

Perfectionism in anorexia nervosa: a literature review

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Abstract

Anorexia nervosa (AN) is an eating disorder with an increases mortality risk and negative psychological and physical health outcomes. Perfectionism has been proposed as a factor that is prominent in AN patients and adversely affects outcomes, such as symptom severity, response to treatment, and illness duration. This review focused on 19 articles to examine the dimensions of perfectionism that play a role in AN, the persistence of perfectionism after recovery from AN, and the influence of perfectionism on response to treatment and the prognosis in AN. The relevant articles that were found through a literature search and the reference lists of other articles were all published between 1994 and 2012. All studies found that maladaptive forms of perfectionism, such as socially prescribed and self-oriented perfectionism, were elevated in active AN cases. Maladaptive and adaptive perfectionism seem to interact in a way that influences the body image perception of AN patients. Perfectionism often remained elevated after treatment, and may be a prognostic factor for unfavorable outcomes, such as a lower recovery rate and a worse prognosis. Two studies however found that the level of perfectionism was in the normal range in long-term recovered individuals, and the influence of perfectionism on the long-term prognosis in AN remains unclear. Inconsistencies in the findings can be attributed to methodological aspects, such as differences in sample sizes and differences in the diagnostic criteria that were used to determine the presence of an eating disorder. These factors limited the comparability and the generalizability of the results in this review. Future research is needed to clarify if perfectionism persists after recovery from AN and how perfectionism affects the prognosis in AN, but this review implies that clinicians should focus on treating perfectionism in AN patients.

Keywords: Anorexia Nervosa, Perfectionism, Response to Treatment, Prognosis, Review

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Introduction

Research on disordered eating dates back centuries ago. Anorexia Nervosa (AN) is an eating disorder that has been of particular interest to researchers in the fields of psychology and psychiatry, because AN is associated with an increased mortality risk. A meta-analysis by Arcelus, Mitchell, Wales and Nielsen (2011) showed that the mortality rate for AN is 5,1 per 1000 person-years, with 1,3 out of 5,1 deaths resulting from suicide. This shows that suicide is an important cause of death in AN patients, a finding that is corroborated by Pompili, Mancinelle, Girardi, Ruberto, and Tatarelli (2004). The mortality rate for AN patients is higher than the mortality rate in other psychiatric disorders (Arcelus et al., 2011), especially when AN patients have a Body Mass Index (BMI) of 13,5 points and lower (Rosling, Sparén, Norring & Von Knorring, 2011). Although AN is not the most common eating disorder, the lifetime prevalence rate of AN is still estimated at 0,9% in women (Hudson, Hiripi, Pope & Kessler, 2007).

According to the DSM-IV-TR criteria, AN is characterized by a refusal to maintain a minimally normal body weight, an intense fear of gaining weight or becoming fat, and a disturbance in the experience of body shape or weight (APA, 2000). AN can be further subdivided into the restricting subtype, the purging subtype, and the binge-eating and purging subtype (Halmi et al., 2000). AN is associated with many serious physical health problems, such as amenorrhea (Stice, South & Shaw, 2012), damage to multiple organs, hypoglycemia, seizures, irregular heartbeat, and even cardiac arrest (www.anred.com, 2011). Research by Nunn, Frampton, Gordon, and Lask (2008) has shown that AN is associated with brain abnormalities, including impairment of neural circuits in several brain structures, such as the insula, hippocampus and amygdala.

Numerous studies have focused on the influence of personality and psychological factors on the onset and the outcomes in AN (e.g. illness severity, duration, and recovery). One of these factors is perfectionism. Perfectionism can be considered as a cognitive attitudinal construct, and research on perfectionism suggests that setting excessively high personal standards of performance for oneself is central to the concept of perfectionism (Frost, Marten, Lahart & Rosenblate, 1990). Other characteristics of perfectionism include concerns about making mistakes, self-doubt, and automatic negative thoughts (Frost et al., 1990). The dominant view in the literature on perfectionism is that it is a dimensional construct, meaning that individuals can vary in the degree of perfectionism. However, according to the opposing categorical perspective on perfectionism two types of perfectionism

can be distinguished, namely adaptive perfectionism and maladaptive perfectionism (Broman-Filks, Hill & Green, 2008). Adaptive perfectionism can be considered as the positive dimension of perfectionism. It is characterized by the setting of realistic personal goals and expectations for oneself, which leads to an enhanced self-esteem and satisfaction (Terry-Short, Owens, Slade & Dewey, 1994). Maladaptive perfectionism can be considered as the negative dimension of perfectionism. It is characterized by the setting of unreasonably high standards for oneself, and is driven by an intense fear of failure (Terry-short et al., 1994). Perfectionism can moreover be further subdivided into three interpersonal and intrapersonal components, as was demonstrated by Hewitt and Flett (1995). Socially prescribed perfectionism, as an interpersonal component, is the belief that others have very high expectations of oneself, and is combined with a strong desire to adhere to the high standards supposedly set by others. Self-oriented perfectionism, as an intrapersonal component, is perfectionism that comes from having irrationally high expectations and standards for oneself (Cockell et al., 2002). Another interpersonal component is other-oriented perfectionism, which can be defined as the setting of unrealistically high standards of performance for others (Hewitt & Flett, 1995). These dimensions can be seen as maladaptive forms of perfectionism when they lead perfectionists to be overly critical of their own behaviors, allowing little or no room for making mistakes (Frost et al., 1990). While the evidence for the categorical view on perfectionism is limited, many researchers have now adopted this view and look at perfectionism as a construct with distinct categories (Broman-Filks et al., 2008).

Several studies indicate that AN is associated with significantly increased levels of perfectionism. Halmi et al. (2000) for example showed that patients with AN have higher scores on several measures of perfectionism when compared to healthy controls. As described earlier, perfectionism can be seen as a multidimensional construct, and in the context of AN, studies have shown that maladaptive (Soenens, Nevelsteen & Vandereycken, 2007) or neurotic (Davis, 1996) perfectionism, and maladaptive forms of socially prescribed and self-oriented perfectionism (Cockell et al., 2002) are dimensions that are particularly important in this population. AN patients have also been shown to be perfectionistic on a very specific aspect of perfectionism, namely concerns over mistakes (Bulik et al., 2003), and these scores remained elevated compared to the scores in a healthy control group, even after weight restoration (Bastiani, Rao, Weltzin & Kaye, 1995). Moreover, Soenens et al. (2007) have demonstrated that maladaptive forms of perfectionism are important in predicting symptom severity in AN. More importantly, longitudinal studies on perfectionism in AN have indicated that high perfectionism scores were a factor that was related to a lack of recovery after 2 years

of follow-up time (Rigaud, Pennacchio, Reveillard & Vergès, 2011), and that high perfectionism predicted a poor prognosis after 5 years of follow-up time (Bizeul, Sadowsky & Rigaud, 2001).

In general, researchers have reached consensus that perfectionism is an important construct in AN patients. There is also agreement among researchers on the fact that especially maladaptive forms of perfectionism are important in the population at hand. However, when it comes to the persistence of perfectionism after recovery from AN, research findings have been slightly more inconsistent. Bardone-Cone, Sturm, Lawson, Robinson, and Smith (2010), and Nilsson, Sundbom, and Hägglöf (2008) have demonstrated that the level of perfectionism in recovered individuals is in the normal range, while other longitudinal studies in this review indicate that perfectionism is a trait that remains elevated even after recovery. There have also been too few studies on the influence of perfectionism on the long-term prognosis in AN.

Despite the aforementioned inconsistencies found in some of the literature, the importance of perfectionism in AN, and the amount of research on this topic, a literature review on the relevant dimensions of perfectionism in AN, the persistence of perfectionism after recovery from AN, and the influence of perfectionism on the response to treatment and the prognosis in AN has not yet been written. Therefore, this literature review will examine the relationship between perfectionism and AN, hereby focusing firstly on the different dimensions of perfectionism that are prominent in AN patients, as well as the persistence of perfectionism after recovery, and the influence of perfectionism on the response to treatment and the prognosis in AN.

Method

As was mentioned, the aim of this review is to examine the relationship between perfectionism and AN, hereby focusing on research that studied the different dimensions of perfectionism in AN, the persistence of perfectionism, or the influence of perfectionism on the response to treatment and the prognosis in AN. Therefore, a literature search was done, using the databases of PsycINFO and PubMed.

To be included in this literature review, articles had to discuss the dimensions of perfectionism that are relevant in AN, how perfectionism persists after recovery from AN, or how perfectionism influences the response to treatment and the prognosis in AN. Furthermore, the articles had to be written in English or Dutch and had to be peer-reviewed. Publication date was not a criterion for selection, since research on AN started many years ago, and older articles can still provide valuable insights into the relationship between perfectionism and AN. Also, studies had to focus on adult populations, with research samples consisting of subjects aged 18 or higher. Longitudinal studies had to include samples at the last follow-up that consisted of subjects that were 18 years or older. Books, dissertations, and reviews were excluded from this review.

Keywords that have been used are "perfectionism AND anorexia NOT bulimia NOT children". This search resulted in 77 articles in PsycINFO and 54 articles in the PubMed database. After this, articles were screened on basis of the title and abstracts to ensure that only articles focusing on the topic at hand were included. Lastly, 52 full-text articles were assessed for relevance for this review. By defining the search term in a very general manner, the search yielded studies on the different dimensions of perfectionism in AN, as well as studies that researched the persistence of perfectionism after recovery from AN, or the influence of perfectionism on the response to treatment and the prognosis in AN.

Finally, on basis of the literature search, 13 articles were included in this review. Six additional records were found through the reference lists of other relevant articles, so that 19 articles in total were included in this review. Figure 1 provides a flowchart of the literature search.

Results

As described earlier, the aim of this literature review is to examine the relationship between perfectionism and AN, hereby focusing on the relevant dimensions of perfectionism in AN, as well as on the persistence of perfectionism after recovery from AN, and the influence of perfectionism on the response to treatment and the prognosis in AN. The following section will review the 19 relevant articles in further detail. In the first part articles focusing on the different dimensions of perfectionism in AN will be discussed, whereas in the second part articles on the persistence of perfectionism and the influence of perfectionism on the response to treatment and the prognosis in AN will be reviewed. Due to the limited number of studies on the influence of perfectionism on the response to treatment and the prognosis in AN, the emphasis of this review is on the dimensions of perfectionism that are important in AN.

Perfectionism in AN: dimensions of specific interest

As was mentioned in the introduction of this review, perfectionism is a multidimensional construct, and maladaptive dimensions in particular seem to be important in AN. All relevant articles confirmed that perfectionism is an important factor in AN patients. Regardless of this general consensus, researchers chose different perspectives from which they studied this relationship. Some studies chose to study the perfectionism construct as a whole in AN patients, and did not subdivide the construct into separate dimensions. Here, the focus will be firstly on those studies, as they provide insight in the general importance of perfectionism in AN. A study by the Price Foundation Collaborative group (2001) attempted to derive behavioral phenotypes in a large sample of eating disordered patients that primarily comprised anorexic individuals: 312 out of the 348 patients were AN patients. In order to do so, a structured interview and several personality questionnaires were used. The Structured Interview of Anorexic and Bulimic syndromes (SIAB) was used to collect eating disorder diagnostic information and information about other psychopathological factors that are related to eating disorders. The Multidimensional Perfectionism Scale (MPS) was used to assess overall perfectionism, and in this study subjects were instructed to answer the questions of the MPS according to how they felt when their eating disorder symptoms were at their worst. The MPS consists of six subscales (concerns about mistakes, personal standards, parental expectations, parental criticism, doubts about actions, and organization) that measure different aspects of perfectionism, and together provide an overall perfectionism score. The results of this study indicated that perfectionism is one of the five big factors that underlie the cluster of

personality and behavioral traits of AN patients in this sample. Therefore, it was concluded that perfectionism, amongst others, is a trait that is often seen in eating disordered individuals, including AN patients.

The relationship between AN and perfectionism as a personality characteristic was also studied by Bachner-Melman, Zohar, Kremer, and Ebstein (2007), but this study focused on studying differences between the different subtypes of AN, namely the bingeing-purging and the restricting subtype. It also focused on studying differences between women of different illness statuses. Three illness-statuses were defined in this study, namely 'currently diagnosed with AN', 'partially recovered', and 'fully recovered'. The sample consisted of 195 women with a past or present diagnosis of AN according to the DSM-IV criteria, of which 17 were currently diagnosed with AN, 107 were partially recovered, and 71 were recovered. The control group consisted of 242 healthy controls. This study utilized self-report instruments, such as the Eating Attitudes Test (EAT) to assess symptoms of disordered eating, the Eating Disorder Inventory (EDI) to assess body dissatisfaction and drive for thinness, and the Child and Adolescent Perfectionism Scale (CAPS) to assess general levels of perfectionism. Few effects of AN subtype on personality were found, but the results demonstrated that there are differences between women of different illness statuses. Namely, the group of AN patients had the highest scores on measures of perfectionism, followed by partially recovered, fully recovered, and healthy control individuals, although only the difference between the healthy control group versus the other three groups was statistically significant. This indicates that perfectionism is a personality variable that underlies AN in fully recovered, partially recovered, and currently ill patients, hereby providing evidence for the notion that perfectionism is a relatively stable personality trait.

A study that closely resembles the study of Bachner-Melman et al. (2007) is a study done by Halmi et al. (2000), as they also focused on how perfectionism varies across clinical subtypes of AN. The sample in this study consisted of 322 women with a DSM-IV diagnosis of AN, of which 146 were patients with the restricting subtype of AN, 116 were patients with the purging subtype, and 59 were patients with the binge-eating and purging subtype. Two instruments were used to measure perfectionism, namely the MPS and the EDI, which has a 'perfectionism' subscale. The scores per subtype group and per subscale were compared, and the results of this indicated that healthy controls scored lower on all perfectionism subscales, except for the subscale 'organization'. Patients with the purging subtype of AN had higher scores than patients with the restricting subtype on the subscale 'parental criticism', which is a subscale that is part of the socially prescribed perfectionism dimension. As was mentioned in

the introduction, socially prescribed perfectionism entails the belief that others have very high expectations of oneself, combined with a strong desire to adhere to the high standards supposedly set by others (Hewitt & Flett, 1995). Differences in scores for each AN subtype on the perfectionism subscale of the Eating Disorder Inventory (EDI) were not significant, but the perfectionism scores of all three AN subtypes were significantly higher than the scores found in a healthy control group. This study also reported that women who were more perfectionistic when their eating disorder was at its worst had a lower lifetime lowest weight, engaged in more ritualistic behaviors, and had a lower motivation to change (Halmi et al., 2000).

While the previous two studies compared the diagnostic subtypes of AN, Peck and Lightsey (2008) chose to compare women that were ill with eating disorders of differing severity, and focused on differences in perfectionism. This led them to subdivide their sample of 261 women into three categories; eating disordered women, symptomatic women, and asymptomatic women, that were then compared on a number of variables. A diagnostic interview and current bodyweight were used to determine in which category patients belonged. The category of asymptomatic women consisted of subjects that showed no eating disorder symptoms, while the category of symptomatic women consisted of women that showed eating disorder symptoms that were still on a subclinical level. The eating disordered group consisted of women showing clinical eating disorder symptoms. For the comparison of these groups mostly self-report instruments were used, namely the Questionnaire for Eating Disorder Diagnosis (QEDD) to differentiate between eating disordered and non-eating disordered individuals, the EDI to measure characteristics of eating disordered patients, and the MPS to assess overall perfectionism. The results indicated that eating disordered women differed from symptomatic and asymptomatic women on all variables, including perfectionism. Also, higher placement on the eating disorder severity continuum, meaning the presence of more severe eating disorder symptoms, was associated with higher levels of perfectionism. The eating disordered group also showed to be extremely dissatisfied with their body, as was measured by the 'body dissatisfaction' subscale of the EDI.

Most of the relevant literature on the relationship between perfectionism and AN studied samples consisting of relatively young women. Forman and Davis (2005) provided interesting new information by also including middle-aged women with eating disorders in their study. This study compared 150 young-adult women (with a mean age of 20.7 years) to 43 middle-aged women (with a mean age of 44.6 years) that were suffering from various eating disorders, including AN. Comparisons were made on several characteristics of eating

disorders, including perfectionism. The comparisons on perfectionism were made based on scores on the EDI. Forman and Davis (2005) found that the group of middle-aged women did not differ significantly from the young-adult group on most psychological variables, including perfectionism. This finding indicated that perfectionism is a feature that is equally important in young-adult and middle-aged women with eating disorders, including AN.

While most of the studies in this review either used a cross-sectional or a prospective design, a different approach was taken by Pliner and Haddock (1995), who used an experimental design to examine the role of perfectionism in weight-concerned and weight-unconcerned women. These two groups were composed based on the participants' scores on the Eating Attitudes test: a score of 20 or higher indicated a large amount of weight-concerns and other eating disorder symptoms that required clinical attention, while a score of 6 or lower indicated little to no eating disorder symptoms. It remains unknown if there were any participants with clinical AN in the sample, but this study was included in the review since it provides interesting insights in how perfectionism manifests itself practically in an experimental setting. The experimental task was to name as many uses for common objects (e.g. 'brick') as possible in a set, standard time. The 100 participants were divided into three groups: one group received a high goal setting manipulation, in which participants were instructed to try their best and think of at least 12 uses for the common object in each trial. Another group received a self-defined goal setting manipulation, in which participants were instructed to set a goal amount of uses to think of for themselves, and to try their best to reach that goal on each trial. The third group received a low goal setting manipulation, in which participants were instructed to try their best, and to think of at least 5 uses for the object in each trial. The participants also received feedback on their performance on the task. Pliner and Haddock (1995) found that extremely weight-concerned women kept striving for unrealistically high goals in the high goal setting condition, which demonstrates the importance of socially prescribed perfectionism in these women. Weight-concerned women strived to live up to the standard that the experimenter asked for during the manipulation, even when this standard seemed unreachable and unrealistic. When weight-concerned women received negative feedback on their performance on the task, they were more adversely affected than women that were weight-unconcerned.

From these first articles can be concluded that perfectionism in general seems important across the different subtypes of AN and across AN of differing severity. It has also been shown that perfectionism influences eating disordered women of younger and older

ages. These findings demonstrate the aforementioned general consensus among researchers about the fact that perfectionism is an important and dominant feature in anorexic women.

Maladaptive versus adaptive perfectionism

As was described in the introduction, perfectionism can be seen as a multidimensional construct. Some of the relevant articles took this into account, and chose to subdivide the construct and compare and contrast specific dimensions of perfectionism. This allows researchers to study the relationship between perfectionism and AN in more depth. As was mentioned in the introduction, perfectionism can be divided into an adaptive and a maladaptive dimension: adaptive perfectionism is defined as setting high standards for oneself, and is mostly seen as positive. Maladaptive perfectionism is defined as setting high standards for oneself and experiencing discrepancies between these standards and one's performance, and is considered as a negative dimension.

The importance of maladaptive perfectionism was demonstrated in a study done by Patterson, Wang & Slaney (2012). The study used self-report questionnaires to assess adaptive and maladaptive perfectionism, such as the Almost Perfect Scale-Revised (APS-R) to measure the adaptive and maladaptive dimensions of perfectionism, and the Perfectionistic Self-Presentation Scale (PSPS) to assess the extent in which an individual engages in perfectionistic self-representation. Perfectionistic self-presentation can be defined as a striving to present oneself as perfect to the world, and can include perfectionistic self-promotion, non-disclosure of flaws, and non-display of imperfections (Patterson et al., 2012). The sample consisted of 212 women, and was subdivided into a subgroup of asymptomatic women, a subgroup of women with subclinical eating disorder symptoms, and a group of clinically eating disordered women, of which six were women with clinical AN. The results of this study showed that maladaptive perfectionism is strongly associated with eating disorder severity: women who were ill with an eating disorder experienced a high discrepancy between self-ascribed high standards and their perceived appearance or performance. The differences between the three subgroups on measures of adaptive perfectionism were not significant. Findings in this study also indicated that the women with eating disorders engaged in perfectionistic self-presentation, and it therefore appears to be a feature of the more severe eating disorders.

Soenens, Nevelsteen, and Vandereycken (2007) also distinguished between maladaptive and adaptive perfectionism. They compared a group of 122 eating disordered women, of which 67 suffered from AN, with a group of 48 healthy controls on measures of

maladaptive and adaptive perfectionism. These dimensions of perfectionism were measured by translated and adapted versions of the MPS and the EDI. The results in this study indicated that the eating disordered group and the control group differed significantly on measures of adaptive and maladaptive perfectionism, whereby the eating disordered group scored significantly higher on both of these dimensions of perfectionism. However, the differences on maladaptive perfectionism were bigger than the differences on measures of adaptive perfectionism. When the four different subtypes of eating disorders in the eating disordered group, namely bulimia nervosa, AN restricting type, AN mixed type, and Eating Disorder Not Otherwise Specified (ED-NOS), were compared and contrasted on measures of adaptive or maladaptive perfectionism, no significant differences between these diagnostic groups were found. This study indicates, as was also shown in the aforementioned study by Halmi et al. (2000), that AN patients are more perfectionistic than healthy controls, and this difference is most strongly demonstrated on measures of maladaptive perfectionism. Moreover, only maladaptive perfectionism predicted symptom severity in the eating disordered group. This highlights the importance of distinguishing between maladaptive and adaptive forms of perfectionism when studying the AN population.

Perfectionism, as a multidimensional construct, could also be considered as a construct consisting of several dimensions that are connected and interact with each other. This is demonstrated in a study by Davis (1996), who proposed an interactive model in which adaptive perfectionism was positively related to body esteem, but only when the level of maladaptive perfectionism was low. When maladaptive perfectionism reached high levels, as it does in most eating disordered women, this relationship reversed. These relationships were confirmed in a sample of 123 women with an eating disorder, of which 42 were AN patients. In this sample the Body Esteem Scale (BES) was used to determine the amount of body esteem, the MPS was used to measure overall perfectionism, and the Neurotic Perfectionism Scale (NPQ) was used to measure maladaptive perfectionism. This study showed that the perception of body image in eating disordered women is an interactive function of adaptive and maladaptive perfectionism.

As was described in the previous paragraphs, several studies in this review used the Multidimensional Perfectionism Scale (MPS) to assess perfectionism, and Bulik et al. (2003) chose to focus on three of its subscales in particular, namely 'concerns over mistakes', 'doubts about actions', and 'personal standards'. The subscale 'personal standards' has been shown to measure adaptive perfectionism, while 'concerns over mistakes' and 'doubts about actions' measure maladaptive perfectionism (Frost et al., 1990). The sample consisted of 1010 women

with psychiatric disorders, of which 34 were AN patients. A structured clinical interview was used to determine the presence of eating disorders, psychiatric disorders including anxiety disorders, or substance use disorders in this sample. Although amenorrhea is a criterion for the diagnosis of AN in the DSM-III, it was not a requirement for AN in this study. The authors concluded that a high level of concerns over mistakes was specifically associated with AN and other eating disorders. Doubts about actions were found to be associated with eating disorders, as well as with anxiety disorders. Concerns over mistakes and doubts about actions appeared to be two critical aspects of perfectionism in the process of better understanding the relationship between perfectionism and AN, which again emphasizes the importance of maladaptive forms of perfectionism in the AN population.

Finally, Terry-Short, Owens, Slade, and Dewey (1994) addressed the fact that in most studies on perfectionism, the instruments used emphasize the maladaptive aspects of perfectionism. Therefore, they strived to create an instrument that focused both on maladaptive and adaptive aspects of perfectionism, and aimed to show how these different aspects vary in different (non)clinical populations. To create this instrument, items from the EDI, the Setting Conditions for Anorexia Nervosa Scale (SCANS), the Burns Perfectionism Scale (BPS), the MPS, and the NPQ were taken and combined. The sample of 311 subjects in total consisted of 255 healthy controls, 21 eating disordered women, 15 depressed women, and 20 successful athletes. The results supported the notion that there are at least two distinct types of perfectionism, namely adaptive and maladaptive perfectionism, and the aforementioned groups differed significantly on these two types of perfectionism. In the group of athletes for example, high positive perfectionism was associated with low negative perfectionism scores. In the eating disordered group however, high scores on positive perfectionism were associated with high scores on negative perfectionism. It is possible that eating disordered individuals generally do not differ greatly from healthy controls when it comes to adaptive perfectionism, but they do have significantly elevated levels of maladaptive perfectionism, when compared to healthy controls.

As the previous studies showed, especially maladaptive forms of perfectionism are dominant in AN patients. A high level of concerns over mistakes, which is an aspect of the maladaptive dimension of perfectionism, is specifically associated with AN. It is also suggested that adaptive and maladaptive forms of perfectionism interact with each other to influence other psychological outcomes, such as body image perception. These results again support the notion that perfectionism is an important feature in AN patients, and that it is

meaningful to further subdivide the construct of perfectionism into an adaptive and maladaptive dimension when studying the AN population.

Socially prescribed and self-oriented perfectionism in AN

As the previous section has shown, mostly the maladaptive dimension of perfectionism is prominent in AN. However, some researchers have chosen to further subdivide perfectionism into intrapersonal versus interpersonal dimensions, namely socially prescribed perfectionism, self-oriented perfectionism and other-oriented perfectionism. Socially prescribed perfectionism, as mentioned earlier, is the belief that others have very high expectations of oneself and is combined with a strong desire to adhere to the high standards supposedly set by others. Therefore, this is an interpersonal dimension of perfectionism. Self-oriented perfectionism is perfectionism that comes from having irrationally high expectations and standards for oneself, which makes it an intrapersonal dimension. Other-oriented perfectionism is interpersonal, and can be defined as the setting of unrealistically high standards of performance for others (Hewitt & Flett, 1995). Clearly, these types of perfectionism can all be maladaptive, as they again lead individuals to set unrealistically high standards.

Cockell et al. (2002) for example showed that it is meaningful to divide perfectionism into self-oriented perfectionism and socially prescribed perfectionism in the context of AN. The sample in this study consisted of 21 female AN patients, a control group of 17 psychiatric patients, and a control group of 21 healthy women. These three groups were compared on a number of variables, including perfectionism and perfectionistic self-presentation. The comparisons were based on scores that were obtained from several self-report instruments, including the Eating Disorder Examination (EDE-Q) to determine the presence of an eating disorder according to the DSM-IV criteria, the MPS to measure overall perfectionism, the PSPS to assess perfectionistic self-presentation, the Interview for Perfectionistic Behavior (IPB) to assess trait and stylistic dimensions of perfectionism, and the Beck Depression Inventory (BDI) to measure symptoms of depression. Compared to the psychiatric and non-psychiatric control group, AN patients in this sample had elevated levels of socially prescribed and self-oriented perfectionism when measured with the MPS, even when other important factors and confounders, such as depression, were adjusted for. This demonstrates that the perfectionism in women with AN distinguishes them from individuals with mood disorders. The results of the IPB corroborated the finding that self-oriented and socially prescribed perfectionism are elevated in AN patients. Furthermore, the scores on trait and

self-presentation dimensions of perfectionism were higher in the group of women with AN than in the psychiatric and the non-psychiatric control group. This study also demonstrated that AN patients want to present themselves to the outside world as perfect, and that they therefore strive for non-disclosure of their imperfections. As was mentioned earlier, this is a tendency that is referred to as perfectionistic self-presentation. This finding on perfectionistic self-presentation in AN was also demonstrated by Patterson et al. (2012).

Interestingly, the study by Cockell et al. (2002) found mean scores for socially prescribed perfectionism on the MPS that were substantially higher than the scores that Bastiani et al. (1995) found in their sample of 19 anorexic women and 10 healthy controls. In the group of anorexic women, 11 women were underweight and 8 were weight-restored. Bastiani et al. (1995) administered the Frost MPS and the Hewitt MPS to assess overall perfectionism, and the EDI to assess perfectionism and eating disorder symptoms in this sample. Apart from the higher scores on socially prescribed perfectionism, the findings in the study by Bastiani et al. (1995) largely parallel the findings in the study by Cockell et al. (2002): underweight AN patients had higher levels of socially prescribed and self-oriented perfectionism when compared to the group of healthy controls. Weight-restored women continued to score higher than healthy controls on self-oriented perfectionism only, as was measured by the Hewitt MPS. A similar result was found based on the EDI scores: underweight and weight-restored anorexic women had higher scores on the subscale 'perfectionism' than healthy controls. An interesting finding was that underweight and weight-restored anorexics both did not score higher than the control group on the subscale 'parental expectations' of the Frost MPS. This subscale assesses if parents had excessively high standards for the patient, and this finding suggests that AN patients in this sample experienced their perfectionism mostly as self-imposed. Lastly, no differences between the AN group and the control group on other-oriented perfectionism were found.

One study focused on self-oriented perfectionism in particular. Watson, Raykos, Street, Fursland, and Nathan (2011) sought to find mediators between self-oriented perfectionism and eating disorder pathology. Their sample consisted of 201 women, of which 34 were AN patients. After an intake assessment and a diagnostic interview to determine the presence of an eating disorder, the EDI and EDE-Q were administered to measure perfectionism and eating disorder pathology. The results that were found demonstrate that the relationship between self-oriented perfectionism and eating disorder psychopathology is mediated by shape and weight overevaluation and conditional goal setting, which is defined as the conviction that achieving a certain goal is crucial to achieving a higher-order end-state,

such as happiness. In this sample, women with a conditional goal setting cognitive style suffered from more severe eating disorder pathology, and this study as a whole contributes to the increasing amount of evidence that perfectionism as a personality trait is strongly related to eating disorders.

The previous studies confirmed that mainly socially prescribed perfectionism is an important dimension in AN, as AN patients will try to achieve unrealistically high standards set for them by others and by themselves. Other-oriented perfectionism appeared to be of little importance in AN. Another interesting finding was the fact that anorexics engage in perfectionistic self-presentation. While self-oriented perfectionism is also often elevated and therefore important in AN, the relationship between this dimension of perfectionism and eating disorder pathology seems to be mediated by other variables.

Persistence of perfectionism

When considering the importance of perfectionism in AN, which has been demonstrated in all of the previous studies, the question arises whether or not perfectionism is a stable and therefore persistent characteristic in AN patients, even after their recovery. Several articles studies the possible persistence of perfectionism after AN.

For example, Bastiani et al. (1995) found that perfectionism is a trait that remained elevated in their sample of 19 AN patients when compared to a group of healthy controls, even after weight restoration. As was mentioned earlier, perfectionism and eating disorder pathology were assessed with the EDI, the Frost MPS, and Hewitt MPS. In this sample, 11 women were assessed when they were underweight and the other 8 women were assessed four weeks after their body weight was restored to a healthy level. The results showed that even after weight restoration, overall perfectionism remained prevalent in anorexic women. Soenens et al. (2007) supported this finding by showing that in a sample of 170 women, of which 67 suffered from AN, adaptive and maladaptive perfectionism scores on the MPS and EDI were lower after their sample of anorexic women followed a treatment specifically designed to treat eating disorders. Compared to a control group however, the scores on adaptive and maladaptive perfectionism in the AN group were still significantly elevated after this treatment, again illustrating the persistent and rigid character of perfectionism in AN.

While the previous suggests that the levels of perfectionism remain elevated in AN patients even after treatment and weight restoration, rather different results were found in a study done by Bardone-Cone, Sturm, Lawson, Robinson, and Smith (2010). This study used a sample consisting of 157 women, of which 55 were active eating disorder cases, 17 were AN

cases, 15 were partially recovered cases, 20 were fully recovered cases, and the 67 others formed a group of healthy controls. Structured interviews, the EDE, the MPS, the PSPS, and the Perfectionism Cognitions Inventory (PCI) were used to determine the level of perfectionism and perfectionistic cognitions across different stages of recovery. The results indicated that the level of perfectionism in fully recovered individuals is comparable to the level of perfectionism found in healthy controls. This level of perfectionism also significantly differed from the level of perfectionism found in individuals that are partially recovered or still eating disordered. This pattern occurred across all forms of perfectionism that were measured in this sample, including perfectionistic self-presentation and trait perfectionism, and this finding shows that the persistence of perfectionism after recovery from AN is not as certain as the other studies suggested. This result is furthermore supported by Nilsson, Sundbom, and Hägglöf (2008), who found similar results for long-term recovered individuals in their longitudinal study of 91 AN patients. At the last follow-up, 68 AN patients participated. The EDI was used to measure perfectionism in this sample, and the results showed that long-term recovered individuals had an EDI 'perfectionism' score that was within the normal range. This again demonstrates that persistent perfectionism after recovery from AN may not be that evident.

Influence of perfectionism on response to treatment and prognosis

Since perfectionism is such a common trait in AN patients, one would expect that it may also have an influence on the response to treatment and the prognosis in this disorder. A few researchers have actually focused on studying the influence of perfectionism on the response to treatment for AN. An example of this is the study done by Sutandar-Pinnock, Woodside, Carter, Olmsted, and Kaplan (2002). This study administered the MPS and the EDI to assess overall perfectionism and eating disorder pathology in a sample of 73 AN patients, of which 71 were women. All participants received at least 4 weeks of treatment in an inpatient treatment program specifically designed to treat AN. In this study, amenorrhea was not a requirement for a diagnosis with AN. In this study, a positive outcome was defined as 'no symptoms and a normal weight', while a negative outcome was defined as 'any other situation' than having a normal weight and no symptoms. Patients with a low score on the subscale 'perfectionism' of the EDI had a better response to treatment, which in turn was associated with more positive outcomes. Higher degrees of perfectionism at pre-treatment were associated with poorer response to treatment, which suggests that patients with high perfectionistic tendencies have more difficulty adhering to a treatment program. Interestingly,

the EDI 'perfectionism' scores in recovered AN patients in this sample were similar to those of a control group, while perfectionism scores on the MPS remained elevated in recovered AN patients when compared to the scores of a healthy control group.

The aforementioned longitudinal study done by Nilsson et al. (2008) supports the findings by Sutandar-Pinnock et al. (2003), by showing that individuals with a lower perfectionism score at admission to a psychiatric clinic had a better response to treatment and better outcomes at follow-up. This study utilized the EDI, the Global Assessment Functioning (GAF), and the Symptom Checklist-90 (SCL-90) to study perfectionism and a range of psychological and psychiatric symptoms. Examples of better outcomes according to this study include a decrease in eating disorder symptoms, a decrease in obsessive-compulsive symptoms as measured by the SCL-90, and an improvement of the Global Assessment Functioning scores as measured by the GAF. In this sample, levels of perfectionism remained the same while symptoms of disordered eating decreased over time. The results of this study indicated that low levels of perfectionism in eating disordered individuals could be of prognostic value: patients with high levels of perfectionism may suffer from a longer illness duration than patients with low levels of perfectionism. In sum, the previous studies suggest that high levels of perfectionism in AN patients lead to a poorer response to treatment, and this therefore means that AN patients have more difficulty completing a treatment program. This in turn can lead to poorer outcomes.

A question that remains is if there is an influence of perfectionism on the prognosis in AN. Bizeul, Sadowsky, and Rigaud (2001) studied this influence in a longitudinal study of 26 eating disordered patients. The Eating Disorder Inventory (EDI) was used to study the prognostic value of the initial EDI scores in this sample, and the results showed that the higher the initial score on the EDI subscales 'perfectionism' and 'interpersonal distrust', the worse the prognosis after 5 years of follow-up. Unfavorable outcomes in this study were defined as 'relapse or remaining sick'. The group of 13 patients with unfavorable outcomes in this sample, as opposed to the other group consisting of 13 fully recovered individuals, had significantly higher scores on the EDI 'perfectionism' subscale. Bizeul et al. (2001) therefore concluded that the total EDI score and the scores on 'perfectionism' and 'interpersonal distrust' could be predictive of long-term outcomes, such as the recovery, in AN patients. High EDI scores are then seen as predictive of a worse long-term prognosis in AN.

Lastly, another longitudinal study done by Rigaud, Pennacchio, Reveillard, and Vergès (2011) followed a sample of 484 AN patients, of which 462 were female. The aim of this study was to study the long-term prognosis of AN, and to do so, Rigaud et al. (2011)

followed the aforementioned sample for a mean duration of 13 years. The instruments that were used to measure perfectionism in this sample were the EDE and the EDI. This study found that high initial levels of perfectionism were, amongst other factors, linked to lower recovery rates from AN after two years. However, bad outcomes after 13 years of follow-up, whereby bad outcomes were defined as a low BMI, abnormal eating behaviors, or the presence of multiple binge-eating or purging episodes a week or excessive exercise, were not predicted by perfectionism. Perfectionism was therefore not predictive of the long-term prognosis in this sample.

Findings in these studies show that there is not yet a general consensus among researchers about whether perfectionism truly remains elevated in formerly eating disordered individuals. While two studies showed that perfectionism is a trait that remains elevated in former AN patients, two other studies argued this finding by demonstrating that the levels of perfectionism in fully recovered individuals are in the normal range. High scores on measures of perfectionism do seem to be related to a poorer response to treatment and a longer illness duration, but the influence of perfectionism on the prognosis in AN needs further clarification.

In sum, this section showed that perfectionism is a characteristic of many AN patients, and elevated levels of perfectionism for the most part seemed to persist after weight-restoration and recovery. It has been demonstrated that especially maladaptive forms of perfectionism are elevated in AN, including socially prescribed perfectionism and perfectionistic self-presentation. High scores on measures of perfectionism in AN patients seem to lead to a poorer response to treatment, lower recovery rates and a worse prognosis after 5 years. While all studies indicated that perfectionism plays a role in AN patients, findings have been more inconsistent when it comes to the persistence of perfectionism, and research on the influence of perfectionism on the long-term prognosis in AN is lacking.

Discussion

In this literature review the relationship between perfectionism and anorexia nervosa (AN) was examined, hereby focusing mainly on different dimensions of perfectionism that are prominent in AN, but also on the persistence of perfectionism after AN, and the influence of perfectionism on the prognosis and the response to treatment for AN. After an extensive literature search, 19 relevant articles were found and summarized.

Based on the articles discussed in the previous section, a general conclusion is that perfectionism is an important feature in AN patients, as was confirmed by all the included articles. Firstly, AN patients have elevated scores on several measures of perfectionism. Most studies in this review used the Multidimensional Perfectionism Scale (MPS) and the Eating Disorder Inventory (EDI), and there was a general consensus that overall perfectionism scores on the MPS and EDI are elevated in the AN population. Several studies chose to focus on specific dimensions of perfectionism, such as adaptive versus maladaptive perfectionism. Maladaptive perfectionism is a negative dimension of perfectionism that is elevated in AN patients. Furthermore, socially prescribed perfectionism and self-oriented perfectionism are also elevated in the AN population when compared to healthy control groups. Lastly, AN patients engage in perfectionistic self-presentation.

The findings have not been as equally consistent when it comes to the persistence of perfectionism after AN and the influence of perfectionism on the prognosis in AN. Most studies indicated that perfectionism is a construct and trait that remains elevated in AN, even after weight restoration to a healthy level. Individuals with lower scores on measures of perfectionism in general responded better to treatment for their eating disorder, which suggests that AN patients that are highly perfectionistic may be at risk for longer illness duration. In contrast, Bardone-Cone et al. (2010) reported that individuals that were recovered from AN had levels of perfectionism that were comparable to the level of perfectionism that was found in a healthy control group. Nilsson et al. (2008) supported this finding by showing that long-term recovered individuals had perfectionism scores that were in the normal range as well. This demonstrates that the persistence of perfectionism after AN is not evident. Also, while Bizeul et al. (2001) demonstrated that high perfectionism led to a worse prognosis after 5 years, Rigaud et al. (2011) were unable to replicate this result after 13 years of follow-up. In short, perfectionism is a feature that is prominent in AN sufferers, and maladaptive forms of perfectionism in particular seem to adversely affect outcomes such as symptom severity and illness duration. High perfectionism also leads to a poorer response to treatment and a lower

recovery rate. However, more research is needed to study the relationship between perfectionism in AN and its influence on the prognosis in this eating disorder. More research on the possible persistence of perfectionism after recovery from AN is also warranted, as it may be a risk factor for relapse.

As described earlier, a fairly nonambiguous conclusion could be drawn when it comes to the importance of perfectionism in AN and the specific dimensions of perfectionism that are dominant in this population. Several studies found that especially maladaptive perfectionism, self-oriented perfectionism, and socially prescribed perfectionism are of importance in AN. This conclusion concerning the general importance of perfectionism in AN could be drawn because most of the relevant articles used the same instruments to measure perfectionism, namely the Multidimensional Perfectionism Scale (MPS), Eating Disorder Inventory (EDI) which has a subscale 'perfectionism', and the Perfectionistic Self Presentation Scale (PSPS) in studies that also focused on perfectionistic self-presentation in AN. This increased the comparability of the studies and therefore can be considered as a strength of this review. Also, most studies were cross-sectional or longitudinal, and this comparability in study design is a methodological aspect that made the studies more comparable.

Furthermore, a lot of the studies used control groups, which can be seen as a strength and a weakness at the same time. On one hand, the presence of a control group makes it possible to compare the results of an AN sample to a sample of healthy controls, and to come to a conclusion on the differences in overall perfectionism in the AN population versus the general healthy population. On the other hand, the control groups that were used in the studies were mostly composed of very healthy control subjects with no issues whatsoever, and they did not vary much in age, sex, and level of education: most control groups consisted of relatively young women with normal and high levels of education. Bardone-Cone et al. (2010) attempted to tackle this issue by using a control group that consisted of women that only fulfilled one criterion, namely 'absence of an eating disorder'. This made the control group in this study more representative of the general population.

The overall strength of this review can be found in the fact that it is the first review to bring studies on perfectionism in AN, the persistence of perfectionism after AN, and the influence of perfectionism on the prognosis and the response to treatment for AN together for critical analysis. However, an issue that most studies dealt with is the possibility that the elevated perfectionism scores that they found are representative of a so called 'scarring effect', namely the possibility that premorbid perfectionism scores were comparable to those of control groups, and that perfectionism could have emerged or have become exacerbated

simultaneously with the eating disorder symptoms (Bachner-Melman et al., 2007). This makes it difficult to determine with certainty whether perfectionism is a trait that is already established in anorexics, or if perfectionism is caused or worsened by AN.

There are some other (methodological) aspects that hampered the comparability of the included studies. A first methodological aspect that could explain some of the inconsistent findings on the persistence of perfectionism after AN and the influence of perfectionism on the prognosis in AN, is the fact that several longitudinal studies dealt with a relatively high drop-out rate. Nilsson et al. (2008) for example studied a sample of 68 individuals in their final analyses after 16 years, which corresponds to a group that was 25% smaller than the original sample. If the entire original sample was used, the end results of this study would have been more reliable.

Also, an important criterion that differed among the longitudinal studies in particular, is how each study defined 'recovery'. Bardone-Cone et al. (2010) also highlighted this issue and described that while some studies mostly use physical measures (e.g. a specific BMI), others use cognitive measures (e.g. no more maladaptive thoughts related to eating) to determine recovery. The study by Bachner-Melman et al. (2007) for example defined recovery as "a BMI above 17.5, regular menstruation for at least three months (unless birth control pills were taken), no regular bingeing or purging symptoms for at least eight consecutive weeks, and no excessive obsessions about food", while Rigaud et al. (2011) defined recovery criteria of having a normal and stable bodyweight with a BMI above 18.5, no excessive exercising, and normal eating behavior. Bardone-Cone et al. (2010) also made a "score within 1 standard deviation of community norms on all subscales of the Eating Disorder Examination-Questionnaire" a necessary criterion for eating disorder recovery. These definitions of recovery differ in strictness, and this makes it difficult to compare and contrast the different studies. Bardone-Cone et al. (2010) therefore suggested that in future studies, recovery should be defined in a way that ensures physical, behavioral, and psychological recovery.

Additionally, another problem in the longitudinal studies in this review is that there were large differences in the amount of follow-up time. The study done by Sutandar-Pinnock et al. (2002) for example followed-up after 6 and 24 months after treatment, while Nilsson et al. (2008) followed up after 8 years and again after 16 years. Interestingly, the study done by Nilsson et al. (2008) found perfectionism scores for long-term recovered individuals that differed from the scores that were found in some of the other studies, as was described earlier. This demonstrates that the amount of follow-up time is an important factor, as it can influence

the results and conclusions in a study. Only studies that do a follow-up after a considerable amount of years can look at how perfectionism changes in a specific group of individuals as this group moves from ill with AN to long-term recovered.

Furthermore, the fact that the studies differed in the criteria they used to determine whether individuals in their sample suffered from a clinical eating disorder or not is another issue in this review. While most studies determined this based on the DSM-IV criteria for eating disorders, not every study used amenorrhea as a criterion to determine whether someone suffered from AN. Evidently, studies that did use amenorrhea as an inclusion criterion researched samples of women that were generally of worse physical health, because amenorrhea is an issue that mostly arises in women that are severely underweight and/or malnourished. This difference hampered the comparability of the studies.

The fact that the studies in this review used samples that varied significantly in size also makes the results more difficult to compare. The sample sizes ranged from a sample size of 26 patients, of which 20 were AN patients (Bizeul et al., 2001), to a sample size of 1010, of which 34 were AN patients (Bulik et al., 2003). The largest sample of anorexics consisted of 484 patients (Rigaud et al., 2011). Even when the overall sample in a study was relatively large, the amount of AN patients was usually fairly small. This makes the generalization of the results to the entire population of AN patients more problematic, and this should therefore be done with caution.

Moreover, not every study clearly stated which part of their sample consisted of AN patients: some simply mentioned that their sample consisted of 'eating disorder cases'. Peck and Lightsey (2008) merely stated that their sample consisted of 'symptomatic' and 'asymptomatic' women, as did Patterson et al. (2012), who divided their sample into a clinical, subclinical and asymptomatic group. Lastly, Pliner and Haddock (1995) merely specified that their sample consisted of a group of 'weight-concerned' and a group of 'weight-unconcerned' women. Since this study was most likely done with a nonclinical sample of weight-concerned women, generalization of these results to the population of anorexic women should be done with caution. Replication of this study with a clinical sample of eating disordered women is necessary. All of the above makes it more difficult to determine whether perfectionism is specifically related to AN, or whether it is related to eating disorder symptoms in general. While there are studies that found that perfectionism is elevated in the part of their sample that consisted of anorexics specifically, the strength of this review and the quality of the individual studies would increase if all studies clearly stated which part of their sample consisted of AN patients. It also remains unknown whether studies successfully and

accurately assigned their subjects to the correct diagnostic eating disorder category, which is an issue that is also mentioned by the Price Foundation Collaborative Group (2001). Diagnostic interviews were often used to determine the correct eating disorder label for each patient in a sample, but it can be difficult to do so since eating disorders are rarely as clearly defined as DSM-criteria make them seem. Patients often suffer from a combination of symptoms from several diagnostic eating disorder categories. When patients are classified into the wrong eating disorder subcategory, the end results become less reliable.

Another issue that makes the generalization of results difficult is the fact that most studies used samples that consisted mostly of females. Recent studies have shown that the amount of male anorexics has increased dramatically over the last years, and men now represent about 10 to 20 percent of the cases of AN (Jones & Morgan, 2010). While the amount of male AN patients is increasing, the fact that the samples in this literature review mostly consisted of women makes it difficult to generalize the findings on perfectionism in AN to the opposite gender. This is a limitation, because studies have shown that eating disorders differ in clinical presentation in men and women (Jones & Morgan, 2010).

Furthermore, most samples consisted of young women with mean ages that were anywhere between 18 and 30 years. The only study that specifically focused on anorexia in middle-aged women was the study done by Forman and Davis (1995), in which the mean age of the sample of middle-aged women was 44.6 years. This is surprising, when considering that AN also affects the elderly (Lapid et al., 2010), a fact that is unfortunately often overlooked. Generalization of the findings on perfectionism in AN from young samples to older samples could be problematic and should be done with caution before more research in older samples has been done.

Lastly, another difference between the included studies is that only some studies chose to use interviews. Using an interview to discuss and determine whether traits such as perfectionism are present makes the end results more reliable than using self-report measures alone, as was also pointed out by Cockell et al. (2002). An interview is also a helpful tool in assessing the severity of eating disorder symptoms. Clearly, the use of interviews can be seen as a strength of several studies in this review, but the fact that not all studies used interviews to assess perfectionism and eating disorder pathology in their sample makes the results more difficult to compare.

In short, the most important strengths of this review are the comparability of test scores because of the overlap in the instruments that the studies used, the use of control groups, and the fact that this is the first review on this subject in particular. Weaknesses of

and differences between the studies in this review include the differences in sample size and the fact that most studies used samples consisting of young women, the differences in diagnostic criteria used, and differences in how recovery was defined by different researchers. As these aspects limit the comparability of the studies and the generalizability of the findings, any conclusions should be drawn with caution. While it is now clear that perfectionism plays a role in AN, more research is necessary to further clarify and verify this relationship, the persistence of perfectionism after AN, and the influence of perfectionism on the prognosis in AN.

After critically discussing the studies in this review, several recommendations for future research can be made. From a methodological viewpoint, more studies with a longitudinal design are needed. The follow-up time in future longitudinal studies should increase, because this will help clarify the role that perfectionism has in long-term recovered AN patients, and it will also show if and how perfectionism changes overtime in a specific sample.

Furthermore, future research should focus research samples that better represent the AN population. This means that future studies should include more men in their sample and that the subjects should vary more in age, considering the fact that eating disorders in the elderly are too often overlooked. As mentioned earlier, eating disorders do differ in clinical presentation in men, and the relationship between perfectionism and AN in men specifically has not been well researched yet. Further research could yield new, interesting information that could help the population of male AN patients. Future control groups should also consist of subjects that better represent the general population, which means that control groups should include men and women of a variety of ages and levels of education, and with and without psychological and psychiatric issues.

Also, future research could be of more value if studies focused on the several dimensions of perfectionism instead of studying the construct as a whole, since it has been shown that there are specific dimensions of perfectionism that are important in AN. Moreover, most studies in this review focused on measuring the construct of perfectionism in AN. Not many studies actually focused on researching how perfectionism influences the anorexic, and which mechanisms could be of importance, while keeping in mind that it would be difficult to determine any causal relationships. Why maladaptive perfectionism in particular has such a pathological meaning in AN also remains unclear and should be studied further.

Another focus for future research should be on how perfectionism interacts with other relevant psychological factors to influence AN severity. Factors such as depression (Mattar, Thiébaud, Huas, Cebula & 2012) and anxiety (Lavender et al., 2013) have been shown to play an important role in AN, and it is possible that perfectionism, anxiety, and/or depression interact and have a unique, combined influence on outcomes in AN. This suggestion was also made by Bardone-Cone et al. (2010), who suggested that levels of recovery could be influenced by premorbid levels of anxiety, depression and perfectionism.

Lastly, how perfectionism influences relapse rates in AN is also unknown. Since perfectionism seems to remain elevated after AN patients followed treatments that are specifically designed to treat AN, it is hypothesized that perfectionism could be a possible contributor to relapse (Soenens et al., 2007). If such a negative influence of perfectionism can be found, this implies that clinical practitioners should put specific emphasis on treating and changing maladaptive perfectionistic thoughts and behaviors in AN patients. However, the opposite could also be true, namely that treatment that focuses on changing the maladaptive eating behaviors and symptoms over time allows AN patients to let go of their perfectionistic standards for themselves. The best temporal order for treatment should therefore be studied. Research on how perfectionism affects outcomes following specific treatments (e.g. cognitive therapy, group therapy) is also fairly scarce. More research on this topic could be helpful for the development of more effective treatment programs.

In sum, although research on the relationship between perfectionism and AN is lacking in some areas, a number of clinical implications are implied now that it is clear that perfectionism plays a role in AN.

Clinical implications

As mentioned above, this literature review implies that perfectionism is a distinct characteristic in AN patients, and that especially maladaptive forms of perfectionism are prevalent in this population. Women with high levels of perfectionism are at risk of more severe illness and longer illness duration. As perfectionism is clearly important in AN, clinicians should take this factor into consideration. Since perfectionism seems to be linked to illness severity, this implies that long-term and multimodal psychotherapy is needed in this population. A better understanding of the relationship between perfectionism and the prognosis in AN is also important, because of the health risks and the increased mortality rate in this population. A clearer view on this relationship would be beneficial for the development of more effective treatment and prevention programs. When treatment programs become more

effective, physical health related outcomes will improve as well. Since AN has an enormous negative impact on the quality of life of anorexic individuals, especially when it is combined with purging behaviors that are often seen in AN patients (Ackard, Cronemeyer, Franzen, Richter & Norstrom, 2011), a better understanding of the importance of perfectionism may help improve this quality of life.

Also, this review implies that perfectionism is a factor that influences treatment success in a negative manner. Therefore, treatments could become more successful if clinicians aim to treat and lower perfectionism in AN patients. Perfectionistic self-representation in particular may be a risk factor for more severe eating disorder symptoms, which implies that this should become a focus point in treatments (Patterson et al., 2012). Perfectionistic self-presentation is also a factor that should be taken into consideration when choosing the correct treatment for an AN patient. As perfectionistic self-presentation is about a non-disclosure of imperfections, this implies that group therapies may not be a good choice when treating AN patients that engage in perfectionistic-self presentation, because group therapies require the sharing of problems and imperfections with other patients (Sutandar-Pinnock et al., 2003). Also, considering the fact that relapse in AN is very common (Carter, Blackmore, Sutandar-Pinnock & Woodside, 2004), and that maladaptive perfectionism could be a risk factor for relapse (Soenens et al., 2007), AN patients should be encouraged to undertake long-term therapy that also focuses on lowering their maladaptive perfectionistic standards, as this may help prevent relapse.

Currently, family-based treatment and cognitive behavioral therapy are treatments that are often and successfully used to treat AN (Dalle Grave, Calugi, Doll & Fairburn, 2013), and in the future it could be useful to incorporate a specific module in therapies and treatments that focuses on perfectionistic thoughts and behaviors related to eating disorders (e.g. 'if I eat this, I will have failed myself and others again'). It has been shown that cognitive behavioral treatment is effective in lowering perfectionism in other clinical groups, such as patients with social phobia (Ashbaugh et al., 2007), which implies that this type of treatment may also be effective in lowering perfectionism in other clinical population, such as the AN population.

Although the specific mechanisms of influence in the relationship between perfectionism and AN remain unclear, perfectionism is a factor in AN patients that should receive more attention during treatments while the amount of research on this topic extends. This also implies how important it is for clinicians that treat AN to have accurate and up to date empirical information, as new findings on perfectionism in AN can help improve the effectiveness of treatment programs.

In conclusion, this literature review showed that especially maladaptive forms of perfectionism are an important characteristic in AN. Patients with high scores on measures of perfectionism may respond poorly to treatment and therefore suffer a longer illness duration, while fully recovered individuals seemed to have levels of perfectionism that were in the normal range in some studies. More research is needed to clarify if and how perfectionism influences relapse in AN. It is also important to study how perfectionism interacts with other (psychological) factors to influence AN severity and outcomes. If the comparability of studies increases and the quality of samples improves, the relationship between perfectionism and AN could be further clarified, which can help improve the quality and effectiveness of treatment and prevention programs for AN.

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Table 1a. Perfectionism and its dimensions in anorexia nervosa (AN).

Authors and Year	Sample	Design	Time of measurement	Follow-up time	Variables	Relevant instruments	Main results
Bachner-Melman, Zohar, Kremer & Ebstein, 2007	N=437, of which 195 women with anorexia nervosa (AN) (17 ill, 107 partially recovered, 71 recovered) and 242 controls	Cross-sectional	Post-diagnosis with AN	No follow-up	Obsessiveness, perfectionism, fear of failure, endorsement of the thin ideal, self-esteem, harm avoidance, novelty seeking, persistence, and reward dependence	Diagnostic interview, eating disorder inventory (EDI), Brief Symptom Inventory, Eating Attitudes Test-26 (EAT), Obligatory Exercise questionnaire, Achievement Motivation Scale, Child and Adolescent Perfectionism scale, Rosenberg Self-Esteem Scale, Maudsley Obsessive-Compulsive Inventory, Tridimensional Personality Questionnaire	Controls differed significantly from all AN groups on almost all variables, subtypes differed only on variable novelty seeking
Bastiani, Rao, Weltzin & Kaye, 1995	N=29, of which 19 women with AN and 10 controls	Cross-sectional	11 assessed when underweight, 8 assessed 4 weeks after healthy weight restoration	No follow-up	Organization, overall perfectionism, self-oriented, socially prescribed and other oriented perfectionism, drive for thinness, bulimia, body dissatisfaction, ineffectiveness, interpersonal distrust, interoceptive awareness, maturity fears	EDI, Hewitt Multidimensional Perfectionism Scale (MPS) and Frost MPS assessments	Women with AN are perfectionistic on all measured aspects of perfectionism, except parental expectations and other-oriented perfectionism. Perfectionism persisted after weight restoration

Authors and Year	Sample	Design	Time of measurement	Follow-up time	Variables	Relevant instruments	Main results
Bulik et al., 2003	N=1010 women with psychiatric disorders, of which 34 with AN	Retrospective	Two years after participating in large twin study	No follow-up	Concerns over mistakes, doubts about actions, personal standards	MPS (adapted version), and diagnostic interviews to determine psychiatric disorders	Elevated scores on subscale 'concerns over mistakes' specifically associated with AN. 'Doubts about actions' associated with both eating and anxiety disorders.
Cockell et al., 2002	N=59, of which 21 women with AN, 21 normal controls and 17 psychiatric controls	Cross-sectional	Questionnaires completed subsequent to interviews	No follow-up	Eating disorder symptoms, several dimensions/facets of perfectionism, perfectionistic behavior, depression, self-esteem, psychiatric disturbance	Eating Disorder Examination (EDE), MPS, Perfectionistic Self-Presentation Scale (PSPS), Interview for Perfectionistic Behavior (IPB), Beck depression Inventory (BDI), Hamilton Depression Rating Scale (HDRS), RSES, and Global Assessment Scale (GAS)	Women with AN had elevated levels of self-oriented and socially prescribed perfectionism compared to control groups, even when other factors are controlled for.
Davis, 1996	N=123 women with an eating disorder (ED), of which 42 with AN	Correlational	At admittance for ED treatment	No follow-up	Body esteem, perfectionism, neurotic perfectionism, neuroticism	Body Esteem Scale (BES), MPS, Neurotic Perfectionism Questionnaire (NPQ), and Eysenck Personality Questionnaire-Revised (EPQ-R)	This study showed that body-image perception in eating disorders should be seen as an interactive function of normal and neurotic perfectionism. Normal perfectionism is positively related to body esteem but only when neurotic perfectionism is low.

Authors and Year	Sample	Design	Time of measurement	Follow-up time	Variables	Relevant instruments	Main results
Forman & Davis, 2005	N=193 women with an ED, of which 77 women with AN, subdivided into groups (young adults and middle-aged women)	Cross-sectional	At admission and discharge	At discharge from treatment	Eating disorder attitudes and symptoms, depression, anxiety, body shape, media influence on body image	EDI-2, BDI, Beck Anxiety Inventory (BAI), and Body Shape Questionnaire (BSQ)	Features related to eating disorders such as perfectionism are equally important to middle-aged women as they are to younger patients
Halmi et al., 2000	N=322 women, of which 146 women with AN subtype restricting, 116 AN subtype purging and 60 with AN subtype binge-eating and purging	Cross-sectional	Post-diagnosis with AN	No follow-up	Perfectionism (different aspects), obsessive compulsive behaviors, preoccupations/rituals related to food, weight, eating, body, exercise	MPS, EDI-2, and Yale-Brown-Cornell Eating Disorder Scale (YBC-EDS)	AN subjects scored high on perfectionism subscales of the instruments used. Scores on the MPS were related to the total score and the motivation-for-change subscale score of the YBC-EDS.
Patterson, Wang & Slaney, 2012	N=212 women	Cross-sectional	During partial hospitalization (ED subjects) and during university classes (healthy subjects)	No follow-up	Eating disorder symptoms, perfectionism, self-presentations, depression, social support, relationship depth, interpersonal conflict, interpersonal wellbeing	Questionnaire for Eating Disorder Diagnosis (Q-EDD), Almost Perfect Scale (APS) (revised), PSPS, Quality of Relationships Inventory (QRI), and Relational Health Indices (RHI)	Maladaptive perfectionism was strongly associated with eating disorder severity. The three groups differed significantly on measures of perfectionism. There were no significant differences in relational health and quality.
Peck & Lightsey, 2008	N=261 women, of which 31 with an ED, 95 with ED symptoms and 135 asymptomatic controls	Cross-sectional	During university hours	No follow-up	Global self-worth, eating disorder attitudes and symptoms, perfectionism, DSM-IV criteria for eating disorders	Q-EDD, EDI-2, MPS, and RSES	Higher perfectionism scores were found for women with more severe eating disorders when compared with symptomatic and asymptomatic women.

Authors and Year	Sample	Design	Time of measurement	Follow-up time	Variables	Relevant instruments	Main results
Pliner & Haddock, 1995	N=100, of which one group had little weight concerns and one group had high weight concerns (group sizes remain unknown)	Experimental	EAT administered several weeks before experiment	No follow-up	Eating disorder symptoms, perfectionism, positive affect, sensation seeking, anxiety, depression, hostility	EAT, EDI, Multiple Affect Adjective Check List (MAACL), and several questionnaires specific to this experiment	Confirms that anorexics conform to high performance expectations that others have of them. Anorexics continued to strive for unrealistically high goals even when it was clear these goals were unreachable and they were more negatively affected by feedback than controls.
Price Foundation Collaborative Group, 2001	N=348, of which 196 AN probands, 116 AN siblings, 36 BN siblings	Multi-site study	Self-rating assessments were completed before the interview	No follow-up	Anxiety, harm avoidance, perfectionism, general and eating-specific obsessive-compulsive symptoms, temperament and character components	SIAB (structured interview), Yale-Brown Obsessive Compulsive Scale (YB-OCS), YBC-EDS, State Trait Anxiety Inventory (STAI), MPS, and Temperament and Character Inventory (TCI)	A combination of trait anxiety, harm avoidance, perfectionism, obsessive-compulsive behavior, and diminished self-directedness underlies the cluster of personality and behavioral traits in this sample
Soenens, Nevelsteen & Vandereycken, 2007	N=170, of which 67 with AN, 32 with BN and 23 with EDNOS, and a control group of 48 women	Longitudinal	First measurement within 48 hours after admittance to clinic, second measurement during second week of treatment, last measurement in last week of treatment	Two weeks after admittance to clinic and during the last week of treatment	Adaptive and maladaptive perfectionism, depression, eating disorder symptoms	MPS, BDI, and EDI	Scores for maladaptive perfectionism were higher in the eating disordered group than the control group, and only maladaptive perfectionism predicted symptom severity.

Authors and Year	Sample	Design	Time of measurement	Follow-up time	Variables	Relevant instruments	Main results
Terry-Short, Owens, Slade & Dewey, 1994	N=281 women, of which 225 healthy controls, 21 eating disordered, 20 successful athletes and 15 depressed women	Cross-sectional	Unknown	No follow-up	Positive perfectionism, negative perfectionism, personal perfectionism, socially prescribed perfectionism	A combination of items from the MPS, EDI, NPQ, Burns Perfectionism Scale (BPS), and the Setting Conditions for Anorexia Nervosa Scale (SCANS)	Perfectionism should be divided into two dimensions: positive and negative perfectionism. Negative perfectionism is elevated in clinical groups.
Watson, Raykos, Street, Fursland & Nathan, 2011	N=201 women with DSM diagnosis of an ED, from which 34 women with AN	Correlational	At admission to clinic	No follow-up	Self-oriented perfectionism, socially prescribed perfectionism, shape and weight overevaluation, conditional goal-setting, eating disorder attitudes and behaviors	Diagnostic interview, EDE-Q, EDI, and the Conditional Goal Setting in Eating Disorders Scale (CGS-EDS)	The relationship between self-oriented perfectionism and eating disorders is mediated by shape and weight overevaluation and conditional goal-setting.

Table 1b. Persistence of perfectionism and influence on response to treatment and prognosis.

Authors and Year	Sample	Design	Time of measurement	Follow-up time	Variables	Relevant instruments	Main results
Bardone-Cone, Sturm, Lawson, Robinson & Smith, 2010	N=157 women, of which 55 active ED cases, 15 partially recovered, 20 fully recovered and 67 healthy controls	Cross-sectional	Questionnaires were completed first, followed by an interview later on	No follow-up	Perfectionism, binge-eating, vomiting, use of laxatives, disordered eating thoughts and behaviors	Structured interview, Eating Disorders Longitudinal Interval Follow-up Evaluation interview (LIFE EAT II), EDE-Q, MPS, PSPS, and Perfectionism Cognitions Inventory (PCI)	Fully recovered individuals and controls had comparable, low levels of perfectionism. Shows that perfectionism after recovery is not an evident outcome.
Bizeul, Sadowsky & Rigaud, 2001	N=26 women, of which 20 with AN (a posteriori classified into two groups: 'recovered' and 'poor outcome') and 6 with BN	Longitudinal	Post-diagnosis with AN	Every six months after initial assessment for at least 5 years	Nutrition status, menses, mental state and psychosocial and psychosexual functioning, mental functioning and insight, perfectionism, drive for thinness, bulimia, body dissatisfaction, ineffectiveness, distrust, maturity fears	EDI, Morgan-Russell Outcome Assessment Schedule, and semi-structured interview	Results show that the higher the score of perfectionism' and 'interpersonal distrust', the worse the prognosis. High EDI scores were also related to illness severity.
Nilsson, Sundbom & Hägglöf, 2008	N=91, of which 90 girls with AN restricting type and 1 boy (N=68 at last follow-up)	Longitudinal	At admission to clinic, first follow-up after 8 years and second follow-up after 16 years	8 and 16 years after admission to clinic	Socially prescribed and self-oriented perfectionism, psychiatric symptoms, mental and physical health	Semi-structured interviews, Symptom Check List (SCL-90), EDI, and Global Assessment Functioning (GAF)	Long-term recovered patients had EDI scores that were in the normal range. At 2nd follow-up both recovered and non-recovered had high scores on perfectionism scale. Patients with high level of perfectionism may be at risk for longer illness duration.

Authors and Year	Sample	Design	Time of measurement	Follow-up time	Variables	Relevant instruments	Main results
Rigaud, Pennacchio, Reveillard & Vergès, 2011	N=484 hospitalized patients with AN, of which 462 women and 22 men	Longitudinal	At hospital admission, at discharge and after that every year for 13 years	Follow-up assessments every year for 13 years	Symptoms and feelings (perfectionism, anxiety, depression etcetera) and disease onset, change of subtype, number of hospitalizations, body weight before AN, highest body weight before AN, body weight loss, lowest and highest body weight during AN, medical complications, and menstrual cycles.	Adapted versions of the EDE-Q, EDI, BDI, Hamilton Anxiety Scale (HAS), and the Morgan-Russell outcome scores	This study found a low recovery rate after two years, which was linked to factors such as low BMI and high scores on measures of perfectionism. After 13,5 years, 60% of the initial group was recovered. The others had poor or severe outcomes.
Sutandar-Pinnock, Woodside, Carter, Olmsted & Kaplan, 2003	N=73 women with AN, and a control group of healthy women	Longitudinal	EDI and EDE completed within two weeks after admission and follow up measurements after 6 and 24 months	Follow-up at 6 and 24 months post-treatment	Perfectionism and eating disorder symptoms	MPS, EDI, and EDE	Recovered AN patients had similar EDI perfectionism scores as controls. MPS perfectionism scores were elevated in AN patients when compared with controls, even when AN patients were in remission.

Figure 1. Flowchart of the literature selection.

