Ten-Year Stability and Predictive Validity of Five Bulimia-Related Indicators

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Objective: The authors examined the temporal stability and predictive utility of bulimic symptoms and related variables over the course of 10 years, from 1982 to 1992. Method: The subjects were 459 women who were aged 18–22 years in 1982 and were surveyed in both 1982 and 1992. Each respondent completed five subscales of the Eating Disorders Inventory (bulimia, drive for thinness, maturity fears, perfectionism, and interpersonal distrust) and answered questions based on the DSM-III criteria for bulimia nervosa. Results: The temporal stability of bulimic symptoms and related variables was relatively high. Bulimic status in 1982 conferred an approximately 15-fold increase in risk 10 years later. Drive for thinness and, to lesser degrees, maturity fears and perfectionism received support as long-term predictors of bulimic symptoms. Conclusions: Bulimic symptoms display high temporal stability and thus may affect long-term functioning and well-being. Later symptoms are related to scores on specific subscales of the Eating Disorders Inventory administered 10 years earlier. Assessment and therapy should be conducted accordingly.

For a number of reasons, long-term stability and predictive utility of symptom-related variables are important to establish. First, temporal stability bears on the basic reliability of tests and has import for the nature of the construct being measured—if the construct is thought to be a stable characteristic, high temporal stability would be expected. When the variable in question is symptom- or syndrome-related, high temporal stability has implications for the symptom’s or syndrome’s course; that is, high temporal stability suggests either a chronic or recurrent course. In addition, when the construct in question is used as an outcome measure to assess an intervention (e.g., when symptom change in response to treatment is measured), it is useful to know whether and how much change in the variable would be expected even without intervention. Finally, predictive utility is useful with regard to factors that may represent risks for later symptoms, as well as prognostic indicators of response to treatment.

With a few exceptions, the temporal stability and predictive validity of bulimia-related variables have received little empirical attention, especially regarding long-term time frames. Wear and Pratz (1) reported test-retest data for the subscales of the Eating Disorders Inventory, obtaining scores for 70 undergraduates at the beginning and end of a 3-week interval. The test-retest coefficients (r) were above 0.80 for all subscales (bulimia, body dissatisfaction, drive for thinness, perfectionism, interoceptive awareness, interpersonal distrust, ineffectiveness) except maturity fears, for which a coefficient of 0.65 was obtained. Crowther et al. (2) conducted a study on the 1-year stability of the Eating Disorders Inventory in a relatively large sample of undergraduate women (N=282). In this study, maturity fears again displayed relatively low stability (r=0.48), especially among subjects who reported eating problems (r=0.26). These researchers also found relatively low stability for the bulimia subscale (r=0.44), especially among subjects who reported eating problems (r=0.22). This result contrasts with the 3-week test-retest correlation of 0.90 for the bulimia subscale reported by Wear and Pratz (1). Fallon et al. (3) reported that 41% of women who had been previously hospitalized for bulimia nervosa met the criteria for the disorder when assessed 2 to 9 years later. Thus, the stability of...
bulimic symptoms and related variables (e.g., score on the maturity fears subscale of the Eating Disorders Inventory) is somewhat in question, especially regarding persons with clinically significant eating disorder symptoms, and, except for bulimic symptoms themselves in the Fallon et al. (3) study, the stability of bulimia-related indicators past 1 year has, to our knowledge, not been addressed.

Regarding the predictive validity of bulimia-related variables, there has been considerably more work, especially on prognostic predictors, but here again, long-term time frames have been somewhat rare. In a study of the predictive utility of the Eating Disorders Inventory subscales, Norring (4) reported that only the bulimia subscale was a clear predictor of eating disorder symptoms 1 and 2 years later. Steiger and colleagues have shown that borderline personality features indicate a poor prognosis. For example, Steiger et al. (5) reported that at 1-year follow-up, bulimic patients with stable borderline traits showed significantly poorer treatment responses of eating and other symptoms than did other bulimic patients (see also references 6–8).

Interpersonal variables may also be useful prognostic indices: Steiger et al. (9) found support for pretreatment social adaptation, Blouin et al. (10) reported positive findings for family environment, and Blouin et al. (11), Olmsted et al. (12), and Sohlberg et al. (13) found that interpersonal distrust was a significant prognostic indicator. Several other variables have been identified as prognostic indices, for example, attitudes related to weight and shape (14), low self-esteem (14–16), comorbid depressive symptoms (17, 18), and low levels of social support (13). It should also be noted that several studies have had null results for hypothesized prognostic indicators (19, 20). One study (20) is noteworthy because it showed no relation between prognostic indices (eating attitudes, social functioning) and symptoms at 5-year follow-up.

In probably the most comprehensive study of the long-term interrelations of eating-related variables, Marchi and Cohen (21) reported that among 659 children followed over 10 years, eating-related problems, such as pickiness and weight concern, displayed substantial temporal stability. Also, pica and problem meals in early childhood were associated with later bulimic symptoms. In addition to the large sample and long-term follow-up, a notable feature of this study is the focus on predictive as opposed to prognostic utility (i.e., it examined prediction of later symptoms in general, not prediction of treatment response specifically).

The present study was designed to extend or add to current knowledge regarding temporal stability and predictive utility by gathering data on a relatively large sample of women (N =459) who at the outset of a long-term study of behavior and diet were in late adolescence (ages 18–22 years). First, temporal stability of scores on five Eating Disorders Inventory subscales (bulimia, drive for thinness, maturity fears, perfectionism, and interpersonal distrust) and of bulimic symptoms assessed according to DSM-III was evaluated over the course of 10 years. Second, the long-term predictive utility of the Eating Disorders Inventory subscales was assessed with regard to prediction of bulimia-related symptoms 10 years later.

METHOD

Participants and Procedure

In the spring of 1982, researchers affiliated with Radcliffe College distributed surveys to a randomly selected sample of 800 women and 400 men who were students at Harvard University (22). We followed up these students 10 years later (23). The focus of the present study is on the 459 women who 1) agreed to participate in 1982 (624 of the original 800, or 78.0%); 2) agreed to participate in 1992 (509 of the original 624, or 81.6%); and 3) had complete data on all relevant measures at both the 1982 and 1992 assessments (459 of 509, or 90.2%). The women were predominantly Caucasian (80.3%); 8.6% were Asian, 6.1% were African American, 3.5% were Hispanic, and 1.6% were classified as “other.” The mean age of the sample in 1982 was 20.01 years (SD =1.7). In both phases of data collection, written informed consent was obtained after complete description of the study to the participants.

The questionnaire included an array of items about demographic background; height and weight; concerns about dieting, eating patterns, and body weight and shape; and eating disorder symptoms. Of particular interest for the present study, in both 1982 and 1992 the participants completed the bulimia, drive for thinness, maturity fears, perfectionism, and interpersonal distrust subscales of the Eating Disorders Inventory and answered questions based on the DSM-III criteria for bulimia nervosa.

Assessment of Bulimic Symptoms and Related Variables

Eating Disorders Inventory. The Eating Disorders Inventory (24) is a frequently used 64-item self-report measure of eating-related attitudes and traits. It has eight subscales: drive for thinness, bulimia, body dissatisfaction, ineffectiveness, perfectionism, interpersonal distrust, interpersonal awareness, and maturity fears. The subscales have shown adequate internal consistency coefficients and have been well validated (24).

The present study focused on the bulimia, drive for thinness, maturity fears, perfectionism, and interpersonal distrust subscales. The focus on these five subscales was forced by the exclusion of the other three subscales (body dissatisfaction, ineffectiveness, and interpersonal awareness) from the 1982–1992 diet behavior project.

The perfectionism subscale includes six items, designed to measure general perfectionism (e.g., “I feel that I must do things perfectly, or not do them at all,” “Only outstanding performance is good enough in my family.”). The bulimia subscale includes seven items that assess binge eating and purging (e.g., “I stuff myself with food,” “I have the thought of trying to vomit to lose weight”). The drive for thinness subscale contains seven items (e.g., “I am terrified of gaining weight,” “I exaggerate or magnify the importance of weight”). The interpersonal distrust subscale includes seven items (e.g., “I trust others” [reverse scoring], “I can communicate with others easily” [reverse scoring]). The maturity fears subscale includes eight items (e.g., “The happiest time in life is when you are a child,” “I wish that I could return to the security of childhood”).

Participants were asked to rate items on a 1 to 6 scale (1 =never, 2 =rarely, 3=sometimes, 4=frequently, 5=usually, 6=always).

DSM-III criteria. Bulimic symptoms were further assessed on the basis of the participants’ responses to questions based on the DSM-III criteria for bulimia nervosa. To meet the criteria for bulimia nervosa in the present study, each participant must have 1) indicated recurrent experiences of at least one episode of binge eating per week; 2) indicated that the binges consisted of large amounts of high-calorie food (not just large meals); 3) indicated that at least some binges occurred when the participant was alone; 4) reported making repeated attempts to lose weight by severely restrictive diets, self-induced vomiting, or the use of cathartics.
or diuretics; 5) indicated that the binges were experienced as out of control; 6) reported often feeling extremely guilty after overeating; and 7) indicated that the participant's weight had not fallen more than 20% below normal since age 16. For the DSM-III bulimic symptoms variable, each participant was given a rating of 0 (endorsed up to six criteria) or 1 (endorsed all seven criteria).

The seven DSM-III criteria afford good coverage of the diagnostic criteria for bulimia nervosa in DSM-IV, and, as will be shown, their relation to the Eating Disorders Inventory bulimia subscale (average \(r=0.51, N=459\)) provides some confidence in them. Furthermore, the rates of bulimia nervosa diagnoses in the present sample (34 of 459, or 7.4%, in 1982; and 13 of 459, or 2.8%, in 1992) are similar to estimates provided by DSM-IV and by Zuckerman et al. (22) and by us (25) for similar samples of women. However, these diagnoses were not established through structured clinical interviews, and no reliability checks are available for them. Findings based on this measure should be interpreted accordingly.

**RESULTS**

The scores on the five subscales of the Eating Disorders Inventory in 1982 and 1992 are presented in table 1. Correlations of these scores and the 1982 and 1992 DSM-III bulimic symptoms measures to each other are given in table 2; bold underlined values are 10-year test-retest correlations.

### Stability of Bulimic Symptoms

Bulimic symptoms as assessed by the Eating Disorders Inventory bulimia subscale displayed considerable stability over 10 years (table 2). A significant correlation between the 1982 and 1992 versions of the DSM-based bulimic symptoms variable was also obtained. Of the 34 participants who met the criteria in 1982, 20.6% (\(N=7\)) met the criteria in 1992. This rate is approximately 15 times as high as that for the rest of the sample (six of those 425, or 1.4%, met the criteria in 1992 but not in 1982), and the associated chi-square statistic is highly significant (\(\chi^2=1.62, df=1, p<0.01\)). Stated differently, seven (53.8%) of the 13 participants who met the criteria for bulimia in 1992 also met the criteria in 1982.

### Stability of Other Bulimia-Related Indicators

The scores on the other subscales of the Eating Disorders Inventory also displayed fairly high temporal stability (tables 1 and 2). In fact, consistent with earlier findings (1, 2), only the scores on the maturity fears subscale obtained a 10-year test-retest coefficient less than 0.50.

In summary, bulimic symptoms and related indicators (drive for thinness, maturity fears, perfectionism, and interpersonal distrust) were relatively stable across a large portion of young women's lives. Earlier bulimic symptoms conferred an approximately 15-fold increase in risk for bulimic symptoms 10 years later.

### Predictive Validity of Bulimia-Related Indicators

As can also be seen in table 2, the 1982 measures of drive for thinness, maturity fears, perfectionism, and interpersonal distrust were predictive of bulimic symp-

### DISCUSSION

#### Importance of Findings

To our knowledge, ours is the first study of the 10-year interrelations of bulimia-related indices for young women.
women. All bulimia-related indicators were relatively stable across a large portion of the young women's lives. Earlier bulimic symptoms conferred an approximately 15-fold increase in risk for bulimic symptoms 10 years later. The Eating Disorders Inventory drive for thinness subscale received strong support as a predictor of bulimic symptoms 10 years later, whereas the sub-scales for maturity fears and perfectionism obtained some (relatively weak) support as long-term predictors of bulimic symptoms.

Our findings have several implications. First, our data demonstrate that symptoms of eating disorders persist from late adolescence to early adulthood, over several years. Thus, untreated or unsuccessfully treated symptoms not only affect near-term well-being and functioning but also affect large portions of the life span of young women (compare data in reference 3). This finding, taken together with the physiological damage associated with long-term binge eating and purging, clearly highlights the need for thorough assessment and empirically validated treatment of bulimic symptoms, e.g., selective serotonin reuptake inhibitors (SSRIs) (27), cognitive therapy (28), and interpersonal therapy (29).

Second, our finding that bulimic symptoms possess relatively high temporal stability is consistent with the view that the symptoms' course is either chronic or recurrent. It is currently not clear whether untreated bulimic symptoms are more likely to follow a relapsing course (in which symptoms resume in the vulnerable time period just after remission), a recurrent course (in which symptoms fully remit but later recur during a low-risk period), or a chronic course (in which symptoms do not fully remit) (compare with data in reference 8). Any of these three scenarios represents a per-nicious disorder with serious consequences for health and functioning.

Consistent with previous findings (1, 2), the bulimia-related measure with the lowest temporal stability was maturity fears. Of course, this result may be due to the fact that over the 10-year study some women resolved concerns regarding maturing and leaving behind earlier identities and roles. Somewhat at odds with this explanation, however, scores on the maturity fears subscale decreased only slightly (table 1). It may be that comfort with development as an adult is a relatively unstable phenomenon that depends on such factors as life events, relationship status, parenthood, and so on.

Earlier studies (11–13) showed support for the Eating Disorders Inventory interpersonal distrust subscale as a prognostic indicator. While this variable may predict treatment response over the short term, our findings do not support it as a long-term predictor of later bulimic symptoms. By contrast, drive for thinness and, to a lesser degree, perfectionism and maturity fears were well supported as long-term predictors.

It is interesting that the rates of bulimic symptoms decreased over the 10-year study—in 1982, 7.4% of the sample met the criteria of the DSM-based bulimic symptoms variable, whereas 2.8% of the sample met the criteria in 1992. Similarly, scores on the Eating Disorders Inventory bulimia subscale decreased substantially from 1982 to 1992. This finding is consistent with that from our comparison of the 1982 sample used in the present study to a new cohort of subjects assessed in 1992 (25). This decrease may be attributable to greater awareness of the potential consequences of disordered eating behavior, through media attention, health-related advertisements, and specific resources.

TABLE 2. Correlations Between 1982 and 1992 Scores on Five Eating Disorders Inventory Subscales and DSM-III Symptoms of Bulimia Nervosa for 459 Women

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<td>0.66**</td>
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<td>Maturity fears subscale, 1982</td>
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<td>Maturity fears subscale, 1992</td>
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<td>Perfectionism subscale, 1982</td>
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<td>0.03</td>
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<td>Interpersonal distrust subscale, 1982</td>
<td>0.16*</td>
<td>0.11*</td>
<td>0.05</td>
<td>-0.01</td>
<td>0.31**</td>
<td>0.18*</td>
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<td>Interpersonal distrust subscale, 1992</td>
<td>0.09</td>
<td>0.20**</td>
<td>0.01</td>
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<tr>
<td>DSM-III bulimic symptoms, 1982</td>
<td>0.50**</td>
<td>0.32**</td>
<td>0.30**</td>
<td>0.23**</td>
<td>0.14*</td>
<td>0.09</td>
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<td>DSM-III bulimic symptoms, 1992</td>
<td>0.32**</td>
<td>0.51**</td>
<td>0.21**</td>
<td>0.28**</td>
<td>0.08</td>
<td>0.01</td>
<td>0.16*</td>
<td>0.17*</td>
<td>0.05</td>
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*aBold underlined values are 10-year test-retest correlations.

bA score of 0 was given if there was no indication of a bulimia diagnosis (i.e., participant endorsed up to six criteria); a score of 1 indicated the participant endorsed all seven criteria for bulimia nervosa.

*p<0.05. **p<0.01.
developed to counter the problem (e.g., eating disorders programs within university counseling centers).

Limitations

As has already been mentioned, structured clinical interviews were not conducted. Also, information on possible personality disorders was not available. These data would have been of interest, in that, for example, Steiger et al. (5) have shown that borderline personality traits are associated with a poor prognosis for future bulimic symptoms. Also, the participants were from a very selective college and were primarily Caucasian, which may affect how generalizable our data are. Furthermore, we were constrained by the methods and items of the 1982 study and thus did not assess other factors that may have been of interest. For example, Joiner et al. (30) and Metalsky et al. (31) have argued that the tendency to attribute negative life events to stable and global causes is common among bulimic women and may render them particularly susceptible to depression. Depression, in turn, may deleteriously affect course and outcome for bulimic patients (17, 18). Another limitation is the effect sizes, which, although statistically significant, were of moderate to small magnitude.

Clinical Implications

The following clinical implications should be considered in the context of the study’s limitations. First, drive for thinness was a consistent predictor of later bulimic symptoms in the present study; accordingly, it deserves consideration as a focus of assessment and therapeutic change. The nature of this construct—an inflexible need for and preoccupation with thin shape—lends itself particularly to cognitive approaches, which are specifically designed to alter such attitudes. The drivenness and preoccupation associated with the drive for thinness concept is reminiscent of the presentation of obsessive-compulsive disorder (OCD). In this regard, Rothenberg (32) suggested that many symptoms of eating disorders are manifestations of obsessive-compulsive pathology. In defense of this position, Rothenberg found that eating-disordered patients, when compared to general psychiatric patients, displayed higher levels of rumination, rituals, and excessive cleanliness and orderliness. Tangential support for this position can also be derived from the fact that SSRIs are effective in the treatment of both bulimia (27) and OCD (33) and from the fact that perfectionism—a construct related to obsessive-compulsive symptoms—was one of two additional variables that emerged in this study as potential predictors of later bulimic symptoms.

Perfectionism also deserves attention as a possible target for therapeutics. For example, in the context of a cognitive behavioral approach, high levels of perfectionism should be noted, especially insofar as reanalysis of the National Institute of Mental Health Treatment of Depression Collaborative Research Program (34) suggests that perfectionism levels among depressed people remain high despite treatment and that perfectionism predicts low functioning at follow-up. From both interpersonal and transference-focused perspectives (as outlined in reference 35), it is important to note that perfectionism has been demonstrated to affect the quality of relationships generally (36) and the quality of therapeutic alliance (34).

An interpersonal approach may also be useful in addressing the other variable that gained some support as a predictor of later symptoms—maturity fears. Because this variable relates to discomfort and problems in assuming adult roles, the emphasis of interpersonal therapy on role transitions and role disputes may be especially helpful (37).

The high stability of symptoms in this study highlights the need for thorough assessment and empirically supported treatment. Because drive for thinness was a strong predictor of later symptoms, particular therapeutic strategies are needed to address it; the same is true for perfectionism and maturity fears. Sound treatment is crucial because, despite the overall drop in rates of bulimic symptoms, many people remained affected with the disorder, the course of which is pernicious and the consequences of which are costly.

REFERENCES