, once upset, little can be done to regulate emotions (e.g. “When I am upset, it takes me a long time to feel better”).
6. *Lack of emotion clarity*: how much an individual knows and understands the emotions they are experiencing (e.g. “I have difficulty making sense out of my feelings”)

DERS’s total score and subscales have shown high internal consistency, good test-retest reliability over a period of 4–8 weeks, and good construct and predictive validity (Giromini et al., 2012; Gratz & Roemer, 2004).

*Diagnostic status.* The *Structural Clinical Interview for DSM-IV Axis I Disorders*, Italian version (SCID-I; First, Spitzer, Gibbon, & Williams, 1997; Mazzi, Morosini, de Girolamo, Lussetti, & Guaraldi, 2000) is a semi-structured diagnostic interview for the assessment of the primary DSM-IV Axis I disorders. It is divided into the following six self-contained modules: mood episodes, psychotic symptoms, psychotic disorders, mood disorders, substance use disorders, and anxiety, adjustment and other disorders (First et al., 1997).

### *Procedure*

Participants with AN were recruited for the study using the consecutive admissions method from the Eating Disorders Centre (EDC) of Local Health Services 3 of Genoa. They were asked to participate in the study after the first diagnostic interview (following DSM-IV criteria) with the psychiatrist and psychologists of EDC and all of them accepted to take part in the study. Non-clinical controls were recruited from high-schools of the local community and data were collected during regular school hours.

All the adolescents and their parents provided written informed consent for participation in the research. The study was approved by the Regional Ethics Committee.

All research measures were individually administered by trained research assistants in two sessions of about 90 minutes each in an interview rooms at the EDC, or in the school. The AAI preceded the psychiatric interview, so that questions about abuse, loss or relationships were not attended to before the AAI. Patients underwent the SCID-I (First et al., 1997; Mazzi et al., 2000) to confirm their AN diagnosis and exclude severe comorbidity (e.g. drug abuse), while non-clinical control group underwent the SCID-I likewise to rule out any possible mental diseases.

### *Data analyses*

The results were analysed using the Statistical Package for the Social Science (SPSS, Version 19.0; IBM Corp., Armonk, NY). We used primarily non-parametric tests (e.g. Mann–Whitney U, Kruskal-Wallis, Spearman’s rho, Fisher’s Exact test, etc) which are appropriate for statistically testing small samples, such as in this study. The level of significance for all analyses was  $p < .05$ .

As needed, the data analysis was carried out by categorising the AAI classifications in a two-way system (secure *vs* insecure), or three-way system (F/A, Ds and E) by using more powerful statistical tests. Finally, regarding the AAI scales, we analyzed only those evaluating the current states of mind, because scales for inferred experience are difficult to interpret and are recommended only for use in the process of coding, not substantive analyses, given their dependence on current mood (Hesse, 2008).

## **Results**

### **Descriptive data**

As we expected, no differences between ANs (restrictive subtype=22, and bingeing subtype=3) and control group were shown regarding age ( $t = -.124$ ,  $p = .90$ , n.s.), years of education ( $t = -1.578$ ,  $p = .12$ , n.s.), and SES ( $t = -.362$ ;  $p = .72$ , n.s.). Moreover, no differences between the two groups were revealed regarding unmatched demographic variables, such as family structure (e.g. parents living together, divorced parent, etc, Exact  $\chi^2 = 5.600$ ,  $p = .131$ ) and number of siblings ( $t = .189$ ,  $p = .85$ , n.s.). None of these

demographic variables were correlated both with the AAI secure/insecure classifications and the scorings of DERS (all  $p$  values between .13 and .90). Therefore, we did not need to include them as covariates.

### **Between group comparisons on attachment representations and emotion dysregulation**

In two cases, the AAIs (one from AN group, and one from controls) had inferior recording quality and they were not coded. In total, 24 participants with AN, and 24 non-clinical girls were included.

AAI four-way classifications of the ANs were distributed as follows: 25% F/A (N=6), 45.8% Ds (N=11), 4.2% E (N=1), 25% U/CC (N=6). Non-clinical adolescent showed the following classifications: 54.2% F/A (N=13), 33.3% Ds (N=8), 12.5% U (N=3) and none E or CC. Comparing the two groups, we found that ANs showed more insecure attachments on the two-way system (Fisher Exact Test,  $p=.04$ ) and Ds category on the three-way system (Exact  $\chi^2=6.41$ ,  $df=2$ ,  $p=.03$ ) than non-clinical controls.

As shown in table 1, significant differences were found between anorexic girls and control group with respect to scales assessing attachment states of mind.

**TABLE 1. Results from AAI's scales**

	AN group (n=24)	Control group (n=24)	Test statistic	
	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Mann-Whitney U</i>	<i>p- value</i>
<b>States of mind related to parents</b>				
Idealizing mother	3.38 (2.94)	2.79 (2.33)	270.500	.351
Idealizing father	1.95 (1.99)	2.21 (2.03)	239.000	.259
Anger mother	1.69 (1.51)	1.13 (.42)	239.000	.066
Anger father	1.41 (. 96)	1.38 (1.09)	263.000	.378
Derogation mother	2.27 (2.18)	1.00 (.00)	204.000	.005**
Derogation father	2.70 (2.36)	1.88(2.01)	206.000	.059
<b>Overall states of mind</b>				
Overall derogation	3.13 (2.74)	2.04 (2.10)	211.500	.050

Lack of memory	3.98 (2.94)	2.75 (2.05)	217.000	.098
Metacognition	1.26 (.62)	1.21 (.72)	254.000	.312
Passivity	2.96 (1.92)	1.88 (1.37)	176.000	.012*
Unresolved Loss	2.40 (1.85)	1.24 (1.09)	165.500	.003**
Unresolved Trauma	4.36 (2.01)	4.33 (2.87)	9.500	.450
Coherence of transcript	4.04 (2.03)	5.26 (2.37)	207.500	.028*
Coherence of mind	3.75 (2.03)	5.14 (2.39)	187.500	.011*

\*  $p < .05$

\*\*  $p < .01$

As table 2 presents, the AN group reported significantly increased difficulties in emotion regulation across all subscales and the total DERS score, compared with non-clinical control group.

**TABLE 2. Results from DERS**

	AN group (n=25)	Control group (n=25)	Test statistic
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	<i>Mean (SD)</i>	<i>Mean (SD)</i>	<i>Mann-Whitney U</i>	<i>p-value</i>
DERS total score	113.32 (24.16)	82.63 (23.64)	108.000	.000**
DERS non-acceptance	17.44 (6.43)	12.88 (6.10)	173.500	.005*
DERS goals	19.20 (5.27)	14.42 (5.07)	145.000	.001*
DERS impulsivity	16.80 (5.82)	12.88 (6.89)	176.500	.006*
DERS awareness	19.56 (5.97)	14.00 (3.71)	138.000	.000**
DERS strategies	24.44 (6.75)	17.08 (6.10)	125.000	.000**
DERS clarity	15.88 (5.48)	11.38 (4.06)	165.000	.003*

\*  $p < .01$

\*\*  $p < .001$

### **Associations between attachment and emotional regulation within the AN group**

Among AN group, we found significant positive correlations between two scales of AAI related to the Ds classifications -idealizing mother and lack of memory- and lack of emotional awareness (respectively Spearman rho=.448,  $p < .01$ , and Spearman rho=.426,  $p < .05$ ) and clarity (respectively Spearman rho=.359,  $p < .05$  and Spearman rho=.364,  $p < .05$ ) of DERS.

A linear regression was carried out to explore the predictive values of the two AAI's subscales on the two DERS's subscales. This regression shows a trend towards significance regarding idealization of the mother as a factor that can lead to predict lack of emotional awareness (table 3).

**Table 3. Regression model predicting lack of emotional awareness and clarity (DERS) from maternal idealization and lack of recall (AAI).**

<b>Factor</b>	<b>Standardised beta</b>	<b>t</b>	<b>p</b>
<i>Emotional Awareness</i>			
<i>Idealization of mother</i>	.516	1.894	.073
<i>Lack of memory</i>	-.070	-.257	.800
<i>Emotional Clarity</i>			
<i>Idealization of mother</i>	.415	1.473	.156
<i>Lack of memory</i>	-.010	-.037	.971

## **Discussion**

In this study, we compared the attachment representations and the difficulties in emotion regulation of female adolescents with AN, and their non-clinical comparisons. Further we explored the associations between attachment and emotion regulation within our clinical group.

First, our sample with AN would show a predominance of insecure attachment representations, specifically dismissing, together with a high presence of unresolved, compared to healthy controls. Our result is consistent with the outcomes of most studies with eating disorder samples which used originally Main's coding system for the AAI, finding a prevalence of Ds and U categories among anorexic patients (Barone & Guiducci, 2009; Pace et al., 2016). This finding seems to confirm the hypothesis of Dozier, Stovall-McClough and Albus (2008) with regards to the link between attachment and psychopathology's aetiology which suggested that dismissing states of mind, representing a deactivating strategy to cope with attachment challenges, might be associated with more externalizing indices of distress, such as eating disorders, conduct disorders and hard-drug use. Therefore, the dismissing pattern might play a role in the insurgence and maintenance of women with AN diagnosis helping them to control their inner and external world throughout the rigid restrictions of eating behaviours (Ward et al., 2001).

With respect to the AAI's scales, lower scores for coherence (transcript and mind) and higher both for lack of resolution of loss and derogation of

mother emerged among AN group compared to healthy ones. These results may suggest the existence among anorexic young women, on one hand, of a problem in elaborating past experiences of mourning and separation and, on the other hand, a difficulty during adolescence to be positively identified with a maternal figure who is negatively valued.

Further, patients with AN reported greater difficulties with emotion regulation than their non-clinical comparisons. This finding confirms results from previous studies which emphasized how anorexic adolescents show multiple forms of emotion dysregulation compared to their control peers (Harrison et al., 2009, 2010; Racine & Wildes, 2013), suggesting that anorexic symptoms may help patients to ignore or avoid emotional experiences as well as interpersonal relationships that can trigger emotional experiences through a heightened mental focus on weight, shape, and eating. Lastly, regarding the associations between the AAI and the DERS we found few significant and positive correlations among idealization and lack of memory—two scales of the AAI related to Ds classifications which capture the discrepancy between a positive semantic/generalized picture of childhood and inadequate episodic/biographical memories— and lack of emotional awareness and clarity of the DERS. These results would reveal the convergence between constructs deriving from two different standpoints, showing that adolescents with AN who often tend to show a discourse style aimed to idealize, minimize, derogate and normalize attachment experiences and relationships (Ds-traits), they tend also to display difficulty paying attention/acknowledging general emotional experiences. Both these aspects

of psychological functioning of anorexic girls may converge with their tendencies to denial of hunger and focus on appearance, giving global assurances that everything is fine and normal, even if evidence points to the contrary. Our results were also consistent with outcomes of study that used physiological measure to assess emotion regulation (Dias et al., 2011), which demonstrated that even among women with diagnosis of eating disorders, security is associated with more productive patterns of psychophysiological response to attachment-related challenges by the AAI.

In conclusion, from a clinical perspective this integrated approach examining both attachment representations and difficulties in emotion regulation of adolescents with AN could offer some indicators for identifying specific areas of fragility to consider during therapy (D'Onofrio, Pace, & Cavanna, 2015; Price-Evans & Treasure, 2011). Clinicians might promote greater efficacy of treatment of people with AN integrating attachment-based intervention -focused both on connection between generalized/semantic and biographical/episodic descriptions of childhood experience, and elaboration of experiences such as loss, abuse or trauma-with clinical work determined on making one's own emotions more aware and readable (Bryan-Waugh, 2006).

### **Limitations**

In this study, several limitations must be noted. First, the choice of an unreferral control group makes unclear whether findings are specific to AN or are affected by referral bias. Second, because of the cross-sectional nature

of the research design, we cannot make causal inferences about associations among attachment, emotion regulation and AN diagnosis. Third, participants were self-selected, which may have introduced some sampling bias, although clinical and non-clinical groups were reasonably matched for age, years of education and SES. Lastly, we included only two sets of proposed risk factors (i.e., insecure attachment and emotion dysregulation) for one form of psychopathology (AN).

It is important to consider other referred clinical groups, longitudinal designs, and additional unexamined risk factors (e.g. genetic vulnerability, adverse life events, parental psychopathology, personality traits, neuro-cognitive impairments, styles of parenting, etc) in future research which may address the possibility that risk factors might interact, and test the direction of possible casual relationship

### **Acknowledgments**

We wish to express our special gratitude towards patients for their participation in the study and for sharing sensitive details, a task that was sometimes hard to complete. We are also grateful to the following psychiatrists, psychologists, students and internships for their help with data collection and for transcribing the interviews: Barbara Masini, Daniela Morando, Antonella Arata, Cinzia Modafferi, Camilla Barabino, Fabiola Bizzi, Mara Bitti, Daniela Cassano.

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Mediterranean Journal of Clinical Psychology, Vol. 4, No. 1,  
Doi: 10.6092/2282-1619/2016.4.1187