Perfectionism, Perceived Weight Status, and Self-Esteem Interact to Predict Bulimic Symptoms: A Model of Bulimic Symptom Development

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An interactive model of perfectionism, perceived weight status, and self-esteem was tested on 342 female undergraduates to predict bulimic symptoms. Using a longitudinal design, the authors tested the model on data collected at 2 points: the spring of participants' senior year of high school and during participants' first year of college. The authors hypothesized and found that self-esteem moderates the interaction between perfectionism and perceived weight status in predicting bulimic symptoms. Women who are high in perfectionism and who consider themselves overweight exhibit bulimic symptoms only if they have low self-esteem (i.e., if they doubt they can attain their high body standards). High self-esteem women with the same diathesis-stress conditions are less likely to exhibit bulimic symptoms. These findings clarify the role of perfectionism in bulimic symptomatology.

Perfectionism long has been associated with eating disorders (e.g., Garner, Olmstead, & Polivy, 1983). Indeed, the very nature of eating disorders—relentlessly striving toward an impossible standard of thinness—is perfectionistic. Hence, it is not surprising that many researchers and theoreticians have hypothesized about the role of perfectionism in the development and maintenance of eating disorders (Bruch, 1973; Davis, 1997; Heatherton & Baumeister, 1991; Joiner, Heatherton, Rudd, & Schmidt, 1997). In general, however, the link between perfectionism and disordered eating symptoms (especially bulimic symptoms) has remained correlational and atheoretical (cf. Joiner, Heatherton, et al., 1997). Furthermore, although there appears to be a link between perfectionistic standards and eating disorders, previous research has not focused on whether perfectionism predicts bulimic symptoms over time.

Perfectionism as a Weak Predictor of Disordered Eating Symptoms

Perfectionism has been described as the desire to achieve ambitious—and perhaps faultless—standards (Brouwers & Wiggum, 1993). Investigations of perfectionism have found it to be, at best, a weak predictor of eating disorder symptoms. Although some studies have found significant correlations between perfectionism and bulimic symptoms (e.g., Joiner, Heatherton, & Keel, 1997), others have failed to find a direct relationship (e.g., Fryer, Waller, & Kroese, 1997). For instance, Joiner, Heatherton, and Keel (1997) found that scores on the Perfectionism subscale of the Eating Disorders Inventory (EDI; Garner et al., 1983), a measure of global perfectionism, predicted DSM-based bulimic symptoms 10 years later. However, perfectionism scores did not predict scores on the Bulimia subscale of the EDI.

One possible explanation for the lack of a consistent relationship between global perfectionism and eating disorders is that perfectionism is a multifaceted construct (Hewitt & Fieri, 1991). The concept has been described as a private drive for perfection (Frost, Marten, Lahart, & Rosenblate, 1990), the desire to appear perfect in the eyes of others (e.g., Bruch, 1973), and in terms of adaptive versus maladaptive perfectionism (e.g., Davis, 1997). Research using multidimensional models, however, has failed to clarify the exact nature of the perfectionism—bulimia link (e.g., Pliner & Haddock, 1996). Past work on perfectionism, then, suggests that neither global measures of perfectionism nor specific components of it are consistently and unequivocally linked to bulimic symptoms.
Reconceptualizing Perfectionism as a Risk Factor

The complicated relationship between perfectionism and bulimia is further muddied by the paucity of theoretical links between them. Recently, however, interactive models of perfectionism have been tested to predict bulimic symptoms. Joiner, Heatherton, et al. (1997) hypothesized that perfectionism results in bulimic symptoms only if individuals are dissatisfied with their current body size. They predicted and found that the interaction between perfectionism (as measured by the EDI-Perfectionism subscale) and perceived weight status (i.e., feeling overweight or not) predicted bulimic symptoms, as measured by scores on the EDI-Bulimia subscale and DSM-based bulimic symptoms. Theirs is a diathesis-stress model of bulimic symptoms whereby perfectionism is a dispositional tendency that is activated when a person encounters a stressor—here, feeling that one is overweight (i.e., that one’s standards are unmet).

Although the model proposed by Joiner, Heatherton, et al. (1997) explains part of the relationship between perfectionism and bulimia, unanswered questions remain. Theoretically, it is unclear why perfectionism, the desire to attain far-reaching goals, in combination with a perception that one’s weight goals are unmet, triggers bingeing and purging. In this context, bingeing is paradoxical, as it sabotages the perfectionist’s goal to be thinner. In addition, Joiner et al.’s study was not longitudinal and therefore could not demonstrate that perfectionism precedes bulimic symptoms. A diathesis–stress model necessarily assumes the existence of the diathesis in advance of the resulting symptoms. To provide further conceptual elaboration of the model, as well as to provide methodological improvements over past work, we conducted the present study.

Perfectionism, Perceived Weight Status, and Self-Esteem

We hypothesized that although the interaction between perfectionism and perceived weight status predicted bulimic symptoms (Joiner, Heatherton, et al., 1997), there must be a moderator variable involved. The two-way interactive model fails to account for the reasonable possibility of a perfectionist who, when faced with subpar performance or outcomes, is motivated to act instrumentally to meet her standards. What determines which perfectionists facing an unmet body standard will show self-defeating bulimic symptoms? We hypothesized that for perfectionists with high self-esteem, perceptions of being overweight will be resolved by engaging effectively in activities aimed at achieving their weight goal. High self-esteem perfectionists who feel overweight would not resort to binge eating because they are likely to view an unmet goal as a temporary, changeable situation rather than as an uncontrollable, devastating reality. Conversely, we hypothesized that for perfectionists with low self-esteem, perceptions of being overweight will be resolved in less productive, less goal-focused ways. Low self-esteem perfectionists doubt their ability to achieve their goal and may give up attempts to attain it for a time. These individuals are likely to interpret an unmet goal as yet another reflection of their inadequacy and inability. The aversive self-awareness and resultant negative affect may set the stage for escape through binge eating (Heatherton & Baumeister, 1991). Our analysis is consistent with Fairburn’s (1995) suggestion that low self-esteem and perfectionism are long-standing personality traits that may contribute to binge eating problems. In this regard, Fairburn (1995) stated, “Indeed, the combination of low self-esteem and perfectionism is especially common among those who binge and probably contributes to the development of the problem” (p. 61).

Thus, we hypothesized that self-esteem moderates the relationship between bulimic symptoms and the interaction between perfectionism and perceived weight status. Specifically, we postulated a three-way interactive model: Perfectionists who perceive themselves to be overweight will show high levels of bulimic symptoms if they have low self-esteem but not if they have high self-esteem.

In the present study we tested the hypothesis that bulimic symptoms result from the interaction of perfectionism, perceived weight status, and self-esteem. To this end, we assessed change in bulimic symptoms from high school to college. Building on past research (Joiner, Heatherton, et al., 1997), we predicted an interaction between perfectionism and perceived weight status in low self-esteem women, for whom clashing perfectionistic standards and perceived overweight status would produce bulimic tendencies. We predicted no interaction between perfectionism and perceived weight status in predicting bulimic symptoms when self-esteem is high.

Method

Participants

Participants in this study (N = 342) were female college students. Initial assessment took place during the spring of participants’ senior year in high school (mean age = 17.6; range = 16–26; SD = 0.71). Follow-up assessments were conducted during participants’ first year of college. The group’s racial composition was 79% White, 10% Asian, 4% Black, 4% Hispanic, and 3% American Indian. Only those who completed high school (Time 1) and college (Time 2) assessments were included in the analyses.1

Procedure

Before coming to college, students accepted into the class of 1999 (N = 1,029) were sent a confidential survey on health and general well-being. Surveys were mailed to students during their senior year of high school (May 1995) and again 2 weeks later to maximize participation. Ninety-three and one half percent of females (N = 481) responded to our initial survey.

We attempted to reassess all high school respondents with a follow-up survey at one of three points during the following year (participants’ first year of college). Follow-up questionnaires were sent according to a seasonal sampling method (mean time between assessments = 9 months). Preliminary analyses revealed no differences between groups by season; thus, all data were collapsed across this variable.2 Our final sample consisted of 342 women who completed both high school and college questionnaires.

1 To assess differences between participants who responded only to our initial high school questionnaire and participants who completed both the high school and college questionnaires, we compared scores on the EDI subscales (Bulimia, Drive for Thinness, Maturity Fears, Perfectionism, and Interpersonal Distrust), ideal weight, self-esteem, and frequency of dieting. There were no differences between groups on these measures (all Fs < 1).

2 We conducted seasonal sampling to assess changes in disordered eating during a high-risk time period of adolescence, the transition from high school to college. Equal thirds of participants from the original survey received follow-up surveys in the months of November 1995, February 1996, and May 1996. In the fall, 117 women (74%) responded; in the winter, 113 women (72%) responded; and in the spring, 112 women (72%) responded.

Tests of the simple slopes revealed no differences between reassessment periods with regard to the relation between change in EDI–Bulimia scores or the predictive effects of the model. For a more detailed explanation see Vohs, Heatherton, and Herrin (in press).
Measures

Attitudes toward disordered eating behaviors were assessed with a modified version of the EDI (Garner et al., 1983). We measured perfectionism using the EDI–Perfectionism subscale, which consists of six items on which participants use a 6-point scale (1 = never, 6 = always) to rate themselves on statements such as "I hate being less than best at things." The alpha internal consistency coefficient was .80.

We operationalized perceived weight status as a dichotomous variable. At Time 1, participants were asked to classify their current body weight into one of the following categories: very underweight, underweight, average weight, or very overweight. We considered participants who classified themselves as "overweight" or "very overweight" to be in the category of overweight (n = 78) and considered all others to be not overweight (n = 262). Participants' Time 1 body mass indexes\(^3\) (BMIs) confirmed that participants who classified themselves as "overweight" or "very overweight" had higher BMIs, \(r(337) = 12.25, p < .0001\) (mean overweight BMI = 24.2, SD = 3.3; mean not-overweight BMI = 20.6, SD = 1.8), than participants who did not consider themselves to be overweight. We used participants' BMI scores as a covariate in all regression analyses to statistically control for actual weight status.

Self-esteem was measured with items from a modified version of the State Self-Esteem Scale (SSES; Heatherton & Polivy, 1991), a reliable 20-item scale that asks an individual to rate him- or herself using a 5-point scale (1 = not at all, 5 = very often) in response to statements such as "I feel confident about my abilities." Participants were asked to respond in terms of how they have felt "during the past week." Previous research has shown that the SSES divides into three subscales of Appearance, Social, and Performance Self-Esteem. Because of conceptual and statistical overlap, we excluded items from the Appearance subscale.\(^4\) The coefficient alpha in this sample was .80.

The focus of the present study was on the EDI–Bulimia subscale, which represented our measure of bulimic symptoms. Participants rated their agreement with seven statements that assessed binging (e.g., "I eat moderately in front of others and stuff myself when they are gone") and purging (e.g., "I have the thought of trying to vomit in order to lose weight") on a scale that ranged from 1 (never) to 6 (always). Alpha was .80.

Results

Physical Changes

There was no change in participants' height from high school to college, \(F(1, 341) = 1.41, p > .23\). We conducted an analysis of variance (ANOVA) on body weight measures, using time of assessment as a within-subject variable. A main effect of time, \(F(1, 340) = 140.59, p < .0001\), revealed that participants gained an average of 3.8 lbs (1.7 kg; SD = 6.0 lbs [2.7 kg]) between high school and college. Mean weight in high school was 131.3 lbs (59.2 kg; SD = 19.6 lbs [8.9 kg]), and mean weight in college was 135.2 lbs (60.9 kg; SD = 19.7 lbs [8.9 kg]). For additional descriptive analyses on the full sample of participants see Vohs, Heatherton, and Herrin (in press).

Descriptive Analyses

We examined the zero-order correlations between predictor and dependent variables. Correlations between Time 1 predictors and our criterion variable revealed EDI–Bulimia scores at Time 2 to be weakly correlated with Time 1 EDI–Perfectionism scores, \(r(340) = .15, p < .01\), and perceived weight status (for which do not feel overweight = 1 and feel overweight = 2), \(r(340) = .18, p = .001\). Time 2 EDI–Bulimia scores were somewhat related to SSES scores at Time 1. \(r(341) = -.36, p < .0001\), such that high self-esteem scores were related to fewer bulimic symptoms. Among predictor variables, there was a weak correlation between perfectionism and perceived weight status, \(r(338) = .16, p < .01\). Correlations between measures of perfectionism and self-esteem, \(r(339) = -.25, p < .0001\), and perceived weight status and self-esteem, \(r(339) = -.36, p < .0001\), were somewhat higher. Although the intercorrelations between predictor variables were not high enough to suggest multicollinearity in our regression analyses, we centered lower order predictor variables as recommended by Aiken and West (1991).

Prediction of Bulimic Symptoms by the Interaction of Perfectionism, Perceived Weight Status, and Self-Esteem

Following procedures recommended by Cohen and Cohen (1983), we conducted a hierarchical multiple regression–correlation procedure on participants' EDI–Bulimia scores to test our predictions. Because the distribution of EDI–Bulimia scores (see Joiner, Heatherton, et al., 1997) was skewed, we performed a square-root transformation as suggested by Cohen and Cohen.

With Time 2 EDI–Bulimia scores as the dependent variable, we entered Time 1 EDI–Bulimia scores into the regression equation, creating a residual change score in bulimic symptoms from participants' senior year of high school to their first year of college. At the first step, we also entered Time 1 BMI scores so as to statistically control for actual body weight. Next, we simultaneously entered Time 1 values for EDI–Perfectionism, the dichotomous variable of perceived weight status, and SSES to assess main effects. At Step 3, Time 1 two-way interactions of EDI–Perfectionism × perceived weight status, EDI–Perfectionism × SSSES, and perceived weight status × SSSES were simultaneously entered as a set. Last, in Step 4 we entered the three-way interaction of EDI–Perfectionism × perceived weight status × SSSES at Time 1. The three-way interaction is the critical test of our prediction that perfectionism, perceived weight status, and self-esteem interact to predict changes in bulimic symptoms.

As seen in Table 1, the regression analysis revealed support for our hypothesis that perfectionism, perceived weight status, and self-esteem interact to predict bulimic symptoms. Only among low self-esteem participants did the combination of perfectionism and perceived weight status affect bulimic symptoms: For these women, being perfectionistic and feeling overweight resulted in more severe bulimic symptoms.

We decomposed the three-way interaction to assess our prediction that among women with low self-esteem, perfectionism and feeling overweight would lead to increased bulimic symptoms because of perceptions of inability to achieve the unmet weight goal. The same variables—perfectionism and perceptions of being overweight—were not hypothesized to predict bulimic symptoms in women with high self-esteem. To examine the form of the three-way interaction, we formed two groups of participants: low self-esteem women (n = 34) and the remaining participants (n = 306). We calculated BMIs for each participant by dividing weight in kilograms by height in meters squared.

\[3\] We calculated BMIs for each participant by dividing weight in kilograms by height in meters squared.

\[4\] We thank an anonymous reviewer for alerting us to this overlap. Analyses using the full SSSES are similar to those reported here.
307). Swann (e.g., Swann, 1987) argued that to assess individuals with low self-esteem in unselected samples, researchers must look to the tail of the distribution, as the scores are often skewed. Thus, we followed Swann’s method of using the bottom decile of self-esteem scores to represent a group of low self-esteem participants (SSES scores; low self-esteem group, $M = 52.2$, $SD = 7.0$; remaining participants, $M = 78.0$, $SD = 8.6$).

We performed a hierarchical multiple regression correlation analysis on each self-esteem group using Time 1 perfectionism, perceived weight status, and their interaction as predictors. First, EDI–Bulimia scores at Time 1 were regressed onto EDI–Bulimia scores at Time 2 to produce a residual change score. We also entered Time 1 BMI at this step. Then the main effects of EDI–Perfectionism and perceived weight status were entered simultaneously. Last, we entered the interaction of EDI–Perfectionism scores and perceived weight status. As can be seen in Table 2, change in bulimic symptoms of low self-esteem participants was predicted by the interaction of EDI–Perfectionism $\times$ perceived weight status, $pr = .38$, $t(27) = 2.13$, $p < .05$. For low self-esteem participants, higher levels of perfectionism and viewing oneself as overweight combined to predict more severe bulimic symptoms. However, for participants without low self-esteem, change in bulimic symptoms was not predicted by the interaction, $pr = -.03$, $t(297) = 0.53$.

To further elucidate the relationship between perfectionism and perceived weight status among low self-esteem women, we sought to examine the effect of perfectionism as a function of perceived body weight among women with low self-esteem. Accordingly, we divided the category of low self-esteem participants into two groups: women who felt overweight ($n = 17$) and women who did not feel overweight ($n = 17$). Next, we performed a regression analysis on bulimic symptoms for each group of low self-esteem women. As the first step we regressed Time 1 EDI–Bulimia scores onto Time 2 EDI–Bulimia scores to create a residual change variable and also entered Time 1 BMI scores. As the second step we entered Time 1 EDI–Perfectionism scores. We performed this procedure twice, once for each group of low self-esteem participants.

We found that among low self-esteem women who consider themselves to be overweight, perfectionistic attitudes are related to more severe bulimic symptoms. Change in bulimic symptoms in this subset of low self-esteem participants was reliably predicted by EDI–Perfectionism, $pr = .50$, $t(13) = 2.60$, $p < .03$. Among low self-esteem participants who did not consider themselves to be overweight, change in bulimic symptoms was not predicted by perfectionistic attitudes, $pr = -.15$, $t(13) = -.54$, $p > .59$.

**Discussion**

The results of our longitudinal study support and extend the diathesis-stress model proposed by Joiner, Heatherton, et al. (1997) to include self-esteem as a moderating variable in the interrelationships among perfectionism, perceived weight status, and bulimic symptoms. Using perfectionism, perceived weight status, and self-esteem, we predicted change in bulimic symptoms an average of 9 months later. The predictive effect of the Perfectionism $\times$ Perceived Weight Status interaction on bulimic symptoms was strongest for women with low self-esteem, for whom feeling overweight and having perfectionistic attitudes preceded more severe bulimic symptoms. By contrast, high self-esteem women were buffered from bulimic symptom development, even if they were perfectionistic and perceived themselves as overweight. These findings highlight the role of self-esteem in activating perfectionism in women who consider themselves to be overweight.

For an individual with idealistic goals, viewing one’s current state as unacceptable should be a motivating force that prompts behaviors aimed at decreasing the perceived discrepancy (Carver & Scheier, 1990). However, as the present study shows, perfectionistic individuals with low self-esteem do not react this way and in fact may engage in behaviors that move them away from their
energy toward this goal while also lowering self-esteem. Carver esteem. Repeated attempts to lose weight, then, lead to increased efforts to lose weight as well as diminished self-esteem. In sum, self-doubt can have debilitating effects on one's goal. Several lines of research suggest why self-doubts interfere with goal attainment and may trigger counterproductive responses.

Heatherton and Baumeister's (1991) model of binge eating states that binge eating occurs in response to an aversive state of self-awareness. Self-awareness is aversive when a person becomes acutely aware of the discrepancy between a desired state and his or her current state. High standards and doubts about one's ability to reduce the discrepancy intensify the aversiveness, making an escape from it (by means of binge eating) more likely.

A model of low self-esteem and dieting (Heatherton & Polivy, 1992) as well as work by Carver and Scheier (1990) emphasize the importance of self-beliefs. Heatherton and Polivy (1992) proposed that failed attempts at weight loss (an inevitable outcome, research shows) are often attributed to lack of willpower or effort, resulting in increased efforts to lose weight as well as diminished self-esteem. Repeated attempts to lose weight, then, lead to increased energy toward this goal while also lowering self-esteem. Carver and Scheier posited that because preexisting self-beliefs guide situation-specific expectancies, low self-esteem individuals are likely to presume a negative outcome in attempting to reach their goals. In sum, self-doubt can have debilitating effects on one's progress toward a goal, through expectancies, reduced self-esteem, or both, to the point of engaging in actions that run counter to one's desired state.

With regard to criteria for a diagnosis of bulimia, it is important to note that bulimia has a binge aspect and a purge aspect. It could be argued that our model, in which high self-esteem women "buckle down" when their perfectionism is thwarted by perceptions of being overweight, would predict increased compensatory symptoms, such as purging. Although this possibility should be considered, we note that (a) our model predicted a measure of general bulimic symptoms; (b) there is evidence that, among women, binge and purge symptoms do not form separate subfactors within a general bulimia factor (Joiner, Vohs, & Heatherton, in press); and (c) at the least, our model applies to binge symptoms, which, unlike compensatory symptoms, cannot be construed as "buckling down."

There are some limitations to this study. Most obviously, the data are derived from self-report measures that, although psychologically sound and well validated, are open to criticism (see Fairburn & Beglin, 1994). This potential measurement concern should be allayed by the convergent findings between the present study and that of Joiner, Heatherton, et al. (1997). Similarly, the EDI-Perfectionism scale as our measurement of perfectionism should be allayed by the convergent findings between the present study and that of Joiner, Vohs, & Heatherton, (1997). Similarly, the EDI-Perfectionism scale as our measurement of perfectionism deserves comment. This subscale pertains to global perfectionism, not to body shape and size standards. Future tests of this model would benefit from closer examinations of the self-esteem variable and the addition of a symptom specificity component. With respect to the model's specificity, research should test whether the variables that predict change in bulimic symptoms also predict symptoms commonly associated with bulimic symptoms, such as depression and anxiety. A theoretical question to be addressed by future research is the relative consequences of self-efficacy and self-esteem in determining the subset of individuals who display increased bulimic symptoms. The construct of self-efficacy, a cognitive appraisal of one's abilities, is similar to our conceptualization of the moderating variable, self-esteem. Indeed, we view self-efficacy as an integral component of self-esteem (Heatherton & Vohs, in press). However, past research implicates the general construct of self-esteem in activat-
ing self-defeating responses such as disinhibited eating in restrained eaters (e.g., Heatherton & Polivy, 1992). We recommend that future research attempt to examine the moderating effects of self-efficacy and self-esteem separately.

In sum, our findings revealed that change in bulimic symptoms was greatest for low self-esteem women who held perfectionistic attitudes and who perceived themselves to be overweight. Our findings suggest that identification and treatment of bulimic symptoms may benefit from concentrating efforts on variables included in the model.

References

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