The possible influence of personality dysfunctioning on individuals with an eating disorder.

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Abstract

Objective: The new proposals of the DSM-5 implement that personality dysfunctioning should be used as a new diagnostic variable. Over the last couple of years research examined possible other factors that might significantly differentiate the types of eating disorders besides the existing DSM-IV criteria. Currently, of the diagnosed eating disorders 50% doesn't fulfill the criteria needed for the diagnosis of anorexia or bulimia. Lilenfed et al. (2006) discovered that there are significant difference between patients with an eating disorder and those without an eating disorder in terms of personality traits. Other investigations showed that - in terms of personality dysfunctioning – anorexia is comorbid with cluster C and bulimia with cluster B personality disorders. Conversely, little research has been done about the characteristics of the NOS group. In line with the proposed implementations for the DSM-5 criteria, what is the exact relationship between personality dysfunctioning and the eating disorders?

Method: The present study investigated the data of 117 patients with an eating disorder (28 AN, 24 BN and 65 NOS) that applied for treatment at the Rembrandthof between 2005 and 2011. Personality dysfunctioning was assessed by the self-administered questionnaires SIPP-118 and the derived Personality Severity Index (PSI) of the SCL-90. The EDI-II-NL assessed the eating characteristics of the different eating disorders.

Results: The correlations revealed that AN is characterized by the drive for thinness and the absence of bulimic criteria and body dissatisfaction of the EDI-II-NL. BN only has a medium correlation with the bulimic criteria of the EDI-II-NL and for the NOS group the domain body dissatisfaction seems to be a good predictor. According to the correlations the emerged personality profiles are characterized by weak self-control, relational functioning and social concordance in patients with AN. Low self-control, identity integration and relational functioning characterize the profile for patients with BN. The profile for patients with NOS is not significantly distinguishable. The influence of personality dysfunctioning is very small in each of the different eating disorders. For AN personality dysfunctioning is not a good predictor. For patients with BN and NOS personality dysfunctioning plays a very small role in the prediction of these eating disorders.

Discussion: The results from the present study seem to be in line with the new proposals of the DSM-5 to integrate personality dysfunctioning as a diagnostic variable. However, the discovered results are small. Further research is needed to confirm the influence of personality dysfunctioning in eating disorders.

Keywords: eating disorders, personality dysfunctioning, SIPP-118, PSI.

Preface

This master thesis has been written to conclude my master Clinical Psychology at University Utrecht. During my internship at GGz Centraal the Rembrandthof I debated about the subject of my thesis. A request was submitted to investigate the relationship between personality dysfunctioning and eating disorders.
I would like to thank dhr. J.G. Berghuis for his supervision, brainstorming sessions and cooperation during the execution of this study. From University Utrecht I was assisted by prof. dr. J.M. Bensing, I want to thank her for the motivational feedback and accompaniment. Besides my supervisors I would like to thank all the patients who have made their data available for this investigation.
Finally, I want to thank everybody that supported me during the process of writing my master thesis!

Introduction

Eating disorders.
Eating disorders are defined according to the DSM-IV-TR criteria. An eating disorder is classified as a syndrome characterised by dysfunctional eating. When dysfunctional eating behaviour is recognized, it should be evaluated for a number of characteristics (American Psychiatric Association, APA, 2000). Three different forms of eating disorders are known: anorexia nervosa (AN), bulimia nervosa (BN) and not otherwise specified (NOS).

According to the DSM-IV-TR the criteria for AN are: refusal to maintain body weight at or above a minimally normal weight for age and height, fear of gaining weight and a disturbance in the way one's body weight or shape is experienced. For females there is also amenorrhea. There are two distinguished subtypes; the restrictive type (AN restrictive, ANR) and the purging type (AN purging, ANP). In ANR the patient uses regularly self-induced vomiting or misuse of laxatives but doesn't have binge eating episodes. In contrast, the ANP patient has binge eating episodes succeeded by purges. BN is characterised by: recurrent episodes of binge eating, a lack of control over eating during the episode, recurrent inappropriate compensatory behaviour in order to prevent weight gain such as self-induced vomiting, misuse of laxatives, diuretics, enemas or other medications. The binge eating and inappropriate compensatory behaviour needs to occur at least twice a week for three months. Bulimia can also be divided into two subtypes: the purging type (BN purging, BNP) and the non-purging type (BN, non purging, BNNP). In BNP the patient regularly uses self-induced vomiting or misuse of laxatives. In BNNP the patient uses other inappropriate compensatory behaviours such as fasting or excessive exercise. The diagnosis for NOS is given when the patient doesn't fit into any criteria for either AN nor BN, despite having an eating disorder (APA, 2000).

The number of diagnosed patients with anorexia nervosa has almost doubled over the last couple of years, whilst the number of patients with bulimia nervosa seems to be decreased (Nederlandse Academie voor Eetstoornissen, 2011). Anorexia nervosa has been reported as the psychiatric disorder with the highest death rate (5.3 %) (Steinhausen et al., 2002). In the Dutch mental health care (Geestelijke Gezondheidszorg) the diagnoses for AN is given to 127 people per 100.000 women and 87 women per 100.000 meet the criteria for BN (Hoek, 2006). Worldwide the diagnosis for the eating disorder NOS is most common, with a prevalence of 2.4%

(Machado, Machado, Goncalves & Hoek, 2007). Over 50% of all diagnosed eating disorders are classified as NOS, 15% is diagnosed with AN and less than 15% with BN (Dalle Grave, Calugi, Brambilla, & Marchesini, 2007). The recovery track of anorexia nervosa is long and takes physically approximately 4.7 years. Psychosocial recovery takes even more time: approximately 6.6 years (Eckert, Halmi, Marchi, Grove & Crosby, 1995; Fennig, Fennig & Roe, 2002). The prognosis of recovery is for BN slightly better than for AN.

Shortcomings of the DSM-IV-TR criteria for eating disorders.
Given the high number of patients that switch from diagnosis during their illness, the current classification of eating disorders isn't adequate to correctly distinguish between the different eating disorders. Other evidence that the DSM-IV-TR criteria are not competent enough is that due to the high amount of NOS diagnoses it seems that the criteria are not specific enough to correctly classify the different psychiatric disorders (Eddy et al., 2007). A possible explanation for this is that the criteria for the eating disorders are insufficient. The dimensional classification of the new DSM-5, where the influence of personality is integrated in classification might be a resolution (APA, 2006). The proposed DSM-5 criteria state that personality functioning is of influence in the severity of a disorder and should therefore be included in the diagnostic criteria. However, more empirically based research is needed to confirm this (APA, 2012).

The possible impact of personality characteristics.
Currently research is more focussed on common psychological aspects of eating disorders, such as: tendency to perfectionism, low self-esteem and interactional difficulty (Fairburn, Cooper and Shafran, 2003). According to Lilenfeld et al. (2006) during treatment of eating disorders the focus should not only be on the eating behaviour and weight, but also on fundamental characteristics such as personality markers and traits. Research has shown that women diagnosed with an eating disorder have significantly lower self-esteem, negative body experience, fear for rejection, perfectionism, need for control and patients find it harder to express their feelings and conflicts (De la Rie, van Furth, de Koning, Noordenbos, & Donker, 2005).
        The developmental course of an eating disorder is based on risk factors (onset of the disorder) and prognostic factors (predictive values on the course of treatment)

(Hoek, 2006). Research has been done to identify possible predictors that influence the recovery or prognosis. The identification of certain predictors can help to distinguish chronic and milder forms of eating disorders; this can be of great therapeutic value to the recovery (Lilenfeld, Wonderlich, Riso, Crosby & Mitchell, 2006).

Streiger and Bruce (2004) investigated the relationship between co-morbidity with personality and eating disorders. A relationship was found between personality, treatment success and the prognosis. If the treatment of comorbid personality dysfunction is successful, the prognosis of recovery from the eating disorder improves. Klump et al. studied the relationship between eating disorders and the Temperament Character Inventory (TCI). They discovered that high levels of harm avoidance and a low levels of self-directedness are traits that influence the development of an eating disorder (2000; 2004). Striegel-Moore et al. (1999) found that about 45% of the AN are co morbidity with cluster C personality disorders, having traits as novelty seeking, harm avoidance, self-directedness and cooperativeness. The avoidant and obsessive-compulsive personality disorders are most frequent (Skodol et al., 1993 in Wentz Nilsson, Gillberg, Gillberg & Rastam, 1999). The BN has more cluster B characteristics, novelty seeking, harm avoidance, self-directedness, cooperativeness and self-transcendence. These traits are based on the TCI from Cloninger (1994). Other researchers found that the borderline personality disorder is most common in BN women (Striegel-Moore et al., 1999; Thompson-Brenner et al., 2008, Svrakic et al., 2002). It's unclear which personality traits can be found in the NOS group. Figure 1 and 2 illustrate a scheme of all the relevant concepts of eating characteristics as well as personality traits for AN and BN.

The possible role of the severity of personality dysfunctioning.
The new DSM 5 proposals (APA, 2010) modified the current classification for personality disorders. A significant impairment in personality functioning and pathological personality trait domains or trait facets is added to the existing criteria. The levels of personality functioning are based on severity of disturbances in the self and interpersonal functioning. The self component consists of identity and self-direction. The interpersonal functioning focuses on empathy and intimacy. These characteristics could be of importance to consider the implementation of personality dysfunctioning as a diagnostic variable. Despite the influence of personality traits it

would be interesting to investigate the relationship between personality dysfunctioning and eating disorders.

Research questions and hypotheses.

This study will examine the relationship between eating disorders and personality dysfunction within a group of eating disorder patients from the Rembrandthof in Hilversum. Important objectives to investigate were: a) the relationship between eating characteristics and each eating disorder, b) the relationship between personality dysfunctioning and each eating disorder, c) predictive power of the eating characteristics on each eating disorder and d) the predictive power of personality dysfunctioning on each eating disorder.

If significant differences in personality dysfunction are found this can be an indication to combine personality factors and eating characteristics in treatment, which could lead to more specified and adjusted treatment. According to Herzog and Eddy (2007; in Wonderlich, Mitchell, de Zwaan & Steiger, 2007) AN will score high on self-control and social concordance and BN will score high on social concordance and lower on self-control. Earlier research (Stiegel-Moore et al., 1999; Svrakic et al., 2002) about personality traits and eating disorders found that the AN group will meet more cluster C (avoidant and obsessive-compulsive) criteria and the BN group more cluster B (borderline) criteria with scores high on self-control and social concordance of the SIPP-118. The criteria of the DSM-IV imply that eating characteristics are of main influence in the classification of an eating disorder. Therefore it is expected that each eating disorder will score on the EDI-II accordingly to the DSM-IV criteria (APA, 2010). Previous research focused mainly on AN and BN. This study will investigate the NOS group, the expectation is that this group has a wider spectrum of scores on personality dysfunctioning.

The scientific relevance of this study is to investigate a more complete understanding of the functioning of eating disorders. Information about the NOS group could possibly help to slink the amount of diagnosed NOS patients. Secondly, a better perceptive of the NOS group might significantly distinguish the group from the other eating disorders. The development of the DSM-5 still needs empirically based evidence to support the proposal to implement personality dysfunctioning as a diagnostic variable. A goal of this study is to add evidence about the influence of personality in the diagnosis of eating disorders. Clinical relevance of this study is that

information about the influence of personality dysfunctioning could be used in treatments of eating disorders. If the role of personality dysfunctioning is significant, treatment should also focus on those personality factors.

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Method

Study sample.

The study sample consisted of 117 patients (5 males and 112 females) from the eating disorders treatment program at GGZ Centraal the Rembrandthof in Hilversum. All patients met the diagnosis of one of the different eating disorders: AN, BN or NOS (APA, 2000). The patients were assigned to the Rembrandthof by their general practitioner. As the patients entered the treatment program, they complete a protocol of questionnaires because of this there was no drop-out in the study sample. The patients investigated in this study applied to the Rembrandthof between 2005 and September 2011.

Sample characteristics.

Of the total 117 participants, 24% met the criteria for AN (N=28), 20.5% met the criteria for BN (N=24) and 55.6% met the criteria for NOS (N=65). Next the eating disorders where specified by their subtypes. From the 28 patients with AN, 11% met the criteria for ANR (N=3) and 18% met the criteria for ANP (N=5). From the 24 patients with BN, 38% met the criteria for BNP (N=9) and 4% met the criteria for BNNP (N=1). The rest group of the AN and BN didn't fit into a subcategory. Since the number of subtypes was so small, only the main eating disorder diagnoses were used in this study. The average age varied between 17 and 62 years with an average of 28.65 years (SD=9.96). The BMI score varied between 14.5 and 49.5 with an average of 23.50 ($SD = 7.84$). The BMI score of the patients with AN was the lowest and the BMI score for the NOS group was the highest (see table 1). No significant differences were found between the different types of eating disorders and age $\chi^2 (1) = 53.75$, $p >.05$, BMI $\chi^2 (166) = 183.79$, $p >.05$ and gender $\chi^2 (2) = 4.18$, $p >.05$.

Design.

This study uses a cross sectional design that is based on questionnaires.

Measures.

The Eating Disorder Examination (EDE, Fairburn & Cooper, 1993) as well as the criteria from the DSM-IV-TR (APA, 2000) were used to diagnose the patients in the study. The EDE is a semi-structured interview, consisting of 23 questions that are categorized in four scales: restraint, eating concern, shape concern and weight

concern (Fairburn & Cooper, 1993). The scales can be categorized into those that measure the eating disorder and those that measure personality characteristics. The response format is a 6-point Likert scale ranging from 1 ("never") to 6 ("every day"). A score on the EDE is needed to diagnose a patient with an eating disorder. The psychometric properties of the EDE are well documented, with a Cronbach's alpha of .90 (Peterson et al., 2007).

The Severity Indices of Personality Problems (SIPP-118) measures the degree of adaptive functioning of personality and consists of domains that relate with the new criteria in the DSM 5 (Verheul et al., 2008). The SIPP-118 focuses on the domains of personality that can be influenced through therapy. This self-report questionnaire measures the components of (mal)adaptive personality functioning over the last three months. It covers important core components of maladaptive personality functioning, divided into five domains: self-control, identity integration, relational capacities, social concordance and responsibility (Verheul et al., 2008). This questionnaire is used for diagnostic purposes and to give an indication on which domains problems arise in personality functioning. The SIPP-118 focuses specifically on those aspects of the personality that can be changed. The questionnaire consists of 118 items, which are scored on a 4-point Likert scale, ranging from 1 ("completely disagree") to 4 ("completely agree"). The lower the score on the SIPP-118 the more maladaptive the personality functioning is. Currently two studies reported promising psychometric properties and validity of the SIPP-118 (Arnevik, Wilberg, Monsen, Andrea & Karterud, 2009; Verheul et al., 2008). The Cronbach's alpha in this study was .92.

The construct *personality severity index (PSI)* is derived from the SCL-90 (Arrindell & Ettema, 1986; Karterud et al., 1995). This personality severity index (PSI) uses the scores from three original scales of the SCL-90: interpersonal sensitivity, hostility and paranoid ideation. The interpersonal sensitivity domain focuses on feelings of personal inadequacy and inferiority in comparisons with others (9 items). The hostility domain evaluates thoughts, feelings or actions characteristic of the negative affect stage of anger (6 items). The paranoid ideation domain evaluates a disordered mode of thinking (6 items). Karterud et al. (1995) discovered that the mean value of the scores on these scales gives an indication about the severity of a possible personality disorder. The PSI consists of 21 questions in total and the items are scored on a 5-point Likertscale (1 = not at all, 5 = a lot). A high score on the PSI scale is an indication for severe personality dysfunctioning. According to the COTAN

documentation (2004) the validity and reliability of the SCL-90 is good. The Cronbach's alpha of the SCL-90 in this study was .76.

The *EDI-II-NL* consists of 91 questions and can be used to create a unique psychological profile of the symptoms of an eating disorder (van Strien, 2002). The items are scored on a 6-point Likert scale, ranging from 1 ("never") to 6 ("always"). A high score on the EDI-II-NL corresponds to more distress of relevant symptomatology. The COTAN documentation (2003) assesses the instrument with a good validity and reliability (van Strien & Ouwens, 2003). The Cronbach's alpha in this study was .73.

Statistical analysis.

The data was analysed with the Statistical Program for Social Sciences (SPSS, version 18.0). Reliability analyses have been done to investigate the consistency between the items. There were no missing values.

The main research question of this study is to examine the relationship between personality dysfunctioning and the different eating disorders. In order to answer the main research question several sub questions need to be answered. The research questions concerning the relationship between eating characteristics and personality traits for each eating disorder is measured with correlations. Spearmann correlations were used to examine the coherence of the nominal scaled eating disorders and the eating characteristics. The dependent variable is the score on the EDI and the independent variable is the type of eating disorder. Pearson correlations were used to examine this relationship, the dependent variable is the score on the SIPP-118 domains and the independent variable is the type of eating disorder. A variance analysis was conducted to investigate if personality dysfunctioning significantly varied across the different types of eating disorders. A logistic regression measured the predictive power of the eating characteristics and personality traits for each eating disorder. The type of eating disorder is the independent variable and the dependent variables are the scores on the SIPP-118 and PSI. A discriminant analysis was conducted to predict which eating variables and personality factors are of influence in the distinction between the different eating disorders.

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Results

Correlations.

Table 2 represents the correlations between the different types of eating disorders and the SIPP-118, EDI, PSI. The Spearmann correlations between the type of eating disorder and personality dysfunctioning and characteristics showed weak correlations. AN had a significantly weak correlation with the domains self-control and social concordance of the SIPP-118 and a medium significant correlation between the domain of relational functioning. Respectively the r = .18, .21 and .30, these results are consistent with the hypothesis. As expected AN showed medium significant negative correlations with the facets bulimia and body dissatisfaction of the EDI, r = -.41 and -.31. However, no significant correlation was found between AN and the PSI scale. BN showed significantly weak correlations with the domains self-control, identity integration and relational functioning of the SIPP-118, respectively the r = -.20, -.18, -.19. These results are contradicting with the hypothesis that BN correlates significantly low with the domain social concordance. A strong significant correlation was found with the EDI facet bulimia, r = .42. However, no significant correlation was found between BN and the PSI scale. The eating disorder NOS did not significantly correlate with the SIPP-118 domains, a broad range of characteristics was discovered. A medium significant negative correlation was found between NOS and the EDI facet body dissatisfaction, r = -.25. However, no significant correlation was found between NOS and the PSI scale.

The correlations between the domains of the SIPP-118 and the PSI scale, which both give an indication of the severity of general personality dysfunctioning, showed that these measurements were on average negatively strongly interconnected. The correlations ranged from -.46 to -.56, except for the responsibility domain which showed a medium correlation, r = -.25. The EDI facets and SIPP-118 domains correlated significantly negative with each other, r's ranged from -.20 to -.40. The PSI scale correlated significantly positive with the EDI facets r ranged from .42 to .21.

Variance in personality dysfunctioning.

A variance analysis showed there was a significant effect of the type of eating disorder (AN, BN and NOS) on the combined dependent variable personality dysfunctioning, $F(10,220) = 1.92$, p <.05; λ = .85; partial η^2 = .08. Analysis of each

individual dependent variable showed that the three eating disorders differed in terms of relational functioning, $F(2,114) = 5.46$, p <.01, partial $\eta^2 = .09$ and in terms of self-control $F(2,114) = 3.84$, p <.05, partial $\eta^2 = .06$. Employing the Tukey post-hoc test, significant differences were found between the eating disorders AN and BN (p <.05) for the personality domain self-control. AN also significantly differentiated from BN and NOS on the personality domain relational functioning. There were no significant differences between personality dysfunctioning and the eating disorders BN and NOS (see table 3 and 4).

Predictive value.

A regression analysis was conducted, with the domain scores of the SIPP-118, EDI facets and PSI scale as predictor variables (see table 5). The results showed that the eating disorder AN is explained by the EDI facets for 25%, all facets were significant $p < .01$. AN is explained by drive for thinness and the absence of bulimia and body dissatisfaction. The domains of the SIPP-118 and the PSI don't add to the explained variance. The results of the logistic regression for BN indicated that the facets of the EDI explained the disorder for 16%, with the bulimic facet as the only significant predictor. Adding the SIPP-118 domains and the PSI increased the explained variance to 18%. However, no specific domain of the SIPP-118 had a significant predictive value, the PSI scale significantly contributed to the prediction of the outcome. The results of the NOS eating disorder indicated that the EDI facets contribute the least to the prediction outcome the facets explained the NOS by only 5%. Nevertheless, the facet body dissatisfaction was found to be a significant predictor. Adding the SIPP-118 domains and the PSI scale increased the explained variance to 6%, no specific domains of the SIPP-118 significantly contributed to the prediction outcome. The PSI significantly contributed to the prediction outcome.

A discriminant analysis was performed with the type of eating disorder as the dependent variable and the domains of the EDI, SIPP-118 and the PSI scale as predictor variables. A total of 117 cases were analyzed. Univariate ANOVAs revealed that the types of eating disorders differed significantly on the predictors bulimic, body dissatisfaction, self-control domain and the domain of relational functions. Two discriminant functions were calculated. The first function explained 79.9% of the variance, canonical $R^2 = .36$, whereas the second explained 20.1%, canonical $R^2 = .12$. These discriminant functions significantly differentiated the eating disorders, $\lambda = .56$,

$\chi2(18) = 63.92$, $p = $ <.01, but removing the first function indicated that the second function did not significantly differentiated the eating disorders, $\lambda = .88$, $\chi2(8) = 14.61$, $p = $ >.05. The correlations between the predictor variables and the discriminant function suggested that the domains relational functions, self-control and responsibility plus the EDI facet drive for thinness loaded more highly on the first function than on the second function. However, the predictor variables body dissatisfaction, PSI scale and the domain identity integration loaded more highly on the second function. The discriminant function plot (see figure 3) showed that the first function discriminated the BN from the AN group, and the second function differentiated the NOS group from the AN and BN eating disorders. The classification results showed that overall 63.2% were classified correctly in their type of eating disorder (see appendice 6).

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Discussion.

The main aim of the present study was to examine the relationship between personality dysfunctioning and the DSM-IV types of eating disorders. Important objectives of this study were to examine a) the relationship between eating characteristics and each eating disorder, b) the relationship between personality dysfunctioning and each eating disorder, c) predictive power of the eating characteristics on each eating disorder and d) the predictive power of personality dysfunctioning on each eating disorder.

Correlations.

In general the correlations between the eating characteristics of the EDI and the specific types of eating disorders are of weak strength. The correlations with the facet 'body dissatisfaction' are striking, since this facet had a negative correlation with NOS and AN and a correlation of almost zero with BN. This result is contradicting to the research done by Strice and Shaw (2002), who found that body dissatisfaction plays a significant role in eating disorders. Anorexia had a medium negative correlation with the facet 'bulimic' as is expected. Garner, Olmsted and Garfinkel (2006) discovered that in general AN correlates positively strong with 'drive for thinness', however in our sample a contrasting result was found and it is unclear why in the present study this relationship was not replicated. The eating disorder BN correlated with the EDI facets as expected and has a medium correlation with the facet bulimic (Witsotsky et al., 2003). To our knowledge no study has yet been done with the NOS group, but the correlations with the EDI are of weak strength. This could be due to the fact that the group is heterogeneous and therefore characteristics within the group might balance each other out.

The correlations in our sample between the personality traits and the specific eating disorders were weak. According to the correlations from this study the emerged personality profiles are characterized by weak self-control, relational functioning and social concordance in patients with AN. Low self-control, identity integration and relational functioning characterize the profile for patients with BN. The profile for patients with NOS is not significantly distinguishable. The correlations showed that AN correlated positive with relational functioning, social concordance and self-control. However, all correlations are of weak strength. BN correlated negative with

self-control, identity integration and relational functioning. Interestingly, these results are equivalent to the found pattern between the EDI facets 'drive for thinness' and 'bulimic' for AN and BN. Notable is that NOS had no significant correlations with the SIPP-118 domains. An explanation might be that the personality characteristics in this group are mixed and therefore balance each other out in a plain indication. The findings are somewhat corresponding to earlier research using the TCI. Using the TCI, Fassino et al. (2002) and Cloninger et al. (1993) found that eating disorder patients tend to have low scores on self-directedness and cooperativeness. Those domains of the TCI are comparative to the reliability, identity integration social concordance domains of the SIPP-118. The results of the variance analysis indicated that AN significantly differed from BN and NOS in terms of personality dysfunctioning in the relational functioning domain. According to this result patients with AN are more capable to care about others as well as feel cared about them and to communicate personal experiences. The results also indicated that personality functioning in the self-control domain is more adaptive in AN than in BN. This means that patients with AN are more capable to tolerate and control their own impulses and emotions.

Research by Cloninger (2000) and Parker et al. (2004) illustrated that there are two main factors that influence personality dysfunctioning: cooperativeness and coping. Cloninger explained the influence of an unstable self-image and Parker the influence of self-defeat, coping. These findings can be related with the present study, in the sense that the self-image could be related to the eating characteristics and the coping to personality dysfunctioning. That would mean that both are of importance in the diagnosis of an eating disorder.

Prognostication.

The present study showed that personality dysfunctioning is of different influence between the different disorders. The discovery that the EDI is the primary predictor of an eating disorder is logical since the instrument is designed to predict eating disorders (van Strien, 2011). Interestingly the significance differed between the eating disorders, therefore it can be concluded that the EDI is distinct in its predictive value. In this study AN is seems to be more multidimensional than BN and NOS, as all the EDI facets were significant. This study discovered that AN is predicted specifically by eating disorder related variables. The predictive value of eating disorder variables

is less strong for BN, the only significant predictor is the EDI facet bulimic which is consistent with previous research (Van Strien, 2002). Personality dysfunctioning added 2% of the total explained variance. Although this is a small improvement, personality dysfunctioning seems to play a tiny role in the prediction of this eating disorder. The predictive value of the EDI for the NOS is small, but the facet body dissatisfaction was significant. Although the facet body dissatisfaction seems to be a characteristic factor of the NOS. Personality dysfunctioning does not seem to be a better predictor, this factor added 1% to the explained variance.

The discriminant analysis revealed two discriminant functions, in line with the findings from the logistic regression the EDI facets – the first function - explained the largest part of the variance. However, it was discovered that personality factors explained a non-significant part in the explained variance. The results indicated that drive for thinness is the weakest predictor. The first function is labelled by a large loading on bulimic, which suggests a label of eating related variables as the function that discriminates between the different eating disorders. The second function is labelled by a large loading on body dissatisfaction and the PSI this suggests a label of personality dysfunctioning and personal confidence. In contrast with the results from the logistic regression indicated the discriminant function plot that BN is discriminated from the other eating disorders by eating characteristic variables. In the logistic regression it was discovered that the eating variables had the largest influence on AN.

In summation, AN is mainly predicted by the eating characteristics from the EDI domains. Likewise, the EDI facets also mainly predicted BN but personality dysfunctioning is of small influence (2%). Notable is that for the NOS patients the predictive value of both eating characteristics and personality dysfunctioning is very small. These findings are contradictory to the hypothesis that AN and BN will be influenced most by personality dysfunctioning. Personality dysfunctioning only significantly contributed to the prediction of BN and NOS. Earlier research (Striegel-Moore et al., 1999; Sullivan, Bulik, Carter, Gendall & Joyce, 1996 and Scrakic et al., 2002) suggested that BN is comorbid with borderline personality disorder and its dysfunctioning, whilst AN is comorbid with the avoidant and obsessive-compulsive personality disorder and its dysfunctioning in personality. In the present study personality dysfunctioning is not of great impact on the AN group. The present study showed that differences between eating disorders are mainly based on eating disorder

variables. However, personality dysfunctioning played a very small role in the differntiation between AN, BN and NOS.

Importance of personality factors in diagnosis of eating disorders.
The proposals of the new DSM-5 are aimed at the importance of a dimensional system in the diagnosis of psychiatric disorders, but also at the influence of personality factors in the diagnostic process (APA, 2010). It is hypothesized that the implementation of personality dysfunctioning as a diagnostic variable might contribute to the accuracy of diagnosing psychiatric disorders. Based on the results from this study, the evidence seems to be in line with the hypothesis that personality dysfunctioning could be an important diagnostic variable. However, the discovered results of the predictive power are very small. Considerable amounts of research about the structure of personality within patients with a personality disorder illustrated that personality disorders are illustrated by maladaptive variants of general personality structure, in other words personality dysfunctioning (Samuel & Widiger, 2009; Clark 2007; Markon, Krueger & Watson, 2005). However, research about personality as a diagnostic variable is mainly focused on personality disorders. According to this study more research is needed to confirm the influence of personality dysfunctioning in eating disorders, nonetheless an indication to implement personality dysfunctioning as diagnostic variable is given.

Limitations and conclusions.
There are multiple limitations associated with the present study that should be acknowledged. Participants in this study signed up for treatment, it is known that only a small part of people with an eating disorder seek treatment (Hoek & van Hoeken, 2003). Therefore the findings of this study cannot be generalized to community samples. The measurements for this study are based on self-report questionnaires that might have led to a social desirable answers and possible underreporting of the symptoms. A big limitation is the small number of patients across the three main diagnostic groups, this prevents an examination of whether and how the eating disorder types could be differentiated on more finer personality traits, rather than using the domain personality dimensions. The investigated sample was not distributed evenly; the NOS group was much bigger than the BN and AN group. Moreover research in this study has been done at domain level and concludes that the results are

of weak strength. Therefore future research should be aimed at facet level to investigate more specific diagnostics between eating disorders and personality dysfunctioning.

In conclusion, the present study replicated earlier findings that eating disorders are distinguishable by their eating characteristics. For AN these characteristics were: drive for thinness and the absence of bulimic and body dissatisfaction. BN is characterised by the bulimic domain of the EDI and the NOS group by the domain body dissatisfaction. According to the results of this study, personality functioning in the domains self-control and relational functioning is significantly better in patients with AN. This means that personality dysfunctioning in patients with BN and NOS is slightly more severe. Although, personality dysfunctioning is of small influence in the prediction of the eating disorders, it was discovered that personality dysfunctioning is a significant predictor for BN and NOS. This study cannot conclude how the dysfunctioning in personality influences the treatment of each eating disorder. Future research is needed to examine this relationship.

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References

American Psychiatric Association. (2010). *Diagnostic and Statistic Manual of Mental Disorders* (4th ed.). Washington: Author.

American Psychiatric Association. (2012). DSM-5 Development. Retrieved from http://www.dsm5.org/proposedrevisions/pages/eatingdisorders.aspx

Arnevik, E., Wilberg, T., Monsen, J.T., Andrea, H. & Karterud, S. (2009). A cross-national validity study of the Severity Indices of Personality Problems (SIPP-118). *Personality and Mental Health, 3*, 41-55.

Arrindell, W.A., & Etterna, J.H.M. (1986). *Manual for the Dutch version of the SCL-90*. Lisse: Swets Test Publishers.

Clark, L.A. (2007). Assessment and diagnosis of personality disorder: perennial issues and an emerging reconceptualization. *Annual review of Psychology, 58*, 227-257.

Cloninger, C.R. (2000). A practical way to diagnose personality disorder: a proposal. *Journal of Personality Disorders*, *14*, 99-108.

Cloninger, C.R., Przybeck, T.R., Svrakic, D.M. & Wetzel, R.D. (1994). *The Temperament and Character Inventory (TCI): A guide to its development and use.* St. Louis: Centor for Psychobiology of Personality.

Cloninger, C.R., Svrakic, D.M. & Przybeck, T.R. (1993). A psychobiological model of temperament and character. *Archives of general psychiatry, 50*, 975-989.

Dalle Grave, R., Calugi, S., Brambilla, F., & Marchesini, G. (2008). Personality Dimensions and Treatment Drop-outs among Eating Disorder Patients Treated with Cognitive Behavior Therapy. *Psychiatry Research, 158*(3), 381-388.

De la Rie, S.M., van Furth, E.F., de Koning, A., Noordenbos, G., & Donker, M.C.H. (2005). The quality of life of family caregivers of eating disorder patients. *Eating disorders: the journal of treatment & prevention, 13*, 345-351.

Eckert, E.D., Halmi, K.A., Marchi, W., Grove, W. & Crosby, R. (1995). Ten-year follow-up of anorexia nervosa: clinical course and outcome. *Psychological Medicine, 25*, 143-156.

Eddy, K.T., Dorer, D., Franko, D., Tahilani, K., Thompson-Brenner, H., & Herzog, D. (2007). Should Bulimia Nervosa be Subtyped by History of Anorexia Nervosa? A Longitudinal Validation. *International Journal of Eating Disorders, 40,* 467-571.

Fairburn, C.G., Cooper, Z., & Shafran, R. (2003). Cognitive behaviour therapy for eating disorders: a 'transdiagnostic' theory and treament. *Behaviour research and therapy, 41*, 509-528.

Fassino, S., Abbate-Daga, G., Amianto, F., Leombruni, P., Boggio, S., & Rovera, G.G. (2002). Temperament and character profile of eating disorders: a controlled study with the Temperament and Character Inventory. *International journal of eating disorders, 32*, 412-425.

Fennig, S., Fennig, S., & Roe, D. (2002). Physical recovery in anorexia nervosa: is this the sole purpose of a child and adolescent medical-psychiatric unit? *General Hospital Psychiatry, 24*, 87-92.

Garner, D.M., Olmsted, M.P., & Garfinkel, P.E. (2006). Does anorexia nervosa occur on a continuum? Subgroups of weight-preoccupied woman and their relationship to anorexia nervosa. *International Journal of Eating Disorders, 2*, 11-20.

Hoek, H.W. (2006). Incidence, prevalence and mortality of anorexia nervosa and other eating disorders. *Current opinion in psychiatry, 4*, 389-394.

Hoek, H.W., & Hoeken, D. van (2003). Review of the Prevalence and Incidence of Eating Disorders. *International Journal of Eating Disorders, 34,* 383-396.

Karterud,S., Friis, S., Irion, T., Mehlum, L., Vaglum,P., Vaglum,S. (1995). A SCL-90R derived index of the severity of personality disorders. *Journal of Personality Disorders*, 9(2), 112-123.

Klump, K.L., Bulik, C.M., Pollice, C., Halmi, K.A., Fichter, M.M., Berrettini, W.H., Devlin, B., Strober, M., Kaplan, A., Woodside, D.B., Treasure, J., Shabbout, M., Lilenfeld, L.R. & Plotnicov, K.H. (2000). Temperament and character in women with anorexia nervosa. *Journal of Nervous & Mental Disease, 188*, 559-567.

Klump, K.L, Strober, M., Bulik, C.M., Thornton, L., Johnson, C., Devlin, B., Fichter, M.M., Halmi, K.A., Kaplan, A.S., Woodside, D.B., Crow, S., Mitchell, J., Rotondo, A., Keel, P.K., Berrettini, W.H, Plotnicov, K., Pollice, C., Lilenfeld, L.R. & Kaye, W.H. (2004). Personality Characteristics of Women before and after Recovery from an Eating Disorder. *Psychological Medicine, 34,*1407-1418.

Lilenfeld, L.R.R., Wonderlich, S., Riso, L.P., Crosby, R. & Mitchell, J. (2006). Eating disorders and personality: A methodological and empirical review. *Clinical Psychology Review, 26,* 299-320.

Machado, P.P.P., Machado, B.C., Gonçalves, S., & Hoek, H.W. (2007). The Prevalence of Eating Disorders Not Otherwise Specified. *International Journal of Eating Disorders, 40,* 212-217.

Markon, K.E., Krueger, R.F., & Watson, D. (2005). Delineating the structure of normal and abnormal personality: an integrative hierarchical approach. *Journal of personality and social psychology, 88*, 230-239.

Parker, G., Hadzi-Pavlovic, D., Both, L., Kumar, S., Wilhelm, K. & Olley, A. (2004). Measuring disordered personality functioning: to love and work reprised. *Acta Psychiatrica Scandinavica, 110*, 230-239.

Peterson, C.B., Crosby, R.D., Wonderlich, S.A., Joiner, T., Crow, S.J., Mitchell, J.E., Bardone-Cone, A.M., Klein, M., & le Grange, D. (2007). Psychometric properties of the eating disorder examination questionnaire: Factor structure and internal consistency. *International Journal of Eating Disorders, 40*, 386-389.

Samuel, D.B. & Widiger, T.A. (2009). A meta-analytic review of the relationships between the five-factor model and the DSM-IV-TR personality disorders: a facet level analysis. *Clinical Psychological Review, 28*, 1326-1342.

Steinhousen, H.C. (2002). The Outcome of Anorexia Nervosa in the 20th Century. *American Journal of Psychiatry, 159*, 1284-1293.

Steiger, H., & Bruce, K. (2004). Personality Traits and Disorders in Anorexia Nervosa, Bulimia Nervosa, and Binge Eating Disorder. In T.D. Brewerton (Ed.), *Clinical Handbook of Eating Disorders: An Integrated Approach* (pp. 209-230). New York: Marcel Dekker, Inc.

Strice, E. & Shaw, H.E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: a synthesis of research findings. *Journal of Psychosomatic research, 53*, 985-993.

Striegel-Moore, R.H., Garvin, V., Dohm, F.A., et al. (1999). Eating disorders in a national sample of hospitalized female and male veterans: detection rates and psychiatric comorbidity. *International journal of eating disorders, 25*, 405-414.

Sullivan, P.F., Bulik, C.M., Carter, F.A., Gendall, K.A., Joyce, P.R. (1996). The significance of a prior history of anorexia in bulimia nervosa. *International journal of eating disorders, 20*, 253-261.

Thompson-Brenner, H., Eddy, K.T., Franko, D.L., Dorer, D.J., Vashchenko, M., Kass, A.E., & Herzog, D.B. (2008). Personality classification system for eating disorders: a longitudinal study. *Comprehensive Psychiatry, 49*, 551-560.

Van Strien, T. (2002). Handleiding EDI-II-NL, Eating Disorder Inventory-II, Nederlandse versie. Lisse: Swets Test Publishers.

Van Strien, T. (2011). EDI-II Inventarisatie van eetstoornissymptomen, handleiding. Amsterdam: Hogrefe Uitgevers.

Van Strien, T., & Ouwens, M. A. (2003). Counterregulation in female obese emotional eaters: Schachter, Goldman and Gordon's (1968) test of psychosomatic theory revisited. Eating Behaviors, 3, 329−340.

Verheul, R., Andrea, H., Berghout, C.C., Dolan, C., Busschbach, J.J.V., van der Koft, P.J.A., Bateman, A.W., & Fonagy, P. (2008). Severity Indices of Personality Problems (SIPP-118): Development, Factor Structure, Reliability and Validity. *Psychological assessment, 20*, 23-34.

Wentz Nilsson, E., Gillberg, C., Gillberg, C., Rastam, M. (1999). Ten-year follow-up of Adolescent-onset Anorexia Nervosa: Personality Disorders. *Journal of the American Academy of Child & Adolescent Psychiatry, 38*, 1389-1395.

Wisotsky, W., Dancyger, I., Fornari, V., Katz, J., Wisotsky, W.L., & Swencionis, C. (2003). The relationship between eating pathology and perceived family functioning in eating disorder patients in a day treatment program. *Eating disorders: the journal of treatment & prevention, 11*, 89-99.

Wonderlich, S., Mitchell, J.E., de Zwaan, M., & Steiger, H. (2007). Annual review of eating disorders part 1. New York: Radcliffe publishing.

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Appendice 1
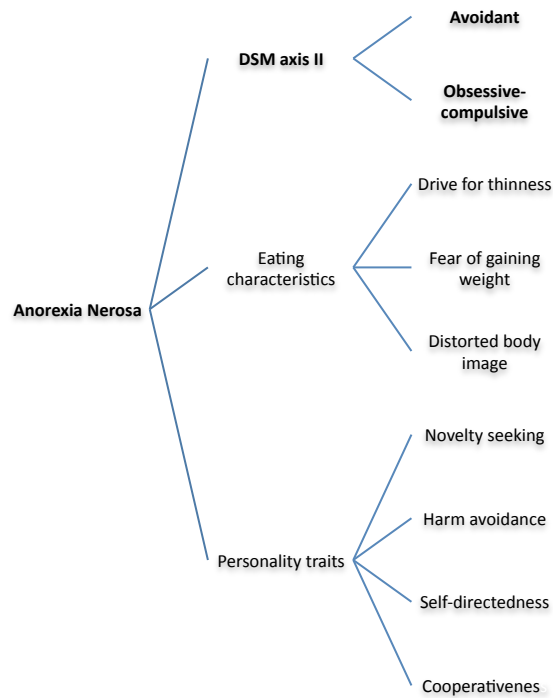
Figure 1 . Scheme of the relevant concepts for Anorexia Nervosa.
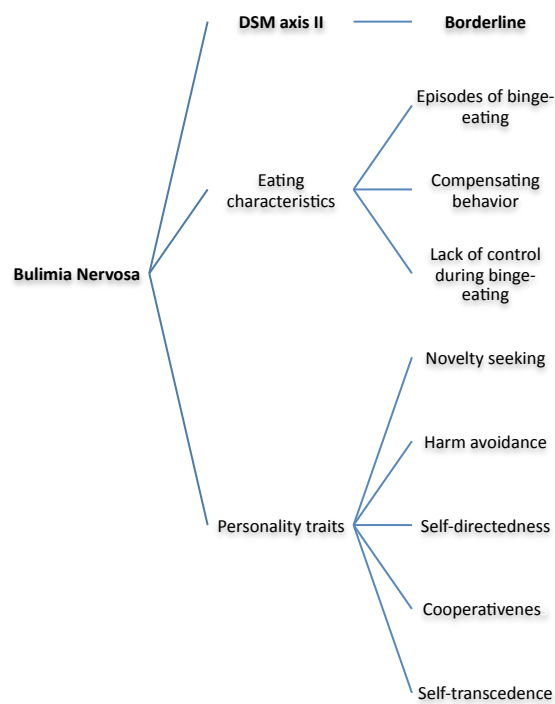
Figure 2. Scheme of the relevant concepts for Bulimia Nervosa.

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Appendice 2

Table 1. *Mean Scores, and SD's of the Variables Categorized for Each Eating Disorder (N=117).*

	AN (N=28)		BN (N=24)		NOS (N=65)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Age	25.32	6.13	27.17	9.00	30.48	11.21
BMI	17.61	2.15	22.57	3.06	26.83	9.07
PSI	21.94	6.39	23.80	5.87	24.83	7.44
SIPP domains						
Selfcontrol	57.25	8.76	49.82	9.28	53.57	10.13
Identity integration	57.29	11.53	50.68	10.87	55.85	13.68
Responsibility	55.44	7.89	50.75	10.05	52.12	10.12
Relational functions	59.58	8.86	50.52	9.18	53.84	10.99
Social concordance	57.95	7.32	53.64	7.55	54.11	9.41
SIPP total score	287.53	36.04	255.43	36.69	269.51	43.62
EDI facets						
Drive for thinness	31.21	8.63	34.17	8.74	33.42	9.39
Bulimic	16.18	7.15	31.04	5.48	23.22	9.36
Body dissatisfaction	34.75	10.29	41.33	11.07	43.15	11.29

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Appendice 3

Table 2. *Correlations Between Eating Disorders, Domain Scores of the SIPP-118, the PSI Scale and the EDI (N = 117).*

Dimensional traits	Eating disorder type			EDI			PSI
	AN	BN	NOS	DT	B	BD	
EDI							
Drive for thinness	-.15	.07	.08				
Bulimic	**-.41****	**.42****	.13				
Body dissatisfaction	**-.31****	.02	-.25**				
SIPP-118							
Selfcontrol	.19*	-.20*	.01	**-.40****	**-.34****	-.27**	**-.49****
Identity integration	.90	-.19*	.07	**-.40****	-.20**	-.24**	**-.50****
Responsibility	.16	-.12	-.03	-.25**	**-.32****	-.26**	-.25**
Relational functioning	.29**	-.19*	-.09	**-.36****	-.27**	**-.32****	**-.57****
Social concordance	.21*	-.10	-.10	-.29**	-.22**	-.28**	**-.46****
PSI	-.16	.01	.13	**.42****	.21*	.23*	

Notes. ** $p < .01$, * $p < .05$. The correlations between the eating disorders and the domain scores are calculated with Spearmann and the correlations between the domain scores with Pearson. Correlations of medium strength and up are made bold. AN = Anorexia Nervosa, BN = Bulimia Nervosa, NOS = Not Otherwise Specified.

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Appendice 4

Table 3. *Between Subjects Effects on the Variance Analysis (N=117).*

Source	Dependent variables	df	F	Sig.	Partial eta squared
Diagnosis on axisI	Self-control	2	3.84	.02	.06
	Identity integration	2	1.99	.14	.03
	Responsibility	2	1.74	.18	.03
	Relational functioning	2	5.46	<.01	.09
	Social concordance	2	2.30	.11	.04

Table 4. *Tukey post-hoc test indicating variances in personality dysfunctioning between the different types of eating disorders (N=117).*

Dependent variable	Type of eating disorder		Mean difference	Std. Error	Sig.
Self-control	AN	BN	7.43*	2.69	.02
		NOS	3.68	2.18	.21
	BN	NOS	-3.74	2.30	.24
Identity integration	AN	BN	6.61	3.53	.51
		NOS	1.43	2.86	.87
	BN	NOS	-5.17	3.03	.21
Responsibility	AN	BN	4.68	2.68	.19
		NOS	3.32	2.17	.28
	BN	NOS	-1.37	2.30	.82
Relational functioning	AN	BN	9.06**	2.83	<.01
		NOS	5.73*	2.30	.03
	BN	NOS	-3.32	2.43	.36
Social concordance	AN	BN	4.31	2.39	.17
		NOS	3.84	1.94	.12
	BN	NOS	-.47	2.05	.97

Notes. ** $p < .01$, * $p < .05$.

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Appendice 5

Table 5. *Regression Analyses Predicting the Eating Disorder Type from the SIPP-118, PSI and EDE. (N=117).*

	B	SE	Sig.	Adjusted R^2
AN (N=28)				
Order of entry: EDI, SIPP-118, PSI				
EDIDT	.02	.01	<.01	
EDIB	-.02	<.01	<.01	
EDIBD	-.02	<.01	<.01	.25
Block 2				
EDIDT	.02	.01	<.01	
EDIB	-.02	<.01	<.01	
EDIBD	-.02	<.01	<.01	
SIPP-118 SE	.01	.01	<.01	
SIPP-118 ID	-.01	.01	<.01	
SIPP-118 RE	-.00	.01	<.01	
SIPP-118 RF	.01	.01	<.01	
SIPP-118 SC	-.00	.01	<.01	
PSI	.01	.01	<.01	.25
BN (N=24)				
Order of entry: EDI, SIPP-118, PSI				
EDIDT	<-.01	<.01	.48	
EDIB	.02	<.01	<.01	
EDIBD	<.01	<.01	.98	.16
Block 2				
EDIDT	<-.01	.01	.48	
EDIB	.02	<.01	<.01	
EDIBD	.00	<.01	.96	
SIPP-118 SE	-.01	.01	.40	
SIPP-118 ID	<-.01	.01	.44	

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SIPP-118 RE	.01	.01	.20	
SIPP-118 RF	<-.01	.01	.29	
SIPP-118 SC	<.01	.01	.73	
PSI	-.01	.01	<.05	.18

NOS (N=65)

Order of entry: EDI, SIPP-118 & PSI

EDIDT	-.01	.01	.12	
EDIB	.00	.01	.91	
EDIBD	.02	.01	<.01	.05

Block 2

EDIDT	-.01	.01	.12	
EDIB	-.00	.01	.84	
EDIBD	.02	.01	.01	
SIPP-118 SE	-.00	.01	.93	
SIPP-118 ID	.01	.01	.12	
SIPP-118 RE	-.00	.01	.55	
SIPP-118 RF	-.00	.01	.70	
SIPP-118 SC	.00	.01	.99	
PSI	.02	.01	<.05	.06

The possible influence of personality dysfunctioning on individuals with an eating disorder.

Appendice 6

Table 6. *Test of Equality Between the Difference in Mean Scores on the Predictor Variables (N=117).*

	Wilks' Lambda	F	Significance
Drive for thinness	.99	.81	.45
Bulimic	.73	21.18	<.01
Body dissatisfaction	.91	5.73	<.01
Self-control domain	.94	3.84	.02
Identity integration domain	.97	1.99	.14
Responsibility domain	.97	1.74	.18
Relational functioning domain	.91	5.45	<.01
Social concordance domain	.96	2.30	.11
PSI	.97	1.72	.18

Table 7. *Structure Matrix (N=117).*

	Function	
	1	2
Bulimic	.80	-.25
Relational functioning domain	-.41	-.06
Self-control domain	-.34	.09
Social concordance domain	-.25	-.21
Responsibility domain	-.23	-.08
Drive for thinness	.15	.07
Body dissatisfaction	.32	.55
PSI	.15	.35
Identity integration domain	-.22	.25

The possible influence of personality dysfunctioning on individuals with an eating disorder.
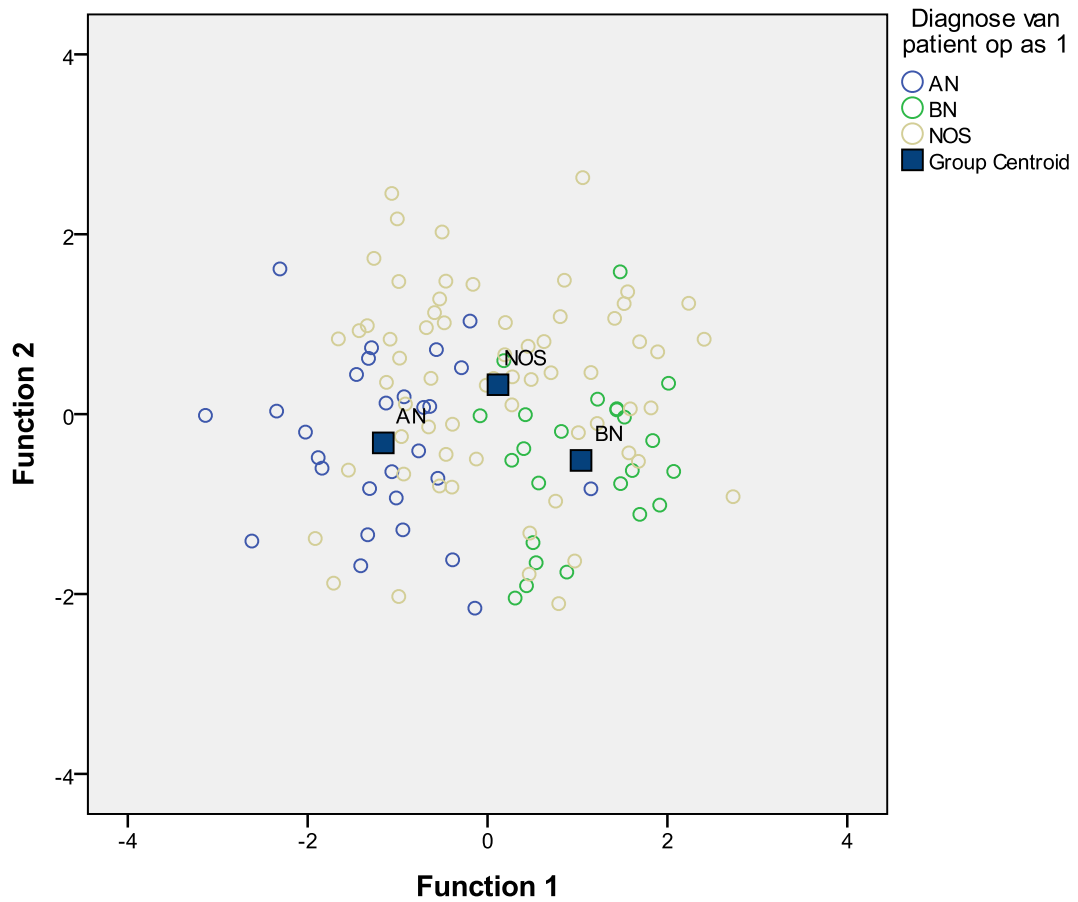
Appendice 7

Figure 3. Discriminant function plot showing the relationship between the influence of eating characteristics and personality dysfunctioning for the different types of eating disorders.