Master Thesis

The relationship between self-criticism, body dissatisfaction and mental well-being in patients with anorexia nervosa

Kristina Dreibrodt

(k.dreibrodt@student.utwente.nl)

1. Supervisor: Roos Pot-Kolder

2. Supervisor: Sander de Vos

Positive Psychology and Technology

Faculty of Behavioral, Management and Social Sciences

University of Twente

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Abstract

Background: Anorexia nervosa (AN) is a mental disorder characterized by a significantly reduced calorie intake, weight loss, the intense fear of gaining weight or becoming fat, and a body image disturbance. This body image disturbance and associated body dissatisfaction serve as maintaining factors of AN. Another maintaining factor for AN is self-criticism. Both, self-criticism and body dissatisfaction are found to have a negative effect on the symptomatology of AN. Literature suggests that mental well-being and psychopathology are related but distinct concepts. Therefore, this study investigates the relationship between body dissatisfaction, self-criticism and mental well-being in AN patients.

Method: A cross-sectional design was used including 213 AN patients. The majority was female and aged between 16 and 30 years. The data was collected by questionnaires covering the concepts of self-criticism, body dissatisfaction and mental well-being. To investigate the introduced topic, a mediation analysis was performed for body dissatisfaction as the mediator on the relationship between self-criticism and mental well-being.

Results: Self-criticism shows a significant effect on body dissatisfaction and mental well-being. However, the mediation effect was insignificant.

Discussion: This study investigates the relationships between self-criticism, body dissatisfaction and mental well-being in AN patients. Significant direct effects were found for self-criticism on both body dissatisfaction and well-being. However, the mediation analysis yields no sufficient significance. As there is little literature about mental well-being in AN patients, it is advisable for future research to examine possible predictors of and influences for mental well-being in individuals with AN.

Keywords: self-criticism, eating disorder, anorexia nervosa, body dissatisfaction, weight concerns, mental well-being

CONTENTS

Introduction

History shows that eating disorders (ED) have been experienced by people since ancient times and became a serious health issue in modern society. Only in the late 1960s, researchers started to label and classify EDs like anorexia nervosa (AN) (Steinhausen, 2002) which got described as one of the predominant EDs in Western societies at that time (Polivy & Herman, 2002). At first, they were rarely reported but they became increasingly prevalent over time. Current literature declares AN as a psychiatric disorder with a lifetime prevalence of 0.9% and a high mortality rate, among others due to suicide and severe health problems (Hudson, Hiripi, Pope, & Kessler, 2007).

According to Halmi and colleagues (1979) there is one group who is at highest risk to develop an ED. This risk group is at the age of 14 to 18 years old and female, since up until 95% of eating disordered people are females (Bernis, 1978; Halmi et al., 1979). In accordance, research found that symptomatic behavior for AN predominantly occurs in females who go to college (Widiger & Samuel, 2005) and who belong to middle- or upper-class (Polivy & Herman, 2002). Consequently, EDs are a so-called "syndrome of adolescence" (Garner, Olmsted, & Garfinkel, 1983).

The definition of AN includes several cognitive and behavioral patterns as well as some physical issues. According to Harrison and Cantor (1997), AN is a mental disorder which is mainly characterized by an intense fear of gaining weight and the rejection of eating enough to reach the minimum of body weight needed with regard to height and age. Specifically, the American Psychiatric Association (2013) lists the following criteria for the classification of AN: a) a significantly reduced calorie intake leading to a significantly low body weight, b) an intense fear of gaining weight or becoming fat, and c) a distortion of one's body image including weight and shape, as well as the increasing effect of one's body image on self-evaluation. The symptomatology of this disorder can also include physical health issues such as amenorrhea (Harrison & Cantor, 1997).

It should be noted that EDs like AN are not caused by several risk factors, a combination of which is likely to trigger the development and maintenance of AN (Polivy & Herman, 2002; Woerwag-Mehta & Treasure, 2008). Researchers point out that none of the factors which are explained in the following are directly causing the development of AN but can rather be seen as 'vulnerability factors' (Polivy & Herman, 2002) or as 'predisposing' or 'maintaining factors' (Woerwag-Mehta & Treasure, 2008).

One of these factors for AN, especially in Western cultures, is being exposed to the media-portrayed thin-ideal (Harrison & Cantor, 1997). Hence, media shows a certain type of body shape and beauty ideal which should be thrived for by the general population. This thin-ideal depends on culture. Cultures in which food is scarce tend to idealize a more corpulent body shape, while individuals of cultures where food is easily available strive for slimness (Polivy & Herman, 2002). Accordingly, the ideal is based on what is hard to achieve, thus, depending on the resources available. Either way, a culture's valuation of thinness or corpulence and the internalization of such ideals can lead to body dissatisfaction and disordered eating behavior when the set ideal seems unachievable (Stormer & Thompson, 1996; Stice, 2001).

Additional vulnerability factors of AN are inaccurate judgment of oneself and obsessive thoughts (Polivy & Herman, 2002). For example, inaccurate judgments of one's own body size and obsessive endeavors to lose weight refer to the construct of body image disturbance. According to Harrison and Cantor (1997), this body image disturbance is related to body dissatisfaction; the dissatisfaction with one's physical appearance. Alternatively, it is sometimes also called weight or shape concerns (Polivy & Herman, 2002; Striegel-Moore, Silberstein & Rodin, 1986). The more dissatisfied an individual is with his/her body, the more prone s/he is to take measures to obtain the desired body shape or weight. Hence, high body dissatisfaction is found to increase the likelihood of developing an ED as well as the severity of the ED pathology (Cash & Deagle Ill, 1997). There are different factors that influence the satisfaction or dissatisfaction with one's body appearance. Woerwag-Mehta and Treasure (2008) list the following factors as causally influencing people's body dissatisfaction: (fear of) negative feedback, high social anxiety and influences by one's peers and social environment. Concerning the social environment, special emphasis is put on a critical family with high expectation but low parental caring who can influence an individual's perceived level of self-control (Policy & Herman, 2002). Thus, perceived family and peer pressure are found to have an effect on an individual's satisfaction with his/her own appearance (Paxton, Schutz, Wertheim, & Muir, 1999). Contrarily, feeling supported by parents and peers and feeling able to become an autonomous individual is likely to be a protective factor against EDs (Polivy & Herman, 2002).

To summarize, cultural formed thin ideals produce a sociocultural pressure that can lead to body dissatisfaction in vulnerable groups like young adolescents (Striegel-Moore, Silberstein, & Rodin, 1986). This body dissatisfaction, in turn, can determine symptoms of

EDs. On the contrary, being satisfied with one's body shape or weight can function as a buffer against the development of EDs in the at-risk group of young females (Chandy, Harris, Blum, & Resnick, 1995).

The concept of self-criticism

An important concept concerning the onset and severity of AN and another potential maintain factor is the personality trait of self-criticism. Self-criticism can be defined as a negative, rather harsh, self-evaluation and an excessive focus on achievements and a strong fear of failing or being rejected (Beck, Rush, Shaw, & Emery, 1979; Blatt, d'Afflitti, & Quinlan, 1976, cited in Gilbert, Clarke, Hempel, Miles, & Irons, 2004). Research points out that self-criticism is either caused by negative comparisons with one's peers or determined by an individual's own personal standards that s/he fails to meet (Gilbert et al., 2004). Moreover, negative self-perception, or self-criticism, can be further enhanced by body dissatisfaction (Dittmar, 2009). Regarding individuals with distorted eating patterns, criticizing oneself for one's body appearance or eating habits is associated with the development of EDs like AN (Dittmar, 2009). As such, the construct of self-criticism is of special interest when discussing the causes of AN.

A study by Gilbert et al. (2004) examines different forms of self-criticism with regard to depressive patients. According to this, self-criticism can be differentiated into three different layers, referring to the 'inadequate self', the 'reassured self', or the 'hated self'. As the 'inadequate self' is related to focusing and dwelling on failures and shortcomings, the 'hated self' goes beyond that. The 'hated self' encompasses feelings of anger and self-dislike, as well as the desire to harm oneself. The 'reassured self', in contrast, is linked to the ability of being caring and supportive towards oneself (Gilbert et al., 2004). Consequently, the associations between EDs, body dissatisfaction and self-criticism may be different, depending on what kind of self-criticism is predominant in the particular individual.

Treating anorexia nervosa

Concerning the treatment of AN, the main goal of current treatment programs is to reduce the psychopathological symptoms and to adjust physical and behavioral patterns (Ackard, Richter, Egan, Engel, & Cronemeyer, 2014; Hay, 2013). However, several researchers suggest to not only focus on psychopathology but also to try to increase mental

health in terms of positive psychology (Tomba, Tecuta, Schumann, & Ballardini, 2017). Hence, patients should be viewed as a whole; with psychopathological symptoms as well as with strengths, capabilities and mental well-being. In accordance, Tomba, Tecuta, Schumann and Ballardini (2017) highlight the use of cognitive-behavioral-based therapy for individuals with AN, as they found this treatment approach to be beneficial for patient's psychological well-being levels. Within their study, AN patients show an improvement in psychological well-being following their first-line therapy. Conclusively, individuals suffering from AN may benefit from the implementation of positive psychology, thus the focus on mental well-being, into their treatment plans to enhance their mental well-being.

Mental well-being in individuals with AN

According to Keyes (2002), an individual's mental health refers to different emotional states that are present or absent at a certain time. Hence, one's mental health is not simply about the presence of psychopathological symptoms and absence functioning. Instead, its also about the presence of positive emotions and functioning. Besides mental illnesses, mental health includes the dimension of mental well-being (Keyes, 2002). In accordance, Westerhof and Keyes (2010) developed the 'Two Continua Model of Mental Health'. The researchers emphasize that mental health goes beyond the absence of mental illnesses and includes well-being. Three different facets of mental well-being are proposed; emotional, psychological and social. Therefore, mental illness and mental well-being are related constructs but should be seen as distinct dimensions (Westerhof & Keyes, 2010). As such, individuals can simultaneously experience different severities of their psychopathology as well as different levels of mental well-being in emotional, psychological and social functioning.

Accordingly, research shows that individuals who suffered or are suffering from EDs like AN were found to experience lower mental health levels compared to individuals not having experienced an ED (de Vos, Radstaak, Bohlmeijer, & Westerhof, 2018; Doll, Peterson, & Stewart-Brown, 2005; Tomba et al., 2014). Specifically, in a study by Doll, Peterson and Stewart-Brown (2005) levels of emotional and psychological well-being are found to be lower in those with an ED in their history. Additionally, de Vos, Radstaak, Bohlmeijer and Westerhof (2018) found lower levels of all three assessed components of well-being, namely emotional, psychological and social, in individuals with an ED compared to the general population. It should be noted that individuals suffering from AN showed the

lowest levels of mental well-being compared to individuals with BN, binge eating disorder (BED) or other specified feeding or eating disorder (OSFED). As such, the subgroup of AN patients exhibited the smallest number of individuals that flourish, meaning having high mental well-being levels (Keyes, 2002). Particularly, less than 10% of the subgroup with AN were found to be flourishing, but more than a third was languishing, thus, low on mental well-being (de Vos, Radstaak, Bohlmeijer, & Westerhof, 2018; Keyes, 2002). Besides, individuals who suffer or have suffered from an ED tended to exhibit more self-harming behavior and suicidal ideation than those without an ED history (Doll, Peterson, & Stewart-Brown, 2005). Therefore, mental health seems to be a construct correlating with the psychopathology of EDs like AN.

Research aim and hypotheses

Research suggests a causal relationship between self-criticism and AN through the concept of body dissatisfaction. Criticizing one's body appearance fosters body dissatisfaction, which in turn, increases the likelihood to develop AN (Cash & Deagle Ill, 1997; Dittmar, 2009; Polivy & Herman, 2002) and affects the severity of AN (Cash & Deagle Ill, 1997). Furthermore, this concept of body dissatisfaction is said to have a great impact on mental well-being, as it can evoke negative emotional states and negative self-perception (Dittmar, 2009). Therefore, this research investigates whether the level of self-criticism influences an individual's mental well-being through the mediating effect of body dissatisfaction.

H1: There is a mediating effect of body dissatisfaction on the relationship between one's perception of the 'inadequate self' and one's mental well-being in individuals suffering from AN.

H2: There is a mediating effect of body dissatisfaction on the relationship between one's perception of the 'hated self' and one's mental well-being in individuals suffering from AN.

H3: There is a mediating effect of body dissatisfaction on the relationship between one's perception of the 'reassured' self and one's mental well-being in individuals suffering from AN.

Methods

Participants

All participants have been in therapy in one of the five outpatient treatment centers of the Stichting Human Concerns. The centers are specialized for the treatment of EDs and located in the Netherlands. Between March 2015 and September 2018, a total of 1066 patients were screened for inclusion. The inclusion criteria for this study required being diagnosed with AN according to the DSM IV at intake, meeting the minimum age of 17 years which is prescribed for treatment at the Stichting Human Concern, being able to understand and filling in the given questionnaires as well as signing an informed consent. Participants were excluded for insufficient mastery of the Dutch language, for severe and active auto-mutilation or for psychiatric issues like active psychosis, severe depression, active suicidal ideation and acute somatic complication. As participants were initially screened for different EDs like AN, BN or binge-eating disorder, patients with EDs other than AN were excluded. This resulted in the inclusion of 405 participants with AN. Furthermore, data was excluded when being incomplete. This leaves a dataset of 213 participants suitable for this research.

Procedure

This study used a cross-sectional research design. The study sample was recruited from patients of the Stichting Human Concerns centers. Therefore, patients who were given an ED diagnosis by a psychiatrist and the intake team of a dietician, family therapist and psychologist were asked to participate. Within their outpatient therapy, the patients had one or two sessions a week and were treated with methods like cognitive behavioral change, insight giving therapy, emotion-regulation, as well as food and weight management. The patients were asked to fill out questionnaires every three months to monitor their recovery. The questionnaires used were part of the patients' treatment evaluation and were discussed with the patient by a multidisciplinary treatment team. Hence, the data collection caused no additional workload for the patients. All participants were informed about the study's goals and purposes, and the possibility to withdraw from their participation at any given time. After signing the informed consent, the questionnaires were collected and anonymized. The Behavioral, Management and Social Sciences ethics committee gave approval for this study protocol.

Materials

Concerning the participants' demographic characteristics, the following constructs were assessed: age, gender, subtype of AN, start age and duration of AN, their body mass index and education level. Additionally, three questionnaires listed below were used to measure the concepts of self-criticism, body dissatisfaction and mental health.

Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS)

To measure the three different subtypes of self-criticism, the 'Forms of Self-Criticizing/Attacking and Self-Reassuring Scale' (FSCRS) was used. The FSCRS (Gilbert et al., 2004) is a self-report questionnaire which asks participants to assess their typical thinking about and reactions to obstacles. Accordingly, participants rate 22 items with statements like 'I remember and dwell on my failings' on a 5-point Likert scale, ranging from 0 = 'not at all like me' to 4 = 'extremely like me'. By means of a factor analysis, the following three factors were suggested: inadequate self, hated self and reassured self. In the study by Gilbert et al. (2004), Cronbach's alpha of the subscales of 'inadequate self', 'hated self' and 'reassured self', was conducted. For this clinical sample, this was 0.91, 0.82 and 0.81, respectively.

Eating Disorder Examination Questionnaire (EDE-Q)

The 'Eating Disorder Examination Questionnaire' (EDE-Q) is a 36-item questionnaire which can be used to measure the frequency of anorexic symptomatology within the last four weeks on a 7-point Likert scale, ranging from 0 = "not one day" to 6 = "every day". Thus, a low score on this scale indicates low psychopathology of the ED. The EDE-Q is composed of the four subscales, covering restraint, eating concern, shape concern, and weight concerns, as well as the global score.

As this research investigates body dissatisfaction, the analysis will focus on the subscale of weight concerns. With regard to the assessment of body dissatisfaction, current literature seems to find no consensus about the most appropriate scale to measure body dissatisfaction or weight concerns but yields a variety of such assessment tools. For instance, previous research has used the Body Esteem Scale for Adolescents and Adults (BESAA) by Mendelson, Mendelson and White (2001) to measure body satisfaction. (Davison, Markey, & Birch, 2003; Liebermann, Gauvin, Bukowski, & White, 2001; Lunde, Frisén, & Hwang, 2007). As suggested by Liebermann, Gauvin, Bukowski and White (2001), by using the

reversed version of this scale the researcher could assess the participants' body dissatisfaction. Hence, higher scores on the reversed coded scale indicated higher levels of body dissatisfaction. Besides, Davison, Markey and Birch (2003) used this measurement of body dissatisfaction to verify the results gained by means of the Weight Concerns Scale (Killen et al., 1994). It was argued that both scales measure similar constructs and thus, assess similar relationships. As explained in the study by Lieberman, Gauvin, Bukowski and White (2001), the BESAA can be differentiated into three subscales including appearance, weight and attribution. The researchers argue that appearance dissatisfaction greatly overlap with the construct of weight dissatisfaction as the subscale of appearance and weight dissatisfaction show high intercorrelation. Consequently, this study uses the EDE-Q subscale of weight concerns to measure the construct of body dissatisfaction. An example item of the weight concerns subscale is: 'Has your weight influenced how you think about (judge) yourself as a person?'. The Cronbach's Alpha for this scale is 0.84, indicating good reliability.

Mental Health Continuum Short Form (MHC-SF)

The Mental Health Continuum Short Form (MHC-SF) is a 14-item questionnaire used to measure wellbeing on a 6-point Likert scale, ranging from 0 = "never" to 5 = "everyday" (Keyes, 2002). This scale includes the three subscales of emotional, psychological and social well-being. The sum of these subscales defines the overall mental well-being. An example item of this scale is: 'During the past month, how often did you feel satisfied with life". By means of this scale, people can be classified as 'languishing' (= low level of mental well-being) and 'flourishing' (= high level of mental well-being) (Keyes, 2006; Keyes et al., 2008). The MHC-SF shows high internal consistency with 0.86, 0.83 and 0.72 for the emotional, psychological and social well-being scale, respectively (Keyes, 2002) and high discriminant validity (Keyes, 2006; Keyes et al., 2008; Lamers et al., 2011, Westerhof & Keyes, 2009).

Data analysis

According to Montoya and Hayes (2017), a mediation model can be used to assess whether an independent variable has a positive or negative effect on a dependent variable and whether this effect is mediated by a third construct. In this case, the mediation model

investigated the effect of the three different subtypes of self-criticism, respectively, on AN patients' mental health and whether body dissatisfaction supports this effect as a mediator. As explained before, body dissatisfaction was assessed by means of the EDE-Q subscale of weight concern. Therefore, total and mean scores of the subscales of self-criticism and the weight concerns subscale, as well as the total score of mental health scale were computed. Then, a bivariate regression analysis is conducted to assess the total effect between self-criticism and mental health. Next, the direct effect between self-criticism and the mediator, weight concerns, was calculated by a bivariate regression analysis. Additionally, a multiple regression analysis was used to measure the direct effect between self-criticism and mental health as well as the one between the mediator and mental health. Lastly, the indirect effect between self-criticism and mental health through the mediator was tested by conducting the method of bootstrapping.

In SPSS, the analysis of such mediation models is best conducted by means of the regression-based PROCESS analysis (Hayes, 2017, cited in Baltes-Götz, 2017). The PROCESS analysis was performed three times, each time measuring the mediation model with one of the three different factors of self-criticism in relation to weight concerns and mental health.

Results

In total, the study sample consisted of 213 AN patients, close to 99% of which were female and only about 1% was male. Almost half of the participants fell into the age group of 16 to 20 years and 90% were under 30 years old. The majority of the participants suffered from the restrictive AN subtype and about 40% reported also mood and anxiety disorder symptomatology. Further frequencies and mean scores of the sample's demographical characteristics as well as mean scores of the three studied constructs can be seen in Table 1.

Table 1

Demographic characteristics of the study sample (N=213)

	Mean	SD	Frequencies (in %)
Gender			
female			98.60
male			1.40
Age group (in years)			
16-20			47.40
21-25			29.10
26-30			14.10
31-35			4.20
35-70			5.20
Body Mass Index	16.50	1.51	
Age of onset of ED (in years)	16.56	4.17	
Duration of treatment (in years)	5.96	6.79	
Educational level			
primary			.90
secondary			60.60
higher			38.50
Subtype of AN			
restrictive			83.60
binge-purging			16.40
Comorbidity			
personality disorder			15.00
mood and/or anxiety disorder			41.80
trauma - stress related disorder (PTSD)			8.50
neurobiological development disorder			7.50
addictive disorder (alcohol/drugs)			.90
other psychiatric disorder			2.80
Self-criticism scale (FSCRS)			
Inadequate self scale	25.69	6.12	
Reassured self scale	11.62	5.38	
Hated self scale	9.08	5.23	
Mental well-being (MHCSF)	2.23	0.93	
Weight concerns (EDE-Q subscale)	19.48	7.23	
Anorexic symptomatology (EDE-Q total)	3.88	1.15	

To investigate whether weight concerns mediates the negative effect of self-criticism on mental well-being in patients with AN, a mediation analysis (Baron & Kenny, 1986) was performed using PROCESS. This analysis was conducted for all three subscales of self-criticism.

First, the total effects between the subscales of self-criticism and mental well-being were estimated by a bivariate regression. A significantly negative correlation was found for both the subscale of the 'inadequate self' (α = -.0784, p<.05) and the one of the 'hated self' (α = -.1096, p<.05). For the subscale of the 'reassured self', a significantly positive correlation was found (α = .1265, p<.05). Thus, all subscales show a significant correlation to the outcome variable of mental well-being.

The mediation analysis included the assessment of the direct effects between self-criticism and weight concerns, between weight concerns and mental well-being as well as the direct effect between self-criticism and mental well-being. The effect sizes for all three subtypes of self-criticism can be seen in Figure 1-3. It should be noted that the direct effects of all three self-criticism subscales on the mediating variable of weight concerns were significant. Specifically, the effect of 0.66 regarding the 'hated self' subscale was quite high.

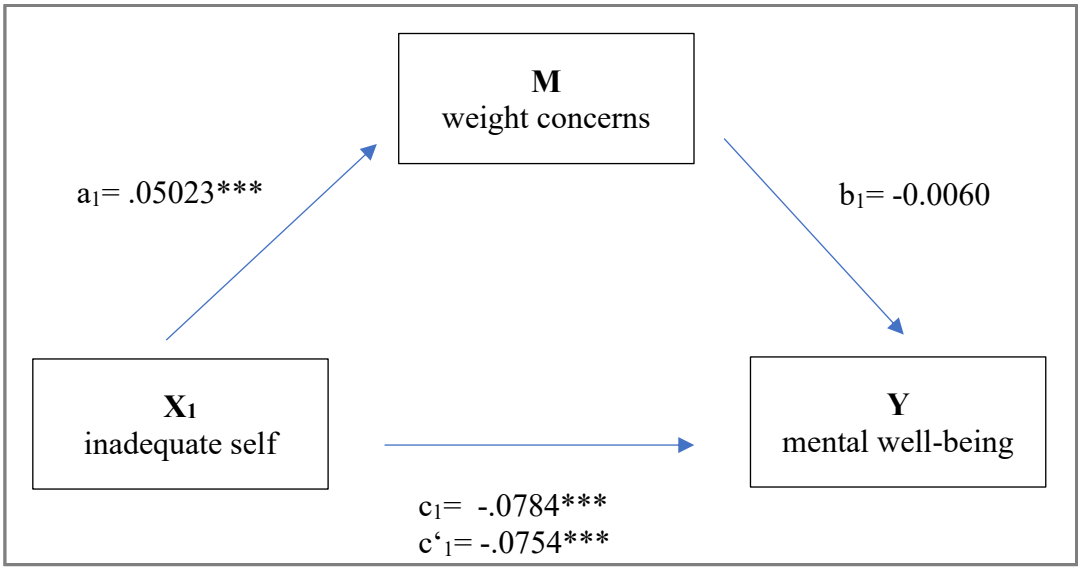

Figure 1

the conceptual diagram showing the mediation effect of weight concerns on the relation between the self-criticism subscale 'inadequate self' and mental well-being

Note. While c_1 presents the total effect of X on Y, c'_1 shows the direct effect of X on Y when the accountancy of M is calculated. ***<0.01.

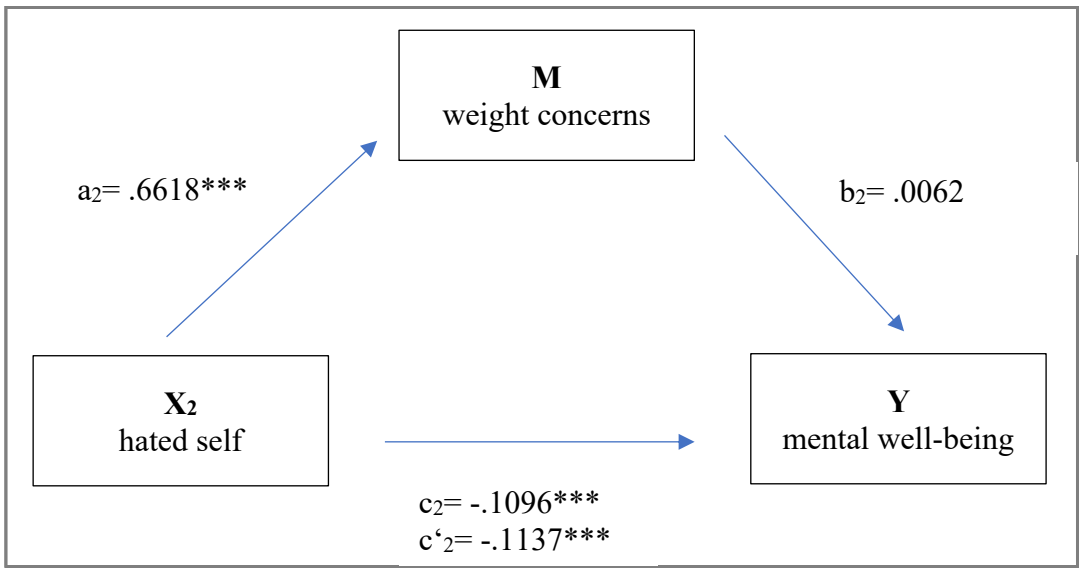

Figure 2

the conceptual diagram showing the mediation effect of weight concerns on the relation between the self-criticism subscale 'hated self' and mental well-being

Note. While c_2 presents the total effect of X on Y, c'_2 shows the direct effect of X on Y when the accountancy of M is calculated. ***<0.01.

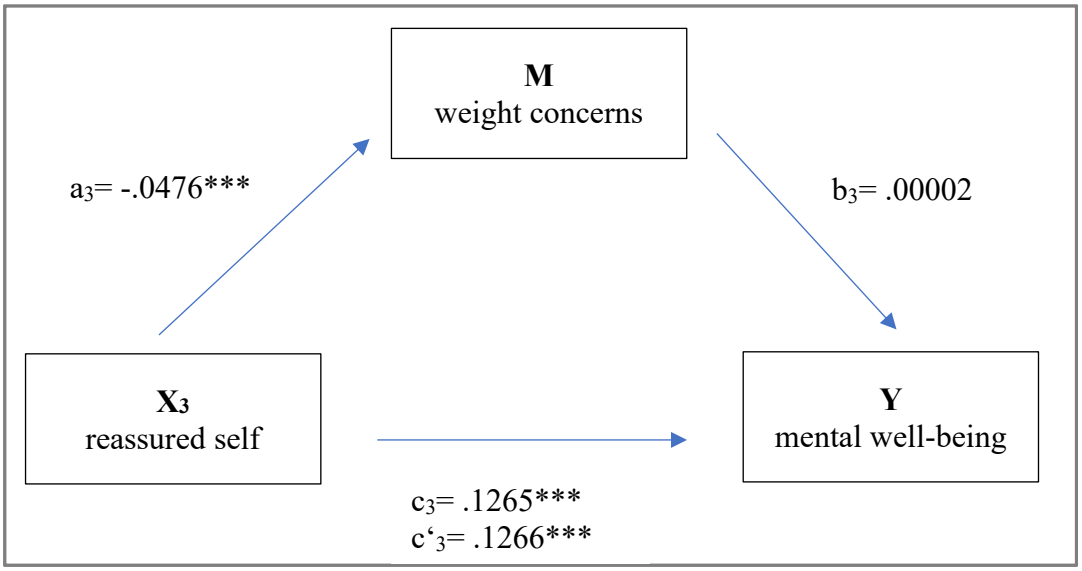

Figure 3

the conceptual diagram showing the mediation effect of weight concerns on the relation between the self-criticism subscale 'reassured self' and mental well-being

Note. While c_3 presents the total effect of X on Y, c'_3 shows the direct effect of X on Y when the accountancy of M is calculated. ***<0.01.

Further, the indirect effects of all three subscales of self-criticism on mental well-being through weight concerns were analyzed. The results are depicted in Table 2. The indirect effects were B_1 = .0030, B_2 = .0041 and B_3 = -.0001 for the self-criticism scales of 'inadequate', 'hated' and 'reassured self', respectively. To test for statistical significance, the method of bootstrapping was used. Accordingly, the confidence interval values indicated no significance of the indirect effects for all subscales of self-criticism. As a result, all three hypotheses needed to be rejected as there was no significant mediation effect found in this study.

Table 2

Effect of the mediator variable 'weight concerns' on the relationship between self-criticism and mental wellbeing, distinctively for all three self-criticism subscales (N=405.

	effect	SD	P	95% CI	
inadequate self					
total	-.0784	.0087	.0000***	-.0956	-.0612
direct	-.0754	.0096	.0000***	-.0943	-.0565
indirect	-.0030	.0043		-.0116	.0051
hated self					
total	-.1096	.0092	.0000***	-.1277	-.0914
direct	-.1137	.0108	.0000***	-.1349	-.0924
indirect	.0041	.0058		-.0084	.0167
reassured self					
total	.1265	.0086	.0000***	.1095	.1435
direct	.1266	.0093	.0000***	.1083	.1450
indirect	-.0001	.0032		-.0063	-0065

Note. SD: standard deviation and p***<0.01.

Discussion

This study investigated whether self-criticism is related to mental well-being in individuals with AN and whether body dissatisfaction (assessed by means of weight concerns) serves as a mediating variable; thus, strengthens or weakens the effect of self-criticism on mental well-being scores in AN patients. For this purpose, self-criticism was differentiated into three subtypes: the 'inadequate self', the 'hated self', and the 'reassured self'. Firstly, a significant correlation was found between all subtypes of self-criticism and the outcome variable of mental well-being, respectively. Hence, the first part of the research question can be confirmed; there is a significant association between self-criticism and mental well-being. In particular, this means that high levels of both 'inadequate self' as well as 'hated self' are related to low levels of mental well-being measured in individuals with AN. Accordingly, individuals who tend to criticize oneself via these two subtypes tend to experience a lowered mental well-being. Likewise, experiencing only little influence of these two subtypes is related to an increased mental well-being in AN patients. Oppositely, a predominant 'reassured self', thus, tending to evaluate oneself via the 'reassured self' may lead to an increased mental well-being while a low manifestation of this subtype is related to a decreased mental well-being.

Secondly, the analysis identifies a significant relationship between all self-criticism subtypes and body dissatisfaction; a positive correlation for the 'inadequate' and 'hated self', and a negative one for the 'reassured self'. Consequently, as self-criticism affects mental well-being, a pronounced 'inadequate' or 'hated self' fosters an individual's body dissatisfaction. Particularly, the effect of the 'hated self' on body dissatisfaction was found to be greater than the effect of the 'inadequate self'. As the 'hated self' is characterized by feelings of anger, self-dislike and the desire to harm oneself (Gilbert et al., 2004), this type of self-evaluation refers to more intense, negative and harsh feelings than the 'inadequate self' which is defined by dwelling on shortcomings. Accordingly, the 'hated self' show an even stronger association to a negative perception of one's body image, thus, the construct of body dissatisfaction. Hence, individuals scoring high on the 'hated self' scale tend to evaluate different parts of themselves in a negative, self-disliking manner; both the self and the body. Opposed to that, a predominant 'reassured self' can weaken one's body dissatisfaction. Hence, decreasing the first two subtypes of self-criticism while increasing the third, the 'reassured self' associates with an improvement of one's mental well-being. In accordance, the dominance of those two negative and self-destructive types of self-criticism increases the vulnerability to eating disorders like

AN via increased body dissatisfaction. Thus, measures to weaken one's 'inadequate' or 'hated self' and to enhance one's reassuring kind of self-criticism should be incorporated when designing a treatment plan for patients with AN.

However, the analysis of body dissatisfaction and mental well-being indicates no significant correlation. Hence, there is no significant mediation effect of body dissatisfaction on the relationships of any of the three measured self-criticism subscales with mental well-being. Conclusively, one's body dissatisfaction does neither weaken nor foster the impact of self-criticism on mental well-being in AN patients.

A potential explanation of this insignificant mediation effect may be the fact that individuals with AN exhibit lower levels of mental well-being compared to a healthy population (Tomba et al., 2014; De Vos, Radstaak, Bohlmeijer, & Westerhof, 2018, 2021; Tomba et al., 2014). For instance, psychological facets of well-being like positive relationships and self-acceptance are found to be lower in patients with AN compared to healthy individuals (Tomba et al., 2014). As current literature rarely reports mental well-being scores in AN patients by means of the MHC-SF, comparison about below-averaged mean scores concerning this scale are hard to make. However, there are two studies by de Vos, Radstaak, Bohlmeijer and Westerhof (2018, 2021) using the MHC-SF to measure well-being in individuals with EDs. Both studies show lower levels of mental well-being in ED patients compared to a healthy control group. The study by de Vos, Radstaak, Bohlmeijer and Westerhof (2018) distinguish between different EDs and report similar scores of mental well-being in AN patients (M=2.17, SD=.94) compared to the scores assessed in this study (M=2.23, SD=.93). As claimed in research, the well-being scores of the general population (M=3.00, SD=.84) were found to be higher than of the AN subgroup (de Vos, Radstaak, Bohlmeijer, & Westerhof, 2018). Consequently, this study's findings support the assertion that AN patients tend to exhibit lower mental well-being levels than healthy individuals. These substandard levels of well-being in AN patients may be a reason why the conducted analysis yields insufficient significance. Hence, the analysis of the potential effect of body dissatisfaction on mental well-being may show more significance when measured in the general population with more balanced well-being levels.

Another crucial point for discussion is the characteristic of self-reports and questionnaires because of their vulnerability to falsification. As described in literature, individuals suffering from AN tend to exhibit high levels of perfectionism (Cassin & Ranson, 2005). The study of Hewitt and Flett (1991) points out that perfectionism is multidimensional

and one dimension, the socially prescribed perfectionism, is related to behavioral patterns in social contexts like the fear of negative evaluation by others and seeking for social approval. Consequently, people who possess a profound socially prescribed perfectionism may tend to give socially desired answers in order to avoid negative social evaluation. In accordance, Anglim et al. (2020) point out that self-report measures of well-being are sensitive to the participants' social desirability and thus, results can be influenced by socially desirable responding. Hence, participants may give incorrect answers about their personal functioning to pretend having a better performance and less deficiencies. As such, people with AN may report less impairment in their mental well-being as they score high in perfectionism and thus, thrive for a perfect performance and appearing independent and capable. Moreover, individuals with AN may not feel significantly impaired in their mental well-being by a distorted body image as they perceive thinness and losing weight as socially desirable. In combination with a fostered perfectionism trait, AN patients may tend to focus on potential popularity instead of possible mental shortcomings (Nordbø et al. (2006); Vitousek, Watson, & Wilson, 1998). Consequently, the validity of self-reports used for individuals who tend to be sensitive to perfectionism and socially desirable responding seems to be questionable.

In this study, the construct of body dissatisfaction was assessed by a subscale of the EDE-Q, the 'weight concerns' subscale. However, current literature seems to find no consensus how constructs like body dissatisfaction and weight concerns are best assessed. For instance, the paper by Allen et al. (2011) analyzed the EDE-Q and an alternative brief scale, and suggests using a combined scale of weight and shape concerns instead of the distinct scales of both constructs as it is measured by the EDE-Q. On the other hand, Davison, Markey and Birch (2003) referred to weight concerns and body dissatisfaction as distinct but related concepts and measured those constructs with different scales. As such, Ogden and Steward (2000) refer to body dissatisfaction as one component of weight concerns. In their study, weight concerns were examined by using two scales, one for restrained eating behavior and one for body dissatisfaction. The scale for body dissatisfaction was the 'Body Shape Questionnaire'(BSQ) of Cooper, Taylore, Cooper and Fairburn (1987). Additionally, other researchers considered weight concerns and body dissatisfaction as different constructs and found proof for differences in precursors and consequences of the two constructs (Allen, Byrne, McLean, & Davis, 2008). Therefore, the analysis done in this study may produce different results when measuring the concept of body dissatisfaction with a different scale than the subscale weight concerns of the EDE-Q. For instance, the BSQ

which was used in the study by Ogden and Steward (2000) could be applied. Alternatively, the paper by Ohring, Graber and Brooks-Gunn (2002) suggests to use the 'Satisfaction with Body Parts Scale'(SBPS) invented by Padin, Lerner and Spiro (1981) or the 'Self-Image Questionnaire for Young Adolescents'(SIQYA) by Petersen and colleagues (1984). As a result, other measurements for body dissatisfaction may be more accurate than the used subscale of the EDE-Q, the weight concern scale and the validity of measurement could be improvement by using one of those instead of the chosen subscale.

Strengths and limitations

The data analysis of this research cannot confirm the three formulated hypotheses. However, this study still points out the importance of mental well-being within the context of AN patients' treatment outcomes and mental health. In the past, several researchers investigated and suggested the inclusion of mental well-being in AN patients' treatment plans (Tomba et al., 2014). Despite, there seems to be a literature gap, as there is no study examining all levels of mental well-being by using the 'Two Continua Model of Mental Health' in relation to different layers of self-criticism in a population of AN patients. Hence, this study thrived for closing this gap. As an additional strength, the analysis yields significant effects of all three self-criticism subscales on body dissatisfaction as well as on mental well-being. Thus, these results support the current literature stating that self-criticism affects these two constructs in AN patients. Further, they explain the differences between the three subscales; meaning that the 'inadequate' and the 'hated self' increases body dissatisfaction and decreases mental well-being, while the opposed effect is found for the 'reassured self'. Special emphasis should be put on the 'hate self' since it shows the greatest effect on body dissatisfaction. Lastly, the study's strengths include the number of participants, as 213 inpatients are quite many participants for researches about AN. Accordingly, a relative great sample size enables good statistical power and thus, increases the probability to find evidence for existing effects.

Concerning this study's limitations, it should be noted that due to missing data, almost half of the initially included 405 patients needed to be excluded. For instance, 138 participants were excluded for no specification of their subtype of anorexia nervosa. Further, data of about 45 participants was excluded as responses to the EDE-Q, the MHC-SF and all three self-criticism subscales were missing. It is unknown why there was so much missing

data and how these excluded responses may have affected the results. It might be that the missing data accounts for the small variation of scores and the inclusion of these respondents could have increased the variance and in turn, the significance of results. Therefore, although 213 participants serve as a sufficient sample size, the high percentage of incomplete and excluded data means a limitation to this study.

Another limitation concerns the potential, partial overlap regarding the construct of well-being and reassured self. As the component of psychological consists, among others, of self-acceptance (Ryff, 1989; Ryff & Keyes, 1995), one can argue that self-reassurance and self-acceptance may be the same or at least strongly overlapping constructs.

Conclusion and clinical implications

To conclude, this research investigated the relationships between self-criticism, body dissatisfaction and mental well-being in people suffering from AN. Significant direct effects were found for self-criticism on both body dissatisfaction and well-being. However, the mediation analysis yields no sufficient significance. Thus, the influence of self-criticism on mental well-being in individuals with AN is not found to be affected via body dissatisfaction. Therefore, body dissatisfaction rather serves as a maintaining factor for AN pathology but does not directly influences AN patients' mental well-being. As such, there is still a gap in literature regarding the investigation of mental well-being, its beneficial inclusion in treatment of AN patients and how mental well-being in AN patients can be enhanced.

Conclusively, future research should look for possible predictors of and influences for mental well-being in individuals with AN. Further, it seems advisable to include perfectionism as a confounding variable when looking for correlation between body dissatisfaction and mental well-being in the future. Thereby, the analysis can be screened for a possible interaction between perfectionism and self-reported levels of mental well-being. Hence, a potential falsification of mental well-being scores due to socially prescribed perfectionism or socially desired responding can be minimized. Lastly, it should be noted that a subscale of the EDE-Q was used to measure body dissatisfaction. As there seems to be no clear evidence which measurement for body dissatisfaction is best to use, future research should investigate whether the replacement of the used weight concern subscale by another scale measuring body dissatisfaction may produce a different but perhaps significant outcome in the mediation analysis.

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