

Relationships Between Perfectionism and Specific Disordered Eating Behaviors

Kelsie Forbush, BA^{1*}
Todd F. Heatherton, PhD²
Pamela K. Keel, PhD¹

ABSTRACT

Objective: Perfectionism has been reported as a specific risk factor for anorexia nervosa and bulimia nervosa, but not binge eating disorder. This study examined whether these differences are due to differential associations between perfectionism and specific eating disorder behaviors.

Method: Participants ($N = 2,482$) completed the eating disorders inventory perfectionism scale and a questionnaire assessing eating disorder symptoms.

Results: Perfectionism was associated with an array of disordered eating behaviors in women. However, associations were strongest for fasting and purging. Further, the association between binge

eating and perfectionism was statistically mediated by fasting. In men, perfectionism was significantly associated only with fasting, and this association was greater than associations with other disordered eating behaviors.

Conclusion: Results explain why previous studies have reported weak or inconsistent associations between perfectionism and binge eating and may inform etiological models of EDNOS characterized by fasting or purging. © 2006 by Wiley Periodicals, Inc.

Keywords: perfectionism; personality; disordered eating; eating disorders

(*Int J Eat Disord* 2007; 40:37–41)

Introduction

Perfectionism plays an important role in several psychological disorders including depression¹ and anxiety disorders,² and has received considerable attention in research on the etiology of eating disorders.^{3–6} Perfectionism represents a precursor to, and a characteristic of, the acute phases of certain eating disorders.^{7–10} Previous investigations have demonstrated that perfectionism persists after long-term weight recovery from anorexia nervosa (AN), and is present in relatives of women with eating disorders.^{5,10} Taken together, these studies suggest that perfectionism may represent an endophe-

notype for determining the genetic bases of eating disorders.¹¹

Although perfectionism has been implicated in the etiology of eating disorders, perfectionism has been reported as a specific risk factor for the development of anorexia nervosa⁷ and bulimia nervosa (BN)⁸ but not binge eating disorder (BED).¹² Research examining concurrent factors that discriminate among eating disorders suggests that women with AN tend to have significantly higher levels of perfectionism compared to women with BN.¹³ In addition, some studies have found that perfectionism further discriminates between AN subtypes, indicating that women with AN-restricting subtype are more perfectionistic and rigid than their AN-binge purge counterparts.¹⁴ However, this result is fairly inconsistent across the literature. For example, some studies have found no differences in perfectionism between AN subtypes,^{9,15} while other studies have found evidence for increased perfectionism in women with AN-binge purge subtype compared to women with AN-restricting subtype.¹⁶

Of interest, several studies have noted weak or inconsistent associations between perfectionism and binge eating.^{17–19} It is possible that these inconsistent associations may be explained by the presence of fasting (acting as an underlying third variable) among some who binge. However, to our knowledge, no study has examined these hypothe-

Accepted 22 April 2006

Portions of this manuscript were presented at the 2005 International Conference on Eating Disorders, Montreal, Canada and the 2005 Annual Meeting of the Eating Disorders Research Society, Toronto, Canada.

Supported by MH R01 63758 from the National Institute for Mental Health; P1 Pamela Keel.

*Correspondence to: Kelsie Forbush, B.A., Department of Psychology, University of Iowa, E11 Seashore Hall, Iowa City, IA. E-mail: kelsie-forbush@uiowa.edu

¹ Department of Psychology, The University of Iowa, Iowa City, Iowa

² Department of Psychological and Brain Sciences, Dartmouth College, Hanover, New Hampshire

Published online 6 September 2006 in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/eat.20310

© 2006 Wiley Periodicals, Inc.

ses directly. The purpose of the present study was to examine and compare the relationships between perfectionism and specific eating disorder behaviors. Focusing on disordered eating behaviors rather than syndromes may provide information pertinent to eating disorders not otherwise specified (EDNOS), a diagnostic category that consists of considerable symptom heterogeneity.

In light of previous research on the associations between perfectionism and eating disorder syndromes, we hypothesized that individuals with a lifetime history of fasting would display higher levels of perfectionism than individuals without a history of fasting. In addition, because of associations between fasting and other eating disorder behaviors (e.g., binge eating, self-induced vomiting, laxative, and diuretic use), we posited that lifetime histories of purging and binge eating would be associated with elevated levels of perfectionism. However, we hypothesized that the associations between perfectionism and disordered eating behaviors would be strongest for fasting and that the association between binge eating and perfectionism might be explained by an underlying third variable (i.e. fasting).

Method

Participants

Participants were female ($n = 1,732$) and male ($n = 750$) undergraduates from a prestigious college in the Northeast enrolled in a 20-year study of health and eating patterns.²⁰ In the springs of 1982, 1992, and 2002, 800 women and 400 men were randomly selected to complete a self-report survey on health and eating patterns. Participation rates were 72% in women and 63% in men. The present investigation examined data at baseline for the three cohorts. Participants had a mean (SD) age of 19.9 (1.8) years. Men reported a mean (SD) body mass index (BMI) of 22.9 (2.8) m/kg², and women reported a mean (SD) BMI of 21.7 (2.9) m/kg². Participants self-reported the following racial/ethnic identities: Caucasian (71%), African American (6.8%), Asian (15.3%), Hispanic (6.2%), and Other/Not-disclosed (0.7%).

Measures

Eating Disorders Inventory-Perfectionism Scale (EDI-P).¹⁵ Although the EDI-P is usually regarded as measuring perfectionism as an unidimensional construct, two large factors have emerged: self-oriented perfectionism (i.e. requiring perfection of oneself) and socially prescribed perfectionism (i.e. perceiving that others are demanding perfection of oneself).^{21,22} The

EDI-P is the most frequently used index of perfectionism in participants with eating disorders²³ and correlates well with other measures of perfectionism, such as the Frost Multidimensional Perfectionism Scale.²⁴

Disordered eating behaviors were measured using self-report surveys that inquired about lifetime histories of engaging in fasting, binge eating, self-induced vomiting, diuretic abuse, or laxative abuse to control weight. Surveys did not provide specific definitions of behaviors, which may contribute to increased error in the assessment of symptoms when lay definitions differ from clinical definitions. However, previous research on this sample supports the concurrent validity of these surveys for assessing disordered eating patterns, in terms of agreement between changes in self-reported binge eating and the EDI Bulimia scale.²⁰ Further, there was good agreement between survey-based diagnoses of eating disorders using these self-reported symptoms and diagnoses based on structured clinical interviews.²⁰

Data Analyses

T Tests were used to examine differences in perfectionism between individuals with and without lifetime histories of specific disordered eating behaviors. Using equations from Rosenthal and Rosnow,²⁵ meta-analytic techniques were used to compare the magnitude of associations between perfectionism and different types of disordered eating behaviors. Cohen's *d* was converted into Fisher's *z*, and the magnitude of discrepancy between Fisher's *z*-scores was compared. To examine whether the association between perfectionism and binge eating might be explained by an underlying third variable (i.e. fasting), we conducted a hierarchical linear regression to determine whether fasting statistically mediated the association between binge eating and perfectionism after confirming a significant bivariate association between binge eating and fasting. The point prevalence of bulimic syndromes declined from 1982 to 2002 in the current sample.²⁰ We conducted separate mediation analyses for each cohort to determine whether secular trends impacted the validity of results. The patterns of mediation results for each cohort were identical to results obtained for all three cohorts combined. Finally, meta-analytic techniques were used to compare the magnitude of associations between perfectionism and specific disordered eating behaviors between women and men.

Results

No significant associations between perfectionism and age ($r = 0.024$, $p = .32$) or BMI were observed

TABLE 1. Associations between perfectionism and specific eating disorder behaviors

	Lifetime History		<i>t</i>	<i>p</i>	<i>d</i>
	Absent	Present			
	EDI-P <i>M</i> (SD)	EDI-P <i>M</i> (SD)			
Women (<i>n</i> = 1,732)					
Fasting	22.58 (5.24)	24.15 (5.46)	-5.83	.001**	0.30
Self-induced vomiting	22.97 (5.35)	24.90 (5.37)	-4.49	.001**	0.36
Laxative abuse	23.01 (5.32)	25.89 (5.62)	-4.95	.001**	0.54
Diuretic abuse	23.08 (5.35)	25.85 (5.40)	-3.79	.001**	0.52
Any purging ^a	22.87 (5.34)	25.03 (5.22)	-5.82	.001**	0.41
Binge eating	22.84 (5.40)	23.75 (5.29)	-3.39	.001**	0.17
Men (<i>n</i> = 750)					
Fasting	22.66 (4.10)	24.00 (5.31)	-2.50	.013*	0.27
Self-induced vomiting	22.85 (5.08)	23.08 (4.11)	-0.16	.870	0.05
Any purging ^a	22.84 (5.10)	23.67 (4.19)	-0.69	.493	0.16
Binge eating	22.74 (5.10)	23.60 (4.83)	-1.52	.128	0.17

* $p < .05$, ** $p < .001$.

^aAny purging was created by combining any history of self-induced vomiting, laxative abuse, or diuretic abuse to control weight into one composite variable.

($r = 0.010$, $p = .68$). There were no differences between men and women on levels of perfectionism ($t(1502) = -1.48$, $p = .14$). Across cohorts, women reported the following lifetime prevalence of disordered eating behaviors: binge eating (37.4%), diuretic abuse (3.2%), fasting (37.4%), self-induced vomiting (10.2%), laxative abuse (5.2%), and any purging (14.3%). Not surprisingly, men reported a much lower lifetime prevalence of disordered eating behaviors than women: binge eating (12.9%), diuretic abuse (0.8%), fasting (14.4%), self-induced vomiting (1.8%), laxative abuse (0.4%), and any purging (2.5%). Given the low lifetime prevalence of diuretic and laxative abuse, these variables were not examined separately for men but were included in a composite variable representing any lifetime history of purging.

As expected, women who reported a lifetime history of fasting, binge eating, self-induced vomiting, diuretic abuse, or laxative abuse had significantly higher levels of perfectionism than those who did not. In men, only a lifetime history of fasting was associated with higher levels of perfectionism (see **Table 1**).

Meta-analyses comparing effect sizes indicated that fasting was more strongly associated with perfectionism than was binge eating ($z = -2.89$, $p = .002$) in women. However, fasting and purging were not differentially associated with perfectionism ($z = 0.002$, $p = .998$). Finally, purging was more strongly associated with perfectionism than was binge eating ($z = -2.89$, $p = .002$). In contrast to results in women, fasting and binge eating were not differentially associated with perfectionism in men ($z = 1.38$, $p = .17$). However, fasting was more strongly associated with perfectionism than was

TABLE 2. Meta-analyses comparing associations between perfectionism and eating disorder behaviors in men and women

Eating Disorder Behavior	Men (<i>n</i> = 750)		Women (<i>n</i> = 1,732)		Z-value
	<i>d</i>	<i>z</i>	<i>d</i>	<i>Z</i>	
Fasting	0.27	0.31	0.30	0.39	-1.78
Self-induced vomiting	0.05	0.08	0.36	0.34	-5.94*
Any purging	0.16	0.16	0.41	0.40	-5.23*
Binge eating	0.17	0.24	0.17	0.29	-1.18

* $p < .001$.

purging ($z = 2.91$, $p = .002$). Purging and binge eating were not differentially associated with perfectionism in men ($z = 1.54$, $p = .12$).

Given the weak but significant association between binge eating and perfectionism in women, analyses were conducted to determine whether the presence of fasting mediated this association. Because a lifetime history of binge eating was not significantly associated with perfectionism in men, these analyses were not conducted in men. First, a lifetime history of fasting was significantly associated with a lifetime history of binge eating ($\chi^2(1) = 230.92$, $p < .001$) in women. Second, hierarchical regression analyses revealed a decrease in the ability of binge eating to predict perfectionism from the first block (binge: $B = 0.92$, $SE \beta = 0.77$, $\beta = 0.082$, $p = .001$) when fasting was entered as a predictor in the second block (binge: $B = 0.40$, $SE \beta = 0.29$, $\beta = 0.036$, $p = .171$). Thus, the association between binge eating and perfectionism in women appears to be explained by their mutual association with fasting.

As shown in **Table 2**, lifetime histories of self-induced vomiting and purging displayed stronger

associations with perfectionism in women than in men. The strength of associations between perfectionism and fasting and binge eating did not differ between men and women.

Conclusion

Perfectionism was significantly associated with an array of disordered eating behaviors in women. However, associations were strongest for fasting and purging behaviors. In men, only a lifetime history of fasting was significantly associated with perfectionism, and this association was greater than associations between perfectionism and other disordered eating behaviors. Furthermore, the association between binge eating and perfectionism appeared to be attributable to the presence of fasting among those who binge. Although men and women did not differ in overall levels of perfectionism, women displayed stronger associations than men between perfectionism and self-induced vomiting and purging. In contrast, the strength of associations between perfectionism and fasting and binge eating were similar between men and women.

Taken together, results appear to explain why perfectionism is a risk factor for both AN and BN, in which fasting and purging are common, but not for BED, in which fasting and purging are absent. Results explain inconsistent results for comparisons of the restricting subtype of AN to the binge-purge subtype of AN,^{9,14} given that both fasting and purging were associated with high levels of perfectionism. Finally, results seem to resolve the counter-intuitive association between high levels of perfectionism and binge episodes.^{17–19} This association appeared to be a consequence of an underlying third variable, fasting. However, it is not possible to conclude from our study whether fasting mediates a *causal* association between perfectionism and binge eating.

In terms of the study's limitations, the most salient issue was the low base rates of disordered eating behaviors in men, since parametric analyses can yield inconsistent results for low base rate phenomena. However, to address this limitation we used meta-analytic techniques to compare effect sizes rather than simply describing which associations were and were not statistically significant. Although effect sizes had small to medium values, effect sizes reflect power to detect statistically significant effects, not clinically significant effects. Thus, effect size estimates can be low and have

meaningful real world importance. For example, in a 2001 meta-analysis in *American Psychologist*, Meyer et al.²⁶ found that the correlation between smoking and 25-year incidence of lung cancer was 0.08, which represents a small effect size. However, the incidence of lung cancer in smokers was increased 5.34 times in women and 4.11 times in men compared with those who never smoked. Thus, our results may have considerable clinical significance for understanding the role of perfectionism as a risk factor for the emergence of specific disordered eating behaviors. A further limitation is that results are based entirely on self-report assessments. Self-report measures of eating disorders have been criticized for producing high false positives. However, this would have reduced our ability to detect significant associations—a problem not observed in analyses of women.

Finally, the EDI-P, although widely used in the field of eating disorders, is limited to evaluating self-oriented and socially prescribed perfectionism (i.e., personal standards and parental expectations).²² These dimensions are measured by a limited number of items, and thus, it is not possible to assess all facets of perfectionism (e.g., concern over mistakes, organization, doubt over actions, etc.). Several studies have indicated that the facets of perfectionism are differentially related to eating pathology.^{4,27,28} For example, previous studies have found that self-oriented perfectionism is related to anorexic symptoms, whereas socially prescribed perfectionism is related to disordered eating symptoms in general, including bulimic symptoms.²⁹ Instead of examining the association between different facets of perfectionism and eating disorders, this study examined the association between different facets of disordered eating and a more narrowly defined construct of perfectionism. Thus, our results suggest that aspects of perfectionism characterized by high personal standards and parental expectations are more strongly associated with fasting than with binge eating.

Despite its limitations, this study has several strengths. This was the first study, to our knowledge, to examine and compare associations between perfectionism and specific disordered eating behaviors. Cohen³⁰ recommends a sample size of 250–1,500 to detect small-sized effects ($d = 0.1–.3$) with 0.80 probability. With our sample of over 1,000 women and 700 men, we had ample power to detect fairly small effect sizes. In addition to having adequate power to explore associations for the specific behaviors that underlie defined eating disorders, our results have the potential to inform nosological research on specific forms of EDNOS. Specifically,

results suggest that perfectionism may be key for understanding the etiology of purging disorder,³¹ despite having limited relevance for the development of BED.

Future research should examine whether particular classes of disordered eating behaviors are differentially associated with distinct dimensions of perfectionism, given research suggesting that perfectionism is best measured as a multidimensional construct.²³ Future investigations also should consider examining other personality traits that discriminate among eating disorder syndromes, such as impulsivity and disinhibition/constraint, for their differential associations with specific eating disorder features. Examining personality traits associated with disordered eating behaviors may result in an improved understanding of the topography and etiology of the full array of eating disorders.

The authors acknowledge members of the Eating Behaviors Research Clinic at the University of Iowa and David Watson, Ph.D., for his guidance in statistical analyses.

References

- Blatt SJ, Zuroff DC, Bondi CM, Sanislow CA III, Pilkonis PA. When and how perfectionism impedes the brief treatment of depression: Further analyses of the National Institute of Mental Health Treatment of Depression Collaborative Research Program. *J Consult Clin Psychol* 1998;66:423–428.
- Kawamura KY, Hunt SL, Frost RO, DiBartolo PM. Perfectionism, anxiety, and depression: Are the relationships independent? *Cogn Ther Res* 2001;25:291–301.
- Bastiani AM, Rao R, Weltzin T, Kaye WH. Perfectionism in anorexia nervosa. *Int J Eat Disord* 1995;17:147–152.
- Bulik CM, Tozzi F, Anderson C, Mazzeo S, Aggen S, Sullivan P. The relation between eating disorders and components of perfectionism. *Am J Psychiatry* 2003;160:366–368.
- Woodside DB, Bulik CM, Halmi KA, Fichter MM, Kaplan A, Berrettini WH, et al. Personality, perfectionism, and attitudes towards eating in parents of individuals with eating disorders. *Int J Eat Disord* 2002;31:290–299.
- Vitousek K, Manke F. Personality variables and disorders in anorexia nervosa and bulimia nervosa. *J Abnorm Psychol* 1994;103:137–147.
- Fairburn CG, Cooper Z, Doll HA, Welch SL. Risk factors for anorexia nervosa: Three integrated case-control comparisons. *Arch Gen Psychiatry* 1999;56:468–476.
- Fairburn CG, Welch SL, Doll HA, Davies BA, O'Connor ME. Risk factors for bulimia nervosa. A community-based case-control study. *Arch Gen Psychiatry* 1997;54:509–517.
- Halmi KA, Sunday SR, Strober M, Kaplan A, Woodside DB, Fichter M, et al. Perfectionism in anorexia nervosa: Variation by clinical subtype, obsessiveness, and pathological eating behavior. *Am J Psychiatry* 2000;157:1799–1805.
- Lilenfeld L, Stein D, Bulik CM, Strober M, Plotnicov K, Pollice C, et al. Personality traits among currently eating disordered, recovered and never ill first-degree female relatives of bulimic and control women. *Psychol Med* 2000;30:1399–1410.
- Kaye WH, Lilenfeld LR, Berrettini WH, Strober M, Devlin B, Klump KL, et al. A search for susceptibility loci for anorexia nervosa: Methods and sample description. *Biol Psychiatry* 2000;47:794–803.
- Fairburn CG, Doll HA, Welch SL, Hay PJ, Davies BA, O'Connor ME. Risk factors for binge eating disorder: A community-based, case-control study. *Arch Gen Psychiatry* 1998;55:425–432.
- Franco-Paredes K, Mancilla-Diaz JM, Vazquez-Arevalo R, Lopez-Aguilar X, Alvarez-Rayon G. Perfectionism and eating disorders: A review of the literature. *Eur Eat Disord Rev* 2005;13:61–70.
- Steiger H, Puentes-Neuman G, Leung FY. Personality and family features of adolescent girls with eating symptoms: Evidence for restrictor/binger differences in a nonclinical population. *Addict Behav* 1991;16:303–314.
- Garner DM, Olmsted MP, Polivy J. Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *Int J Eat Disord* 1983;2:15–34.
- Garner DM, Garner MV, Rosen LW. Anorexia nervosa “restricters” who purge: Implications for subtyping anorexia nervosa. *Int J Eat Disord* 1993;13:171–185.
- Vohs KD, Bardone AM, Joiner TE, Abramson LY, Heatherton TF. Perfectionism, perceived weight status, and self-esteem interact to predict bulimic symptoms: A model of bulimic symptom development. *J Abnorm Psychol* 1999;108:695–700.
- Vohs KD, Voelz ZR, Pettit JW, Bardone AM, Katz J, Abramson LY, et al. Perfectionism, body dissatisfaction, and self-esteem: An interactive model of bulimic symptom development. *J Soc Clin Psychol* 2001;20:476–497.
- Joiner TE, Heatherton TF, Rudd MD, Schmidt NB. Perfectionism, perceived weight status, and bulimic symptoms: Two studies testing a diathesis-stress model. *J Abnorm Psychol* 1997;106:145–153.
- Keel PK, Heatherton TF, Dorer DJ, Joiner TE, Zalta AK. Point prevalence of bulimia nervosa in 1982, 1992, and 2002. *Psychol Med* 2006;35:1–9.
- Joiner T, Schmidt N. Dimensions of perfectionism, life stress, and depressed and anxious symptoms. *J Soc Clin Psychol* 1995;14:165–183.
- Sherry SB, Hewitt PL, Besser A, McGee BJ, Flett GL. Self-oriented and socially prescribed perfectionism in the Eating Disorder Inventory Perfectionism subscale. *Int J Eat Disord* 2004;35:69–79.
- Shafran R, Cooper Z, Fairburn CG. Clinical perfectionism: A cognitive-behavioural analysis. *Behav Res Ther* 2002;40:773–791.
- Frost RO, Marten P, Lahart C, Rosenblate R. The dimensions of perfectionism. *Cogn Ther Res* 1990;14:449–468.
- Rosenthal R, Rosnow RL. *Essentials of Behavioral Research: Methods and Data Analysis*, 2nd ed. Boston, MA: McGraw-Hill, 1991.
- Meyer GJ, Finn SE, Eyde LD, Kay GG, Moreland KL, Dies RR, et al. Psychological testing and psychological assessment: A review of evidence and issues. *Am Psychol* 2001;56:128–165.
- Sutandar-Pinnock K, Woodside D, Carter JC, Olmsted MP, Kaplan AS. Perfectionism in anorexia nervosa: A 6–24-month follow-up study. *Int J Eat Disord* 2003;33:225–229.
- Sassaroli S, Ruggiero GM. The role of stress in the association between low self-esteem, perfectionism, and worry, and eating disorders. *Int J Eat Disord* 2005;37:135–141.
- Hewitt P, Flett G, Ediger E. Perfectionism trait and perfectionistic self-presentation in eating disorder attitudes, characteristics, and symptoms. *Int J Eat Disord* 1995;18:317–326.
- Cohen J. *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed. New York: Erlbaum, 1988.
- Keel PK, Haedt A, Edler C. Purging disorder: An ominous variant of bulimia nervosa? *Int J Eat Disord* 2005;38:191–199.