What happens to eating disorder (ED) patients after specialized treatment? – Examining the course of ED psychopathology and well-being along with potential predictors

Master Thesis

Laura Seifert
s1834185

Positive Psychology & Technology

University of Twente

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First Supervisor: Sander de Vos

Second Supervisor: Dr. Christina Bode

ABSTRACT

Background. Eating disorders (EDs) are severe and complex mental illnesses, which have serious consequences and a high impact on an individual's life. There are various forms of treatment for EDs, but research on the sustainability of treatment outcomes varies extensively. There is no general agreement on definitions of recovery and relapse in EDs, and many studies focus only on physical and/or behavioral aspects of the disorder, thereby neglecting psychological aspects. Consequently, clear information about the course of mental health of ED patients after treatment is lacking. **Objective.** For this reason, this study investigated two components of mental health, by exploring the course of both ED psychopathology and well-being within the first year after treatment in a sample of ED patients, and examining whether there are differences between patients who were considered as recovered at the end of treatment (i.e. scoring comparable to the general population) and those who were not recovered. Additionally, differences in the course of ED psychopathology and well-being between the different types of EDs were analyzed, and the extent to which these two variables were predicted by characteristics at the end of treatment was explored. **Method.** The data for this study was collected from a larger ongoing study, where patients who received treatment at a specialized treatment center for EDs filled in multiple questionnaires at different timepoints during and after treatment. This study included 636 female participants (mean age group: 26-30 years) and used the measurements at the end of treatment and at 6- and 12 months follow-up. **Results**. Analyses of variances showed that ED psychopathology and well-being did not significantly change during the first year after treatment for patients who were recovered and not recovered at the end of treatment. Moreover, significant differences in the mean scores were found between patients who were recovered and were not recovered, indicating that patients who were recovered remained recovered during the first year after treatment, while patients who were not recovered did not further recover. No differences in the mean scores between the EDs were found. Regression analysis showed that the only significant predictors of ED psychopathology and well-being at follow-up were ED psychopathology and well-being at the end of treatment, respectively. **Discussion.** The generalizability of the findings is limited, due to the systematic dropout of the participants. Consequently, further research on the course of ED psychopathology and well-being of ED patients after treatment is needed in order to confirm the findings of this study.

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INTRODUCTION

Eating disorders (EDs) are severe and complex mental illnesses, which are described by persistent disturbances in eating behavior (Mathis, Costa, & Xandre, 2020). These disturbances lead to a modified consumption or absorption of food and considerably affect an individual's physical health and/or psychological functioning (Mathis et al., 2020). Despite differences in prevalence estimates across studies (Mathis et al., 2020), the prevalence of EDs has grown dramatically during the past three decades (Calderon, 2006). The weighted means of lifetime ED prevalence are 8.4% (ranging from 3.3-18.6%) for women, and 2.2% (ranging from 0.8-6.5%) for men (Galmiche, Déchelotte, Lambert, & Tavolacci, 2019). EDs are common in adolescents and especially in young adults, with a peak age of onset at 15-25 years (Schmidt et al., 2016). Indeed, EDs are one of the most frequent chronic illnesses among young females (Calderon, 2006).

There are different types of eating disorders, all described in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases and Related Health Problems (ICD) (Galmiche et al., 2019). The main ED types are Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Binge Eating Disorder (BED), which are referred to as the three "typical" eating disorders. The "atypical" forms of these disorders are called 'other specified feeding or eating disorders' (OSFEDs). An OSFED is described as an eating disorder which leads to clinically significant distress or disturbance in social life without meeting the full criteria for typical EDs (Galmiche et al., 2019).

All types of eating disorders are displayed by disturbances in eating behavior, but the ways in which these disturbances manifest themselves vary between the EDs. **AN** is characterized by a refusal of maintaining a minimal body weight, a pathological fear of gaining weight, and a disturbed body image (Davey, 2014). Therefore, restricted eating and actions used to lose weight (like excessive sporting or the use of laxatives) are common. In contrast to AN, individuals with **BN** do not selectively restrict their food intake, but instead suffer from recurrent overeating. These repeating incidents of overeating are commonly called "binges", describing the uncontrolled intake of very large amounts of food, which is followed by actions to compensate and prevent weight gain, for example the use of laxatives or self-induced vomiting (Fairburn & Harrison, 2003). **BED** is also described as recurrent overeating, but without compensatory behavior (Fairburn & Harrison, 2003). Hence, in contrast to BN, individuals with BED do not undertake any actions to control their weight after binge-eating incidents.

All of these ED types can have different but serious consequences and impact an individual's life to a large extent. Generally, various forms of physical impairments can result from the modified consumption/absorption of food and/or from possible compensatory behaviors, leading for example to gastrointestinal issues, cardiac complications, or esophageal inflammation. These physical impairments play an important role in the course and prognosis of psychopathology, and lead, together with suicide, to the high mortality of ED patients (Monteleone, & Brambilla, 2015). Moreover, it has been found that individuals with EDs also display higher levels of other mental disorders (Demmler, Brophy, Marchant, John, & Tan, 2020). In fact, more than 70% of individuals with an ED suffer from comorbid disorders as categorized in the DSM, specifically anxiety disorders (>50%), mood disorders (>40%), self-harm (>20%), and substance use (>10%) (Keski-Rahkonen, & Mustelin, 2016). However, scientific information about the (causal) relationship between EDs and comorbid disorders is inconsistent and further research is needed to explain the high comorbidity.

Reflecting the general knowledge about the severity of eating disorders, treatment is of great importance. In a regular clinical setting, the treatment for patients with EDs consists of psychotherapy, often in combination with pharmacotherapy (Grubišin, & Medved, 2002). Common forms of psychotherapy for EDs are, for example, *Cognitive-Behavioral Therapy (CBT)*, which deals with the challenging and correcting of dysfunctional thoughts (Fairburn, Cooper, & Shafran, 2003), *Interpersonal Therapy*, which focuses on the social and interpersonal context in which the eating disorder developed and maintains (Burke, Karam, Tanofsky-Kraff, & Wilfley, 2018), and *Family-Based Therapy*, where the treatment is extended into the homes of younger patients and thereby integrating the family into the therapy process (Fairburn, Cooper, & Sharfran, 2003). In addition to psychotherapy and pharmacotherapy, also the management of somatic problems and nutrition consultation are included in the therapy scheme (Grubišin, & Medved, 2002).

In order to assess whether a treatment is successful in supporting recovery, it is essential to have a clear concept of recovery. However, there seems to be no general agreement on the criteria for recovery of EDs between therapists and researchers (Noordenbos, 2011). While many studies on EDs focus on the *physical aspects* of recovery like BMI and/or the *behavioral aspects* like restrictive eating, compensatory behavior or binge-eating, the *psychological aspects* of recovery are often not taken into account, specifically how individuals think about food, eating, and their bodies (Bardone-Cone et al., 2010). Consequently, variations in the criteria for recovery lead to major differences in the percentages of ED patients who recover (Jarman & Walsh, 1999). The study by Saccomani et

al. (1989) showed that when only considering physical aspects, 79% of patients with AN could be assessed as being recovered, but when also considering the psychological aspects the percentage of patients recovered decreased to 48%. In fact, it has been suggested that not considering the psychological component of EDs in assessing recovery may generate a "pseudo recovery" state (Keski-Rahkonen & Tozzi, 2005). Additionally, there also seems to be no agreement on the period of time in which a patient has to be symptom free before being assessed as "fully recovered" from an ED (Noordenbos, 2011). While some researchers propose a duration of 4 weeks (Berkman, Lohr, & Bulik, 2007), others recommend a duration of at least 8 weeks (Strober, Freeman, & Morrell, 1997), and others indicate that even 12 weeks might be not long enough to ensure recovery (Cogley & Keel, 2002). Moreover, there are not only large variations in the criteria for recovery, but also in regard to the instruments used to assess whether patients recovered or not (Noordenbos, 2011). This was for example demonstrated by Couturier & Lock (2006), who used different instruments to analyze recovery in 86 AN patients, which resulted in variations of recovery rates ranging from 3% to 96%.

Regardless of the different recovery definitions, the sustainability of treatment outcomes is generally perceived as a main problem in clinical work (Gulec et al., 2011), as achievements during treatment are reported to be susceptible to relapse in the long term (Murray, 2020). However, despite the fact that there generally seems to be a lot existing literature about relapse of EDs, there is an absence of general agreement on a functional definition of relapse (Khalsa, Portnoff, McCurdy-McKinnon, & Feusner, 2017). Indeed, a review by Khalsa and colleagues (2017) showed that, similar to the definitions of recovery, also the definitions of relapse are varying extensively in literature. This is for example demonstrated by the review of Berends and colleagues (2018), who examined existing literature about relapse in **AN**, and found that 31% of patients relapsed after treatment. However, while all 16 studies included in that review used a reduction of body weight to define relapse in AN (BMI < 18.5), only nine of these studies additionally included the recurrence of eating disorder symptoms into their definition. In regard to the other types of EDs, a study by Hamli et al. (2002) investigated relapse in **BN** and found that 44% of patients had relapsed 4 months after treatment. In that study, relapse of BN was defined as the occurrence of binge-eating and purging after complete abstinence of these incidents. A different study focused on relapse in **BED** and found that 28% of patients had relapsed at a 6 months follow-up (Safer, Lively, Telch, & Agras, 2002). In that study, the criterion for BED relapse was the occurrence of binge-eating after abstinence.

Having considered the definitions of recovery and relapse, the next step is to get insight into the predictors of the ED outcome. However, the lack of general agreement on the criteria for recovery and relapse constitutes also a problem for research about the predictors of recovery and relapse from EDs (Noordenbos, 2011). In regard to the predictors of *recovery*, the effect of different recovery definitions was investigated by Keel et al. (2000), who assessed 173 female BN patients during a 10-year follow-up. The predictors of recovery varied extensively depending on the definition of recovery, with no prediction variable constantly predicting recovery throughout the different definitions (Keel et al. 2000). Nevertheless, there are other studies that did identify specific predictors, and the review by Vall & Wade (2015) included 126 studies across all ED types which examined at least one predictor of ED outcome. Here, it was concluded that better outcomes of EDs were predicted by fewer comorbidities, lower depression, higher BMI, fewer binge/purge behaviors, lower shape/weight concern, higher motivation to recover, better interpersonal functioning, and fewer problems in the family (Vall & Wade, 2015). Also in regard to the predictors of *relapse* there appear to be different findings, which not only depend on the definition of relapse but also on the type of ED. The review by Berends and colleagues (2018) found factors associated with relapse in AN to be, among others, a concern with weight and shape, obsessions and compulsions, longer duration of treatment, and increased age with longer duration of illness. However, predictive factors for relapse in BN were found to be higher levels of preoccupation and ritualization of eating, less motivation for change, and a shorter time of abstinence during treatment. The predictive factors for relapse in BED were found to be an early onset of binge eating and higher levels of restraint eating (Safer, Lively, Telch, & Agras, 2002).

In addition to the various predictors of ED outcome that have just been mentioned, another possible characteristic that could generally play a role in the course of EDs was suggested to be personality. Personality traits have appeared as a fundamental structure for mental disorders (Wright, & Simms, 2015), and could therefore potentially explain the variation in outcome and predict prognosis (Levallius et al., 2016). In fact, it has been found that personality can predict present and future psychosocial functioning in patients with different mental disorders, and predicts treatment response for example in addiction, depression, borderline personality disorder, pathological gambling and eating disorders (Levallius et al., 2016). Moreover, Vall & Wade (2015) found that an absence of personality disorders was predictive of better ED outcome at follow-up. Consequently, personality seems to play an important role in EDs, but specific information about the effect of different

personality domains on the course of EDs after treatment is limited, and therefore further research is needed.

As existing literature demonstrates, the spectrum of factors associated with recovery and relapse appears to be large (Berends et al., 2018). However, studies investigating the long-term course of EDs seem to present a high diversity in relation to characteristics of the sample, follow-up period, assessment procedures, statistical analyses and conceptual definitions of recovery and relapse (Richard, Bauer, & Kordy, 2005). Consequently, generalizations across studies are complicated (Richard et al., 2005), with comparisons of recovery and relapse rates and factors being difficult between ED types as well as within the different ED types. Thus, a clear picture of the psychological course of EDs after treatment appears to be inconsistent, and therefore further research is needed in order to specifically get clearer insight into the mental health of ED patients after treatment.

In order to precisely assess the overall state of mental health of ED patients, it is necessary to consider a general concept of mental health along with its implications for EDs and its treatment. Mental health is not just about the absence of psychopathological symptoms (mental illness) but also about the presence of well-being (Westerhof & Keyes, 2010). There are three components of well-being: (1) *emotional well-being*, focusing on satisfaction with life, happiness and positive affect, (2) *psychological well-being*, focusing on optimal psychological functioning, and (3*) social well-being*, focusing on optimal functioning in societal contexts (Westerhof & Keyes, 2010). In fact, well-being and psychopathology are considered as two related but distinct dimensions of mental health (Franken, Lamers, Ten Klooster, Bohlmeijer, & Westerhof, 2018). Hence, an individual with psychopathology may still display high levels of well-being, while an individual with low levels of well-being does not automatically also display psychopathology (de Vos, Radstaak, Bohlmeijer, & Westerhof, 2018). The two continua model of mental health conceptualized these thoughts in a heuristic model (Westerhof & Keyes, 2010), which has extensively been tested. In fact, well-being has also been suggested to play an important role in the recovery of psychological disorders (Fava, 1996). However, the application of the two continua model to EDs is rather new and therefore requires further exploration.

Basically, the main focus in research on ED recovery generally tends to be on psychopathological symptoms, thereby neglecting other aspects of recovery (Tomba et al., 2014), like well-being. Nevertheless, it has been found that the mean level of well-being is lower for ED patients compared to the general population (de Vos et al., 2018). Indeed, therapies have been developed that focus on increasing well-being among clinical populations

(Weiss, Westerhof, & Bohlmeijer, 2016). Although there has not been much research about the importance of well-being for mental health among ED patients (Tomba et al., 2014), when considering the personal experience of ED patients it can be assumed that well-being is indeed an important component of recovery in EDs. A review by de Vos and colleagues (2017) examined 18 studies with individuals who recovered from an ED and identified criteria for ED recovery that were described to be important by the participants. Next to symptom remission, individuals who recovered from an ED perceived various aspects of well-being as essential criteria for ED recovery (de Vos et al., 2017). This seems to be in line with the findings of Romano & Ebener (2019), who reported that specifically higher psychological well-being appears to be associated with better recovery of EDs. Consequently, next to psychopathology also well-being seems to be an important aspect in the mental health of ED patients, however there has not been much research about the course of well-being in ED patients after treatment.

Although scientific information about the course of well-being in ED patients is lacking, its importance is underlined by existing research about constructs that appear to be related to well-being. A measure related to well-being that was most frequently used in research on EDs is general health-related quality of life (HRQoL) (Baiano et al. 2014), which describes the subjective perception of the effect an illness has on one's physical, social, and psychological functioning (WHOQOL Group, 1995). A study by Padierna et al. (2002) investigated the HRQoL of ED patients in a 2-year follow-up, with the assessment including different domains like emotional role, social functioning and mental health. Here, it was found that HRQoL had significantly improved at 2 years follow-up, but in comparison to the general population ED patients were still more dysfunctional in all domains (Padierna et al., 2002). This gives rise to an important implication, as it shows that ED patients were still not perceiving an average quality of life two years after treatment, which might provide indications of impaired mental health, and therefore aftercare or additional treatment might be needed. Moreover, it underlines the importance of gathering detailed information about the course of well-being in ED patients after treatment, in order to fully assess their state of mental health and ultimately be able to support them with specified methods.

All in all, many studies about ED recovery and relapse use pathology change as the only outcome measure, but the importance of applying additional criteria for ED recovery is highlighted not only by researchers but also by ED patients and individuals who recovered (de Vos et al., 2017). Nevertheless, information about the course of psychological aspects in ED patients after treatment is limited, and specifically the two dimensions of mental health have

rarely been studied jointly in EDs. Therefore, this study aimed to get an insight into the course of both ED psychopathology and well-being of ED patients after treatment, and to examine whether there are differences between patients who were considered as recovered at the end of treatment (EOT) and those who were not recovered. Additionally, it was analyzed whether the course of ED psychopathology and well-being differs between the ED types, and the extent to which certain characteristics at EOT predict ED psychopathology and well-being within the first year after treatment was assessed. In regard to the potential predictors, variables were chosen that were of theoretical interest: As previously described, personality, comorbidity, and treatment duration were all suggested to play a role in EDs, but clear information about their effect on the course of both ED psychopathology and well-being is lacking. Moreover, in accordance with the two continua model of mental health, it was also of interest to get insight into the relationship between ED psychopathology and well-being in ED patients by investigating their predictive effect on each other.

Course

Research Question 1: What is the course of **ED psychopathology** in the first year after treatment among ED patients, for both patients who were and were not recovered at EOT?

Research Question 2: What is the course of **well-being** in the first year after treatment among ED patients, for both patients who displayed adequate and inadequate well-being at EOT?

Research Question 3: Are there differences **between ED types** in the course of ED psychopathology and well-being?

Predictors

Research Question 4: To what extent are treatment duration, comorbidity, personality, well-being, and ED psychopathology at the end of treatment predictive for **ED psychopathology** at 6 and 12 months after treatment?

Research Question 5: To what extent are treatment duration, comorbidity, personality, ED psychopathology, and well-being at the end of treatment predictive for **well-being** at 6 and 12 months after treatment?

METHODS

Participants

Participants were patients who received treatment at Stichting Human Concern, a specialized treatment center for eating disorders in the Netherlands. Inclusion criteria for this study were participants with (a) a minimum age of 17 years, which was the minimum age to obtain treatment at the treatment center, (b) an ED diagnosis at intake (DSM-5), and (c) a signed informed consent.

In total, 826 patients who left treatment between June 2015 and August 2019 and followed treatment for at least 6 months were screened for inclusion. Of these, 74 patients denied the informed consent, 13 patients did not have an ED diagnosis, and 88 patients did not fill in any of the three measurements, and were therefore excluded. Consequently, 651 patients were included in the dataset. However, after examination of the sex status, it was found that only 15 males participated in the study and were therefore excluded due to the very low and unequal sample size. Hence, in total 636 participants, all female, were included in this study.

The data for this study was collected from a larger *ongoing* follow-up study. For this reason, in the dataset used in this study, 155 patients (24.4%) have not received the questionnaires at 12 months follow-up yet, but might do so in the future. Additionally, to 77 patients (12.1%) the follow-up measurements have not been administered because of referral to another treatment or leaving treatment early ("non-responder"). Moreover, not all patients who received the questionnaires also filled them in (Figure 1).

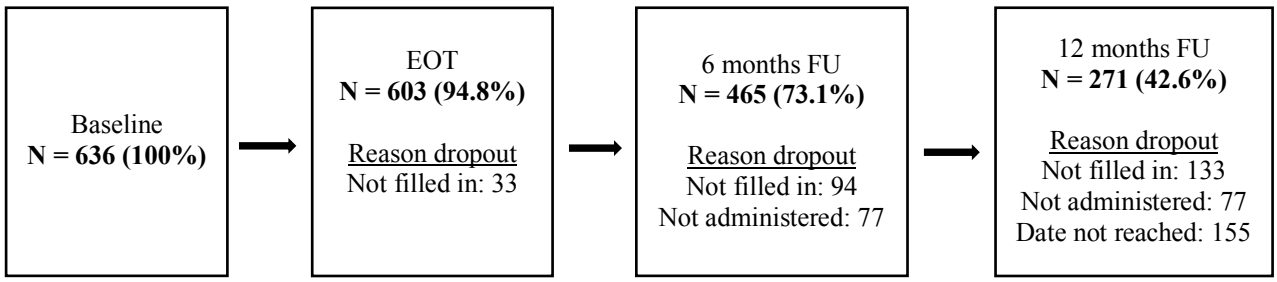

Figure 1. Current dropout of participants during the study

The study protocol was approved by the BMS Ethics Committee of the University of Twente.

Procedure

At the beginning of treatment, a baseline questionnaire was administered where the demographics of the patients were assessed, which were also verified during the intake interview with a psychologist and/or psychiatrist. During the intake, additional background characteristics were assessed and patients were diagnosed by a psychiatrist in collaboration with the intake team (consisting of a dietician, psychiatrist, or clinical psychologist) and a clinician who has an eating disorder history and has been trained to use this experiential knowledge for the treatment of patients (de Vos et al., 2016). In regard to this study, all patients were asked whether they wanted to participate in scientific research, including the follow-up research after treatment, which consists of an additional three measurements. Therefore, an informed consent was administered where they had to indicate whether they wanted their data to be included in the study.

The questionnaires were filled in at intake, at the start of treatment, every three months during treatment, and at the end of treatment. Here, patients were also reminded of the follow-up research. A follow-up meeting was scheduled for six months after discharge with their personal clinician in order to check if the patients were doing well. However, this procedure was cancelled on 1st October 2019, hence patients who left treatment after this date did not receive a follow-up meeting anymore. Regardless of the follow-up meeting, all former patients received the follow-up questionnaires automatically via e-mail at **6, 12 and 24 months** after treatment. However, for this study the 24 months follow-up measurement was excluded as not enough data had been collected yet. Moreover, due to the specific focus of this study on the course of EDs *after* treatment, only the measurements at the end of treatment, at 6 months follow-up and at 12 months follow-up have been used.

At each follow-up measurement, the questionnaires were available for a total duration of 14 days. Patients who did not fill in the questionnaires within the first 7 days automatically received another e-mail as a reminder (Appendix A). Two weeks after the questionnaire were available for the first time, the questionnaires that had not been filled in yet were available for a second time, again for a duration of 14 days. Both times patients also received a personal e-mail form the research team, where the procedure of the follow-up questionnaires was explained in more detail. Moreover, in order to increase the response rate, the personal e-mails explained that a gift voucher of 15 EURO would be offered in return. At the end of the questionnaires patients were allowed to indicate which gift voucher they wanted to received (VVV or Bol.com). The gift voucher procedure had be to cancelled at the 10th of January 2020, since the organization reached the allocated budget. Hence, patients who filled in the

questionnaires after this date were not presented with the opportunity to receive a gift voucher.

For the data set, multiple steps were taken to maximize anonymization: patient-codes and fill in dates of application/questionnaire were excluded, birthdate was changed into age groups *(17-20/21-25/26-30/31-35/36-40/41-50/51+),* the specific comorbid disorders were changes into disorder groups *(personality disorder/mood-anxiety disorder/trauma-stress related disorder/neurobiological development disorder/addictive disorder/other psychiatric disorder),* weight and height measures were excluded (providing only BMI: kg/m2), and the questions about in which center patients received new treatment were excluded.

Materials

Baseline information

The following variables were assessed and classified as part of the intake procedure and used in this study: gender, age, ED diagnosis, and comorbid disorder.

Measurements

All of the measurements contained the same questionnaires: Eating Disorder Examination Questionnaire (EDE-Q), Outcome Questionnaire (OQ-45), Mental Health Continuum – Short Form (MHC-SF), Forms of Self-criticizing and Reassurance Scale (FSCRS), Severity Indices of Personality Problems – Short Form (SIPP-SF), Body Mass Index (BMI), and some open ended questions (about relapse). Only the questionnaires that contribute to the specifics of this study will be described.

Eating Disorder Psychopathology (EDE-Q)

Eating disorder psychopathology was measured with the global scale of the Eating Disorder Examination Questionnaire (EDE-Q), which includes four subscales: Restraint, Eating Concern, Weight Concern, and Shape Concern. The global scale consists of 22 items and participants had to indicate the frequency of symptoms during the *last 28 days*. Answers were given in form of a 7-point Likert scale, ranging from “no days” (0) to “every day” (6), resulting in a mean score of all answers, hence ranging from 0-6. The global scale was used for this study, not focusing on the subscales individually. Lower scores indicate lower ED psychopathology. The global score represents a valid indication of the general ED

psychopathology level (Aardoom, Dingemans, Op't Landt, & Van Furth, 2012). Recovery on ED psychopathology was defined as a global EDE-Q score < 1 standard deviation (SD) higher than the general population mean, i.e., **≤ 2.77** (Mond, Hay, Rodgers, & Owen, 2006), since this is a measure that is often used internationally (de Jong et al., 2020).

Well-Being (MHC-SF)

Well-being was measured with the Mental Health Continuum - Short Form (MHC-SF). The questionnaire includes emotional, psychological, and social well-being, with a total of 14 items. Participants had to indicate the frequency of certain feelings during *the last month*. Answers were given on a 6-point Likert scale, ranging from "never" (0) to "always" (5), resulting in a mean score of all answers, hence ranging from 0-5. The total score was used for this study, not focusing on the subscales individually. Higher scores indicate higher well-being. In order to distinguish between adequate and inadequate well-being, in this study the same approach as for the EDE-Q was used, and therefore the cut-off was defined as a total MHC-SF score 1 SD below the general population mean, i.e. **2.16.** Hence, adequate well-being was defined as a total score **≥ 2.16,** while inadequate well-being was defined as a total score **< 2.16.** The general population was represented by a control group of the LISS-panel (Longitudinal Internet Study in the Social Science) of CentERdata, consisting of 835 non-institutionalized women living in the Netherlands (de Vos et al., 2018; Lamers, Westerhof, Bohlmeijer, & Keyes, 2013).

Comorbidity (OQ-45 – SD scale)

As an alternative for the presence of general comorbidity, general psychopathology was measured with the symptomatic distress scale (SD scale) of the Outcome Questionnaire (OQ-45), which is in line with the Dutch standard for mental healthcare (Warmerdam, Barendregt, & de Beurs, 2017). The OQ-45 SD scale consists of 25 items where participants had to indicate the frequency of certain feelings within *the last week*. Answers were given on a 5-point Likert scale, ranging from "never" (0) to "always" (4), resulting in a range of 0 – 100 for the total SD score. Higher scores indicate higher psychopathology. The OQ-45 presents adequate psychometric properties (de Jong et al., 2008).

Personality functioning (SIPP-SF)

Personality functioning was measured with the Severity Indices of Personality Problems – Short Form (SIPP-SF), which assesses five domains of personality functioning: responsibility,

self-control, identity integration, social concordance, and relational capacities. All scales present good construct validity and internal reliability, and therefore successfully assess (mal)adaptive personality functioning among adults (van Reijswoud et al., 2020). The SIPP-SF consists in total of 60 items (12 items per domain) where participants had to indicate their level of agreement to certain statements within *the last three months*. Answers were given on a 4-point Likert scale, ranging from "fully disagree" (1) to "fully agree" (4), resulting in a range of 12 - 48 for the total score of each subscale. All five subscales were used individually for this study. Lower levels indicate more maladaptive functioning while higher levels indicate more adaptive functioning.

Analysis

The data set was analyzed through the statistical program for social sciences (SPSS, version 24). If necessary, the variables were recoded, and qualitative answers (e.g. ED diagnosis) were formed into numeric variables. Missing data was handled by a listwise deletion procedure, where any individual got excluded from the specific analysis if any value of interest was missing. Hence, this method ensured that only participants who filled in all measurements of interest were included in the analysis. In regard to the dropout, a Mann-Whitney-U-Test was executed to determine if patients who were included in this study differ in ED diagnosis diagnosed at intake or ED psychopathology measured at EOT from patients who dropped out. The results of this test had implications for the representativeness of the sample included in the study and consequently for the generalizability of the findings.

In order to explore the course of **ED psychopathology** within the first year after treatment, a repeated measures analysis of variance (ANOVA) was used. A new variable was computed, which displays if an individual was recovered (EDE-Q score ≤ 2.77) or not recovered (EDE-Q score > 2.77) on ED psychopathology at EOT. In the ANOVA, the timepoint (i.e. EOT, 6- and 12 months follow-up) was set as the independent variable, with "recovered or not recovered" as a between-subjects factor, and ED psychopathology was set as the dependent variable. Thereby it was analyzed whether the mean score of ED psychopathology differs significantly between timepoints, and whether there were differences in the course of ED psychopathology between patients who were and were not recovered at EOT. In case of significant differences between timepoints, a Tukey post-hoc analysis was executed in order to examine between which timepoints the differences were found. When checking the assumptions required to carry out a repeated measures ANOVA, the Mauchly's Test showed that the data violated the assumption of sphericity ($p < 0.05$), therefore the

Greenhouse-Geisser correction was used. The output also displayed the descriptive statistics for each of the three timepoints, including the mean score of ED psychopathology (M), the standard deviation (SD), and the number of patients included in the analysis (N).

The same analysis was executed to explore the course of **well-being** within the first year after treatment. Also here a new variable was computed, which displays if an individual displayed adequate (MHC-SF score ≥ 2.16) or inadequate (MHC-SF score < 2.16) well-being at EOT. Here, the dependent variable was well-being, and the independent variable was also timepoint, with "adequate or inadequate" as a between-subjects factor.

In order to explore whether the course of *ED psychopathology* within the first year after treatment differs **between the EDs**, a mixed ANOVA was executed, with timepoint and ED diagnosis as the two independent variables The same analysis was executed in order to explore whether the course of *well-being* differs between the EDs. BED was excluded from both analyses since only one patient filled in all the necessary measurements.

In order to analyze the predictive value of treatment duration, comorbidity, personality, well-being, and ED psychopathology at EOT on **ED psychopathology** at *6- and 12 months* follow-up, two multivariate regression analyses were executed. Here, ED psychopathology at 6/12 months follow-up was set as the dependent variable, and the independent variables were duration of treatment, comorbidity, the five domains of personality functioning, well-being, and ED psychopathology, all measured at the end of treatment. Thereby it was analyzed how much these characteristics predict ED psychopathology at follow-up. Multicollinearity was tested by examining the variance inflation factors (VIF) and the values of tolerance displayed in the collinearity statistics.

The same regression analyses were executed to analyze the predictive value of treatment duration, comorbidity, personality, ED psychopathology, and well-being at EOT on **well-being** at *6- and 12 months* follow-up. Here, well-being at 6/12 months follow-up was set as the depended variable, and the independent variables were treatment duration, comorbidity, the five domains of personality functioning, ED psychopathology, and well-being, all measured at the end of treatment.

RESULTS

Background characteristics

The 636 female participants included in this study presented the following characteristics:

Age

91 patients (14.3%) were between *17-20 years* old, 210 patients (33%) between *21-25 years*, 145 patients (22.8%) between *26-30 years*, 76 patients (11.9%) between *31-35 years*, 47 patients (7.4%) between *36-40 years*, 47 patients (7.4%) between *41-50 years*, 18 patients (2.8%) *above 51 years*, and two patients did not provide their age.

The mean age group was 26 – 30 years.

Primary ED diagnosis

247 patients (38.8%) were diagnosed with *AN*, 131 patients (20.6%) with *BN*, 14 patients (2.2.%) with *BED*, and 244 patients (38.45%) with *OSFED.*

Comorbid disorder

In addition to the ED, 82 patients (13.1%) were diagnosed with a *personality disorder***,** 327 patients (52.2%) with a *mood & anxiety disorder*, 36 patients (5.8%) with a *trauma-stress related disorder (PTSD)*, 41 patients (6.5%) with a *neurobiological development disorder*, 12 patients (1.9%) with an *addictive disorder***,** and 18 (2.9%) with *another psychiatric disorder*.

Treatment duration

The mean treatment duration was 26.6 months (*SD* = 12.8).

Dropout

Due to the fact that the study is still ongoing, the dropout of some patients, and the listwise deletion procedure that was used to deal with missing data, from the initial sample size of 636 patients, 391 patients (61.5%) were excluded, resulting in 245 patients (38.5%) who were examined in this study.

A Mann-Whitney-U-Test was used to investigated whether the patients who dropped out differed from the patients who were examined in this study in regard to primary ED diagnosis and baseline ED psychopathology. No significant difference between the groups was found in ED diagnosis: $U = 46688.50$, $Z = -.58$, $\boldsymbol{p = .57}$, indicating that the patient sample examined in this study presented similar frequencies of the different ED diagnoses as the patients who dropped out (Table 1). However, a significant difference in ED psychopathology at EOT was found between the groups, as the overall mean of patients who dropped out (*M* =

2.28, *SD* = 1.63) was statistically significant different from patients who did not drop out (*M* = 1.70, *SD* = 1.47): *U* = 34429.00, *Z* = -4.49, ***p* < .01**. This means that patients who were examined in this study had lower ED psychopathology than the patients who dropped out (Table 1).

Table 1. *Frequency of ED diagnosis and mean scores of ED psychopathology for patients who did and did not drop out*

		Dropout (N = 391)	No dropout (N = 245)
		N (%)	N (%)
ED Diagnosis	AN	145 (37.1%)	102 (41.6%)
	BN	85 (21.7%)	46 (18.8%)
	BED	13 (3.3%)	1 (.4%)
	OSFED	148 (37.9%)	96 (39.2%)
		M (*SD*)	M (*SD*)
ED psychopathology		2.28 *(1.63)*	1.70 *(1.47)*

Note. AN = Anorexia Nervosa, BN = Bulimia Nervosa, BED = Binge-eating Disorder, OSFED = Other specified feeding and eating disorders

Baseline ED psychopathology and well-being

At the end of treatment, 189 patients (77.46%) examined in this study were classified as recovered on ED psychopathology (i.e. scoring lower than 1 SD above the normal population), while 55 patients (22.54%) were classified as not recovered. In regard to well-being, at the end of treatment 175 patients (83.73%) displayed adequate well-being (i.e. scoring higher than 1 SD below the normal population), while 34 patients (16.27%) displayed inadequate well-being.

The requirements for ANOVA and regression analysis (normality, linearity, homoscedasticity, multicollinearity, independent errors) were carefully checked and in all cases fulfilled.

Course of ED psychopathology

A repeated measures ANOVA was executed to explore differences of the mean ED psychopathology scores between the timepoints (EOT, 6- and 12 months follow-up) and between the groups (i.e. patients who were and were not recovered at EOT).

Overall, there was **no** statistically significant difference of the mean ED psychopathology scores between the timepoints: $F(1.81, 440.4) = .45$, $\boldsymbol{p = .62}$. However, the overall mean of patients who were recovered at EOT ($M = 1.11$, $SD = .88$) was statistically significant different from patient who were not recovered at EOT ($M = 3.73$, $SD = .88$): $F(1.85, 447.7) = 15.10$, $\boldsymbol{p < .01}$.

These results indicate that ED psychopathology did not change during the first year after treatment for both groups, but the overall mean scores of the course of ED psychopathology were different between patients who were and were not recovered at EOT (Table and Figure 2). No post-hoc analysis was performed because there were no significant differences between the time points.

Table 2. *ED psychopathology scores at EOT, 6- and 12 months follow-up for individuals who were recovered, not recovered, and the total*

	Recovered (N = 189)		Not recovered (N = 55)		Total (N = 245)	
	M	SD	**M**	SD	**M**	SD
EOT	**1.04**	.81	**3.97**	.83	**1.70**	1.47
6 months	**1.08**	.96	**3.74**	1.16	**1.68**	1.50
12 months	**1.22**	1.09	**3.47**	1.35	**1.73**	1.49
Overall	**1.11**	.88	**3.73**	.88	**1.70**	1.41

Note. EOT = End of treatment

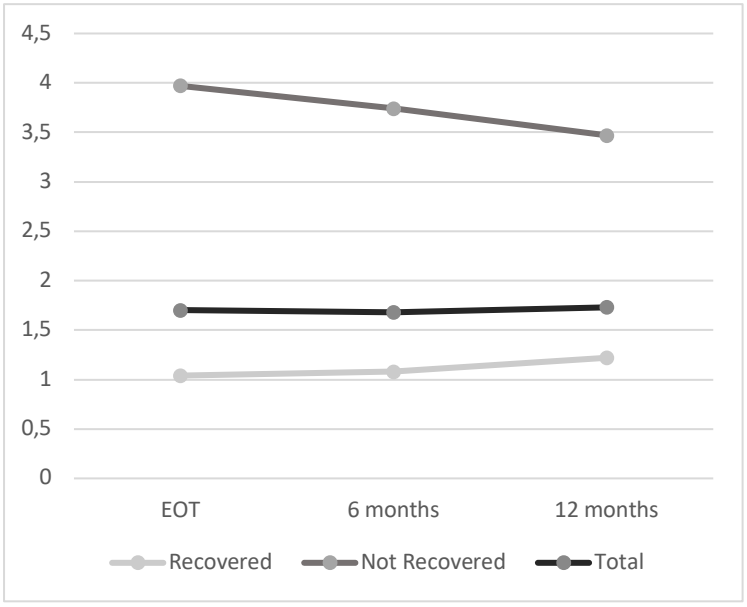

Figure 2. ED psychopathology scores at EOT, 6- and 12 months follow-up for individuals who were recovered (light grey), not recovered (dark grey), and the total (black)

Course of well-being

Another repeated measures ANOVA was executed to explore differences of the mean well-being scores between the timepoints (EOT, 6- and 12 months follow-up) and between the groups (i.e. patients with adequate and inadequate well-being at EOT). Overall, there was **no** statistically significant difference of the mean well-being scores between the timepoints: $F(1.89, 393.4) = .80$, $\boldsymbol{p = .44}$. However, the overall mean of patients who displayed adequate well-being at EOT ($M = 3.50$, $SD = .72$) was statistically significant different from patient who displayed inadequate well-being at EOT ($M = 1.79$, $SD = .71$): $F(1.91, 395.42) = 14.5$, $\boldsymbol{p < .01}$.

These results indicate that well-being did not change within the first year after treatment for both groups, but the overall mean scores of the course of well-being were different between patients who had adequate and inadequate well-being at EOT (Table and Figure 3). No post-hoc analysis was performed because there were no significant differences between the time points.

Table 3. *Well-being scores at EOT, 6- and 12- months follow up for individuals who were recovered, not recovered, and the total*

	Adequate (N = 175)		Inadequate (N = 34)		Total (N = 209)	
	M	SD	**M**	SD	**M**	SD
EOT	**3.55**	.73	**1.47**	.52	**3.21**	1.04
6 months	**3.51**	.81	**1.93**	.91	**3.25**	1.01
12 months	**3.44**	.89	**1.98**	.93	**3.20**	1.04
Overall	**3.50**	.72	**1.79**	.71	**3.22**	.95

Note. EOT = End of treatment

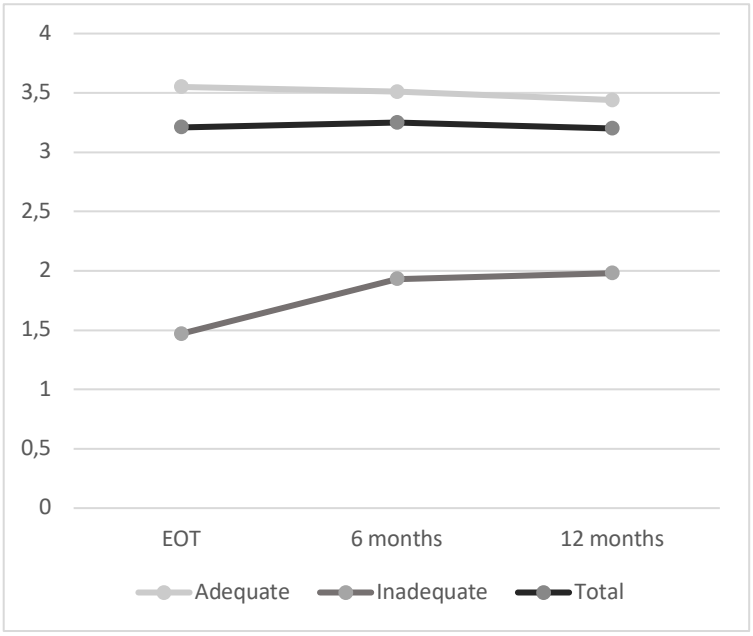

Figure 3. Well-being scores at EOT, 6- and 12 months follow-up for individuals who with adequate well-being (light grey), inadequate well-being (dark grey), and the total (black)

Differences between EDs

ED psychopathology

A mixed ANOVA was executed to explore differences of the mean ED psychopathology scores between the different types of EDs. Overall, there was **no** statistically significant difference of the mean ED psychopathology scores between the EDs: $F(3.63, 437.31) = .24$, ***p* = .90**, indicating that individuals with different types of EDs displayed a similar course of ED psychopathology (Table and Figure 4).

Table 4. *ED psychopathology score at EOT, 6- and 12 months follow up for AN, BN, and OSFED*

	AN (N = 102)		BN (N = 46)		OSFED (N = 96)	
	M	SD	**M**	SD	**M**	SD
EOT	**1.96**	1.49	**1.70**	1.53	**1.41**	1.37
6 months	**2.00**	1.61	**1.67**	1.44	**1.36**	1.37
12 months	**2.03**	1.61	**1.69**	1.44	**1.46**	1.35
Total	**2.00**	1.39	**1.68**	1.39	**1.41**	1.39

Note. AN = Anorexia Nervosa, BN = Bulimia Nervosa, OSFED = Other specified feeding and eating disorders, EOT = End of treatment

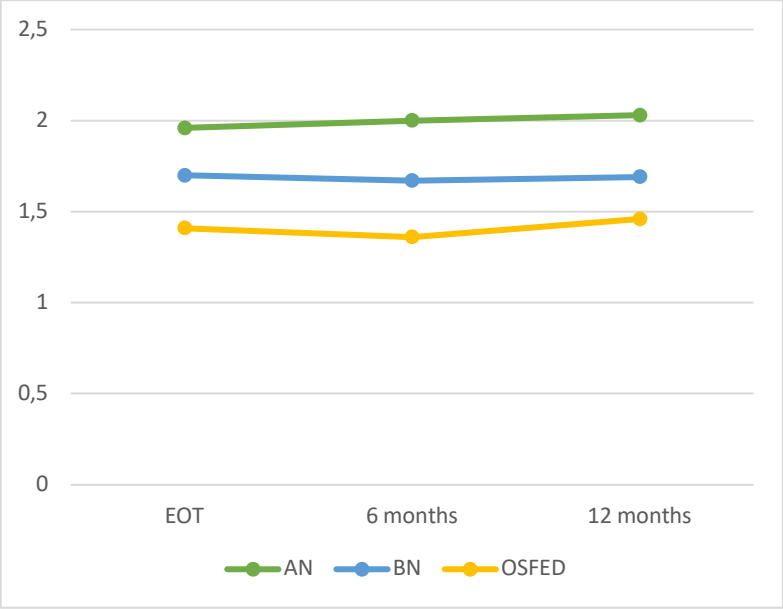

Figure 4. ED psychopathology scores at EOT, 6- and 12 months follow up for AN, BN, and OSFED

Well-being

Another mixed ANOVA was executed to explore differences of the mean well-being scores between the different types of EDs. Overall, there was **no** statistically significant difference of the mean well-being scores between the EDs: $F(3.79, 387.97) = .56$, $\boldsymbol{p = .68}$, indicating that individuals with different types of EDs displayed a similar course of well-being (Table and Figure 5).

Table 5. *Well-being scores at EOT, 6- and 12 months follow up for AN, BN, and OSFED*

	AN (N = 88)		BN (N = 39)		OSFED (N = 81)	
	M	SD	**M**	SD	**M**	SD
EOT	**2.91**	.98	**3.17**	1.06	**3.52**	1.00
6 months	**2.97**	.99	**3.30**	.92	**3.54**	1.00
12 months	**2.95**	1.06	**3.19**	.95	**3.48**	1.01
Total	**2.94**	.92	**3.22**	.92	**3.53**	.93

Note. AN = Anorexia Nervosa, BN = Bulimia Nervosa, OSFED = Other specified feeding and eating disorders, EOT = End of treatment

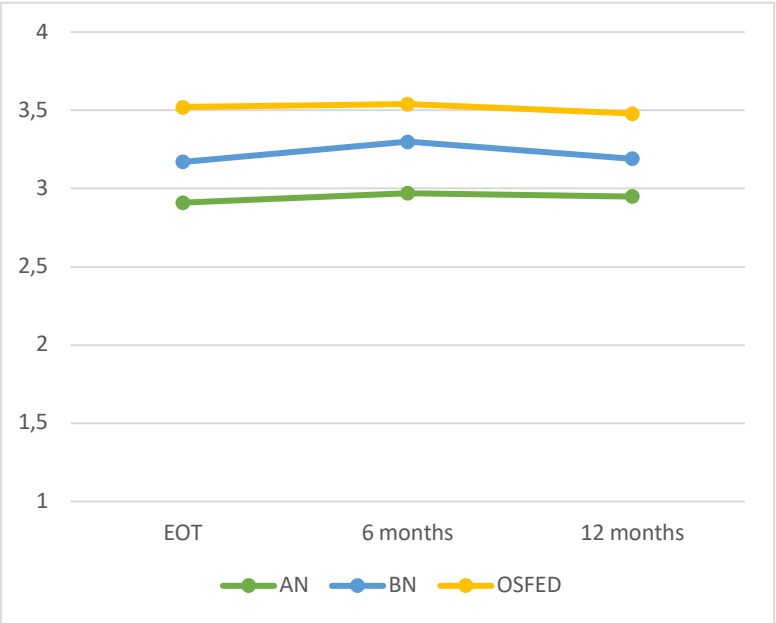

Figure 5. Well-being scores at EOT, 6- and 12 months follow up for AN, BN, and OSFED

Predictors of ED psychopathology

ED psychopathology at 6 months follow-up

A multiple regression analysis was executed to predict ED psychopathology at 6 months follow-up from duration of treatment, comorbidity, the five domains of personality, well-being and ED psychopathology (all measured at the end of treatment). Overall, these variables **did** statistically significantly predict ED psychopathology at 6 months follow-up: $F(9, 183) = 52.88$, $\boldsymbol{p < .01}$, $R^2 = .72$. Looking at the predictors individually, it was found that the only statistically significant predictor of ED psychopathology at 6 months follow-up was ED psychopathology at EOT ($\beta = .73$, $p < .01$).

These results indicate that the variation of ED psychopathology at 6 months follow-up can be explained largely by the predictors at EOT. However, examining which predictors were significant, ED psychopathology at EOT was the only one, meaning that a patients' ED psychopathology displayed at EOT has a high impact on the ED psychopathology displayed at 6 months follow-up. More specifically, the relationship between these two variables appears to be positive, indicating that an increase in ED psychopathology at EOT leads to an increase in ED psychopathology at 6 months follow-up (Table 6). The other predictors were not significant, meaning that they did not explain much variation in ED psychopathology at 6 months follow-up.

Table 6. *Predictors of ED psychopathology at 6 months follow-up*

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Treatment duration	-.01	.01	-.06	-1.44	.15
ED psychopathology	.69	.05	.73	13.87	<.01
Well-being	.06	.10	.04	.63	.53
Comorbidity	.01	.01	.11	1.29	.20
Self-control	-.01	.02	-.03	-.45	.66
Identity integration	-.00	.02	-.01	-.11	.91
Responsibility domain	.00	.02	.00	.02	.98
Relational capacities	-.01	.01	-.08	-1.14	.26
Social concordance	.00	.02	-.00	-.02	.98

ED psychopathology at 12 months follow-up

The same analysis was executed to predict ED psychopathology at 12 months follow-up. Also for this timepoint the variables **did** statistically significantly predict ED psychopathology, $F(9, 77) = 15.14$, $\boldsymbol{p < .01}$, $R^2 = .64$. Looking at the predictors individually, it was also found that the only statistically significant predictor of ED psychopathology at 12 months follow-up was ED psychopathology at EOT ($\beta = .53$, $p < .01$).

These results indicate that the variation of ED psychopathology at 12 months follow-up can be explained largely by the predictors at EOT. However, examining which predictors were significant, ED psychopathology at EOT was the only one, meaning that a patients' ED psychopathology displayed at EOT has a high impact on the ED psychopathology displayed at 12 months follow-up. More specifically, the relationship between these two variables appears to be positive, indicating that an increase in ED psychopathology at EOT also leads to an increase in ED psychopathology at 12 months follow-up (Table 7). Additionally, a predictor that was found to be marginally significant is relational capacities ($\beta = -.28$, $p = .07$), indicating a tendency that an increase in relational capacities at EOT might lead to a decrease in ED psychopathology at 12 months follow-up. The other predictors were not significant, meaning that they did not explain much variation in ED psychopathology at 12 months follow-up.

Table 7. *Predictors of ED psychopathology at 12 months follow-up*

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Treatment duration	.01	.02	.07	.94	.35
ED psychopathology	.52	.11	.53	4.82	<.01
Well-being	-.25	.19	-.19	-1.33	.19
Comorbidity	.01	.01	.09	.59	.56
Self-control	-.04	.03	-.15	-1.12	.27
Identity integration	.04	.03	.27	1.45	.15
Responsibility domain	-.01	.03	-.04	-.29	.78
Relational capacities	-.05	.03	-.28	-1.82	.07
Social concordance	.04	.03	.12	1.16	.25

Predictors of well-being

Well-being at 6 months follow-up

Another multiple regression analysis was executed to predict well-being at 6 months follow-up from duration of treatment, comorbidity, the five domains of personality, ED psychopathology and well-being (all measured at the end of treatment). Overall, these variables **did** statistically significantly predict well-being at 6 months follow-up, $F(9, 18) = 47.34$, $\boldsymbol{p < .01}$, $R^2 = .70$. Looking at the predictors individually, it was found that the only statistically significant predictor of well-being at 6 months follow-up was well-being at EOT ($\beta = .56$, $p < .01$).

These results indicate that the variation of well-being at 6 months follow-up can be explained largely by the predictors at EOT. However, examining which predictors were significant, well-being at EOT was the only one, meaning that a patients' well-being displayed at EOT has a high impact on the well-being displayed at 6 months follow-up. More specifically, the relationship between these two variables appears to be positive, indicating that an increase in well-being at EOT leads to an increase in well-being at 6 months follow-up (Table 8). Additionally, a predictor that was found to be marginally significant is relational capacities ($\beta = .12$, $p = .09$), indicating a tendency that an increase in relational capacities at EOT might lead to an increase in well-being at 6 months follow-up. The other predictors were not significant, meaning that they did not explain much variation in well-being at 6 months follow-up.

Table 8. *Predictors of well-being at 6 months follow-up*

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Treatment duration	-.00	.01	-.03	-.81	.42
ED psychopathology	-.01	.04	-.02	-.36	.72
Well-being	.54	.07	.56	7.62	<.01
Comorbidity	.00	.01	.00	.01	.99
Self-control	.00	.01	.01	.18	.86
Identity integration	.02	.01	.14	1.44	.15
Responsibility domain	.01	.01	.06	.89	.38
Relational capacities	.02	.01	.12	1.70	.09

Social concordance	.01	.01	.02	.36	.72

Well-being at 12 months follow-up

The same analysis was executed to predict well-being at 12 months follow-up. Also for this timepoint the variables **did** statistically significantly predict well-being, $F(9, 77) = 14.86$, $\boldsymbol{p < .01}$, $R^2 = .64$. Looking at the predictors individually, it was also found that the only statistically significant predictor of well-being at 12 months follow-up was well-being at EOT ($\beta = .58$, $p < .01$).

These results indicate that the variation of well-being at 12 months follow-up can be explained largely by the predictors at EOT. However, examining which predictors were significant, well-being at EOT was the only one, meaning that a patients' well-being displayed at EOT has a high impact on the well-being displayed at 12 months follow-up. More specifically, the relationship between these two variables appears to be positive, indicating that an increase in well-being at EOT leads to an increase in well-being at 12 months follow-up (Table 9). The other predictors were not significant, meaning that they did not explain much variation in well-being at 12 months follow-up.

Table 9. *Predictors of well-being at 12 months follow-up*

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
Treatment duration	.01	.01	.03	.43	.67
ED psychopathology	.08	.09	.10	.91	.36
Well-being	.59	.15	.58	3.98	<.01
Comorbidity	.01	.01	.15	1.04	.30
Self-control	.04	.03	.22	1.66	.10
Identity integration	.01	.02	.07	.35	.73
Responsibility domain	.01	.02	.05	.40	.69
Relational capacities	.03	.02	.23	1.48	.14
Social concordance	-.01	.03	-.05	-.51	.61

DISCUSSION

This longitudinal follow-up study was one of the first to examine the course of both ED psychopathology and well-being in a sample of ED patients. Firstly, the course of ED psychopathology was explored for patients who were recovered and were not recovered at EOT, as well as the course of well-being for patients with adequate and inadequate well-being. Secondly, differences between the ED types were determined in both the course of ED psychopathology and well-being. Thirdly, potential predictors of ED psychopathology and well-being at 6- and 12 months follow-up were investigated. In the following sections the findings are discussed for each research question individually.

Beforehand, in order to accurately interpret the findings of this study, it is important to first consider the baseline measures assessed at EOT and their implications. Generally, most of the patients in this study were at discharge considered as recovered on ED psychopathology (77.5%) and presented adequate well-being (83.7%), meaning that they scored comparable with the general population. This finding seems to be in line with previous studies which showed that various forms of psychotherapy are successful in reducing ED pathology during treatment (Levallius et al., 2016). However, compared to what was found in existing literature, the findings of this study seem to be more encouraging in relation to the baseline measures of both ED psychopathology and well-being. In regard to ED psychopathology, previous research considering the psychological aspects of EDs reported lower recovery rates, like the study by Saccomani et al. (1989) who reported a recovery rate of only 48%. In regard to well-being, comparing the baseline measure of this study with previous research on constructs that appear to be related to well-being also leads to inconsistencies. As previously mentioned, the study by Padierna et al. (2000) examined the health-related quality of life (HRQoL) of ED patients, and found that two years after treatment ED patients still continued to score lower in all domains of HRQoL compared to the general population. Hence, previous research indicates that ED patients perceive significant impairments in HRQoL compared to individuals without EDs (Romano & Ebener, 2018), however the present study found that most patients experience comparable well-being like the general population.

A possible explanation for the encouraging baseline measures of the present study might be related to the type of dropout that was found, as it appeared to be systematic: Although patients who were examined in this study did not differ in ED diagnoses from patients who dropped out, they did significantly differ in ED psychopathology at EOT. More specifically, patients examined in this study presented lower ED psychopathology than the

patients who dropped out. The approach that was used in this study to handle missing data (i.e. listwise deletion) might have affected the systematic dropout, and consequently might provide a possible reason for the encouraging findings of this study, and possibly also for the inconsistencies in comparison with the findings of previous research. Moreover, it underlines the importance of keeping the systematic dropout of this study in mind when interpreting the results of each research question.

Having considered the baseline measures and their possible implications, it is then possible to go into detail regarding the findings of the research questions. **The first research question** concerned the course of ED psychopathology within the first year after treatment, while the **second research question** concerned the course of well-being. Here, results were especially interesting as they indicated that both ED psychopathology and well-being did not change within the first year after treatment, since for both variables no significant difference of the mean scores was found between EOT, 6- and 12 months follow-up. However, significant differences in the mean score of the course of *ED psychopathology* were found between patients who were recovered at EOT and those who were not recovered. This difference between the groups shows that individuals who were recovered on ED psychopathology at EOT remained recovered during the first year after treatment, while individuals who were not recovered were not able to further recover and still displayed pathological ED psychopathology at follow-up. Similar results were found for *well-being*, as also significant differences in the mean score of the course of well-being were found between patients who displayed adequate well-being at EOT and those who displayed inadequate well-being. This aspect represents one of the most important findings of this study, which on the one hand has a positive indication as it suggests that there was not much relapse of those who were recovered. However, on the other hand it also has a negative indication because it shows that those not recovered do not further improve after treatment. Consequently, this shows that ED psychopathology and well-being measures at EOT are useful for the identification of individuals who might need additional treatment or aftercare. Hence, it indicates a very important implication for practice, as patients should be assessed at EOT and those who display high levels of ED psychopathology and/or low levels of well-being should be further supervised after discharge, since they cannot be expected to improve within the first year after treatment.

However, the finding that individuals who were recovered at EOT remained recovered during the first year after treatment seems to contradict previous research describing the sustainability of treatment outcomes as a main problem in clinical work, as patients with EDs

were usually described to often undergo relapses after the end of treatment (Gulec et al., 2011). Generally, this study did not provide indications of the high relapse rates reported by previous studies. A possible reasons for the different findings might be the fact that previous studies used different definitions of relapse and recovery, as they mostly focused on physical and/or behavioral aspects of EDs and thereby often missed psychological aspects (Bardone-Cone et al., 2010). Consequently, it might be possible that individuals are recovered psychologically (e.g. displaying positive attitudes towards themselves, food and eating), but still be unrecovered physically and/or behaviorally (e.g. displaying an unhealthy BMI which would diagnose them as under- or overweight). This is in line with findings of Byrne (2002), who found that various psychological factors might have an effect on the behaviors involved in relapse of patients with obesity. Hence, it indicates that psychological aspects influence (eating) behavior and therefore also physical aspects, thereby suggesting that the psychological aspects are the underlying mechanisms which change first and can then lead to changes in (eating) behavior. Thus, this could provide a possible explanation for why the psychological recovery rates found in this study are higher than the physical or behavioral recovery rates in other studies. On the other hand, this idea seems to contradict the findings by Saccomani et al. (1989), who reported a recovery rate of 79% in AN patient when exclusively focusing on physical aspects, but a recovery rate of only 48% when considering psychological aspects. Hence, this finding indicates that recovery rates are lower when considering psychological aspects in comparison to physical aspects, thereby not providing an explanation for the high recovery rates in the present study. Consequently, further research is needed to confirm the recovery rates found in this study, and it might be of interest to further investigate the relationship between physical, behavioral and psychological aspects of ED recovery.

Regardless of the inconsistencies in recovery rates, since EDs are mental disorders it generally appears reasonable to examine the psychological aspects of EDs, as these provide deeper insight into the disorders instead of only focusing on aspects like behavior and appearance. Consequently, this represents one of the major strengths of this study, namely the fact that an aspect of recovery was investigated which has often been neglected in previous studies and therefore contributes to new insights and important knowledge in this field. However, since previous research reported the first two years after treatment to present the highest risk of relapse (Berends et al., 2018), further research should include the 24 months follow-up measurement in order to investigate whether the psychological aspects of EDs change during the second year after treatment. Moreover, since previous research reported that specifically higher *psychological* well-being appears to be associated with better recovery

of EDs (Romano & Ebener, 2019), for future research investigating well-being in ED patients it might be of interest to consider the three components of well-being (psychological, emotional, social) individually. Then, valuable information could be gained about the course and the predictors of each component of well-being.

The third research question concerned the possible differences between the EDs in the course of ED psychopathology and well-being. The results of this study showed no differences between AN, BN and OSFED in the course of ED psychopathology or well-being. This finding indicates that the type of ED does not determine the state of mental health an individual is presenting within the first year after treatment. This implies an important implication for practice, as the ED diagnosis cannot be used for making (psychological) prognoses of different EDs, and therefore can also not be used for the identification of individuals who might need additional treatment or aftercare. Hence, all patients need to be carefully assessed on an individual level, without focusing overly on the specific ED diagnosis. This comparison between the EDs represents another major strength of this study, as initially all types of EDs were included, which is an aspect that was often neglected in previous studies since they often focused on only one type of ED. However, the sample size of patients with BED was very small so that it had to be excluded from the analysis and thereby represents a limitation of this study. A possible reason for the small sample size of BED patients could be related to the fact that patients with BED seem to not seek treatment as often, or at least as soon as, patients with the other ED types. More specifically, de Vos and colleagues (2017) reported that the duration of illness before seeking treatment was 16.1 years for BED, while it was only 7.7 years for AN, 11.6 years for BN, and 11.9 years for OSFED. Consequently, further research is needed in order to get insight into the mental health of BED patients after treatment.

The fourth and **fifth research question** concerned the predictors of ED psychopathology and well-being at 6- and 12 months follow-up. The first variable that was analyzed in terms of its predictability was *treatment duration*. In contrast to Berends et al. (2018) who found treatment duration to be a predictor of relapse in AN, this study found that treatment duration was neither a predictor of ED psychopathology nor of well-being at follow-up. A possible reason for this difference in findings could be the fact that Berends et al. (2018) focused only on AN, while this study included all types of EDs. Hence, an interesting point for further research might be to investigate whether there are differences between the ED types in the predictors of the outcome measure. Additionally, further research is needed to investigate the relationship between treatment duration and the mental health of ED patients.

The second variable that was analyzed in terms of its predictability on ED psychopathology and well-being was *comorbidity*. This variable was of interest because of previous research that reported individuals with EDs to display higher levels of other mental disorders (Demmler et al., 2020). However, the results of this study showed that comorbidity did not predict ED psychopathology or well-being during follow-up. This finding seems to be contradicting previous research, as the review by Vall & Wade (2015) found that better outcomes of EDs (both at EOT and 6 months follow-up) were predicted by fewer comorbidities. Consequently, further research is needed to investigate the effect of comorbidity on ED psychopathology and well-being.

The third variable that was analyzed in terms of its predictability on ED psychopathology and well-being was *personality*, which included five different personality domains. The results of this study showed that none of the five personality domains significantly predicted ED psychopathology or well-being at follow-up. This finding seems to contradict the previously mentioned research, which suggested personality to play a role in the course of EDs (Wright, & Simms, 2015). Additionally, the findings by de Vos et al. (2018), where the two personality domains "identity integration" and "responsibility" were found to predict well-being, can also not be supported by the present study. Nevertheless, an interesting finding of this study was that one personality domain showed a tendency, as "relational capacities" marginally predicted ED psychopathology at 12 months follow-up and well-being at 6 months follow-up. The domain of relational capacities includes the facets of "enduring relationships", "intimacy" and "feeling recognized", thereby describing how an individual is functioning in relationships. More specifically, the finding suggests that there is a *negative* association between relational capacities and ED psychopathology, meaning that better functioning in relationships leads to a decrease in ED psychopathology. Additionally, there seems to be a *positive* association between relational capacities and well-being, meaning that better functioning in relationships also leads to an increase in well-being. Consequently, relational capacities seems to be an important component of mental health in ED patients. This in in line with previous research that reported relational capacities to be a fundamental aspect in EDs. More specifically, individuals with EDs were reported to not only struggle with detachment and insensibility within their body, but also with feelings of being isolated and disconnected from others (King, 2019). Hence, for further research it might be interesting to investigate the relational capacities domain in more detail, and important implications for practice might be obtained by examining if specified interventions focusing on this personality domain improve the outcome of EDs.

The last two variables that were analyzed in terms of their predictability on ED psychopathology and well-being at follow-up were *ED psychopathology* and *well-being* at EOT. Here, it was found that ED psychopathology at EOT predicted ED psychopathology at 6- and 12 months follow-up, while well-being at EOT also predicted well-being at 6- and 12 months follow-up. More specifically, there were *positive* associations between measurements at EOT and at follow-up, meaning that higher ED psychopathology or well-being at EOT also lead to higher ED psychopathology or well-being at follow-up, respectively. This seems to be in line with the other findings of this study about the course of ED psychopathology and well-being, and shows again that its measurements at EOT are highly predictive of the course of these two variables within the first year after treatment.

Another interesting finding of this study was demonstrated with reference to the two continua model of mental health, as no high associations between well-being and psychopathology were found. Accordingly, ED psychopathology at EOT did not predict functioning on well-being at follow-up, and vice versa. Hence, this finding further substantiates the two continua model of mental health, which describes psychopathology and well-being as two distinct dimensions of mental health. Consequently, the results of this study showed that an individual with severe ED psychopathology can still display high levels of well-being, while an individual with low levels of well-being does not necessarily also display severe ED psychopathology. This finding is in line with the results of de Vos et al. (2018) which also support the two-continuum structure of mental health in ED patients. Consequently, this finding represents an important implication for practice, namely that in order to assess the overall state of mental health in patients with EDs, it is necessary to examine both ED psychopathology and well-being, instead of either one.

Overall, the longitudinal study design represents a basic strength of this study as it included multiple measurements and thereby provided insight into the course of ED psychopathology and well-being over time. However, as already indicated above, the type of dropout found in this study represents a main limitation, as it appeared to be systematic: Patients who were examined in this study presented significantly lower ED psychopathology at EOT then the patients who dropped out. This means that patients who dropped out had a more severe ED than the patients in this study, which might also provide a possible explanation for why they did not fill in the follow-up measurements as they might be back in treatment (or not feeling well enough, or deceased). However, the exact reasons for dropout remain unknown, and no information about the mental health of these individuals after treatment could been obtained. Consequently, a selection bias had been observed, which

limits the representativeness of the study sample for the target population, and therefore also the generalizability of the findings. Further research is needed to get an insight into what happens to the ED patients who drop out of a study. Moreover, as this study only included females, the findings might not be generalizable to males. Further research could investigate whether there are differences in the course of ED psychopathology and well-being between gender.

In summary, the results of this study showed that the mean levels of ED psychopathology and well-being did not change during the first year after treatment for both patients who were recovered and were not recovered. In fact, patients who were considered as recovered at EOT remained recovered within the first year after treatment, while patients who were not recovered at EOT were not able to further recover. No significant difference between the different ED types was found in the course of ED psychopathology and well-being. Variances in ED psychopathology and well-being at follow-up were largely explained by predictors at EOT. However, the only significant predictors of ED psychopathology and well-being at follow-up were ED psychopathology and well-being at EOT, respectively. The results of this study further substantiate the two continua model of mental health, as no high associations between psychopathology and well-being were found.

All in all, the findings of this study appear encouraging, as they demonstrated the sustainability of treatment outcomes by showing that patients who were at discharge considered as recovered also remained recovered afterwards. Moreover, the results of this study indicated an important implication for practice, as patients with high levels of ED psychopathology and/or low levels of well-being might be identified through assessment at EOT, thereby providing the possibility for aftercare programs to specifically target these individuals, and ultimately improve the outcome of EDs. However, the generalizability of the findings is limited due to the systematic dropout, and therefore the course of ED psychopathology and well-being in ED patients should be further researched.

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Appendix A

Email reminder nr. 1

Beste …..,

Je bent bij Human Concern in behandeling geweest. Wij nemen standaard een half jaar, één jaar en twee jaar na beëindiging van de behandeling contact met je op.
Dit doen we om te kijken naar het effect van onze behandeling, zodat we onszelf waar nodig kunnen verbeteren en om te weten hoe het nu met je gaat.
Hiervoor sturen wij je een zogeheten 'follow-up' vragenlijst via het programma Vital Health Questmanager. Als het goed is heb je in het verleden al met dit programma gewerkt en de vragenlijst zal je dan ook bekend voorkomen.

Onlangs heb je een mail ontvangen van dit programma, met een link naar de follow-up vragenlijst. Middels deze mail wil ik je hieraan herinneren en je verzoeken deze in te vullen. Voor de zekerheid heb ik je ook nog een mail met nieuwe inloggegevens gestuurd.

Om je te bedanken voor het invullen van de vragenlijst mag ik je een cadeaubon t.w.v. €15,- aanbieden. Je mag kiezen voor een VVV-bon of een bon bij Bol.com (dit wordt gevraagd in de vragenlijst). Nadat je de vragenlijsten hebt ingevuld stuur ik je de bon per post toe.
Ik zie graag je reactie tegemoet en wens je nog een fijne dag!

Email reminder nr. 2

Beste …,

Zie de mail hieronder verstuurd op.....

Volgens onze gegevens is deze follow-up vragenlijst nog niet ingevuld. Wellicht heb je hierover nog vragen en zijn er onduidelijkheden?

Door het invullen van follow-up vragenlijsten kunnen we zien hoe het nu met je gaat en kunnen we (anoniem) onderzoek doen naar onze behandeling op lange termijn.
Hiermee kunnen we de behandelingen bij Human Concern dus blijven verbeteren!

Als bedankje voor het invullen van de follow-up vragenlijst willen we je graag een cadeaubon opsturen. Ik hoop dat je in de gelegenheid bent om de lijsten voor ons in te vullen.

Mocht je nog vragen hebben neem dan gerust contact met me op.