



UvA-DARE (Digital Academic Repository)

Attachment insecurity, mentalization and their relation to symptoms in eating disorder patients

Kuipers, G.S.; van Loenhout, Z.; van der Ark, L.A.; Bekker, M.H.J.

DOI

[10.1080/14616734.2015.1136660](https://doi.org/10.1080/14616734.2015.1136660)

Publication date

2016

Document Version

Final published version

Published in

Attachment & Human Development

[Link to publication](#)

Citation for published version (APA):

Kuipers, G. S., van Loenhout, Z., van der Ark, L. A., & Bekker, M. H. J. (2016). Attachment insecurity, mentalization and their relation to symptoms in eating disorder patients. *Attachment & Human Development*, 18(3), 250-272.
<https://doi.org/10.1080/14616734.2015.1136660>

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

UvA-DARE is a service provided by the library of the University of Amsterdam (<https://dare.uva.nl>)



Attachment insecurity, mentalization and their relation to symptoms in eating disorder patients

Greet S. Kuipers, Zara van Loenhout, L. Andries van der Ark & Marrie H.J. Bekker

To cite this article: Greet S. Kuipers, Zara van Loenhout, L. Andries van der Ark & Marrie H.J. Bekker (2016) Attachment insecurity, mentalization and their relation to symptoms in eating disorder patients, *Attachment & Human Development*, 18:3, 250-272, DOI: [10.1080/14616734.2015.1136660](https://doi.org/10.1080/14616734.2015.1136660)

To link to this article: <http://dx.doi.org/10.1080/14616734.2015.1136660>



Published online: 26 Jan 2016.



Submit your article to this journal [↗](#)



Article views: 744



View related articles [↗](#)



View Crossmark data [↗](#)



Citing articles: 1 View citing articles [↗](#)

Attachment insecurity, mentalization and their relation to symptoms in eating disorder patients

Greet S. Kuipers^a, Zara van Loenhout^a, L. Andries van der Ark^b and Marrie H.J. Bekker^c

^aGGZ Breburg, Unit for Eating Disorders, Tilburg, The Netherlands; ^bResearch Institute of Child Development and Education, University of Amsterdam, Amsterdam, The Netherlands; ^cDepartment of Medical and Clinical Psychology, Tilburg University, Tilburg, The Netherlands

ABSTRACT

Objective: To investigate the relationships of attachment security and mentalization with core and co-morbid symptoms in eating disorder patients. **Method:** We compared 51 eating disorder patients at the start of intensive treatment and 20 healthy controls on attachment, mentalization, eating disorder symptoms, depression, anxiety, personality disorders, psycho-neuroticism, autonomy problems and self-injurious behavior, using the Adult Attachment Interview, the SCID-I and II and several questionnaires. **Results:** Compared with the controls, the eating disorder patients showed a higher prevalence of insecure attachment; eating disorder patients more often than controls received the AAI classification Unresolved for loss or abuse. They also had a lower level of mentalization and more autonomy problems. In the patient group eating disorder symptoms, depression, anxiety, psycho-neuroticism and autonomy problems were neither related to attachment security nor to mentalization; self-injurious behavior was associated with lesser attachment security and lower mentalization; borderline personality disorder was related to lower mentalization. In the control group no relations were found between attachment, mentalization and psychopathologic variables. **Discussion:** Eating disorder patients' low level of mentalization suggests the usefulness of Mentalization Based Treatment techniques for eating disorder treatment, especially in case of self-injurious behavior and/or co-morbid borderline personality disorder.

ARTICLE HISTORY

Received 17 July 2015
Revised 23 December 2015
Accepted 23 December 2015

KEYWORDS

attachment; mentalization;
eating disorders;
co-morbidity; AAI

Introduction

In recent years, the importance of attachment insecurity and mentalization for the development and persistence of eating disorders has received increasing attention in both theoretical and empirical studies (Kuipers & Bekker, 2012; Zachrisson & Skårderud, 2010). Attachment is the result of the inborn instinct to find protection, help, and comfort in moments of anxiety, pain, and bewilderment. The parents' response to the child is thought to be internalized as a working model of dealing with distress, and forms the basis for affect regulation (Fonagy & Target, 2006). When in distress, securely

attached people can be comforted by themselves or others, whereas insecurely attached people are unable to do so. Instead, they tend to withdraw from important others and restrict emotions or tend to cling to important others and to become overwhelmed by emotions. Secure attachment is essential for developing a healthy and autonomous adult personality (Bowlby, 1988).

Attachment insecurity is far more common in patients suffering from anorexia nervosa (AN), bulimia nervosa (BN), or an eating disorder not otherwise specified (EDnos) than in healthy controls (Kuipers & Bekker, 2012; Ward, Ramsay, & Treasure, 2000). Autonomy problems in eating disorder patients proved to be associated with attachment insecurity (Bekker, Croon, Van Balkom, & Vermeë, 2008). Several studies on attachment and eating disorders showed a positive relationship between attachment insecurity and body dissatisfaction (Abbate-Daga, Gramaglia, Amianto, Marzola, & Fassino, 2010; Tasca et al., 2006; Troisi et al., 2006; Troisi, Massaroni, & Cuzzolare, 2005). The severity of the eating disorder symptoms and poor treatment outcomes in eating disorder patients were related to higher attachment anxiety (Illing, Tasca, Balfour, & Bissada, 2010). Some authors (e.g., Abbate-Daga et al., 2010; Troisi et al., 2006) controlled for co-morbid depression or personality traits, whereas others (e.g., Illing et al., 2010) did not, although it is known that co-morbid symptomatology influences the course of eating disorders (Fichter, Quadflieg, & Hedlund, 2006).

Mentalization is defined as the ability to understand the mental states of oneself and others and is considered to be partly constitutionally given, and partly acquired in a transactional process between individual and attachment figures (Bateman & Fonagy, 2012). Mentalization is positively associated with attachment security (Fonagy, Target, Steele, & Steele, 1998). A child learns to discover mental states and to understand behavior as intentionally motivated through contingent, mirroring interaction with caregivers. Mentalization is acquired alongside other cognitive capacities such as affect representation and regulation and attentional control (Fonagy & Target, 2006). Ordinary mentalization is characterized by the explicit effort to tease out mental states underlying behavior, by the awareness of the nature of mental states, by taking a developmental perspective, and also by acknowledging the separateness of minds. When mentalization is low, more rigid, less sophisticated modes of experiencing reality dominate. These modes are described as “psychic equivalent”, “pretend”, and “teleological” (Bateman & Fonagy, 2012, pp. 515–517). The relation between attachment security and mentalization might be partly mediated by the capacity to recognize and to regulate affects. Over- as well as under-regulation of emotions hinders mentalization, e.g., a negative association was found between mentalizing capacity and alexithymia (Kemps & Kooiman, 2015); mentalizing is incapacitated by intense emotional arousal (Bateman & Fonagy, 2012). Luyten, Fonagy, Lowyck, and Vermote (2012) delivered a list of instruments that each assess different capacities that are relevant with regard to mentalization, e.g., the capacity to recognize one’s own emotions, the ability to infer what other persons think (theory of mind) or feel (emotional theory of mind), empathy, meta-cognition, or the ability to reflect on one’s own attachment experiences (reflective function). The relations between the different aspects of mentalization and the convergence of different measure instruments need further investigation. Fonagy et al. (1998) developed the Reflective Function Scale (RFS) to measure mentalization; given the complexity of ways speakers show moderate to high reflective function (RF) as opposed to inhibited or low

RF, the relative weight to be given to responses to questions that permit as opposed to demand RF, a 2–3 day training, with a post seminar reliability test, is needed to become fully informed and reliable as a RFS scorer.

Skårderud spelled out the possible relevance of mentalization in understanding and treating eating disorders (Skårderud, 2007a, 2007b). In his view, difficulty with mentalization could explain why AN patients try to deal with negative emotions and feelings by physical methods (e.g., restricted eating, purging). Studies on eating disorder patients that did find relationships of body dissatisfaction with negative affects (Tasca et al., 2006) or with feelings of ineffectiveness (Troisi et al., 2006) are consistent with the theoretical assumption (Skårderud & Fonagy, 2012) that these patients tend to experience inner states in bodily terms. Keating, Tasca, and Hill (2013) found low body esteem in eating disorder patients directly linked to attachment anxiety and indirectly – mediated by alexithymia – to attachment avoidance (Keating et al., 2013). Research on mentalization in eating disorders showed that anorexia nervosa patients score lower on the RFS than healthy controls (Rothschild-Yakar, Levy-Shiff, Fridman-Balaban, Gur, & Stein, 2010; Ward et al., 2001) as well as on Reading the mind tasks and on emotional awareness (Oldershaw, Hambrook, Tchanturia, Treasure, & Schmidt, 2010). With regard to bulimia nervosa, no differences were found between patients and healthy controls in mean scores on the RFS (Pedersen, Lunn, Katznelson, & Poulsen, 2012) nor on theory of mind tasks (Kenyon et al., 2012). In a study on deficits in mentalization as a risk factor for the development of eating disorders in preadolescent girls, there was also a negative association between mentalization scores and the eating disorder risk (Cate, Khademi, Judd, & Miller, 2013).

Rothschild-Yakar et al. (2010) compared the levels of mentalization, the perceived quality of the relation with the parents, and eating disorder symptoms of AN, purging type patients, to those of healthy controls. The patients scored lower on mentalization and reported more difficulties in the relation with their parents. In the patient group, mentalization was unrelated to drive for thinness but with higher mentalization scores, more bulimic symptoms were reported. In another study on mentalization, representations of parents and eating disorder symptoms, Rothschild-Yakar, Waniel, and Stein (2013) found that better mentalization, in combination with more benevolent parental representations, predicted lower levels of eating disorder symptoms in a sample of eating disorder patients. This relation was mediated by anxiety and depression: better mentalization was associated with lower levels of self-reported anxiety and depressive symptoms which in turn were related to less eating disorder symptoms (Rothschild-Yakar et al., 2013).

In their conclusion of their review on attachment and mentalization in eating disorder patients, Kuipers and Bekker (2012) recommended future research on this topic to be specific on eating disorder diagnoses and co-morbidity in the investigated sample. Co-morbid conditions may confound the outcomes of a study on attachment and mentalization. The most common co-morbid conditions: depression, anxiety (Klump, Bulik, Kaye, Treasure, & Tyson, 2009) and personality disorder (Vrabel, Rø, Martinsen, Hoffart, & Rosevinge, 2010) are all associated with insecure attachment (Dozier, Chase Stovall-McClough, & Albus, 2008). In a study on patients with different psychiatric disorders at the start of inpatient treatment, Fonagy et al. (1996) found depression, anxiety, eating disorders and borderline personality disorder to be associated with insecure AAI attachment classifications. Patients with an eating disorder as well as patients with borderline

personality disorder in this study scored lowest on mentalization compared to the rest of the patient sample.

The present study on relations between attachment insecurity, mentalization and symptoms in eating disorder patients is specific on eating disorder diagnosis, co-morbid depression, anxiety and personality disorder. The Adult Attachment Interview is used to assess attachment and level of mentalization. Earlier studies using the AAI to assess attachment in eating disorders did not account for relevant co-morbidity and did not investigate correlations between attachment and symptoms (Kuipers & Bekker, 2012). Self-injurious behavior, such as cutting, scratching or bruising, is a frequent co-morbid condition in eating disorder patients (Claes, Vandereycken, & Vertommen, 2004), related to low mentalization (Rossouw & Fonagy, 2012). Therefore we also investigated the frequency of self-injurious behavior in our sample, and its relation to attachment and mentalization.

Studies on the relation between mentalization and eating disorder symptoms are scarce; the relation might be direct or indirect, mediated by co-morbid personality disorders or other factors such as distress/psychoneuroticism, alexithymia or autonomy. Because of their known relation to both attachment security and to eating disorders, we choose to include autonomy (Bekker et al., 2008) and psycho-neuroticism (Karatzias et al., 2010; Mikulincer & Shaver, 2007) as variables in our study.

Objective

The aim of the study was to compare eating disorder patients and healthy controls in terms of attachment security and mentalization, and to investigate relationships between attachment security, mentalization, and symptom severity in eating disorder patients. Firstly, we expected eating disorder patients to be more often insecurely attached and to score lower on mentalization than healthy controls. Secondly, we expected the severity of eating disorder symptoms, depression, personality disorders, anxiety, psycho-neuroticism, autonomy problems and self-injurious behavior to be higher in the eating disorder patient group than in the control group. Thirdly, we expected both attachment security and mentalization to be negatively related to the severity of eating disorder symptoms, depression, personality disorder, anxiety, psycho-neuroticism, autonomy problems and self-injurious behavior in the eating disorder patient group.

Method

This study is part of a longitudinal study on attachment, mentalization and symptoms of eating disorder patients. The study has been approved by the Netherlands medical ethical committee for mental health institutions (Medisch-Ethische Toetsingscommissie Instellingen Geestelijke Gezondheidszorg, METIGG).

Participants

Patients were recruited in one of two selected eating disorder treatment centers in the south of the Netherlands: eating disorder patients starting an intensive (clinic or day-clinic)

were asked to participate. Control participants were recruited by an advertisement in the public hall of the Social Sciences Department of Tilburg University; participation was rewarded with study achievement points. All participants were at least 18 years old, and gave informed consent. The patient group consisted of 51 eating disorder patients (50 female; 50 Caucasian, 1 Asian). For 30% of the patients this was the first treatment for their eating disorder, 70% had previously been treated (outpatient, admission or both). The control group consisted of 20 university students (19 female; 20 Caucasian) without an eating disorder. The mean age of patients ($M = 23.6$, $SD = 6.7$) and controls ($M = 21.4$, $SD = 5.8$) did not differ significantly; ($t(69) = 1.30$, $p = .20$). The educational level differed: all controls were enrolled in a university program, whereas 46% of the patients had this level of education. With regard to experiences of loss and abuse, 32 of the patients reported one or more losses from important others, four reported sexual or physical abuse, and 10 reported both loss and abuse. In the control group 15 participants reported loss, one reported physical abuse, and two reported both loss and sexual abuse.

We included fewer controls than patients because of the longitudinal nature of our research design: patients would be followed during treatment. Due to the risk of dropout we wanted to include as many patients as possible, with respect to the time span and the financial means available.

Procedure

Both groups were screened to ensure that patients had an eating disorder and that controls did not, and to guarantee that no participant suffered from a psychosis. In addition, all participants were screened for depression and personality disorders. The Structured Clinical Interview for DSM Axis I disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1996) was used to diagnose eating disorders and depression, the section on psychotic symptoms of the Mini-International Neuropsychiatric Interview (Sheehan et al., 1998) was administered to probe for actual psychotic symptoms. The administration of MINI and SCID-I was performed by the first author and a psycho-therapist, who were both experienced in the clinical use of these instruments. The Structured Clinical Interview for DSM Axis II disorders (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997) was used to diagnose personality disorders. The SCID-II was conducted and scored by one of two psychologists (the second author and a colleague) who had been trained and supervised in conducting the SCID-II by a senior training psychologist from GGZ Breburg.

After the screening, the Adult Attachment Interview (AAI; George, Kaplan, & Main, 1996; Dutch translation by Van IJzendoorn, Bakermans-Kranenburg, Schuengel, & Juffer, 1999) was held with each participant individually, by one of two interviewers (the first author and a colleague) who were trained and supervised in conducting the AAI at the Dutch Psychoanalytic Institute (Nederlands Psychoanalytisch Instituut) in Amsterdam. The Coherence of Mind subscale of the AAI (COH) was used to measure level of attachment, and the Reflective Functioning Scale (RFS) was used for assessing the level of mentalization. After the AAI, a set of five self-report questionnaires was handed to participants, providing scores on the severity of eating disorder symptoms, state and trait anxiety, psycho-neuroticism, three aspects of autonomy, and self-injurious behavior.

The scores were put into a dataset by the second author. All instruments are described below.

Patients were interviewed in the first two weeks of their (day-)clinical treatment. The five completed questionnaires had to be returned before the end of the third week of this treatment. One patient took part in the AAI and the SCID-I but did not take part in the SCID-II and did not complete the self-report questionnaires, producing a missing value on several variables.

Measures

Structured Clinical Interview for DSM Axis I disorders (SCID-I; First et al., 1996). Only the sections on eating disorders and mood disorders were used to diagnose eating disorders and depression, respectively. A diagnosis was given when criteria for the diagnosis were met at least one month before the interview. Using the guidelines of Landis and Koch (1977), the reported inter-rater reliability (Cohen's kappa, κ) of the SCID-I was good, both for eating disorder diagnoses ($\kappa = .77$; Zanarini & Frankenburg, 2001) and for major depression diagnosis ($\kappa = .93$; Skre, Onstad, Torgersen, & Kringlen, 1991).

Structured Clinical Interview for DSM Axis II Personality disorders (SCID-II; First et al., 1997). The SCID-II was used to diagnose personality disorders, and was administered by trained psychologists. The inter-rater reliability of the SCID-II for categorical diagnoses ranged from $\kappa = .61$ to $\kappa = 1.00$ (Seegal, Hersen, & Van Hasselt, 1994).

The *Adult Attachment Interview* (AAI; George et al., 1996; Van IJzendoorn et al., 1999) was used to assess attachment security and level of mentalization. The AAI is a structured interview of 20 questions that concern childhood experiences with parents/parental figures, separations and experiences of loss or traumatic abuse. Participants are also asked to think about why their parents behaved as they did in their childhood, how their experiences influenced their actual personality and what they hope their own (imaginary) children will learn from their way of raising them. For secure attachment, the interviewee has to talk and think about attachment experiences without becoming overwhelmed, defensive-restricted or disoriented.

First, the AAI is used to cluster respondents with respect to attachment. There are three different *classifications* of the organized state of mind with respect to attachment: one secure, called *free-autonomous* (F; valuing attachment, objectively recounting experiences), two insecure, called *dismissive* (Ds; dismissing or devaluing the importance of attachment experiences or attachment figures) and *entangled* (E; preoccupied with past attachment experiences or attachment figures). The classification *unresolved* (U) refers to a disorganized state of mind and is based on the interviewee's moments of severe disorientation when asked about experiences of loss or abuse. This classification is superimposed on the classification of the organized state of mind dominant in the rest of the interview and notated as U/organized state of mind, for example, U/Ds or U/F. Interviews in which none of the organized states of mind dominate, receive the classification *cannot classify* (CC). For example, a person may be dismissive (Ds) towards his mother and entangled (E) towards his father. The CC classification is regarded as insecure. The inter-rater reliability of the Dutch version of the AAI ($\kappa = .66$; Bakermans-Kranenburg & Van IJzendoorn, 1993) can be qualified as fair (Landis & Koch, 1977). AAI classifications of parents have proven predictive of attachment behavior in their child;

insecure AAI classifications are related with axis I and axis II psychopathology, e.g., anxiety disorders, eating disorders, substance abuse, borderline personality disorder, suicidal behavior (Hesse, 1999). The *Coherence of Mind* subscale of the AAI (COH; Main, Goldwyn, & Hesse, 2002) can be used as a quantitative measure of the level of attachment security. The 9-point scale ranges from 1 to 9; a higher score means more security. In the literature no studies could be found on relations between scores on the Coherence of Mind subscale and measures for psychopathology.

Second, the AAI is used to score respondents on the *Reflective Functioning Scale* (RFS; Fonagy et al., 1998), a quantitative measure of mentalization. The 11-point scale ranges from -1 (negative reflective functioning) to 3 (low), 5 (ordinary), 7 (marked) and 9 (excellent). In non-clinical populations, mean scores of 5.2 and 5.8 were found (Fonagy et al., 1998). In a psychometric study the inter-rater reliability for the global RFS score was .71 (Taubner et al., 2013). Parental RF correlated with attachment security in offspring (Katznelson, 2014), with infant-parent attachment, with children's theory of mind, with parents' ratings of mental health in their children at age 5, and with self-reported mental health and self-esteem in children at age 11 (Steele & Steele, 2008). Scores on the RFS correlated with measurements of social cognition (Rothschild-Yakar et al., 2010), of self-perception and self-regulation (Muller, Kaufhold, Overbeck, & Grabhorn, 2006), and of neurocognitive functions (Levy et al., 2005).

In our study, S. den Hollander (trained by D. Pederson & D. Jacobvitz, and reliable since 2001) classified the patients on attachment, and scored the COH; G. Kuipers (trained at the Anna Freud Centre in 2011, and reliable since 2012) scored the RFS.

Eating Disorder Inventory-II (EDI-II; Garner, 1991; Dutch translation by Van Strien, 2002), short version, was used to measure eating disorder symptoms. The EDI-II short version is a self-report questionnaire that consists of 64 items. Each item has six ordered answer categories, ranging from 1 (*never*) to 6 (*always*). The EDI-II short version consists of eight subscales on behaviors and personality traits associated with eating disorders. The total score on the EDI-II short version was taken as a measure for the severity of eating disorder symptoms. The scores on the subscales *Drive for Thinness* (DT), *Bulimia* (B) and *Body Dissatisfaction* (BD) were taken as measures for the severity of these particular eating disorder symptoms. In our sample internal consistency estimated by Cronbach's alpha was 0.91 for the total EDI score, 0.97 for DT, 0.93 for B, and 0.96 for BD. The EDI-II discriminates very well between clinical and non-clinical groups. Norm scores are available for eating disorder patients and for female students (Van Strien & Ouwens, 2003).

The *State Trait Anxiety Inventory* (STAI; Spielberger, 1983; Dutch translation by Van der Ploeg, Defares, & Spielberger, 1979) is a self-report questionnaire that consists of two subscales: *State anxiety* and *Trait anxiety* which refer to level of anxiety and proneness to anxiety, respectively. Both scales consist of 20 items that are scored on a 4-point scale, ranging from 1 (*not at all*) to 4 (*very much*). Test-retest reliability for state anxiety is low, especially in women; for the subscale trait anxiety it is good (Van der Ploeg, 1982). Norm scores are available for psychiatric patients and the general population, with different scores for women or men (Van der Ploeg, 1982). In our sample Cronbach's alpha was 0.97 for state anxiety, and 0.96 for trait anxiety.

The *Symptom Checklist-90* (SCL-90; Derogatis, 1977; Dutch version by Arrindell & Ettema, 1986) is a self-report questionnaire consisting of 90 items. In each item the

respondent indicates the prevalence of a psychological symptom during the previous week on a 5-point scale ranging from 1 (*not at all*) to 5 (*very much*). Eight dimensions of psychopathology are assessed: agoraphobia, anxiety, depression, somatization, insufficient thinking and acting, interpersonal sensitivity, hostility and sleeping problems. In our study the total score was used as a measure of psychoneurotic-somatic distress; internal consistency estimated by Cronbach's alpha was 0.98 in our sample. Norm scores for the SCL-90 are available for psychiatric outpatients and the general population (Arrindell & Ettema, 1986).

The Dutch version of the *Autonomy-Connectedness Scale-30* (ACS-30; Bekker, 2015) was used to measure autonomy. The ACS-30 is a self-report questionnaire, consisting of 30 items. Respondents indicate on a 5-point scale ranging from 1 (*disagree*) to 5 (*agree*) how well an item fits with themselves. There are three subscales: *Self-awareness* (SA), *Sensitivity to others* (SO) and *Capacity for managing new situations* (CMNS). Self-awareness is the capacity to be aware of one's own opinions, wishes and needs and to express them in social situations. Sensitivity to others includes sensitivity to the opinions, wishes and needs of other people, empathy and the capacity for intimacy and separation. The capacity to manage new situations is about feeling (in)secure in new situations, flexibility and the tendency to exploring behavior. In our sample the reliabilities estimated by Cronbach's alpha were .89 for SA, .81 for SO, and .83 for CMNS. Norm scores on the three subscales are available for males and females, aged 16 years and older.

The *Self-injury Questionnaire-Treatment Related* (SIQ-TR; Claes & Vandereycken, 2007) is a Dutch self-report questionnaire measuring the prevalence and frequency of six types of self-injurious behavior: scratching, cutting, bruising, burning, biting oneself, and any other form of self-injury. Respondents rate the prevalence on a 5-point scale, ranging from 1 (*a week ago*) to 5 (*never*), and the frequency on a 4-point scale, ranging from 1 (*never*) to 4 (*several times a day*). In our study self-injurious behavior was considered to be present if it had happened at least one time in the previous month. In their study on the reliability and validity of the SIQ-TR in a sample of female eating disorder patients, Claes and Vandereycken (2007) also included only patients who reported self-injurious behavior in the previous month ($N = 83$). SIQ-TR outcomes significantly correlated to outcomes on the Self-Harm Inventory. The alpha coefficient of the different types of self-injurious behavior reported in their sample was 0.62 (Claes & Vandereycken, 2007).

Analyses

Before testing the hypotheses, we analyzed the frequency of eating disorder diagnoses in the patient group. To test the first hypothesis (on differences in attachment security and mentalization between patients and controls) we compared the distribution of AAI classifications of patients and controls by a chi-square test for categorical outcomes, and the mean scores on COH and RFS of both groups with one-sided *t*-tests for independent samples of unequal size. The possible confounding effects of education, of underweight and of previous treatment on mentalization in the patient group were analyzed, with analysis of variance, a bivariate correlation test and a one-sided *t*-test respectively. Outcomes on the AAI and the RFS in both groups were compared to results found in literature.

To test the second hypothesis (on differences in symptoms between patients and controls), we analyzed the frequency of depression, personality disorders and self-injurious behavior in both the patient and the control group. Outcomes on these co-morbid conditions were compared to results found in literature. The mean scores on the EDI-II, STAI, SCL-90 and ACS-30 of patients and controls were compared to each other, by one sided *t*-tests for independent samples of unequal size. Scores were compared to norm scores. In total we used 15 tests to compare the patients with the control group. As measures for effect size we used Cohen's *d* (*t*-tests) and Phi (chi-square). Effect sizes of .2 are considered small, of .5 medium and of .8 large (Cohen, 1988).

To test the third hypothesis on relations between attachment security, mentalization and symptoms we used one sided *t*-tests for independent samples of unequal size to compare the mean scores on COH and RFS of patients with or without depression, and of patients with or without the most frequent co-morbid personality disorders; we investigated relations between the scores on the questionnaires, COH and RFS, by means of Pearson's product-moment correlations. We used 65 tests to investigate relations between variables, both in the patient group and in the control group.

In testing our three hypothesis we used one-sided *t*-tests instead of two-sided *t*-tests, because in each instant we assumed there would be a difference between the two groups.

Data were analyzed by PASW, version 19 (SPSS Inc, 2010). In significant testing we used the nominal Type I error rate of $\alpha = .05$. Because we conducted multiple tests in this study, we used the Benjamini-Hochberg procedure (Benjamini & Hochberg, 1995; also see Benjamini & Yekutieli, 2001), to control the family-wise type I error rate. This procedure is more powerful than the Bonferroni correction, while still correcting for multiple testing. Following the Benjamini-Hochberg procedure, each single test had a different alpha level. Significant results will be marked with an asterisk: *.

Results

Screening

All participants met our selection criteria regarding eating disorders and psychosis, and were thus included in the main study. None of the participants (patients and controls) was found to suffer from psychosis. All patients had an eating disorder: 41% had AN, restrictive type, 31% had AN, purging type, 18% had EDnos (i.e., AN or BN, not fully meeting the DSM-IV criteria), and 10% had BN; whereas none of the controls had an eating disorder. The mean Body Mass Index (BMI) in the patient group ($M = 16.9$; $SD = 2.5$) was lower than in the control group ($M = 21.2$; $SD = 2.1$; $t(68) = 6.47$, $p < .001$; effect size (Cohen's *d*) = -2.25). The mean duration of illness in years in the patient group was $M = 5.43$ ($SD = 4.51$).

Attachment and mentalization

Our hypothesis was that eating disorder patients compared to controls were more often insecurely attached. Table 1 shows the distribution of secure (F) and insecure (U, Ds, E, and CC) AAI classifications for eating disorder patients and controls. The percentage F

Table 1. Distribution of secure and insecure AAI classifications for eating disorder patients and controls (with adjusted residuals in parentheses).

| | Controls (<i>N</i> = 20) | Eating disorder patients (<i>N</i> = 51) |
|-------------------------|---------------------------|---|
| Secure (F) | 14 (2.8) | 17 (−2.8) |
| Insecure (U, Ds, E, CC) | 6 (−2.8) | 34 (2.8) |

AAI = Adult Attachment Interview; F = free, autonomous; U = Unresolved for loss or abuse; Ds = dismissive; E = entangled, pre-occupied; CC = cannot classify

$\chi^2(1) = 7.85, p = .005^*$

was lower in the patient group (33.3%) than in the control group (70.0%); $\chi^2(1) = 7.85, p = .005$; effect size $\Phi = -.33$. The significant result confirmed by the Chi Square value comes from each of the 4 cells, as the Adjusted Residual in each exceeds 1.96 or is lower than −1.96, meaning the observed frequency was higher or lower than the expected frequency. The hypothesis was confirmed.

Table 2 shows for both eating disorder patients and controls how many persons were classified U (Unresolved for loss or abuse). In total 21 of the patients (41.1%) were Unresolved: 7 for loss, 14 for physical or sexual abuse. In the control group 2 persons (10%) received the classification U, one for loss, one for physical abuse. The difference between patients (41.1%) and controls (10.0%) with regard to classification U was significant ($\chi^2(1) = 6.38, p = .012$; effect size $\Phi = .30$). The significant result comes from each of the 4 cells, as the Adjusted Residual in each exceeds 1.96 or is lower than −1.96, the thresholds of significance.

The distribution of the underlying AAI-classifications F, Ds, E or CC (AAI is always scored at two levels: on the organized state of mind regarding attachment and on disorganization with respect to loss or abuse) in our study was not significantly different for eating disorder patients or controls ($\chi^2(3) = 5.82, p = .121$). The percentages E (13.7%) and CC (23.6%) were higher in the patient group than in the control group (E 0%, CC 10%); classification Ds was slightly more frequent in the control group (15% versus 13.7% in the patients). In both groups, insecurely attached persons (Ds, E or CC) tended to be more often unresolved for loss or abuse: thirteen of the 26 insecurely attached patients (50%) compared to eight of the 25 (32%) securely (F) attached patients were unresolved for loss or abuse. In the control group one of the five insecurely attached persons (20%) versus one of the 15 securely attached controls (6.7%) was unresolved for loss or abuse. In accordance with our hypothesis that attachment security would be higher in controls, the mean score on the COH (not tabulated) was significantly lower for the eating disorder patients ($M = 3.64, SD = 2.38$) than for the controls ($M = 5.67, SD = 2.26; t(69) = 3.29, p = .002$; effect size Cohen's $d = -.87$). Because the distribution of COH scores was on the border of normality, we compared controls and

Table 2. Frequency of AAI classification U for eating disorder patients and controls (with adjusted residuals in parentheses).

| | Controls (<i>N</i> = 20) | Eating disorder patients (<i>N</i> = 51) |
|-------|---------------------------|---|
| Non U | 18 (2.5) | 30 (−2.5) |
| U | 2 (−2.5) | 21 (2.5) |

AAI = Adult Attachment Interview; U = Unresolved for loss or abuse

$\chi^2(1) = 6.38, p = .012^*$

patients again in a non-parametric permutation test; in this test the difference was also significant ($p = .002$).

We expected mentalization to be higher in controls. The mean score on the RFS was lower for the eating disorder patients ($M = 2.63$, $SD = 1.48$) than for the control group ($M = 4.60$, $SD = 1.31$; $t(69) = 5.20$, $p = .000$; effect size Cohen's $d = -1.41$). Our hypothesis was confirmed. Steele and Steele (2008) found a relation between a higher level of education and a higher score on RFS in men, not in women. The difference in RFS score between controls and patients could be partly due to the difference in level of education. Because there was no variation in educational level in the control group (all at university level) it was useless to run an ANCOVA. To determine whether differences in level of education in the patient group were related to differences in scores on the RFS, we conducted a post hoc analysis: the eating disorder group was divided into three subgroups with different levels of education (low, medium, high). The mean scores on the RFS in the subgroups were 3.00 ($SD = 2.16$) for the low level of education, 2.22 ($SD = 1.36$) for the medium level of education and 2.60 ($SD = 1.57$) for high education. A one-way analysis of variance showed no differences in the mean RFS scores for the three subgroups ($F(2,47) = 1.58$, $p = .22$).

Lower BMI could also reduce the level of mentalization. Starvation is associated with cognitive impairments (Mathias & Kent, 1998). However, in the patient group the RFS scores were not correlated to BMI ($r = -.011$, $p = .94$).

The possible confounding influence of previous treatment on mentalizing capacity was investigated, but no difference in RFS score was found between patients that had been treated before ($N = 35$; $M = 2.69$, $SD = 1.47$) and patients for whom this treatment was the first ($N = 15$; $M = 2.47$, $SD = 1.59$; $t(48) = 0.470$, $p = .64$).

Frequency of depression, personality disorder and self-injurious behavior

A current depressive episode was diagnosed in 63% of the patients (29% severe, 33% moderate). All except two patients (i.e., 96%) had one or more personality disorder: 10% had one diagnosis; 86% had more than one. A combination of cluster A, cluster B and cluster C diagnosis was found in 37% of the patients. The most frequent diagnosis was avoidant personality disorder (78%), followed by obsessive-compulsive personality disorder (72%), depressive personality disorder (70%), borderline personality disorder (64%), paranoid personality disorder (36%), and dependent personality disorder (34%). The other personality disorder diagnoses all had a frequency of less than 10%. None of the controls suffered from depression or a personality disorder. Self-injurious behavior (SIB) in the previous month was reported by 14 patients (28.0%) and one of the controls (5.0%). Our hypothesis that eating disorder patients would suffer more from depression, personality disorders and self-injurious behavior than controls was confirmed.

Severity of eating disorder symptoms, anxiety, psycho-neuroticism and autonomy problems

In order to test whether the severity of eating disorder symptoms, of anxiety, of psycho-neuroticism and of autonomy problems was higher in the patient group than in the control group, we compared the mean scores on the EDI-II, the STAI, the SCL-90 and the

Table 3. Mean and standard deviation of the test scores of EDI-II, STAI, SCL-90, and ACS-30, for 50 eating disorder patients and 20 controls.

| Test | Scale | Patients | | Controls | | <i>t</i> (68) | Cohen's <i>d</i> | Sign |
|------|---------|----------|---------------|----------|---------------|---------------|------------------|------|
| | | <i>M</i> | (<i>SD</i>) | <i>M</i> | (<i>SD</i>) | | | |
| EDI | Total | 262.32 | (26.56) | 138.70 | (23.22) | 18.21 | 4.96 | * |
| | DT | 34.82 | (6.53) | 14.60 | (7.09) | 11.43 | 2.97 | * |
| | B | 17.10 | (8.12) | 10.10 | (2.97) | 3.74 | 1.45 | * |
| | BD | 45.84 | (7.76) | 26.10 | (10.21) | 8.77 | 2.18 | * |
| STAI | State A | 59.08 | (10.48) | 30.05 | (5.03) | 11.81 | 3.53 | * |
| | Trait A | 62.96 | (7.62) | 32.75 | (5.41) | 16.14 | 4.57 | * |
| SCL | Total | 243.24 | (49.15) | 107.60 | (13.54) | 12.11 | 3.76 | * |
| ACS | SA | 2.55 | (0.86) | 3.96 | (0.64) | 6.64 | 1.86 | * |
| | SO | 4.06 | (0.50) | 3.54 | (0.47) | 3.96 | 1.07 | * |
| | CMNS | 2.29 | (0.80) | 3.49 | (0.71) | 5.85 | 1.59 | * |

EDI = Eating Disorder Inventory-II, STAI = State Trait Anxiety Inventory, SCL = Symptom Checklist-90; ACS = Autonomy-Connectedness Scale-30, DT = Drive for thinness, B = Bulimia, BD = Body dissatisfaction, State A = State anxiety, Trait A = Trait anxiety, SA = Self-awareness, SO = Sensitivity to others, CMNS = Capacity to manage new situations, *M* = mean, *SD* = standard deviation, *t*(68) = *t*-test with 68 degrees of freedom, Cohen's *d* = effect size, Sign = Significance, * = statistically significant according to Benjamini-Hochberg procedure for multiple testing

ACS-30 for patients and controls. The mean scores and standard deviations are shown in Table 3. Except for SA and CMNS, the mean scores were higher for patients than for controls. All differences in mean scores between the two groups were significant. Our hypothesis was confirmed.

Table 4 shows the means and standard deviations or other measure of variance of the patients in our sample and norm groups. The mean scores on DT and on BD for our patients were considerably higher than the norm scores for restrictive AN patients ($t(49) = 6.42, p < .001$; $t(49) = 5.42, p < .001$), the mean score on B was considerably lower ($t(49) = -8.19, p < .001$) than the norm score for purging AN patients. For the anxiety scales, the mean and variance of the scores in our sample was similar to the norm groups. Our patients fall into the above average category of the SCL-90. On SA and CMNS the patients scored lower than average compared to a women norm group, on SO they scored above average.

Table 4. Mean and standard deviation of the test scores of EDI-II, STAI, and SCL-90, for the 50 eating disorder patients in this study and for norm groups.

| Test | Scale | This study | | Norm Group | | Description |
|------|---------|------------|---------------|-------------------------|---------------|--------------------------------|
| | | <i>M</i> | (<i>SD</i>) | <i>M</i> | (<i>SD</i>) | |
| EDI | Total | 262.32 | (26.56) | — | — | Not available |
| | DT | 34.82 | (6.53) | 28.9 | (8.3) | AN, restrictive type |
| | B | 17.10 | (8.12) | 12.3 | (5.5) | AN, restrictive type |
| | | | | 26.5 | (7.3) | AN, purging type |
| | | | | 39.3 | (10.1) | AN, restrictive type |
| STAI | State A | 59.08 | (10.48) | 41.1 | (9.3) | AN, purging type |
| | | | | 60.0 | Range = 31–77 | Female psychiatric outpatients |
| | | | | 56.0 | Range = 27–69 | Female psychiatric outpatients |
| SCL | Total | 243.24 | (49.15) | Above average = 215–253 | | Psychiatric outpatients |

EDI = Eating Disorder Inventory-II, STAI = State Trait Anxiety Inventory, SCL = Symptom Checklist-90; DT = Drive for thinness, B = Bulimia, BD = Body dissatisfaction, State A = State anxiety, Trait A = Trait anxiety, *M* = mean, *SD* = Standard deviation.

The means and variance of the controls in our sample compared to those of norm groups are shown in Table 5. For trait anxiety, state anxiety, and psycho-neuroticism, the controls' mean score was considerably lower than the mean score of the norm groups. For the EDI-II subscales DT, BD and B the scores of our controls were lower than those of female students. For the three ACS-30 scales the controls' mean scores were similar to norms (Table 5).

Correlations between severity of symptoms, attachment security and mentalization

To test our third hypothesis on relations between attachment security and mentalization on the one hand and symptoms on the other hand, we compared patients with or without a depression, patients with or without a specific personality disorder and patients with or without self-injurious behavior. We also investigated correlations between attachment security, mentalization, eating disorder symptoms, anxiety, psycho-neuroticism and autonomy. The results of these tests are described below.

Eating disorder patients with a severe ($N = 15$) or moderate current depression ($N = 17$) did not significantly differ from each other or the patients who did not have a depression ($N = 19$) on neither COH ($F(2,48) = 1.58, p = .22$) or RFS ($F(2,48) = .71, p = .50$). Differences in scores on COH or RFS between patients with or without Avoidant Personality Disorder were not significant, neither were differences on these measures found between patients with or without co-morbid Obsessive-Compulsive PD, Depressive PD, Paranoid PD or Dependent PD. The patients with co-morbid Borderline Personality Disorder ($N = 32$) scored significantly lower on the RFS than the patients without BPD ($N = 18$): $M = 2.28, SD = 1.22$ vs. $M = 3.22, SD = 1.77$; $t(48) = 2.22, p = .016$; effect size Cohen's $d = -.62$). The difference in mean scores on COH between these groups was not significant ($t(48) = 1.66, p = .10$).

Table 6 shows the correlations between scores on the COH, the RFS, the EDI-II, the STAI, the SCL-90, and the ACS-30 for the eating disorder patients (above the diagonal) and for the controls (below diagonal). As expected, attachment security and mentalization were positively correlated in both groups. However, we found hardly any support for our expectation that in the patient group attachment is correlated to eating disorder

Table 5. Mean and standard deviation of the test scores of EDI-II, STAI, and SCL-90, for the 20 controls in this study and for norm groups.

| Test | Scale | This study | | Norm Group | | Description |
|------|---------|------------|---------------|----------------------|---------------|--------------------|
| | | <i>M</i> | (<i>SD</i>) | <i>M</i> | (<i>SD</i>) | |
| EDI | Total | 138.70 | (23.22) | — | — | Not available |
| | DT | 14.60 | (7.09) | 17.6 | (7.6) | Female students |
| | B | 10.10 | (2.97) | 12.1 | (5.4) | Female students |
| | BD | 26.10 | (10.21) | 32.4 | (11.4) | Female students |
| STAI | State A | 30.05 | (5.03) | 56.0 | Range = 30–75 | Female students |
| | Trait A | 32.75 | (5.41) | 55.0 | Range = 37–68 | Female students |
| SCL | Total | 107.60 | (13.54) | 96–112 below average | | General population |

EDI = Eating Disorder Inventory-II, STAI = State Trait Anxiety Inventory, SCL = Symptom Checklist-90; DT = Drive for thinness, B = Bulimia, BD = Body dissatisfaction, State A = State anxiety, Trait A = Trait anxiety, *M* = mean, *SD* = Standard deviation.

Table 6. Correlations in the eating disorder patient group (right, above diagonal) and in the control group (left, below diagonal).

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----------|------|------|------|------|------|------|------|------|------|------|------|-------|
| 1.COH | | .43* | -.01 | .20 | -.09 | .02 | -.06 | .03 | -.04 | .01 | .10 | -.25 |
| 2.RFS | .58* | | -.08 | .12 | -.09 | -.09 | -.16 | -.13 | -.17 | -.17 | .06 | -.13 |
| 3.EDI-II | -.28 | -.17 | | | | | .25 | .60* | .39* | -.25 | .16 | -.36* |
| 4.DT | -.27 | -.08 | | | -.14 | .70* | .14 | .34* | .10 | .13 | .20 | -.10 |
| 5.B | -.37 | -.30 | | .75* | | -.12 | -.17 | -.24 | -.15 | .05 | -.25 | .02 |
| 6.BD | -.01 | .13 | | .78* | .46 | | .21 | .39* | .13 | -.06 | .25 | -.16 |
| 7.State | .12 | .23 | .30 | .26 | -.06 | .18 | | .56* | .53* | -.31 | .06 | .02 |
| 8.Trait | .07 | .20 | .49 | .49 | .16 | .54 | .51 | | .62* | -.26 | .22 | -.30 |
| 9.SCL | -.33 | -.36 | .62* | .35 | .20 | .47 | .25 | .33 | | -.11 | -.09 | -.09 |
| 10.SA | -.16 | -.01 | -.37 | -.14 | .15 | -.21 | -.48 | -.31 | -.22 | | -.29 | .49* |
| 11.SO | -.27 | -.11 | .39 | .38 | .24 | .26 | .15 | .08 | .13 | -.14 | | -.42* |
| 12.CMNS | -.34 | .04 | -.05 | -.07 | -.01 | .02 | -.09 | -.01 | .21 | .40 | -.30 | |

* = statistically significant according to Benjamini-Hochberg procedure for multiple testing

1.COH = AAI Coherence of Mind scale; 2.RFS = Reflective Functioning Scale; 3.EDI-II = Eating Disorder Inventory-II; 4. DT = Drive for Thinness; 5.B = Bulimia; 6.BD = Body Dissatisfaction; 7.State = State Anxiety; 8.Trait = Trait Anxiety; 9. SCL = Symptom Checklist; 10.SA = Self Awareness; 11.SO = Sensitivity for Others; 12.CMNS = Capacity to Manage New Situation

symptoms, anxiety, psycho-neuroticism, and autonomy. Similarly, we did not find any support for our expectation that mentalization is negatively correlated to eating disorder symptoms, anxiety, psycho-neuroticism, and autonomy problems. In the control group we also failed to demonstrate relationships between the scores on attachment security and mentalization on the one hand and all other scales on the other.

The total score on the EDI-II in the patient group was related to anxiety, psycho-neuroticism and autonomy problems; in the control group we only found a relation of the score on the EDI-II to psychoneuroticism.

The score on the COH of the patients who reported SIB was significantly lower ($M = 2.50$, $SD = 1.95$, $N = 14$) than for patients who did not report such behavior ($M = 4.10$, $SD = 2.43$, $N = 36$; $t(48) = 2.19$, $p < .05$; effect size Cohen's $d = -.73$), whereas the mean RFS score was significantly less for patients who reported SIB ($M = 1.79$, $SD = 0.98$, $N = 14$) than for patients who did not report such behavior ($M = 2.94$, $SD = 1.55$, $N = 36$; $t(48) = 2.60$, $p < .025$; effect size Cohen's $d = .89$). Thus our hypothesis that SIB would be related to attachment insecurity and low level of mentalization was confirmed.

SIB is one of the criteria for the diagnosis BPD in DSM-IV. In our sample, 11 of the 14 eating disorder patients who suffered from SIB (i.e., 79%) had received the diagnosis of BPD and 21 of the 36 patients who did not report SIB (i.e., 58%) received this diagnosis. The difference is not statistically significant ($X^2(1) = 1.02$, $p = .31$).

Discussion

As we described in the Introduction, there is increasing evidence for relations between attachment security and core or co-morbid symptoms in eating disorders. This study was the first to investigate the role of mentalization in the relations between attachment security and eating disorder symptoms, and if low mentalization was associated with co-morbidity such as personality disorders, anxiety, autonomy problems or self-injurious behavior. To put our results into perspective we think it is important to first review the characteristics of our sample with regard to eating disorder diagnosis and co-morbidity

and thereafter discuss the meaning of our results and the limitations of the study. The majority of patients in our study suffered from AN. Two-thirds of the eating disorder sample in our study suffered from co-morbid depression, and anxiety scores were high compared to the norm scores of female psychiatric outpatients. In a study on inpatients with AN or BN, Braun, Sunday, and Halmi (1994) also reported depression and anxiety to be common co-morbid diagnoses; 69% of the patients in their study had at least one personality disorder. In our study this percentage is higher (96%). In an inpatient sample of eating disorder patients, Vrubel et al. (2010) found 78% to suffer from a personality disorder. The (statistically not significant) higher frequency of personality disorders in our study might be due to the fact that we administered the SCID-II at admission, while they assessed personality disorders at the end of inpatient treatment. This might be essential because in Vrubel et al.'s study the frequency of personality disorders declined with each year of treatment. Another explanation might be a difference in admission criteria: in our study severe underweight and poor psychosocial functioning, in theirs the impact of the eating disorder on overall functioning (Vrubel et al., 2010). And third, their sample contained more bulimia nervosa patients and less anorexia nervosa patients compared to ours. The prevalence of co-morbid personality disorders is higher in anorexia nervosa than in bulimia nervosa (Herzog, Keller, Lavori, Kenny, & Sacks, 1992). The percentage of reported SIB in our patient group (28.0%) was comparable to the 30.4% found by Claes and Vandereycken (2007) in a sample of 273 female eating disorder patients. In our study, SIB was not confined to the subgroup of eating disorder patients with co-morbid BPD; this is consistent with results in literature (Claes et al., 2004).

Our first hypothesis concerned the difference in attachment security and mentalization between eating disorder patients and healthy controls. The total percentage of insecure attachment classifications we found in our patient sample was comparable to other studies with samples consisting mostly of AN patients (Candelori & Ciocca, 1998; Dias, Soares, Klein, Cunha, & Roisman, 2011; Ramacciotti et al., 2000). The percentage of 70.0% secure attachment in our control group was high compared to the reported 55.2% in a non-clinical population (Van IJzendoorn & Bakermans-Kranenburg, 2008), which reduced the generalizability of the difference we found between patients and non-patients in our study. The distribution of AAI classifications in our eating disorder sample differed from other studies' results: Ward et al. (2001) in a study of AN inpatients reported higher frequencies Ds and E than we found, the percentage U (40%) equals ours. The difference might be due to method of classification: Ward et al. (2001) did not use the classification CC. The control group in our study was comparable to a non-clinical population in its percentage of disorganized AAI classifications U and CC: 15% (Van IJzendoorn & Bakermans-Kranenburg, 2008). The mean score on the RFS of the patients in our study was comparable to the scores found by Ward et al. (2001) in AN patients. The mean RFS score in the control group in our study: 4.6 ($SD = 1.3$) was comparable to that found by Pedersen et al. (2012): 4.25 ($SD = 1.3$). The difference in RFS score between patients and controls in our study might be partly due to a difference in level of education. It is a limitation of this study that we did not match patients and controls with respect to age and education. A weakness of our study is that both the AAI and the RFS were scored by just one person; because of this, the inter-rater reliability in

this sample could not be computed. Scorers were thoroughly trained and proved to be reliable according to the international standards.

Our hypothesis that, in eating disorder patients, negative relations would exist between attachment security and mentalization on the one hand, and eating disorder symptoms, depression, anxiety, psycho-neuroticism and autonomy problems on the other hand, was not confirmed. We inspected the data for the possible effect of outliers on statistic analysis, but this did not change our findings. Our failure to find results on the relation between attachment and symptoms might be due to the use of a categorical measure of attachment, the AAI, because of its reduced power to detect a significant effect compared to nominal attachment measures. Positive relations between attachment insecurity and eating disorders were found in studies using the self-report Attachment Style Questionnaire (Feeney, Noller, & Hannrahan, 1994): higher scores on the Need for Approval scale were correlated to the severity of pre-treatment eating disorder symptoms (Illing et al., 2010), and to body dissatisfaction (Abbate-Daga et al., 2010); higher attachment anxiety was correlated to drive for thinness and dietary restraint (Tasca et al., 2006), and to body dissatisfaction (Troisi et al., 2006). Also in self-report studies, attachment insecurity was found to correlate to psycho-neuroticism (Mikulincer & Shaver, 2007) and to autonomy problems (Bekker et al., 2008). To investigate relations between AAI and other instruments in our study we used the nominal subscale Coherence of mind. In a study on the association between self-reported attachment and the AAI, the COH was the AAI subscale found to be the most predictive of scores on self-report scales of attachment security (Shaver, Belsky, & Brennan, 2000). However, in a review of studies on the association between the COH and self-reported attachment scores Roisman et al. (2007) found r to range from 0.02 to .17, suggesting trivial to small overlap between these measures. This could explain why we were not able to confirm the abovementioned correlations between self-reported attachment insecurity and eating disorder symptoms, psycho-neuroticism and autonomy problems. The AAI has the advantage, above self-report questionnaires, of accessing information on attachment that the interviewed individual is not consciously aware of. However, in retrospective, it would have been informative to not only use the AAI but also a self-report questionnaire on attachment, in order to investigate the relations between attachment security and symptoms.

In comparison to the assessment of mentalization, much more is known about the different instruments measuring attachment, as mentioned above. The RFS we used in this study measures global mentalizing capacity in relation to attachment experiences. There is little information on its relation to other instruments measuring related capacities, e.g., emotion recognition, or to instruments measuring psychopathology. Luyten et al. (2012) argued that mentalization has many facets and polarities, such as implicit versus explicit, self-oriented versus other-oriented, cognitive versus affective, internally versus externally focused. It is possible that specific aspects of mentalization such as self-oriented versus other-oriented or internally versus externally focused, are correlated to specific symptoms in eating disorder patients, whereas the global capacity to mentalize on attachment experiences is not. Because of its relation to both attachment (Oskis et al., 2013) and to eating disorders (Keating et al., 2013; Montebanocci et al., 2006), it would have been informative to assess alexithymia in our study. Alexithymia, especially the difficulty to recognize emotions, could be a confounding factor in the low mentalization scores

found in our patient sample. In the introduction we mentioned the study by Cate et al. (2013) who found deficits in mentalization to be a risk for developing an eating disorder in a sample of pre-adolescent girls. Low mentalization and attachment insecurity might be risk factors for the development of an eating disorder in genetically vulnerable individuals. The average age of onset is in adolescence; one of the developmental tasks in this phase is to separate from primary attachment figures and to find independent ways to regulate emotions, like internal cognitive strategies or support from peers. This striving for autonomy is more likely to succeed in securely attached teenagers because they have good self-esteem and can rely on the support of their caregivers (Gander, Sevecke, & Buchheim, 2015). Insecurely attached adolescents are at risk to experience more interpersonal distress, while at the same time their capacity to deal with it is impaired due to dysfunctional emotion regulation strategies and low mentalizing skills. Several studies have shown the relation between poorly managed negative affects, body dissatisfaction and disordered eating behavior in young women (Tasca et al., 2006, 2009; Troisi et al., 2006). Once eating disorder symptoms such as restriction and purging have developed, both the physiological and psychological consequences of these behaviors tend to reinforce them (Connan, Campbell, Katzman, Lightman, & Treasure, 2003), e.g., hunger caused by restriction evoking binge eating; restricting giving a sense of control. The patients in this study had severe eating disorder symptoms and the mean duration of illness was longer than five years. The clinical features of their eating behavior in this stadium of the illness would be influenced more by the reinforcing mechanisms mentioned above than by initial risk factors such as low mentalization and attachment insecurity.

In this study the severity of eating disorder symptoms in the patient group, measured with the total score of the EDI-II, was strongly related to trait anxiety (.60), moderately to psycho-neuroticism (.39) and to the capacity to manage new situations (-.36). The relation to psycho-neuroticism might be confounded by trait anxiety, because they were also strongly related (.62). In the control group the total score on the EDI-II strongly (.62) related to psycho-neuroticism; the correlation between trait anxiety and EDI-II score (.49) did not reach statistical significance, possibly due to lack of power. In the control group no one suffered from an eating disorder; eating problems might occur temporarily, in association with current psychosomatic distress. The strong relation between trait anxiety and eating disorder symptoms in our patient sample is consistent with other research, in which high trait anxiety scores are related to severity of illness in anorexia nervosa patients (Pollice, Kaye, Greeno, & Weltzin, 1997; Schulze, Calame, Keller, & Mehler-Wex, 2009). Trait anxiety might predispose to developing an eating disorder. The negative relation between eating disorder symptom severity and the capacity to manage new situations is not mediated by anxiety; it might reflect the social withdrawal patients with severe anorexia nervosa tend to. A limitation of our study was that the patient group was not sufficiently large for regression analysis. To investigate the partial contribution of different variables to a dependent outcome such as the score on the EDI-II with regression analysis, a large sample is needed.

Attachment insecurity and low mentalization might influence the degree to which patients are able to benefit from therapy directly, because of their disabling effect on seeking and finding comfort in the relation with others, which impairs the therapeutic alliance. The high frequency of insecure attachment AAI classifications found in eating disorder patient samples and the relation between attachment insecurity and impaired

emotion regulation, lack of autonomy, and body dissatisfaction, which are all related to eating disorder symptoms, underpin the importance of focusing on attachment in the treatment of eating disorders. Information on patients' attachment experiences, current attachment relations, and affect-regulation strategies should be assessed before starting treatment and can help the patient to also take a developmental stance towards the eating disorder. Patients should be encouraged to communicate about their inner and interpersonal experiences. In group therapy and family therapy, a focus on interpersonal relations and on understanding each others' behavior as intentionally motivated can enhance mentalization and self-esteem and reduce anxiety. Impaired emotion recognition and hostility to the body and bodily signals could benefit from non verbal therapy such as psychomotor and art therapy. For some patients the impact of abusive experiences should have special attention. Sexual abuse is a non specific risk factor for developing an eating disorder (Jacobi, De Zwaan, Hayward, Kraemer, & Stewart Agras, 2004). Trauma related hyperarousal, disorganized attachment, impaired mentalization (Bateman & Fonagy, 2012), low self-esteem and body dissatisfaction could be factors relevant in this regard. The impact of loss is important for others. It should be noticed that difficulty in dealing with loss could be associated with underlying attachment insecurity, as classification U tended to be more frequent in case of an insecure organized state of mind (Ds, E or CC).

In a sample of eating disorder patients that were severely ill with regard to eating disorder and to co-morbid personality disorder compared to other inpatient samples, we found a higher percentage of insecure attachment (especially classification Unresolved for loss or abuse) and a lower level of mentalization than in healthy controls. We were not able to find relations between attachment security and mentalization on the one hand, and eating disorder symptoms on the other hand. The high frequency of BPD and the observed relation between low mentalization and BPD as well as SIB in our sample of eating disorder patients might suggest the use of Mentalization-Based Treatment (MBT) for eating disorder patients needing intensive treatment: MBT is effective in reducing symptoms – including self-harm and eating disorder symptoms – in adult borderline personality disorder patients (Bateman & Fonagy, 2009). Low mentalization in our sample is not restricted to patients with a co-morbid borderline personality disorder: the majority of patients have problems with mentalization compared to controls without an eating disorder. Longitudinal research on treatment outcomes, recovery and persistence of eating disorder symptoms in relation to attachment security and mentalization could shed further light on the influence of attachment and mentalization on the course of eating disorders. We think it is important to be precise about relevant co-morbidity in future research.

Acknowledgements

The authors thank Mrs. C. Vierboom and Ms. M. Faulborn for their contribution in conducting AAI and SCID-II interviews.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

- Abbate-Daga, G., Gramaglia, C., Amianto, F., Marzola, E., & Fassino, S. (2010). Attachment insecurity, personality and body dissatisfaction in eating disorders. *Journal of Nervous and Mental Disorders*, 198, 520–524. doi:[10.1097/NMD.0b013e3181e4c6f7](https://doi.org/10.1097/NMD.0b013e3181e4c6f7)
- Arrindell, W.A., & Ettema, J.H.M. (1986). *SCL-90: Handleiding bij een multidimensionele psychopathologie-indicator* [Manual for the multi-dimensional psychopathology indicator]. Lisse, Netherlands: Swets & Zeitlinger.
- Bakermans-Kranenburg, M., & Van IJzendoorn, R. (1993). A psychometric study of the Adult Attachment Interview. Reliability and discriminant validity. *Developmental Psychology*, 29, 870–879. doi:[10.1037/0012-1649.29.5.870](https://doi.org/10.1037/0012-1649.29.5.870)
- Bateman, A.W., & Fonagy, P. (2009). Randomized controlled trial of outpatient mentalization-based treatment versus structured clinical management for borderline personality disorder. *American Journal of Psychiatry*, 166, 1355–1364. doi:[10.1176/appi.ajp.2009.09040539](https://doi.org/10.1176/appi.ajp.2009.09040539)
- Bateman, A.W., & Fonagy, P. (Eds.). (2012). *Handbook of mentalizing in mental health practice*. Washington, DC: American Psychiatric Publishing.
- Bekker, M.H.J. (2015). *Autonomie-Gehechtheidsschaal AGS-30: Handleiding* [Autonomy-Connectedness scale ACS-30: Scale and manual]. Houten: Bohn Stafleu van Loghum.
- Bekker, M.H.J., Croon, M.A., Van Balkom, E.G.A., & Vermeë, J.B.G. (2008). Predicting individual differences in autonomy-connectedness: The role of body awareness, alexithymia and assertiveness. *Journal of Clinical Psychology*, 64, 747–765. doi:[10.1002/jclp.20486](https://doi.org/10.1002/jclp.20486)
- Benjamini, Y., & Hochberg, Y. (1995). Controlling the false discovery rate: A practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society, Series B*, 57, 289–300.
- Benjamini, Y., & Yekutieli, D. (2001). The control of the false discovery rate in multiple testing under dependency. *The Annals of Statistics*, 29, 1165–1188. doi:[10.1214/aos/1013699998](https://doi.org/10.1214/aos/1013699998)
- Bowlby, J. (1988). *A secure base: Parent-child attachment and healthy human development*. New York, NY: Basic Books.
- Braun, D.L., Sunday, S.R., & Halmi, K.A. (1994). Psychiatric comorbidity in patients with eating disorders. *Psychological Medicine*, 24(4), 859–867. doi:[10.1017/S0033291700028956](https://doi.org/10.1017/S0033291700028956)
- Candelori, C., & Ciocca, A. (1998). Attachment and eating disorders. In A. Bria, A. Ciocca, & S. De Risio (Eds.), *Psychotherapeutic issues in eating disorders: Models, methods and results* (pp. 139–153). Rome: Societa Editrice Universo.
- Cate, R.C., Khademi, M., Judd, P., & Miller, H. (2013). Deficits in mentalization: A risk factor for future development of eating disorders among pre-adolescent girls. *Advances in Eating Disorders: Theory, Research and Practice*, 1(3), 187–194. doi:[10.1080/21662630.2013.794497](https://doi.org/10.1080/21662630.2013.794497)
- Claes, L., & Vandereycken, W. (2007). The self-injury questionnaire-treatment related: Construction, reliability and validity in a sample of female eating disorder patients. In P. M. Goldfarb (Ed.), *Psychological tests and testing research trends* (pp. 111–139). New York, NY: Nova Science Publishers.
- Claes, L., Vandereycken, W., & Vertommen, H. (2004). Personality traits in eating-disordered patients with and without self-injurious behaviors. *Journal of Personality Disorders*, 18, 399–404. doi:[10.1521/pedi.2004.18.4.399](https://doi.org/10.1521/pedi.2004.18.4.399)
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Connan, F., Campbell, I.C., Katzman, M., Lightman, S.L., & Treasure, J. (2003). A neurodevelopmental model for AN. *Physiology and Behavior*, 79, 13–24. doi:[10.1016/S0031-9384\(03\)00101-X](https://doi.org/10.1016/S0031-9384(03)00101-X)
- Derogatis, L.R. (1977). *SCL-90-: Administration, scoring, and procedures manual I*. Baltimore, MD: Clinical Psychometrics Research.
- Dias, P., Soares, I., Klein, J., Cunha, J.P.S., & Roisman, G.I. (2011). Autonomic correlates of attachment insecurity in a sample of women with eating disorders. *Attachment and Human Development*, 13, 155–167. doi:[10.1080/14616734.2011.554005](https://doi.org/10.1080/14616734.2011.554005)
- Dozier, M., Chase Stovall-McClough, K., & Albus, K.E. (2008). Attachment and psychopathology in adulthood. In J. Cassidy & M. Shaver (Eds.), *Handbook of attachment: Theory, research and clinical applications* (2nd ed., pp. 718–744). New York, NY: Guilford Press.

- Feeney, J.A., Noller, P., & Hannrahan, M. (1994). Assessing adult attachment. In M. B. Sperling & W. H. Berman (Eds.), *Attachment in adults. Clinical and developmental perspectives* (pp. 128–152). New York, NY: Guilford Press.
- Fichter, M., Quadflieg, N., & Hedlund, S. (2006). Twelve-year course and outcome predictors of AN. *International Journal of Eating Disorders*, 39, 87–100. doi:10.1002/eat.20215
- First, M.B., Gibbon, M., Spitzer, R.L., Williams, J.B.W., & Benjamin, L.S. (1997). *Structured clinical interview for DSM-IV axis II personality disorders (SCID-II)*. Washington, DC: American Psychiatric Press.
- First, M.B., Spitzer, R.L., Gibbon, M., & Williams, J.B.W. (1996). *Structured clinical interview for DSM-IV axis I disorders, clinician version (SCID—CV)*. Washington, DC: American Psychiatric Press.
- Fonagy, P., Leigh, T., Steele, M., Steele, H., Kennedy, R., Mattoon, G., ... Gerber, A. (1996). The relation of attachment status, psychiatric classification, and response to psychotherapy. *Journal of Consulting and Clinical Psychology*, 64, 22–31. doi:10.1037/0022-006X.64.1.22
- Fonagy, P., & Target, M. (2006). The mentalization-focused approach to self pathology. *Journal of Personality Disorders*, 20(6), 544–576. doi:10.1521/pedi.2006.20.6.544
- Fonagy, P., Target, M., Steele, H., & Steele, M. (1998). *Reflective-functioning manual, version 5.0, for application to adult attachment interview*. London: University College London.
- Gander, M., Sevecke, K., & Buchheim, A. (2015). Eating disorders in adolescence: Attachment issues from a developmental perspective. *Frontiers in Psychology*, 6, 1136. doi:10.3389/fpsyg.2015.01136
- Garner, D.M. (1991). *Eating disorder inventory-2, professional manual*. Odessa, FL: Psychological Assessment Resources.
- George, C., Kaplan, N., & Main, M. (1996). *Adult attachment interview 3*. Berkeley, CA: Department of Psychology, University of California at Berkeley.
- Herzog, D.B., Keller, M.B., Lavori, P.W., Kenny, G.M., & Sacks, N.R. (1992). The prevalence of personality disorders in 210 women with eating disorders. *Journal for Clinical Psychiatry*, 53(5), 147–152.
- Hesse, E. (1999). The adult attachment interview: Historical and current perspectives. In J. Cassidy & P. R. Shaver (Eds.), *Handbook of attachment* (pp. 395–433). New York, NY: Guilford.
- Illing, V., Tasca, G., Balfour, L., & Bissada, H. (2010). Attachment insecurity predicts eating disorder symptoms and treatment outcomes in a clinical sample of women. *Journal of Nervous and Mental Disorders*, 198, 653–659. doi:10.1097/NMD.0b013e3181ef34b2
- Jacobi, C., De Zwaan, M., Hayward, C., Kraemer, H., & Stewart Agras, W. (2004). Coming to terms with risk factors for eating disorders: Application of risk terminology and suggestions for a general taxonomy. *Psychological Bulletin*, 130(1), 19–65. doi:10.1037/0033-2909.130.1.19
- Karatzias, T., Chouliara, Z., Power, K., Collin, P., Yellowlees, A., & Grierson, D. (2010). General psychopathology in anorexia nervosa: The role of psychosocial factors. *Clinical Psychology & Psychotherapy*, 17, 519–527. doi:10.1002/cpp.701
- Katznelson, H. (2014). Reflective functioning: A review. *Clinical Psychology Review*, 34, 107–117. doi:10.1016/j.cpr.2013.12.003
- Keating, L., Tasca, G., & Hill, R. (2013). Structural relationships among attachment insecurity, alexithymia, and body esteem in women with eating disorders. *Eating Behaviors*, 14, 366–373. doi:10.1016/j.eatbeh.2013.06.013
- Kemps, S., & Kooiman, C. (2015). Measuring mentalization: An attempt using the reflective functioning rating scale. *Tijdschrift voor Psychiatrie*, 57 (9), 645–655.
- Kenyon, M., Samarawickrema, N., DeJong, H., Van den Eynde, F., Startup, H., Lavender, A., ... & Schmidt, U. (2012). Theory of mind in bulimia nervosa. *International Journal of Eating Disorders*, 45 (3), 377–384. doi:10.1002/eat.20967
- Klump, K., Bulik, C., Kaye, W., Treasure, J., & Tyson, E. (2009). Academy for eating disorders position paper: Eating disorders are serious mental illnesses. *International Journal of Eating Disorders*, 42, 97–103. doi:10.1002/eat.20589

- Kuipers, G.S., & Bekker, M.H.J. (2012). Attachment, mentalization and eating disorders: A review of studies using the Adult Attachment Interview. *Current Psychiatry Reviews*, 8, 326–336. doi:[10.2174/157340012803520478](https://doi.org/10.2174/157340012803520478)
- Landis, J.R., & Koch, G.G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33, 159–174. doi:[10.2307/2529310](https://doi.org/10.2307/2529310)
- Levy, K., Meehan, K., Reynoso, J., Lenzenweger, M., Clarkin, J., & Kernberg, O. (2005). The relation of reflective function to neurocognitive functioning in patients with borderline personality disorder. *Journal of the American Psychoanalytic Association*, 53(4), 1305–1307. Retrieved from <https://www.researchgate.net/publication/234155535>
- Luyten, P., Fonagy, P., Lowyck, B., & Vermote, R. (2012). The assessment of mentalization. In A. W. Bateman & P. Fonagy (Eds.), *Handbook of mentalizing in mental health practice* (pp. 43–65). Washington, DC: American Psychiatric Publishing.
- Main, M., Goldwyn, R., & Hesse, E. (2002). *Adult attachment scoring and classification systems*. Berkeley, CA: Department of Psychology, University of California at Berkeley.
- Mathias, J.L., & Kent, P.S. (1998). Neuropsychological consequences of extreme weight loss and dietary restriction in patients with AN. *Journal of Clinical and Experimental Neuropsychology*, 20, 548–564. doi:[10.1076/jcen.20.4.548.1476](https://doi.org/10.1076/jcen.20.4.548.1476)
- Mikulincer, M., & Shaver, P.R. (2007). *Attachment in adulthood: Structure, dynamics and change* (pp. 369–404). New York, NY: The Guilford Press.
- Montebarocci, O., Codispoti, M., Surcinelli, P., Franzoni, E., Baldaro, B., & Rossi, N. (2006). Alexithymia in female patients with eating disorders. *Eating and Weight Disorders*, 11(1), 14–21. doi:[10.1007/BF03327739](https://doi.org/10.1007/BF03327739)
- Müller, C., Kaufhold, J., Overbeck, G., & Grabhorn, R. (2006). The importance of reflective functioning to the diagnosis of psychic structure. *Psychology and Psychotherapy: Theory, Research and Practice*, 79(4), 485–494. doi:[10.1348/147608305x68048](https://doi.org/10.1348/147608305x68048)
- Oldershaw, A., Hambrook, D., Tchanturia, K., Treasure, J., & Schmidt, U. (2010). Emotional theory of mind and emotional awareness in recovered anorexia nervosa patients. *Psychosomatic Medicine*, 72, 73–79. doi:[0033-3174/10/7201-0073](https://doi.org/10.1003-3174/10/7201-0073)
- Oskis, A., Clow, A., Hucklebidey, F., Bifulco, A., Jacobs, C., & Loveday, C. (2013). Understanding alexithymia in female adolescents: The role of attachment style. *Personality and Individual Differences*, 54(1), 97–102. doi:[10.1016/j.paid.2012.08.023](https://doi.org/10.1016/j.paid.2012.08.023)
- Pedersen, S.H., Lunn, S., Katznelson, H., & Poulsen, S. (2012). Reflective functioning in 70 patients suffering from BN. *European Eating Disorders Review*, 20, 303–310. doi:[10.1002/erv.2158](https://doi.org/10.1002/erv.2158)
- Pollice, C., Kaye, W., Greeno, C., & Weltzin, T. (1997). Relationship of depression, anxiety and obsessionality to state of illness in anorexia nervosa. *International Journal of Eating Disorders*, 21(4), 367–376. doi:[10.1002/\(SICI\)1098-108X\(1997\)21:4<367::AID-EAT10>3.0.CO;2-W](https://doi.org/10.1002/(SICI)1098-108X(1997)21:4<367::AID-EAT10>3.0.CO;2-W)
- Ramacciotti, A., Sorbello, M., Pazzagli, A., Vismara, L., Mancone, A., & Pallanti, S. (2000). Attachment process in eating disorders. *Eating and Weight Disorders*, 6, 166–170. doi:[10.1007/BF03339766](https://doi.org/10.1007/BF03339766)
- Roisman, G.I., Holland, A., Fortuna, K., Fraley, R.C., Clausell, E., & Clarke, A. (2007). The Adult Attachment Interview and self-reports of attachment style: An empirical rapprochement. *Journal of Personality and Social Psychology*, 92, 678–697. doi:[10.1037/0022-3514.92.4.678](https://doi.org/10.1037/0022-3514.92.4.678)
- Rossouw, T.I., & Fonagy, P. (2012). Mentalization-based treatment for self-harm in adolescents: A randomized controlled trial. *Journal of the American Academy of Child & Adolescent Psychiatry*, 51, 1304–1313. doi:[10.1016/j.jaac.2012.09.018](https://doi.org/10.1016/j.jaac.2012.09.018)
- Rothschild-Yakar, L., Levy-Shiff, R., Fridman-Balaban, R., Gur, E., & Stein, D. (2010). Mentalization and relationships with parents as predictors of eating disordered behavior. *Journal for Nervous and Mental Disorders*, 198, 501–507. doi:[10.1097/NMD.0b013e3181e526c8](https://doi.org/10.1097/NMD.0b013e3181e526c8)
- Rothschild-Yakar, L., Waniel, A., & Stein, D. (2013). Mentalizing in self vs. parent representations and working models of parents as risk and protective factors from distress and eating disorders. *The Journal of Nervous and Mental Disease*, 201(6), 510–518. doi:[10.1097/NMD.0b013e3182948316](https://doi.org/10.1097/NMD.0b013e3182948316)
- Schulze, V.M., Calame, S., Keller, F., & Mehler-Wex, C. (2009). Trait anxiety in children and adolescents with anorexia nervosa. *Eating and Weight Disorders*, 14(2–3), 163–168. doi:[10.1007/BF03327817](https://doi.org/10.1007/BF03327817)

- Segal, D.L., Hersen, M., & Van Hasselt, V.B. (1994). Reliability of the SCID: An evaluative review. *Comprehensive Psychiatry*, 35, 316–327. doi:[10.1016/0010-440X\(94\)90025-6](https://doi.org/10.1016/0010-440X(94)90025-6)
- Shaver, P.R., Belsky, J., & Brennan, K.A. (2000). The Adult Attachment Interview and self-reports of romantic attachment: Associations across domains and methods. *Personal Relationships*, 7, 25–43. doi:[10.1111/j.1475-6811.2000.tb00002.x](https://doi.org/10.1111/j.1475-6811.2000.tb00002.x)
- Sheehan, D.V., Lecubrier, Y., Sheehan, K.H., Amorim, P., Janavs, J., Weiller, E., . . . Dunbar, G.C. (1998). Mini-international neuropsychiatric interview (M.I.N.I.): The development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *Journal of Clinical Psychiatry*, 59(suppl. 20), 22–33.
- Skårderud, F. (2007a). Eating one's words, part I: 'Concretized metaphors' and reflective function in AN – An interview study. *European Eating Disorders Review*, 15, 163–174. doi:[10.1002/erv.777](https://doi.org/10.1002/erv.777)
- Skårderud, F. (2007b). Eating one's words, part II: The embodied mind and reflective function in AN – Theory. *European Eating Disorders Review*, 15, 243–252. doi:[10.1002/erv.778](https://doi.org/10.1002/erv.778)
- Skårderud, F., & Fonagy, P. (2012). Eating disorders. In A. W. Bateman & P. Fonagy (Eds.), *Handbook of mentalizing in mental health practice* (pp. 347–383). Washington, DC: American Psychiatric Publishing.
- Skre, I., Onstad, S., Torgersen, S., & Kringlen, E. (1991). High inter-rater reliability for the Structured Clinical Interview for DSM-III-R Axis I (SCID-I). *Acta Psychiatrica Scandinavica*, 84, 167–173. doi:[10.1111/acp.1991.84.issue-2](https://doi.org/10.1111/acp.1991.84.issue-2)
- Spielberger, C.D. (1983). *Manual for the state trait anxiety inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Steele, H., & Steele, M. (2008). On the origins of reflective functioning. In F. N. Busch (Ed.), *Mentalization* (pp. 133–158). New York, NY: Analytic Press.
- Tasca, G.A., Kowal, J., Balfour, L., Ritchie, K., Virley, B., & Bissada, H. (2006). An attachment insecurity model of negative affect among women seeking treatment for an eating disorder. *Eating Behaviors*, 7, 252–257. doi:[10.1016/j.eatbeh.2005.09.004](https://doi.org/10.1016/j.eatbeh.2005.09.004)
- Tasca, G.A., Szadkowski, L., Illing, V., Trinneer, A., Grenon, R., Demidenko, N., . . . Bissada, H. (2009). Adult attachment, depression, and eating disorder symptoms: The mediating role of affect regulation strategies. *Personality and Individual Differences*, 47, 662–667. doi:[10.1016/j.paid.2009.06.006](https://doi.org/10.1016/j.paid.2009.06.006)
- Taubner, S., Hörz, S., Fischer-Kern, M., Doering, S., Buchheim, A., & Zimmermann, J. (2013). Internal structure of the reflective functioning scale. *Psychological Assessment*, 25, 127–135. doi:[10.1037/a0029138](https://doi.org/10.1037/a0029138)
- Troisi, A., Di Lorenzo, G., Alcini, S., Croce Nanni, R., Di Pasquale, C., & Siracusano, A. (2006). Body dissatisfaction in women with eating disorders: Relationship to early separation anxiety and insecure attachment. *Psychosomatic Medicine*, 68, 449–453. doi:[10.1097/01.psy.0000204923.09390.5b](https://doi.org/10.1097/01.psy.0000204923.09390.5b)
- Troisi, A., Massaroni, P., & Cuzzolare, M. (2005). Early separation anxiety and adult attachment style in women with eating disorders. *British Journal of Clinical Psychology*, 44, 89–97. doi:[10.1348/014466504X20053](https://doi.org/10.1348/014466504X20053)
- Van der Ploeg, H.M. (1982). De Zelf-Beoordelings Vragenlijst (ZBV-DY) [State trait anxiety inventory]. *Tijdschrift voor Psychiatrie*, 24, 576–588.
- Van der Ploeg, H.M., Defares, P.B., & Spielberger, C.D. (1979). *Zelf-beoordelingsvragenlijst* [State trait anxiety inventory]. Lisse, Netherlands: Swets & Zeitlinger.
- Van IJzendoorn, M.H., & Bakermans-Kranenburg, M.J. (2008). The distribution of adult attachment representations in clinical groups. In H. Steele & M. Steele (Eds.), *Clinical applications of the Adult Attachment Interview* (pp. 68–98). New York, NY: Guilford Press.
- Van IJzendoorn, M.H., Bakermans-Kranenburg, M.J., Schuengel, C., & Juffer, F. (1999). *Gehechtheidsbiografisch Interview*. Leiden, Netherlands: University of Leiden.
- Van Strien, T. (2002). *EDI-II-NL, handleiding* [EDI-II-NL, manual]. Lisse, Netherlands: Swets & Zeitlinger.
- Van Strien, T., & Ouwens, M. (2003). Validation of the Dutch EDI-2 in one clinical and two non-clinical populations. *European Journal of Psychological Assessment*, 19, 66–84. doi:[10.1027//1015-5759.19.1.66](https://doi.org/10.1027//1015-5759.19.1.66)

- Vrabel, K., Rø, O., Martinsen, E., Hoffart, A., & Rosevinge, J. (2010). Five year prospective study of personality disorders in adults with longstanding eating disorders. *International Journal for Eating Disorders*, 43, 22–28. doi:[10.1002/eat.20662](https://doi.org/10.1002/eat.20662)
- Ward, A., Ramsay, R., & Treasure, J. (2000). Attachment research in eating disorders. *British Journal of Medical Psychology*, 73, 35–51. doi:[10.1348/000711200160282](https://doi.org/10.1348/000711200160282)
- Ward, A., Ramsay, R., Turnbull, S., Steele, M., Steele, H., & Treasure, J. (2001). Attachment in anorexia nervosa: A transgenerational perspective. *British Journal of Medical Psychology*, 74, 497–505. doi:[10.1348/000711201161145](https://doi.org/10.1348/000711201161145)
- Zachrisson, H.D., & Skårderud, F. (2010). Feelings of insecurity: Review of attachment and eating disorders. *European Eating Disorders Review*, 18, 97–106. doi:[10.1002/erv.999](https://doi.org/10.1002/erv.999)
- Zanarini, M.C., & Frankenburg, F.R. (2001). Attainment and maintenance of reliability of axis I and II disorders over the course of a longitudinal study. *Comprehensive Psychiatry*, 42, 369–374. doi:[10.1053/comp.2001.24556](https://doi.org/10.1053/comp.2001.24556)