

Review article

Perfectionism and eating disorders: Current status and future directions

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Abstract

The literature examining the relation between perfectionism and eating disorders was reviewed and content and methodological comparisons were made with the perfectionism literature in anxiety disorders and depressive disorders. A PsychInfo search using the key words “perfectionism/ perfect/ perfectionistic,” “anorexia,” “bulimia,” and “eating disorders” was performed and the generated list of papers was supplemented based on a review of reference lists in the papers. A total of 55 papers published between 1990 and 2005 were identified that assessed perfectionism among individuals with diagnosed eating disorders. The key research questions were distilled from these publications and empirical findings were summarized for each question, followed by a comparison with perfectionism papers in the anxiety and depressive disorder literatures. Also, key research design methodological parameters were identified and comparisons made across the three literatures: eating disorders, anxiety disorders, depressive disorders. The current review concludes with conceptual and methodological recommendations for researchers interested in perfectionism and eating disorders.

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1. Introduction

Perfectionism has long been linked to eating disorders. Indeed, eating disorder pioneer Hilde Bruch characterized young anorexia nervosa (AN) patients as fulfilling “every parent’s and teacher’s idea of perfection” and demonstrating “pleasing superperfection” (Bruch, 1978, p. 59). While the link with AN is longstanding and broadly accepted, the relation of perfectionism to bulimia nervosa (BN) is less clear. Some, however, suggest that the common central features of both AN and BN (in particular, striving for a “perfect” weight or body shape) are inherently perfectionistic (Goldner, Cockell, & Srikameswaran, 2002). Importantly, a recent proposal in the treatment of eating disorders has identified perfectionism as a key maintenance mechanism that may help account for the persistence of severe eating disorders (Fairburn, Cooper, & Shafran, 2003).

Three extensive reviews have considered the role of perfectionism in eating disorders. Jacobi, Hayward, de Zwaan, Kraemer, and Agras (2004) concluded that empirical work supports perfectionism as a correlate in the context of cross-sectional designs and (the few existing) longitudinal designs, and as a specific correlate in studies retrospectively assessing perfectionism. In his meta-analytic review, Stice (2002) found that the effect of perfectionism on maintenance of eating pathology was medium in magnitude, and the effect on increases in eating pathology (in particular, bulimic symptoms) was small, but significant. Stice suggested that perfectionism may be a risk factor for bulimic symptoms and a maintenance factor for more general eating pathology, and that perfectionism may interact with other risk factors in producing or maintaining eating pathology (e.g., Vohs, Bardone, Joiner, Abramson, & Heatherton, 1999). In their review of personality and eating disorders, Lilienfeld, Wonderlich, Riso, Crosby, and Mitchell (2006) concluded that the limited prospective research suggests that perfectionism may be a predisposing personality trait, preceding and increasing risk for the development of an eating disorder.

Despite general clinical and empirical consensus that perfectionism has a role in eating disorders (in particular, AN), the various research findings have yet to be collectively presented in a manner that produces a clear picture of what empirically oriented questions are being asked about perfectionism and eating disorders, and what the data are indicating. This review explicitly lays out the key research questions being addressed in the literature and summarizes the relevant empirical findings. Also, research on perfectionism in anxiety disorders and depressive disorders is reviewed to provide comparisons to the perfectionism–eating disorders literature. Finally, Enns, Cox, and Berger (2001) reported potential differences in the operation of perfectionism in analogue versus clinical samples. Consequently, in this review we focus exclusively on studies using diagnosed samples. Reviewing the multitude of studies of eating and perfectionism among nonclinical participants may present an inaccurate picture of perfectionism in eating disorders.

1.1. Assessment of perfectionism

Any review related to perfectionism must grapple with the problems of defining and assessing perfectionism. Prior to the 1990’s, assessment measures for perfectionism reflected a unidimensional construct. For example, one of the earliest perfectionism measures, the Burns Perfectionism Scale (Burns, 1980), focused on perfectionism as reflecting unremitting striving for unreasonably high standards and assessing one’s worth based on accomplishment. The most

commonly used assessment of perfectionism in the eating disorder literature comes from the Eating Disorder Inventory (EDI; [Garner, Olmsted, & Polivy, 1983](#)). While developed as a measure of general perfectionism yielding one score, researchers have since demonstrated that the EDI-Perfectionism subscale may better fit a two-factor model, including self-oriented perfectionism and family-pressured perfectionism ([Joiner & Schmidt, 1995](#); [Sherry, Hewitt, Besser, McGee, & Flett, 2004](#)). Both of these measures have satisfactory psychometrics ([Enns & Cox, 2002](#)).

In the early 1990's, multidimensional conceptualizations of perfectionism led to the development of new instruments, including the Frost Multidimensional Perfectionism Scale (Frost MPS; [Frost, Marten, Lahart, & Rosenblate, 1990](#)) and the Hewitt and Flett Multidimensional Perfectionism Scale (Hewitt and Flett MPS; [Hewitt & Flett, 1991a](#)). Both instruments have been used extensively and have good psychometric properties ([Enns & Cox, 2002](#)), and both address interpersonal aspects of perfectionism. Briefly, the Frost MPS provides scores for total perfectionism and for six dimensions of perfectionism, conceptually labeled Concern Over Mistakes (CM), Personal Standards (PS), Parental Criticism (PC), Parental Expectations (PE), Doubts About Actions (DA), and Organization (O). The Hewitt and Flett MPS is composed of three dimensions reflecting the personal and social components of perfectionism: Self-Oriented Perfectionism (SOP; reflecting one's personal setting of high standards), Socially Prescribed Perfectionism (SPP; reflecting perceived high expectations from others of oneself), and Other-Oriented Perfectionism (OOP; reflecting one's high expectations for others). (See [Table 1](#) for a list of key perfectionism acronyms used in this review.)

In the past decade additional perfectionism measures have emerged with adequate psychometric properties and different conceptualizations of perfectionism. The Almost Perfect Scale—Revised (APS—R; [Slaney, Rice, Mobley, Trippi, & Ashby, 2001](#)) seeks to discriminate between adaptive and maladaptive perfectionism and includes a discrepancy subscale that assesses distress caused specifically by the mismatch of standards and performance. The perfectionism subscale of the Obsessive Beliefs Questionnaire (OBQ-Perfectionism; [Obsessive Compulsive Cognitions Working Group, 2001](#)) is part of a larger measure of obsessive compulsive beliefs. It is consistent with the maladaptive perfectionism dimension and the tendency to avoid mistakes and failure. The Perfectionism Cognitions Inventory (PCI; [Flett, Hewitt, Blankstein, & Gray, 1998](#)) reflects a cognitive focus, assessing frequency of perfectionistic automatic thoughts, and has been found to account for unique variance in distress beyond that accounted for by trait perfectionism dimensions ([Flett et al., 1998](#)).

Various studies using multidimensional measures of perfectionism suggest that there are two factors underlying the multidimensionality. Conceptually, this harkens back to [Hamachek's \(1978\)](#) distinction between neurotic perfectionism (striving for excessively high standards is motivated by fear of failure) and normal perfectionism (striving for reasonable standards leads to satisfaction), as well as ideas of negative perfectionism (perfectionistic behavior that is driven by negative reinforcement) and positive perfectionism (perfectionistic behavior that is driven by positive reinforcement) ([Terry-Short, Owens, Slade, & Dewey, 1995](#)). More generally, theorists have described maladaptive and achievement striving components of perfectionism (e.g., [Slaney et al., 2001](#)). Empirically, factor

Table 1
Key perfectionism acronyms

Acronym	Scale or subscale referred to
EDI-Perfectionism	Perfectionism subscale of the Eating Disorder Inventory (Garner et al., 1983)
Frost MPS	Multidimensional Perfectionism Scale (Frost et al., 1990)
CM	Concern Over Mistakes (Frost MPS)
PS	Personal Standards (Frost MPS)
PC	Parental Criticism (Frost MPS)
PE	Parental Expectations (Frost MPS)
DA	Doubts About Actions (Frost MPS)
O	Organization (Frost MPS)
Hewitt and Flett MPS	Multidimensional Perfectionism Scale (Hewitt & Flett, 1991a)
SOP	Self-Oriented Perfectionism (Hewitt and Flett MPS)
SPP	Socially Prescribed Perfectionism (Hewitt and Flett MPS)
OOP	Other-Oriented Perfectionism (Hewitt and Flett MPS)
APS—R	Almost Perfect Scale—Revised (Slaney et al., 2001)
OBQ-Perfectionism	Perfectionism subscale of the Obsessive Beliefs Questionnaire (Obsessive Compulsive Cognitions Working Group, 2001)
PCI	Perfectionism Cognitions Inventory (Flett et al., 1998)

analytic work involving the items from the Frost MPS and the Hewitt and Flett MPS has found support for two factors, conceptually labeled Maladaptive Evaluative Concerns (consisting of CM, DA, PC, and PE from the Frost MPS, and SPP from the Hewitt and Flett MPS) and Positive Striving, which will be referred to as Achievement Striving in this paper, (consisting of PS and O from the Frost MPS, and SOP and OOP from the Hewitt and Flett MPS) (Frost, Heimberg, Holt, Mattia, & Neubauer, 1993). Bieling, Israeli, and Antony (2004) used versions of the factors derived by Frost et al. (1993) to find that the Maladaptive Evaluative Concerns dimension was more strongly associated with measures of psychological distress than was the Achievement Striving dimension. This finding, along with other findings related to multidimensional perfectionism and maladjustment, led Bieling and colleagues to conclude that CM, DA, PC, PE, and SPP reflect maladaptive perfectionism while PS and SOP, reflect, if not an adaptive component, then at least a more benign one, not associated with distress. In this review we will primarily discuss findings in terms of the two underlying dimensions of maladaptive and achievement striving perfectionism but we will also refer to specific dimensions of perfectionism (i.e., PS, CM, SOP, SPP, etc.) to highlight findings involving specific subscales. Unidimensional measures of perfectionism like the Burns Perfectionism Scale, the EDI-Perfectionism subscale, and OBQ-Perfectionism contain a mixture of maladaptive and achievement striving items, though they appear somewhat more closely associated with maladaptive perfectionism (Frost et al., 1990).

1.2. *The current review*

The current review was guided by two objectives. First, we wished to examine rigorously the existing empirical literature addressing the relation between perfectionism and eating disorders, particularly in terms of: 1) identifying the central questions being posed by eating disorder researchers, and then summarizing the data addressing these questions, and 2) identifying methodological characteristics of these studies. Second, we wished to compare the study of perfectionism in the eating disorder literature to the study of perfectionism in the anxiety disorder and depressive disorder literatures. Our findings and insights from these other literatures, in conjunction with our review of the eating disorder literature, raise critical conceptual and methodological issues for the study of perfectionism in the eating disorders.

2. **Methods**

We began with a systematic review of the published empirical work on perfectionism and eating disorders. Literature searches were conducted using PsychInfo for the years 1990 through 2005. The year 1990 was selected as the start date for this search since assessment instruments looking at perfectionism multidimensionally emerged in the early 1990's, leading to a substantial increase in perfectionism research. For example, a PsychInfo search using "perfectionism" and "anorexia" yielded over 90 articles between 1990 and 2005, and only 16 for the 15 years prior to 1990. Index words included perfectionism/perfect/perfectionistic and anorexia, bulimia, and eating disorders. Also, reference lists of identified empirical studies were searched to identify additional studies.

Empirical studies were included in the review if they met the following criteria: 1) sample size of at least 10 participants per cell; 2) participants met diagnostic criteria for an eating disorder (e.g., DSM or RDC criteria for AN, BN, binge eating disorder [BED], or eating disorder not otherwise specified [EDNOS]); 3) assessment of perfectionism occurred using a measure with adequate psychometric properties and history of use. The list of acceptable measures included the Burns Perfectionism Scale, EDI-Perfectionism, Frost MPS, Hewitt and Flett MPS, Almost Perfect Scale—Revised, OBQ-Perfectionism, and Perfectionism Cognitions Inventory (see Introduction for descriptions). Studies that met the above three criteria were excluded for review if methodological problems precluded confident interpretation of findings (e.g., potential participant selection bias due to a high attrition rate).

When the perfectionism literature among anxiety disorders and depressive disorders was reviewed, a similar approach was used. Literature searches were conducted for 1990 onward, and the same inclusion criteria were applied, including requiring a diagnosis (in this case, of an anxiety disorder or a unipolar depressive disorder).

Based on an initial review of the perfectionism literature in the eating disorders, anxiety disorders, and depressive disorders, three of the authors (A.M.B.-C., S.A.W., R.O.F.) developed a rating scheme in which the following information was extracted from each included article: description of sample (including diagnoses and cell sizes), measures used (including diagnostic assessment and perfectionism measure), study design (e.g., cross-sectional, longitudinal, randomized controlled trials), and results (i.e., main findings as they relate to perfectionism). These three

authors then intensively reviewed and rated the included studies from the three literatures. Working tables were created which summarized the results, and these tables were used to create the Results section and to help generate the recommendations proposed in the Conclusion.

3. Results

The literature search for empirical articles meeting inclusion criteria resulted in 55 studies addressing the relation between perfectionism and diagnosed eating disorders, with the majority of these involving clinical samples rather than population or community samples. Based on an initial review of these articles, the authors identified nine research questions that were addressed by these studies. These papers were then reviewed comprehensively in terms of methodology and results. Each of the nine questions is presented below with a summary of the findings from the eating disorder studies addressing it. A brief summary of the studies in the anxiety and depression literatures that have addressed these same questions follows. Finally, the eating disorder, anxiety, and depression literatures are compared across key methodological parameters.

3.1. Content comparisons: what is being asked?

3.1.1. Perfectionism and eating disorders

3.1.1.1. *Q1: Do individuals with eating disorders have higher levels of perfectionism than healthy controls?* Nine studies compared perfectionism levels between individuals with AN and healthy controls. Those using the EDI-Perfectionism consistently found that individuals with diagnosed AN had elevated perfectionism when compared with healthy controls or norms (Bastiani, Rao, Weltzin, & Kaye, 1995¹; Halmi et al., 2000; Moor, Vartanian, Touyz, & Beumont, 2004; Niv, Kaplan, Mitrani, & Shiang, 1998; Pla & Toro, 1999; Sutandar-Pinnock, Woodside, Carter, Olmsted, & Kaplan, 2003). An exception was Bizeul, Brun, and Rigaud's (2003) finding that non-depressed AN patients had EDI-Perfectionism scores comparable to a healthy control group. Also, Tachikawa et al. (2004) found that while binge-purge AN individuals had higher perfectionism levels than controls, there was no significant difference between restricting AN individuals and controls. The three studies assessing perfectionism as a multidimensional construct reported similarly consistent results with both maladaptive and achievement striving dimensions being higher in AN. Halmi et al. (2000) found higher scores on both maladaptive (CM, DA, PE, and PC) and achievement striving (PS) dimensions among AN individuals. Likewise, Bastiani et al. (1995) found elevations in AN participants on maladaptive perfectionism (CM, DA, PC, and SPP) as well as achievement striving perfectionism (PS, O, and SOP). Finally, Cockell et al. (2002) found higher SOP and SPP scores among AN participants compared to normal controls.

Six studies have attempted to answer this question among individuals with BN and/or BED with less consistent findings than those seen for AN. Using the unidimensional EDI-Perfectionism, Lilenfeld et al. (2000), Moor et al. (2004), and Tachikawa et al. (2004) found that BN participants had significantly higher perfectionism levels than healthy controls, however, BED individuals did not differ significantly from overweight controls (de Zwaan et al., 1994; Kuehnel & Wadden, 1994). Using a multidimensional measure of perfectionism, Lilenfeld et al. (2000) found higher scores on both maladaptive (CM, DA, PE, and PC) and achievement striving (PS) dimensions in their BN sample compared to healthy controls. However, Pratt, Telch, Labouvie, Wilson, and Agras (2001) found that those with BN or BED had higher scores for SOP, but not SPP, when compared to an obese non-eating disordered control group after controlling for depression, self-esteem, age, and body mass index.

Two studies reported perfectionism comparisons using mixed samples of eating disorders (i.e., AN, BN, and EDNOS). Results were inconsistent, with some evidence for the eating disorder sample having higher perfectionism than controls (Frost MPS total for Kaye et al., 2004), and other evidence failing to support this (EDI-Perfectionism for Moor et al., 2004).

¹ Bastiani et al. (1995) included a cell with fewer than 10 study participants ($n=8$, weight-restored AN group), which would have excluded it from this review given the inclusion criteria described in the Methods section. However, we chose to include this work given that it was the only one to assess perfectionism using the Frost MPS, the Hewitt and Flett MPS, and EDI-Perfectionism.

In general, the above studies show a consistent pattern of elevated levels of both maladaptive and achievement striving perfectionism among both AN and BN patients, although this pattern is most consistent for AN. Results with BED participants are inconsistent and inferences about this relationship are limited.

3.1.1.2. Q2: Do individuals with eating disorders have higher levels of perfectionism than other psychiatric groups?

This question raises the issue of specificity: is perfectionism related to psychopathology in general (or to multiple psychological disorders), or is there a special relation between perfectionism and eating disorders? Three studies were found explicitly addressing this question. [Bulik et al. \(2003\)](#) undertook the broad investigation of the relation between perfectionism (assessed using select subscales of the Frost MPS) and psychopathology as indexed by diagnoses of AN, BN, major depression, alcohol abuse or dependence, generalized anxiety disorder, panic disorder, and any phobia. Within a population-based sample of female twins, they found that elevated CM was associated with significantly elevated odds ratios for both AN and BN, but not with other psychiatric disorders. DA was associated with both eating and anxiety disorders. Personal Standards, the other perfectionism dimension assessed, was not significantly associated with any diagnosis. These initial findings suggest that the aspect of perfectionism associated with the tendency to interpret mistakes as failures is most strongly associated with eating disorders rather than being generally predictive of psychopathology.

[Cockell et al. \(2002\)](#) compared a group of AN participants with a psychiatric control group with mood disorder diagnoses (mixed unipolar and bipolar) using the Hewitt and Flett MPS. The AN patients scored significantly higher on both the Self-Oriented and the Socially Prescribed Perfectionism dimensions, but not on Other-Oriented Perfectionism. Similar results emerged from [Cassidy, Allsopp, and Williams \(1999\)](#) who compared a mixed eating disordered adolescent sample (AN and BN) with a mixed psychiatric control group (conduct, emotional, and affective disorders), finding that the eating disordered group scored significantly higher on EDI-Perfectionism.

The existing evidence suggests that certain dimensions of perfectionism may be specifically associated with eating disorders, although some caution is warranted since, unlike [Bulik et al. \(2003\)](#), a number of studies have shown associations between maladaptive dimensions, including CM, and anxiety disorders and depressive disorders, and since the mood disorder control group in [Cockell et al. \(2002\)](#) did not differ from normal controls on any dimension of perfectionism, which is inconsistent with other studies of depressive samples (see “Perfectionism and Anxiety and Depressive Disorders”). Of note, [Bulik et al. \(2003\)](#) is among the limited number of perfectionism—eating disorder studies that used a population-based sample rather than a clinical sample, and it is possible that research findings may differ depending on whether or not clinical samples (which are likely to be more severe and have greater comorbidity; [Galbaud du Fort, Newman, & Bland, 1993](#)) are used. Also relevant to the interpretation of these findings: none of the three studies assessed comorbid Axis I pathology in their eating disorder samples (although [Bulik et al., 2003](#) controlled for eating disorder diagnosis in the analyses involving the other disorders). To truly address specificity, “pure” diagnostic groups are required.

Comparing mean levels of perfectionism across different disorders provides another way to consider specificity. [Table 2](#) presents the ranges of mean levels found for different disorders across different studies. Although there are limitations to these comparisons (e.g., data collected at different time points, limited mean level information for BN individuals), it is notable that the AN individuals stand out from the others with the highest scores on both maladaptive and achievement striving dimensions of perfectionism.

Table 2
Comparison of mean levels of perfectionism across anxiety disorders, depressive disorders, and eating disorders

Disorder	Concern Over Mistakes (CM)	Personal Standards (PS)	Socially Prescribed Perfectionism (SPP)	Self-Oriented Perfectionism (SOP)
Anxiety Disorders (social phobia, OCD, panic disorder)	20.4–27.5 (13)	15.8–24.8 (12)	51.3–58.3 (4)	66.5–71.6 (4)
Depressive disorders	27.0–27.4 (2)	21.6–22.1 (2)	58.7–61.6 (5)	65.8–76.1 (5)
Anorexia nervosa	31.8–34.8 (5)	26.8–28.0 (5)	60.0–79.4 (3)	84.0–93.4 (3)
Bulimia nervosa	24.6 (1)	23.6 (1)	No data reported	72.6 (1)

Note. Ranges of means from different studies are listed. Number in parentheses represents the number of samples providing data.

3.1.1.3. Q3: Among eating disorder individuals, are certain subtypes associated with higher levels of perfectionism? Studies addressed this question by various means of subtyping (e.g., diagnosis, key behavioral features). Ten studies compared perfectionism levels across the diagnostic groups of AN, BN, BED, and/or EDNOS, consistently finding no differences between subtypes. Milos, Spindler, and Schnyder (2004) found no EDI-Perfectionism differences across AN, BN, and EDNOS groups, while Moor et al. (2004) found comparable perfectionism levels for AN and BN patients, but lower levels for EDNOS patients. Bussolotti et al. (2002) also found no EDI-Perfectionism differences between AN and BN patients. Comparing a BED sample with purging BN individuals from two other studies, de Zwaan et al. (1994) reported comparable EDI-Perfectionism levels. Using a multidimensional measure of perfectionism, no group differences were found in any of the three subscales of the Hewitt and Flett MPS across diagnoses of AN, BN, and EDNOS (Davis, 1997) and diagnoses of BN and BED (Pratt et al., 2001).

Comparing diagnostic groups with attention to subtypes within diagnosis, Tachikawa et al. (2004) found no EDI-Perfectionism differences across the following diagnostic groups: restricting AN, binge–purge AN, and purging BN, and neither Garner, Garner, and Rosen (1993) nor Halmi et al. (2000) found EDI-Perfectionism differences across restricting, binge–purge, and purging subtypes of AN. However, among a non-depressed AN group, Bizeul et al. (2003) reported significantly higher EDI-Perfectionism scores among binge–purge AN compared to restricting AN individuals. Reporting multidimensional perfectionism findings, Halmi et al. (2000) also found no AN subtype differences on the Frost MPS with the exception of PC where purging AN participants had significantly higher scores than restricting AN participants.

Seven studies compared perfectionism levels across eating disordered groups differentiated by key behavioral or affective features. For example, Davis, Kaptein, Kaplan, Olmsted, and Woodside (1998) reported that, among individuals with AN, high-level exercisers had higher levels of SOP than those who were moderate or non-exercisers, but similar levels of SPP and OOP. Studies differentiating by purging behavior found that eating disordered individuals with a history of laxative abuse had higher EDI-Perfectionism scores than those without a laxative abuse history (Pryor, Wiederman, & McGilley, 1996), and that presence of vomiting was associated with lower PS and O, but not with maladaptive dimensions of the Frost MPS (Reba et al., 2005). Researchers differentiating by affective indices found that a suicidal versus a non-suicidal eating disordered group did not differ on EDI-Perfectionism (Yamaguchi et al., 2000), but that depressed AN individuals were more perfectionistic than non-depressed AN individuals (Bizeul et al., 2003). Regarding impulsivity, Favaro et al. (2005) found that among their AN and BN patients, those with multiple impulsive behaviors were more perfectionistic (EDI-Perfectionism) than those without impulsive behaviors. Finally, Davis and Jamieson (2005) divided their BN sample into those who reported the greatest decreases in negative affect and somatic states during binge eating (i.e., those for whom binge eating had the most functional significance) and those who exhibited less reliable changes in these states, finding that those for whom binge eating had significant functional significance also had the higher levels of EDI-Perfectionism.

Taking into consideration the dynamic nature of eating disorder diagnoses, Tozzi et al. (2005) compared individuals with restricting AN to those with an initial diagnosis of restricting AN who developed BN, and found that individuals who “crossed over” from AN to BN scored significantly higher on the PC subscale of the Frost MPS, but not on the other perfectionism subscales.

In general, it appears that perfectionism levels (both maladaptive and achievement striving components) differ minimally across eating disorder subtypes, defined diagnostically according to DSM-IV categories. Findings are more mixed when subtyping was driven by other behavioral or affective features.

3.1.1.4. Q4: Do individuals who recovered from eating disorders have higher levels of perfectionism than controls? How do they compare to currently ill eating disordered individuals? Seven studies examined perfectionism levels among individuals recovered from AN. These studies varied in their follow-up intervals and specific criteria for recovery, but normal weight and the return of menses were common indicators of recovery. Most studies measuring perfectionism with the EDI-Perfectionism found elevated levels in their recovered AN participants compared to controls or norms (Bastiani et al., 1995; Niv et al., 1998; Srinivasagam et al., 1995; Ward, Brown, Lightman, Campbell, & Treasure, 1998), including a study reporting these elevations an average of 12 years after the initial referral (Sullivan, Bulik, Fear, & Pickering, 1998). Exceptions, where no EDI-Perfectionism differences were found between recovered AN and healthy controls, were reported by Casper (1990) at an 8–10 year follow-up and by Sutandar-Pinnock et al. (2003) at the end of treatment. However, Sutandar-Pinnock et al. (2003) reported that at 6–24 month follow-up, those

with “good” outcomes were higher on all Frost MPS subscales except for PE compared to controls, but still had comparable EDI-Perfectionism scores. Multidimensionally, elevations in both maladaptive and achievement striving dimensions of perfectionism have been reported in recovered AN compared to healthy controls (Bastiani et al., 1995; Srinivasagam et al., 1995).

When comparing weight-restored AN participants to those currently ill (i.e., not recovered, low weight), studies have consistently found no significant differences in perfectionism scores, across a range of perfectionism assessments (Frost MPS, Hewitt and Flett MPS, EDI-Perfectionism) (Bastiani et al., 1995; Niv et al., 1998; Ward et al., 1998). Findings were mixed for Sutandar-Pinnock et al. (2003) since, at 6–24 month follow-ups, AN patients with “good” outcomes, compared to those with “poor” outcomes (AN symptoms, below normal weight), had lower EDI-Perfectionism scores but did not differ in the Frost MPS scores.

Three studies examined perfectionism levels among individuals recovered from BN. These studies typically used the following recovery criteria: stable weight (>90% ideal body weight), regular menstrual cycles, and no binge eating, purging or restrictive eating patterns, all for at least one year. Two studies reported that, compared to healthy controls, recovered BN participants had significantly higher scores on the EDI-Perfectionism scale (Lilenfeld et al., 2000; Stein et al., 2002), and one study reported marginally elevated scores on this measure (Kaye et al., 1998). Additionally, Kaye et al. (1998) found that recovered BN participants scored higher on the Frost MPS total than healthy controls, and Lilenfeld et al. (2000) found elevated total and subscale Frost MPS scores (with the exception of PE and O) among recovered BN individuals. Only Lilenfeld et al. (2000) compared individuals recovered from BN with those currently ill; they found no significant differences in perfectionism between these groups, regardless of assessment measure (EDI-Perfectionism, Frost MPS).

Kaye et al. (2004) used a mixed eating disordered group (AN and BN subtypes) and found that those who were recovered (normal weight maintained as well as the absence of disordered eating behavior for the past year) had higher Frost MPS total scores than healthy controls. In this same study, individuals with a remitted eating disorder generally did not differ from those with an active eating disorder on the total perfectionism score of the Frost MPS.

Though there were some inconsistencies, in general these studies suggest that recovery from AN and BN is not accompanied by reductions in either maladaptive or achievement striving perfectionism and, furthermore, scores on these scales remain elevated in recovered participants. This is consistent with the idea that perfectionism is not a simple state effect associated with the active phase of illness and that perfectionism may serve as a risk factor for eating disorders, although the possibility that it represents a long-term “scar” of the eating disorder must be considered. An important limitation of these studies involves how “recovery” is defined (Quadflieg & Fichter, 2003; Steinhausen, 2002). The absence of a standard definition for recovery results in the use of idiosyncratic definitions, often with an over-reliance on physical indices (e.g., maintenance of “normal” weight and return of menses) and differences in the amount of time that indices of recovery must be maintained. Of the studies reviewed, all included weight restoration as a recovery criterion (although how that was defined varied — e.g., 85–115% ideal body weight; 90–120% ideal body weight; >18.5 BMI) and about half specified absence of binge eating, purging, or restrictive eating patterns; none assessed recovery in terms of body- or eating-related cognitions. Without a consistent definition of recovery, meaningful comparisons across studies of “recovered” individuals will be constrained.

3.1.1.5. Q5: Does premorbid perfectionism predict eating disorders? A set of studies by Fairburn and colleagues addressed this question using retrospective reports of perfectionism in childhood. In each study, a community-based case-control study design was used. Fairburn, Welch, Doll, Davies, and O’Connor (1997) found that individuals with BN had higher rates of childhood perfectionism (retrospectively assessed) than a healthy control group, but not compared to a general psychiatric control group. When BED individuals were the focus of inquiry, they did not appear to differ in levels of retrospectively assessed childhood perfectionism when compared with healthy controls, a general psychiatric group, or a BN group (Fairburn, Doll, Welch, Hay, Davies, & O’Connor, 1998). Striegel-Moore et al. (2005) used a similar study design, including the retrospective assessment of perfectionism, to find that individuals with BED reported higher levels of perfectionism than a healthy control group, but comparable levels to a general psychiatric control group. Finally, Fairburn, Cooper, Doll, and Welch (1999) found that individuals with AN had higher rates of childhood perfectionism (retrospectively assessed) than the healthy control group and the general psychiatric group, but that childhood perfectionism levels did not differ from the BN group. Of note, this set of studies assessed perfectionism using measures other than those included in this review, but their inclusion was deemed important given the rarity of studies designed to consider premorbid perfectionism.

Tyrka, Waldron, Graber, and Brooks-Gunn (2002) temporally structured assessments in an attempt to predict onset of eating disorders. They collected data on young females across three time points: T1 (ages 12–16), T2 (two years after T1, ages 14–18), and T3 (eight years after T1, ages 20–24). High school onset (i.e., by T2) of an AN or BN syndrome was not predicted by perfectionism assessed at T1 after controlling for initial eating disorder symptom levels. However, for young adult onset (i.e., by T3) of an AN syndrome, EDI-Perfectionism, assessed at either T1 or T2, was a significant prospective predictor. Perfectionism did not significantly predict young adult onset BN syndrome. In Santonastaso, Friederici, and Favaro's (1999) study, however, premorbid perfectionism, measured prospectively with the EDI-Perfectionism, was not one of the variables that predicted which asymptomatic girls subsequently developed an eating disorder (AN or BN) across a year's time.

There is limited work addressing this question, with most of it involving retrospective assessment of perfectionism. Inherent in a retrospective study design are problems related to inaccurate recall, selective recall, and recall biased by outcome (Kazdin, 2003). Furthermore, to determine whether perfectionism is a true risk factor for eating disorders, assurances of precedence are crucial, and this requires prospective, longitudinal designs (Jacobi et al., 2004). (However, prospective studies may be especially difficult in studies of eating disorders due to low incidence rates.) These limitations notwithstanding, the existing evidence supports premorbid perfectionism predicting eating disorders, especially AN.

3.1.1.6. Q6: Does medication or psychotherapy influence perfectionism level among eating disordered individuals?

Four studies have explored the effect of psychotropic medication or psychotherapy on perfectionism levels among eating disordered individuals. In their double-blind placebo-controlled study, Fichter, Leibl, Kruger, and Rief (1997) found that the selective serotonin reuptake inhibitor (SSRI) fluvoxamine did no better than placebo at reducing perfectionism (EDI-Perfectionism) among individuals with BN. Santonastaso, Friederici, and Favaro (2001), however, reported that, in an open, controlled trial, the SSRI sertraline was associated with decreased EDI-Perfectionism between baseline and 14-week follow-up among AN patients; no significant perfectionism change was reported in the placebo group. In a study by Garner et al. (1990) in which BN patients participated in a short-term psychotherapy trial, there was a greater decrease in EDI-Perfectionism from pre- to post-treatment among BN patients with good outcomes compared to those with poor outcomes. Szabo and Terre Blanche (1997), however, reported that there was no significant change in EDI-Perfectionism for their AN sample between admission to an inpatient program and discharge; interestingly, all other EDI subscales showed significant decreases.

The data are currently mixed on whether medication or psychotherapy influences change in perfectionism among eating disordered individuals.

3.1.1.7. Q7: Does perfectionism predict treatment outcome or prognosis among eating disordered individuals?

Six studies have investigated the role of perfectionism in predicting prognosis for eating disordered individuals. Among AN patients, higher initial levels of EDI-Perfectionism were associated with dropping out of treatment (Sutandar-Pinnock et al., 2003) and with poor prognosis at 5–10 years post-inpatient admission (Bizeul, Sadowsky, & Rigaud, 2001). Perfectionism appears less potent in predicting treatment outcome among BN patients. For example, Mussell et al. (2000) found that EDI-Perfectionism did not predict treatment completion, did not predict bulimic symptom remission at the end of cognitive-behavioral therapy above and beyond bulimic severity levels and depressive symptomatology, and did not predict remission at a 6 month follow-up above and beyond symptom remission status at end of treatment. Garner et al. (1990) reported similar results in that BN individuals with good outcomes post-treatment and those with poor outcomes had comparable pre-treatment levels of EDI-Perfectionism. While Maddocks and Kaplan (1991) reported that lower levels of pre-treatment EDI-Perfectionism were associated with positive outcomes, when selecting from a large pool of pre-treatment variables, perfectionism was not among those best differentiating BN patients who remained symptomatic at end of treatment from those who showed marked remission. Among a mixed eating disordered sample, those who had remitted at a 1 year follow-up had significantly lower EDI-Perfectionism scores at baseline compared to those who remained symptomatic (Santonastaso et al., 1999).

In summary, perfectionism appears to be a negative predictor of outcome for AN, but to be less of an influence on BN outcome.

3.1.1.8. Q8: Do relatives of eating disordered individuals have elevated perfectionism? Studies addressing this question are responding to the heritability of personality traits, the clustering of eating disorders in families, and the

hypothesis that eating disorders and personality traits may share an underlying familial liability (Lilenfeld et al., 2006). Four studies have reported on family findings related to perfectionism and eating disorders. Lilenfeld et al. (2000) used a combined family and recovered study design, which included probands with a history of BN (both currently ill and recovered BN individuals), matched control women with no history of eating disorders, and first-degree female relatives (mothers and sisters) of both the probands and the controls. The never-ill (i.e., no history of an eating disorder) relatives of BN probands had significantly higher EDI-Perfectionism scores than never-ill relatives of control probands, as well as significantly higher scores on the Frost MPS (total, CM, and PC). Lilenfeld et al. (2000) argue that this supports a predisposition model for perfectionism, with this personality trait increasing risk for the development of BN. They also found that BN probands' relatives with a history of an eating disorder scored higher than the never-ill relatives of BN probands on the DA subscale of the Frost MPS, suggesting that this dimension of perfectionism may be a consequence of the eating disorder.

Woodside et al. (2002) compared personality traits in parents of individuals with AN to parents of healthy controls (control data obtained in a previous family study). Mothers of AN probands had higher levels of perfectionism than control mothers on the Frost MPS total score and the maladaptive subscales of CM and PC, but not on the EDI-Perfectionism. However, the cause and effect relationship of these maternal traits and the daughters' eating disorder remain uncertain. Fathers of AN probands did not differ from control fathers on the Frost MPS or EDI-Perfectionism, although there was a trend toward lower levels of some perfectionism dimensions among fathers of AN probands.

Casper (1990) found that recovered AN patients (all physically recovered using weight and menses criteria and most "psychologically" recovered per normal scores on a measure of disordered eating attitudes and behaviors) did not differ from their sisters (none with a lifetime AN diagnosis) on EDI-Perfectionism. Of note, in this study, the recovered group did not differ from healthy controls on perfectionism either. Cassidy et al. (1999) found that mothers of eating disordered adolescents had significantly lower EDI-Perfectionism scores than mothers of psychiatric controls.

In conclusion, limited work supports predisposition and scar models involving the maladaptive dimension of perfectionism, although the degree to which, for example, the predisposition is due to genetics versus environment requires further exploration.

3.1.1.9. Q9: How does perfectionism relate to comorbidity patterns among eating disordered individuals? Four studies examined perfectionism among eating disordered individuals with and without comorbid psychopathology. Investigating alcohol use disorder comorbidity, Bulik et al. (2004) found that individuals with eating disorders who also met criteria for an alcohol use disorder had higher perfectionism scores (Frost MPS Total, CM, DA, PC, and PE — i.e., the maladaptive dimension) when compared to eating disordered individuals without an alcohol use disorder. In an exploration of obsessive compulsive comorbidity, Halmi et al. (2005) found that eating disordered individuals with comorbid OCD and OCPD had the highest perfectionism levels (using the Frost MPS) while those without OCD and OCPD had the lowest levels. CM and DA best discriminated between those with and without any obsessive-compulsive diagnosis, PS was most clearly associated with OCPD comorbidity, and PE was most clearly associated with OCD comorbidity. Kaye et al. (2004) considered perfectionism differences as a function of a lifetime anxiety disorder and the active or remitted state of the eating disorder. They found that the highest levels of perfectionism (as measured with the Frost MPS total) were endorsed by those with an active eating disorder and a lifetime history of one or more anxiety diagnoses. Interestingly, those who were remitted and had no history of an anxiety disorder still had significantly higher levels of perfectionism than the healthy control group. (Note: Bulik et al. (2004), Halmi et al. (2005), and Kaye et al. (2004) all used data from the Price Foundation international, multi-site study of the genetics of eating disorders to address their different comorbidity questions.) Finally, Milos et al. (2004) considered comorbidity in several ways. Having any Axis I disorder in addition to an eating disorder was not associated with higher perfectionism levels (EDI-Perfectionism) when compared with having no Axis I comorbidity. However, eating disordered individuals with a comorbid anxiety disorder or affective disorder did have higher perfectionism levels than eating disordered individuals without these comorbidities; no such finding was found for eating disorders and substance-related disorders comorbidity. Having any Axis II disorder was associated with greater perfectionism compared to having no personality disorder comorbidity. Eating disordered individuals with a comorbid Cluster A or C personality disorder had higher EDI-Perfectionism than eating disordered individuals without these comorbidities; no such finding was found for eating disorders and Cluster B personality disorder comorbidity.

In general, eating disordered individuals with comorbid psychopathology tend to have elevated perfectionism compared to their non-comorbid eating disordered peers.

3.1.1.10. Summary. The empirical literature to date suggests that eating disorders are characterized by high-level perfectionism which endures after recovery and appears to be familial in nature and to have predispositional significance for the development of eating disorders. Also, although relatively limited, there is some evidence of specificity in which certain dimensions of perfectionism appear particularly elevated in the eating disorders, but there is little evidence to suggest that perfectionism characterizes any particular eating disorder. On the other hand, there is some evidence that perfectionism is particularly elevated in eating disordered individuals with high levels of psychiatric comorbidity. Finally, it is unclear if perfectionism is modifiable during the course of eating disorder treatment, but there is reasonable evidence to suggest that high levels of perfectionism predict poorer overall outcomes, at least among AN individuals.

These findings emerge from studies using a range of methodologies (see also, Methodological comparisons section). The majority of these studies are cross-sectional studies, which constrains inferences about a causal role for perfectionism. Among the ten studies with a longitudinal component, most were treatment studies with relatively short time intervals (e.g., under 6 months) and only a few included more than two assessment points. Thus, the ideal prospective longitudinal design with multiple time points, which would permit the test of a variety of models of perfectionism and eating disorders (Lilenfeld et al., 2006), remains largely elusive. Also, the majority of these studies used clinical samples recruited from treatment settings. As a result, these findings may generalize to more severe or comorbid cases of eating disorders, but not necessarily to non-treatment-seeking individuals with eating disorders. Another methodological element that varied across studies was the way diagnostic criteria were established. While about half of the studies determined eating disorder status using a structured interview such as the Structured Clinical Interview for DSM-IV (SCID; First, Spitzer, Gibbon, & Williams, 1995) (e.g., studies using the Price Foundation international, multi-site data), others determined diagnoses less rigorously such as with a clinical interview by a psychiatrist or psychologist (e.g., Moor et al., 2004; Pla & Toro, 1999). Finally, sample sizes varied across studies, which has implications for power. While *n*'s ranged from 11 (e.g., Kuehnel & Wadden, 1994; Stein et al., 2002) to 1048 (Reba et al., 2005), almost half of the studies included at least 100 participants with eating disorders. Clearly, some methodologies permit stronger inferences than others, with studies using structured interviews to determine diagnosis, large epidemiological samples, and longitudinal designs permitting some of the strongest and most generalizable inferences.

3.1.2. Perfectionism and anxiety and depressive disorders²

The role of perfectionism in the anxiety disorders (social phobia, panic disorder, obsessive–compulsive disorder [OCD], generalized anxiety disorder [GAD], and specific phobia) was investigated in 25 studies using at least one of the measures of perfectionism included in this review; 11 studies investigated the role of perfectionism in a diagnosed depressed group (major depressive disorder [MDD], dysthymia, or depressive disorder not otherwise specified). When comparing the anxiety disorder groups to healthy controls (Q1), separate studies of individuals with social phobia, panic disorder, and OCD consistently found elevated levels of maladaptive perfectionism (SPP from Hewitt and Flett MPS and CM, in particular, from Frost MPS), but not achievement striving perfectionism (e.g., Antony, Purdon, Huta, & Swinson, 1998; Juster et al., 1996; Saboonchi, Lundh, & Ost, 1999). Studies using the OBQ-Perfectionism in OCD and GAD patients also found perfectionism elevations in their anxiety groups (e.g., Obsessive Compulsive Cognitions Working Group, 2003; Sica et al., 2004), with one study finding elevations on the PCI (Ferrari, 1995). Only for specific phobia has a pattern of non-significant maladaptive perfectionism differences been found (Antony et al., 1998). Finally, for studies comparing groups with mixed anxiety disorders to healthy controls, most studies found elevated perfectionism as measured by maladaptive dimensions or the OBQ-Perfectionism (e.g., Obsessive Compulsive Cognitions Working Group, 2003; Purdon, Antony, & Swinson, 1999). When the depression literature has made these

² While this review chose to focus on perfectionism research being conducted in “pure” categories of psychopathology (i.e., eating disorders, anxiety disorders, unipolar depressive disorders), several studies exist examining perfectionism in mixed psychopathology samples (e.g., Cox, Enns, & Clara, 2002; Hewitt, Newton, Flett, & Callander, 1997; Sherry, Hewitt, Flett, & Harvey, 2003). The diagnoses typically present in these mixed psychopathology groups included: anxiety disorders, mood disorders, schizophrenia, substance abuse/dependence disorders, adjustment disorders, and personality disorders. In these studies, maladaptive dimensions of perfectionism appeared to be more strongly related to distress (e.g., anxiety symptoms, depressive symptoms, suicidal ideation, hopelessness) than were the achievement striving dimensions. While the results from these studies are interesting and generally in line with results found using pure psychopathology groups, the use of a mixed psychopathology group clouds the relation between any particular psychopathology and perfectionism, and precludes tests of specificity.

comparisons, the depressed group has had higher levels of maladaptive perfectionism (SPP, CM, DA) (Enns et al., 2001; Hewitt & Flett, 1991b) and, in some cases, achievement striving perfectionism (SOP) (Hewitt & Flett, 1991b). Thus, consistent with studies on eating disorders, the maladaptive dimension of perfectionism was elevated compared to controls for anxiety disorders and depressive disorders. Regarding achievement striving perfectionism, there was no evidence for elevations in anxiety disorders, but some evidence for elevations in depressive disorders (as was found for the eating disorders).

Most of the research addressing specificity issues (Q2) in these literatures compared anxiety disorder groups with depressive disorder groups. Both Hewitt and Flett (1991b) and Norman, Davies, Nicholson, Cortese, and Malla (1998) found that depressed patients had higher scores on the achievement striving dimension of perfectionism than anxiety disorder patients, but found no differences between these psychiatric groups on the maladaptive dimension. However, in a hierarchical regression where SOP was entered after neuroticism, extraversion, and anxiety scores, SOP did not discriminate MDD patients from panic patients (Cox, Enns, Walker, Kjemisted, & Pidlubny, 2001). Bulik et al.'s (2003) examination of the odds ratios for several disorders in relation to perfectionism found that CM was not uniquely associated with either MDD or any of the anxiety disorder diagnoses assessed (GAD, panic disorder, any phobia), and that DA was uniquely associated with anxiety disorders (and AN and BN), but not major depression. PS was not associated with increased risk for either anxiety or depression. The one anxiety study that used a different pathological comparison group found that OCD patients and pathological gamblers did not differ on the OBQ-Perfectionism scale (Anholt et al., 2004). In sum, evidence for a specific relationship with perfectionism is mixed, with some support for elevated achievement striving perfectionism being associated with depressive disorders but not anxiety disorders and some support for one type of maladaptive perfectionism (DA) being associated with anxiety disorders but not depressive disorders.

No work appears to have looked at how different types of unipolar depressive disorders may compare on perfectionism levels, but a small number of studies have made comparisons across anxiety disorders (Q3). Studies comparing OCD patients with panic disorder patients and studies comparing social phobia patients with panic disorder patients have typically found elevations in the maladaptive dimension (especially CM and DA) among OCD patients and social phobia patients (e.g., Antony et al., 1998; Saboonchi et al., 1999). Using the OBQ-Perfectionism, Anholt et al. (2004) failed to find perfectionism differences between OCD individuals and panic disorder individuals, but Sica et al. (2004) found elevated perfectionism in an OCD group compared to a GAD group. One study of adolescents did not find differences in the Frost MPS subscales between an OCD group and a mixed anxiety disorder group (Libby, Reynolds, Derisley, & Clark, 2004). Interestingly, when panic disorder patients are subtyped by presence of agoraphobia, those with agoraphobia show elevated maladaptive and achievement striving perfectionism compared to those without agoraphobia (Iketani et al., 2002). In summary, it appears that maladaptive dimensions of perfectionism may be highest among OCD and social phobia patients compared to panic disorder, GAD, and specific phobia patients.

The anxiety and depression literatures have little data on how recovered individuals compare with controls and with currently ill individuals on perfectionism levels (Q4). For example, although not tested, CM levels among a social phobia group at the end of treatment were still considerably above that reported for non-clinical groups in other studies (Rosser, Issakidis, & Peters, 2003). The one study that considered perfectionism levels among patients recovered from MDD focused on the relative stability of dimensions of perfectionism within the sample. Cox and Enns (2003) reported that, compared to baseline levels when depressive criteria were met, recovered patients had lower SPP and CM, but higher PE, PC, and O; when comparisons were made using a composite index reflecting maladaptive perfectionism, the recovered group did not differ from their baseline levels. Thus, the limited evidence suggests that, as with eating disorders, perfectionism is not a simple state effect associated with the active phase of illness and that perfectionism may serve as a risk factor for anxiety and depression.

No work appears to have looked at whether premorbid perfectionism predicts anxiety disorders or depressive disorders (Q5). In terms of changes in perfectionism across treatment (medication or psychotherapy) (Q6), we could find no studies of the influence of medication on perfectionism in the anxiety disorder literature. In the depression literature, Fava et al. (1997) found that depressed patients showed significant decreases in EDI-Perfectionism over an 8-week treatment with fluoxetine, and that changes in perfectionism were associated with changes in depression severity. One psychotherapy study in the depression literature reported that individuals with residual depression who had met MDD criteria in the past 18 months showed decreases in both SOP and SPP from pre- to post-treatment in a group cognitive behavior therapy context (Enns, Cox, & Pidlubny, 2002). However, only the changes in the maladaptive dimension of perfectionism (SPP) were associated with decreased depressive symptoms. Psychotherapy

studies in the anxiety literature have found significant decreases in the maladaptive dimension (e.g., CM, DA, PC) following psychotherapy for social phobia (Lundh & Ost, 2001; Rosser et al., 2003), and Lundh and Ost (2001) additionally found decreases in the achievement striving dimension of PS. Thus, existing data suggest that medication and psychotherapy may contribute to decreased perfectionism among depressed patients and psychotherapy may decrease perfectionism level among anxiety disorder patients.

Only one study using the perfectionism measures identified in this review has investigated whether perfectionism predicts prognosis among depressed individuals (Q7), finding that baseline SOP and SPP did not predict treatment completion and did not predict outcome among completers (Enns et al., 2002). However, a program of research by Blatt and colleagues (NIMH Treatment of Depression Collaborative Research Program) has explored extensively the impact of perfectionism on treatment outcome using a self-critical perfectionism factor derived from the Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978). In brief, pre-treatment perfectionism predicted negative outcomes among depressed patients regardless of treatment group (Blatt, Quinlan, Pilkonis, & Shea, 1995), and mediators of the link between perfectionism and outcome were identified (e.g., development of a poor therapeutic alliance; Zuroff et al., 2000). In the anxiety literature, Rosser et al. (2003) reported that CM failed to predict outcome in treatment for social phobia beyond pretreatment levels of social anxiety. Lundh and Ost (2001) found higher pre-treatment Frost MPS scores, especially PS, among treatment non-responders in a study of cognitive behavior therapy for social phobia. However, treatment responders and non-responders had equivalent reductions in perfectionism following treatment. In sum, a certain type of maladaptive perfectionism (highly self-critical) may be an impediment to treatment for depressed patients, while findings are more mixed for the prognosis of individuals with anxiety disorders.

No work appears to have looked at whether relatives of individuals diagnosed with an anxiety disorder or a depressive disorder have elevated perfectionism (Q8). Similarly, no work has investigated how perfectionism relates to comorbidity patterns among depressed individuals (Q9). In a large sample of anxiety disorder patients, Bieling, Summerfeldt, Israeli, and Antony (2004) found that the maladaptive dimension of perfectionism (CM, DA, PC) correlated with the number of comorbid diagnoses, the number of comorbid anxiety diagnoses, and the number of comorbid depression diagnoses. The achievement striving dimension did not correlate with any of these patterns of comorbidity. Even after controlling for anxiety, depression, and distress, the relations between maladaptive perfectionism and comorbidity remained significant for anxiety disorder patients.

Perfectionism research in the anxiety and depression literature also includes tests of more complex models involving perfectionism than is typically seen in the eating disorder literature. These models include moderator models, mediation models, and models investigating whether perfectionism accounts for unique variance in anxiety or depressive symptoms above and beyond other constructs related to anxiety and depressive disorders. For example, Hewitt and Flett (1993) tested stress as a moderator in their depressed sample, and found that SOP interacted with achievement (but not interpersonal) hassles and SPP interacted with interpersonal (but also achievement) hassles to predict unique variance in depression levels. As an example of a mediational test, Enns, Cox, and Larsen (2000) reported that SPP and CM each mediated the relation between lack of maternal care in childhood and depressive symptoms for women, suggesting that maladaptive perfectionism may be important in the pathway from ineffective parenting to adult depression. Much more work has partialled variance to test whether perfectionism predicts above and beyond other key constructs. In the anxiety literature, for example, after controlling for depression, Juster et al. (1996) found that both CM and DA were still associated with social anxiety among social phobia patients, while Hewitt and Flett (1991b) found that SPP no longer predicted anxiety among a mixed group of anxiety disorder patients. In the depression literature, for example, Enns et al. (2001) found that SPP predicted depressive symptom level above and beyond higher order personality factors including neuroticism, and Hewitt and Flett (1993) reported that SPP predicted unique variance in depression levels after controlling for SOP and other personality measures.

3.1.2.1. Summary. The empirical literature to date suggests that while anxiety disorders are characterized by high levels of maladaptive perfectionism (and perhaps specifically doubts about actions), depressive disorders are associated with both maladaptive and achievement striving perfectionism dimensions. Within the anxiety disorders, maladaptive perfectionism appears to especially characterize OCD and social phobia, as well as being associated with high levels of comorbidity. Very limited evidence suggests that perfectionism levels endure after recovery from anxiety and depressive disorders. However, there is some evidence that psychotherapy may contribute to decreased perfectionism among both anxiety and depressive disorder patients, and some evidence that a maladaptive dimension of perfectionism predicts

prognosis in treatment, at least for depressed patients. The anxiety and depressive disorder literatures do not address whether premorbid perfectionism predicts these disorders or whether relatives of probands have elevated perfectionism. However, this literature does examine complex models involving perfectionism, including how perfectionism may operate in moderator and mediation models.

3.2. Methodological comparisons: how are questions related to perfectionism being asked?

The present review also yielded information about how the different empirical literatures compare on key methodological parameters. The methodological parameters selected are generally similar to those included in a recent methodological survey of eating disorder research conducted over the last three decades (Wonderlich et al., 2006; Crosby et al., 2006). They included: 1) presence/absence of various control groups (i.e., healthy control groups, similar psychopathology control group [e.g., AN vs. BN], and different psychopathology control group [e.g., AN vs. Depressed]); 2) use of a longitudinal design (defined as including two assessment time points with perfectionism measured at least at Time 1); 3) use of a treatment design whereby perfectionism was explicitly included in the treatment design and impact of perfectionism on treatment outcome and/or changes in perfectionism were assessed; 4) specific perfectionism measures used; 5) tests of whether unique variance in outcome was accounted for by perfectionism above and beyond other constructs (i.e., analyses partialing variance, generally in a hierarchical regression framework); 6) tests of moderator models (i.e., perfectionism interacting with another construct to predict outcome) or tests of mediation models.³

3.2.1. Control groups

In terms of control groups, 47% of eating disorder studies used healthy controls, compared to 72% of anxiety studies and 18% of depression studies. While 31% of eating disorder studies used control groups permitting comparisons between different eating disorder types (e.g., AN vs. BN), this design was used in 48% of anxiety studies (e.g., panic disorder vs. social phobia) but in none of the depression studies. Finally, 15% of eating disorder studies used a non-eating disordered psychopathology control group, 20% of anxiety studies used a non-anxious psychopathology control group, and 36% of depression studies used a non-depressed psychopathology control group. It appears that the anxiety literature has been the most consistent in including various control groups in study designs, although the depression literature has the highest percentage of studies with psychopathology control groups, permitting specificity tests.

3.2.2. Longitudinal design

A longitudinal design was employed in 18% of eating disorder studies, compared to 8% of anxiety studies and 27% of depression studies. Across literatures, there is a marked lack of longitudinal designs. Such designs are a prerequisite for answering questions related to whether perfectionism is a true risk factor and questions related to change (e.g., whether perfectionism influences symptom level change; how perfectionism may change across treatment).

3.2.3. Treatment design

Treatment designs investigating the role of perfectionism in treatment made up 13% of the eating disorder studies, compared to 8% of the anxiety studies and 18% of the depression studies. Given that perfectionism is viewed as a vulnerability factor for these psychological disorders, more research exploring how perfectionism may change over treatment (and what relation perfectionism change has to symptom improvement) seems warranted.

3.2.4. Assessment of perfectionism

The most commonly used perfectionism measures were the Frost MPS, the Hewitt and Flett MPS, EDI-Perfectionism, and OBQ-Perfectionism. Among the eating disorder studies, 69% used EDI-Perfectionism, 27% used Frost MPS, 11% used Hewitt and Flett MPS, and 0% used OBQ-Perfectionism. Among the anxiety disorder studies, 0% used EDI-Perfectionism, 60% used Frost MPS, 20% used Hewitt and Flett MPS, and 24% used OBQ-

³ Working tables describing where each study stands related to these six methodological parameters were created and the counts for each methodology feature were tallied to produce the results reported in this paper. Copies of the working tables are available upon request from the first author.

Perfectionism. Among the depressive disorder studies, 9% used EDI-Perfectionism, 55% used Frost MPS, 73% used Hewitt and Flett MPS, and 0% used OBQ-Perfectionism. These breakdowns reveal a clear bias for the use of EDI-Perfectionism in eating disorder research and for the use of the Frost MPS in anxiety research, as well as a bias towards the Hewitt and Flett MPS in depression research. Certainly, given that the EDI-Perfectionism is a component of one of the most commonly used eating disorder assessments (the EDI), it is no surprise that it is well-represented in the eating disorder studies and poorly represented in the anxiety disorder and depressive disorder literatures. Unknown is how having perfectionism bundled with eating disorder items may influence responses to the perfectionism items. Also of note, of the 15 eating disorder studies that used the Frost MPS (27% of the 55 eating disorder studies), nine were studies coming from data collected through the Price Foundation international, multi-site study of the genetics of eating disorders. That is, rather than a number of distinct eating disorder studies using the Frost MPS, the same dataset (or various subsets of this dataset) has been used to look at different issues related to the Frost MPS.

Regarding multidimensional perfectionism measures, 36% of eating disorder studies included a multidimensional assessment of perfectionism (the Frost MPS or the Hewitt and Flett MPS), compared to 72% of the anxiety studies and 91% of the depression studies. Given the ongoing debate about the conceptualization of perfectionism, although sometimes impractical given participant-burden issues, using more than one perfectionism measure in a study can contribute to identifying underlying patterns of dimensionality and to refining the construct. Multiple perfectionism measures were used in 13% of eating disorder studies, 8% of anxiety studies, and 36% of depression studies.

3.2.5. *Tests of perfectionism accounting for unique variance*

Perfectionism was involved in tests of unique variance in 24% of eating disorder studies, compared to 48% of anxiety studies and 82% of depression studies. Eating disorder work clearly lags behind the anxiety and depression fields in terms of empirically testing whether perfectionism explains incremental variance in outcome (e.g., symptom levels).

3.2.6. *Moderator and mediation models*

Moderator models involving perfectionism were tested in 4% of eating disorder studies, compared to 12% of anxiety studies and 9% of depression studies. Mediation models involving perfectionism were tested in 2% of eating disorder studies, compared to 4% of anxiety studies and 9% of depression studies. Across areas, limited work has hypothesized and tested perfectionism in interaction with other vulnerabilities or stressors in the prediction of symptom level or diagnostic status. Similarly, limited work has proposed and tested mechanisms by which perfectionism may be associated with symptom level.

4. **Conclusions**

A review of the literatures on the relation between perfectionism and diagnoses of eating disorders, anxiety disorders, and mood disorders illuminates the directions eating disorder research has taken and sheds light on future directions. In some areas, the eating disorder literature appears to be progressing more than the other literatures — for example, in attempts to consider premonitory perfectionism (e.g., Fairburn et al., 1999) and familial patterns of perfectionism (e.g., Lilenfeld et al., 2000). In other areas, the eating disorder literature lags behind perfectionism research in anxiety disorders and depressive disorders, most notably in the relative dearth of multidimensional perfectionism assessments. Also, compared to the anxiety and depression literatures, there is a greater absence of tests of more complex models involving perfectionism in the eating disorder literature (e.g., tests of unique variance, moderation).

A major difference in the findings for anxiety disordered populations compared to eating disordered populations is that in anxiety disorders, only the maladaptive dimensions of perfectionism are elevated (CM, DA, PC, SPP). Similarly, among samples of individuals with depressive disorders, maladaptive dimensions are most consistently elevated, although there is evidence for achievement striving perfectionism elevations as well (Hewitt & Flett, 1991b). In eating disordered populations both maladaptive (e.g., CM, DA, SPP) and achievement striving (e.g., PS, SOP) dimensions of perfectionism appear to be elevated. This suggests that describing dimensions of perfectionism as positive/adaptive and negative/maladaptive may not be entirely accurate — eating disorders may be one context in which achievement striving (“adaptive”) perfectionism is actually negative or maladaptive.

4.1. Mechanisms of action: from perfectionism to eating disorders

While prospective longitudinal studies are still needed to establish causation, most investigators assume that perfectionism is a causal or vulnerability factor for the development of some forms of psychopathology (see Bieling, Israeli, et al., 2004). Largely missing from the literature on perfectionism is specification of any explanatory mechanism leading from perfectionism to eating disorder, anxiety or depression. One possible mechanism concerns the role of perfectionism in attempts to attain and maintain social status or rank. High levels of maladaptive perfectionism involve doubts about the quality of one's behavior, excessive concerns over mistakes, and heightened sensitivity to the expectations of others. These characteristics may lead to a search for more objective or external sources of self-validation. Such sources may include social feedback in the form of comparisons on easily quantifiable dimensions like body weight. Several investigators have found perfectionism, especially socially prescribed perfectionism, predicted heightened body comparisons among adolescent girls (Schutz, Paxton, & Wertheim, 2002) and correlated with social rank variables such as shame, submissive behavior, defeat, and negative evaluation of social comparisons (Wyatt & Gilbert, 1998). Along these lines, Bieling, Israeli, et al. (2004) have suggested that perfectionism may moderate responses to events that involve loss of rank or status such that perfectionists respond by maladaptive attempts to regain their perceived rank. One such maladaptive attempt to regain perceived rank might be to focus on body weight as a readily quantifiable marker of success or rank.

A related mechanism by which perfectionism could lead to eating disorders or other psychopathology involves the long-term effects of attempts to conceal mistakes. A number of studies have now demonstrated that people with high levels of perfectionism go to great lengths to hide their mistakes and imperfections (Hewitt, Flett, Sherry, et al., 2003) and that this perfectionistic self-presentation style is associated with eating disorder symptoms (Cockell et al., 2002; McGee, Hewitt, Sherry, Parkin, & Flett, 2005). Along these lines, attempts to conceal flaws may have the effect of limiting feedback about the seriousness of mistakes, as well as limiting the opportunities of learning from them. For instance, Frost and Marten (1990) speculated that the reason perfectionists in their study wrote poorly compared to nonperfectionists was because over time they took pains to avoid allowing other people to view samples of their writing thereby insulating themselves from feedback that could have improved writing skills. Related studies have found that concealing mistakes mediates the relation between maladaptive perfectionism and distress (Kawamura & Frost, 2004) and that experiential avoidance mediates the relation between perfectionism and worry (Santanello & Gardner, *in press*). Future research should examine whether a similar pathway exists between perfectionism and eating disorders.

Another possible mechanism of action involves rumination. Much evidence exists for a connection between rumination and depression (Nolen-Hoeksema, 2000), while growing evidence highlights a relation between perfectionism and rumination. Frost, Trepanier, Brown, and Heimberg (1997) found that high CM individuals, compared to those with low CM, engage in a more ruminative style in response to their mistakes (e.g., were more bothered by mistakes, reacted to mistakes with more negative affect). Burns and Fedewa (2005) found that a form of maladaptive perfectionism was significantly positively correlated with rumination in response to depressed mood, but a positive form of perfectionism was unrelated to rumination but positively related to distraction and problem-solving tendencies in response to depressed mood. Furthermore, the notion of a ruminative cognitive quality of perfectionism helped shape the Perfectionism Cognitions Inventory (PCI; Flett et al., 1998) which taps into the frequency of automatic thoughts involving perfectionism. Flett, Madorsky, Hewitt, and Heisel (2002) suggest that rumination may mediate the link between perfectionism and distress. In their study, many of the significant correlations between perfectionism and psychological distress (anxiety and depression) became non-significant after controlling for rumination levels. Research should examine whether rumination mediates the link between perfectionism and eating disorders.

Yet another possibility involves perfectionism as an important distal element in the causal pathway of the escape theory of binge eating (Abramson, Bardone-Cone, Vohs, Joiner, & Heatherton, 2006; Heatherton & Baumeister, 1991). This theory posits that perfectionism (high standards) acts as a vulnerability factor which, in the context of an unmet standard, produces an undesirable discrepancy which generates intense negative affect and aversive self-awareness which motivates temporary escape through binge eating. While this theory has not been fully tested, elements have found support. For example, a connection has been found between perfectionism and an unmet standard (feeling overweight) and the outcome of bulimic symptoms (most notably, binge eating), with highly perfectionistic women who feel overweight endorsing the highest levels of bulimic symptoms (Joiner, Heatherton, Rudd, & Schmidt, 1997). Relatedly, there is evidence that perfectionism, self-esteem/self-efficacy, and an appearance ego threat interact to

predict bulimic symptoms (Bardone-Cone, Abramson, Vohs, Heatherton, & Joiner, 2006; Vohs et al., 1999). Bardone-Cone et al. (2006) speculate that the confluence of high perfectionism, low self-efficacy, and the ego threat of high body dissatisfaction produces the negative effect posited by escape theory which, in turn, drives efforts to escape, with the appeal of binge eating being that it is one way to temporarily block meaningful thought and numb feelings (Bardone, Jaffee, Krahn, & Baker, 1996). Which perfectionistic individuals turn to binge eating rather than other “escape behaviors” (e.g., drinking) is an important area for future research (Abramson et al., 2006).

From a different, non-causal perspective, perfectionism may have its impact on psychological disorders that are already established. That is, perfectionism may influence aspects of the disorder including severity, presentation, course, and response to treatment (for a thorough review of such a pathoplasty model, see Lilienfeld et al., 2006). For example, perfectionism appears to act as a moderator in predicting which depressed individuals experience negative outcomes in psychotherapy (Blatt et al., 1995), and is associated with treatment drop-out among AN patients (Sutandar-Pinnock et al., 2003). Perfectionism may act as a mediator of the relationship between eating disorder and course, with, for example, the elevations in both maladaptive and achievement striving perfectionism associated with AN perhaps contributing to the chronicity of this disorder. Considering the role of perfectionism among already established cases of eating disorders is warranted in future research.

Finally, perfectionism as observed and measured, might be an observable and measurable phenotypic personality manifestation of an underlying genetically mediated and neurobiologically determined trait or set of traits. In contrast to the related construct of obsessionality, very little is known about the neurobiology of perfectionism. Moreover, neurocognitive correlates of perfectionism are less well developed than that of, for example, the related trait of obsessionality. The fact that perfectionism and related traits are heritable (Tozzi et al., 2004), are elevated in family members of individuals with eating disorders (Lilienfeld et al., 2000; Woodside et al., 2002), seem to predate the onset of eating disorders (Fairburn et al., 1999), and persist after recovery (Srinivasagam et al., 1995) provides considerable support for exploring the potential role of neurobiological correlates of perfectionism as an endophenotype for eating disorders. Identification of neurobiological or neurocognitive endophenotypes of perfectionism that could influence traits such as perseveration, detail orientation, and flaw detection, could assist with understanding the role of biology and genetics in liability to perfectionism.

4.2. Future directions for perfectionism and eating disorder research

While the existing perfectionism research is asking interesting questions in relation to eating disorders, more data are needed to address some of them, in particular, questions related to specificity, premorbid perfectionism, treatment, and perfectionism in family members. Additional understanding about specificity will require the inclusion of non-eating disordered psychiatric controls, “pure” psychopathology groups, and the use of both clinical and population-based samples. Better tests of whether premorbid perfectionism predicts eating disorders will require prospective research with perfectionism assessed prior to the emergence of eating disorder symptomatology; this study design is necessary in order to justify perfectionism as a risk factor (Jacobi et al., 2004). In order to understand how perfectionism responds in treatment, treatment studies are needed that assess perfectionism pre-treatment and subsequently (ideally during treatment, at end of treatment, and at follow-ups at various intervals), to see whether perfectionism changes as a result of treatment for an eating disorder, whether perfectionism change is associated with decreased symptoms, and whether pre-treatment perfectionism influences treatment outcome. Especially interesting will be to see how the “transdiagnostic” treatment of eating disorders, which targets perfectionism as a maintenance factor of eating disorders (Fairburn et al., 2003), operates in these regards. Finally, more family and recovered studies are needed in order to address questions related to the heritability of perfectionism and eating disorders and to test different conceptual models explaining the relation between perfectionism and eating disorders (predispositional, scar, common cause; Lilienfeld et al., 2006).

There are additional questions that should be asked in order to arrive at a better understanding of perfectionism in the eating disorders. Much work remains to address whether perfectionism accounts for unique variance in eating disorders (above and beyond other dimensions of perfectionism, higher order personality constructs, negative affect, etc.), whether perfectionism interacts with other variables to explain eating disorder symptoms (moderator model), and what mechanisms explain the link between perfectionism and eating disorders (mediator model — see Mechanisms of action section). What work exists using more complex models involving perfectionism has tended to use non-clinical samples, predicting symptom level rather than diagnoses. For example, researchers comparing different dimensions of

perfectionism against each other have reported different findings: Hewitt, Flett, and Ediger (1995) found that only a self-oriented dimension of perfectionism explained unique variance in dietary restraint (a behavioral feature of AN), while others have found that both self-oriented and socially prescribed dimensions are associated with dietary restraint and anorexic attitudes and behaviors (McLaren, Gauvin, & White, 2001; Sherry et al., 2004). Regarding moderator models, there is some evidence for perfectionism interacting with self-esteem/self-efficacy and body dissatisfaction to predict elevated bulimic symptoms (Bardone-Cone et al., 2006; Vohs et al., 1999) and for self-oriented and socially prescribed dimensions of perfectionism interacting to predict anorexic attitudes and behaviors (Sherry et al., 2004); whether these interactive models explain symptom levels in AN and BN patients is unknown.

Another recommended direction involves diversifying study samples, expanding beyond the typical Caucasian female sample. Preliminary work has been done by Woodside et al. (2004), who found that men with eating disorders were less perfectionistic than women with eating disorders, and by Bardone-Cone, Weishuhn, and Boyd (submitted for publication), who used an undergraduate sample of Black and White women to find a similar pattern of associations between maladaptive and achievement striving dimensions of perfectionism and bulimic symptoms in both groups. Another research direction involves examining the role of perfectionism in a phenomenon specific to eating disorders, the transition from AN to BN (or from restricting AN to binge/purge AN); to date, only one study has examined perfectionism in this “cross-over” (Tozzi et al., 2005). Finally, researchers should recognize that perfectionism may play different roles in the etiology, maintenance, and course of an eating disorder, and provide the appropriate tests for these different conceptualizations.

Lastly, we recommend ongoing consideration of the perfectionism construct. The early 1990’s produced the means of assessing perfectionism as a multidimensional construct (Frost et al., 1990; Hewitt and Flett, 1991a). Since then, Shafran, Cooper, and Fairburn (2002) stressed the importance of “clinical perfectionism,” defined as overdependence of self-evaluation on the pursuit of demanding, self-imposed standards despite negative consequences, which they proposed to be unidimensional, dysfunctional, and without interpersonal features. They claimed that, of the multidimensional measures, only the Frost MPS subscales of PS and (some of the items from) CM and the SOP subscale of the Hewitt and Flett MPS appropriately assess clinical perfectionism. In their reply, Hewitt, Flett, Besser, Besser, Sherry, and McGee (2003) expressed concern that Shafran et al. (2002) were encouraging a return to a unidimensional perspective, ignoring social context, and they provide historical, theoretical, and empirical evidence to support the value of conceptualizing perfectionism multidimensionally. A large number of investigations have concluded that there are two primary dimensions of perfectionism (e.g., Bieling et al., 2004; Frost et al., 1993; Hill, McIntire, & Bacharach, 1997; Kilbert, Langhinrichsen-Rohling, & Saito, 2005). As Dunkley, Blankstein, Masheb, and Grilo (2006) suggest, the Evaluative Concern dimension rather than the Achievement Striving dimension is the most closely associated with most forms of psychopathology and most closely reflects the concepts of clinical perfectionism and maladaptive perfectionism. The exception may be for AN where the Achievement Striving dimension is also elevated compared to non-clinical controls. Future perfectionism research in the eating disorders should engage in this dialogue by using assessment measures that conceptualize perfectionism multidimensionally and that reflect the empirically and theoretically supported maladaptive and achievement striving dimensions of perfectionism. Relatedly, furthering our understanding of the construct of perfectionism using neurocognitive and neurobiological methodology in addition to questionnaire methodology may assist to enrich our understanding of both the biological and psychological processes underlying the trait.

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