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Family functioning, peer influence, and media influence as predictors of bulimic behavior

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Abstract

One hundred and twenty undergraduate women students reported their height and weight and completed the Eating Disorder Questionnaire (EDQ), the Eysenck Personality Inventory (EPI), the Beck Depression Inventory (BDI), the Family Assessment Device (FAD), the Body Shape Questionnaire (BSQ), the Body Image Assessment (BIA), and measures of peer and media influence. Family functioning was shown to be a poor predictor of bulimic behavior, whereas peer influence was a significant predictor. Media influence interacted with body dysphoria to increase the likelihood of bulimic behavior. The BSQ was a better predictor of bulimic behavior than the BIA, suggesting that students' responses to a measure that asks questions about specific areas of the body may reflect their feelings of body dysphoria more accurately than a measure that relies on a generalized silhouette.

Keywords: Bulimia; Body image; Family relations; Peer relations; Mass media; Extraversion

1. Introduction

Bulimia nervosa is an eating disorder characterized by periods of binge eating followed by behaviors intended to compensate for the weight gain associated with bingeing (*DSM-IV*, American Psychiatric Association, 1994). These compensatory behaviors include self-induced vomiting, excessive exercise, and the use of diuretics or laxatives. The distinction between clinical bulimia and subclinical levels of bulimic behavior is important. Among

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samples of college women, there are many more women with bulimic behaviors such as binge eating and vomiting than women whose behavior meets the DSM-IV (1994) diagnostic criteria for bulimia nervosa (Halmi, Falk, & Schwartz, 1981).

Previous research has linked bulimia to poor family functioning. Compared to women who do not have eating disorders, women in treatment for bulimia often report more problems with their parents and describe a variety of other family difficulties (Clopton, Haas, & Kent, 2001). For example, Ordman and Kirschenbaum (1986) found that individuals in treatment for bulimia were more likely than nonbulimic controls to report family interactions that were characterized by the presence of conflict and the absence of cohesion. Similarly, Humphrey (1986) found that participants diagnosed as having bulimia reported feeling more neglect and less nurturance and empathy from their parents than other women.

Studies that attempt to identify family dysfunction as a causal variable in bulimia are limited by their use of self-report measures of family functioning obtained from clinical samples, making it difficult to know whether the family interaction caused the bulimia or vice versa (Polivy & Herman, 1993). Relatively few studies have shown that disturbed family interactions are related to bulimic-like behaviors in individuals with nonclinical levels of bulimic behavior. To test this hypothesis, McNamara and Loveman (1990) compared the responses of women with bulimia and women who were either repeat dieters or nondieters on a questionnaire measuring different aspects of family functioning including affective functioning, affective responsiveness, problem solving, communication, and behavioral control. Women were classified as "repeat dieters" if they fell short of meeting the diagnostic criteria for bulimia but expressed some dissatisfaction with their body size and reported having dieted twice in the past year and at least five times in the past 5 years. These researchers expected that if repeat dieting placed a woman at risk for developing clinical bulimia (as proposed by Streigel-Moore, Silberstein, & Rodin, 1986), and if there was a direct relation between a poor family environment and bulimic behavior, then women who were repeat dieters would show greater family dysfunction than those who were nondieters, though not as much dysfunction as women with bulimia. Although women with bulimia reported significantly greater dysfunction in their families than did women who did not have bulimia, repeat dieters did not report significantly greater family dysfunction than nondieters. Another study done on a large nonclinical sample of college women found that a disordered family environment increased the probability of developing bulimia nervosa only when it was combined with sexual abuse (Hastings & Kern, 1994). Therefore, although many researchers point to the negative evaluations of their family environments given by women with bulimia as evidence that family dysfunction contributes to the development of bulimia, the relation between family functioning and bulimic behavior in nonclinical samples is unclear.

The notion that the family environment of adolescents and young adults is a major determinant of their personality development has been questioned in recent years, especially by Harris (1995) in her review of the developmental literature. Citing data from studies of twins and adoptees, Harris (1995) noted that genes typically account for about half of the variance in personality characteristics, with environmental factors accounting for the other half. To identify the sources of the environmental influence, she described a group socialization theory of development that maintains that the peer group is the primary factor

shaping personality characteristics, and that the family environment exerts almost no effect on personality development. Pressure to conform to group norms is one of the most powerful ways peers can modify personality characteristics. Harris (1995) regards peer pressure not as an overt mandate for peers to imitate each other, but as a more subtle desire in individuals to share experiences with their peers that are meaningful to the group identity.

Research has shown that peer influence can have a significant effect on binge eating. One study found that women in two college sororities reported a positive relationship between binge eating and popularity, suggesting that binge eating is primarily acquired through peer modeling (Crandall, 1988). However, binge eating and popularity were related in different ways for the two sororities. In one, the popularity of each member, measured by sociometric ratings, increased linearly with the amount of binge eating engaged in by that member. In the other sorority, only binge eating at a certain level was associated with popularity; deviations in either direction from that norm were associated with reductions in popularity. Similarly, a study in which adolescent girls repeatedly completed self-report measures over a 3-year period found a correlation between eating-disordered behavior and criticism regarding weight from their peers (Cattarin & Thompson, 1994). A significant relationship was found between participants' obesity levels and teasing from peers about their appearance, which produced body dysphoria and led to disturbed eating patterns. These two studies are consistent with Harris's (1995) developmental theory of socialization through peers and indicate that peer groups may be primarily responsible for the acquisition and maintenance of bulimic behavior.

Another factor in the development of bulimia is the high value Western culture places on thinness as the ideal body type for women. The link between femininity and thinness is underscored by the fact that the vast majority of female roles in the mass media are portrayed by youthful, slim women, whereas women who defy traditional notions of what is feminine (e.g., feminists and lesbians) are often depicted as unattractive (Streigel-Moore, 1993). Advertisements for low-calorie diets and exercise programs are mainstays of popular women's magazines and television shows, and the thin body ideal is linked with a variety of virtues including self-discipline, assertiveness, sexual freedom, and wealth (Nasser, 1988).

Many researchers have suggested a link between increases in the cultural emphasis on thinness and the escalation of disordered eating patterns in young women (Streigel-Moore, 1993). The finding that women with bulimia exhibit a tendency to prefer thinner ideal body sizes on a silhouette measure than other women (Williamson, Cubic, & Gleaves, 1993) implies that women with bulimia internalize thin-ideal images to a greater extent than do other women (Stice & Agras, 1998). Among women college students, disturbed eating patterns have been found to be correlated with exposure to various media sources, including fashion magazines and television shows (Stice, Schupak-Neuberg, Shaw, & Stein, 1994). However, the effect of media exposure on eating-disordered behavior may be mediated not only by the internalization of the thin ideal but also by other factors such as body dysphoria.

Studies of anorexia and bulimia implicate body dissatisfaction as a significant contributor to the development of disturbed eating patterns (Williamson, Barker, Bertman, & Gleaves, 1995). A common measure used to assess dissatisfaction with one's body involves the presentation of silhouettes of female figures against which participants are asked to compare their own body images. One study indicated that when women are asked for an evaluation of

their current and ideal body sizes using silhouettes, women with bulimia tend to report an inflated perception of their current body size compared both to women who do not have bulimia and to women who are obese (Williamson, Kelley, Davis, Ruggiero, & Blouin, 1985). Similarly, another study using these silhouette measures showed that women college students who engaged in bulimic behaviors reported a larger body image discrepancy (i.e., the difference between one's perceived current body size and ideal body size) than students who did not engage in those behaviors (Rahmatian, 1994).

The frequent co-occurrence of depression and neuroticism with bulimia nervosa has been well documented (Kerr, Skok, & McLaughlin, 1991; Williamson et al., 1985). Given that individuals with elevated scores on questionnaires measuring bulimic behaviors also tend to show relatively high levels of depression and neuroticism, this study examined whether family functioning and perceived pressure from peer groups and the media predict any additional variance in eating-disordered behavior after body dysphoria, depression, and neuroticism have been taken into account. Specifically, this study addressed which of these variables are most predictive of disturbed eating behaviors and whether there are interactions among these variables. This study also examined whether verbal self-report scales of body dysphoria account for more of the variance in bulimic behaviors than silhouette measures.

2. Method

2.1. Participants

Many eating-disordered behaviors, such as binge eating, self-induced vomiting, aggressive dieting, and a "normative discontent" with body size, exist in samples of nonclinical women (Kent & Clopton, 1992; Williamson et al., 1995). Therefore, the participants in this study were undergraduate women students, drawn from university psychology classes, and each student was given extra credit for her participation. Women over the age of 30 were excluded from the study because bulimic behaviors occur mainly among adolescent and young adult women.

2.2. Measures

2.2.1. Family Assessment Device (FAD; Epstein, Baldwin, & Bishop, 1983)

The FAD has 53 items and a 5-point Likert-type response format. There are seven FAD subscales: (1) problem solving, (2) communication, (3) roles, (4) affective responsiveness, (5) affective involvement, (6) behavioral control, and (7) general functioning. The first six subscales of this instrument were designed to assess the main components of healthy family functioning according to the McMaster Model of Family Functioning. Cronbach's alpha was reported as .92 for the general functioning subscale, and as ranging from .72 to .83 for the other six subscales (Epstein et al., 1983). Test–retest reliability of subscale scores over a 1-week period ranged from .66 to .76, and the correlation between the FAD and the Locke–Wallace Marital Adjustment Test (Locke & Wallace, 1959) was reported to be .53 (Miller, Epstein, Bishop, & Keitner, 1986).

2.2.2. Body Image Assessment (BIA; Williamson, Davis, Bennett, Goreczny, & Gleaves, 1989)

The BIA evaluates a woman's perceptions of her current body size and her ideal size. Individuals completing this instrument are presented with nine silhouettes of female figures ranging from extremely thin to obese, and are asked to choose the figures that best represent their current body image (CBI) and ideal body image (IBI). The BIA discrepancy score, which is the CBI score minus the IBI, is used as an index of body dysphoria. The BIA successfully differentiates between women with bulimia and non-bulimic controls, and the test–retest reliability was reported to be .90 for the current body size measure and .71 for the ideal body size measure (Williamson et al., 1989).

A modified version of the BIA was used in this study. Instead of presenting the silhouettes on cards, they were presented in a scrambled order on a screen, and participants were asked to select the silhouettes that represented their CBI and IBI. To increase reliability, this procedure was performed three times for both the CBI and IBI assessment. The CBI and IBI scores were then computed from the average of those three trials.

2.2.3. Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper, & Fairburn, 1987)

The BSQ is a 34-item questionnaire designed to evaluate negative feelings about body shape, and each item has a 5-point Likert-type response format. Cooper et al. (1987) demonstrated satisfactory concurrent and discriminant validity of the BSQ using samples of eating-disordered and nonclinical groups. A factor analysis of BSQ items has also supported its validity as a measure of body dysphoria (Williamson et al., 1995).

A modified 16-item version of the BSQ was used in this study to allow for group administration. Certain items having to do with bulimic behaviors such as purging were eliminated so as not to duplicate items on the Eating Disorder Questionnaire (EDQ). Also, items having to do with specific body areas (e.g., "my hips are larger than I would like them to be") were added to assess participants' negative feelings about specific areas of the body.

2.2.4. Eating Disorder Questionnaire (Rahmatian, 1994)

The EDQ is a measure of binge eating and compensatory behaviors that differentiates participants exhibiting bulimic behaviors from those with nonbulimic eating patterns (Ellis, 1998; Nichols, 1998; Rahmatian, 1994). The 12 EDQ items that assess behavior related to eating disorders were used in this study. Each item has a 5-point Likert-type response format, and possible EDQ scores ranged from 0 (*no disturbed eating habits*) to 60 (*extreme bulimic behavior*).

2.2.5. Beck Depression Inventory (BDI; Beck, Rush, Shaw, & Emery, 1979)

Each of the 21 items of this questionnaire consists of four related statements describing feelings, thoughts, and behavior related to depression. Each item is scored from 0 to 3 so that BDI scores range from 0 (*no depression*) to 63 (*severe depression*). The BDI has been used in many studies and has been shown to provide a reliable and valid measure of depressive symptoms (Beck, Steer, & Garbin, 1988).

2.2.6. Eysenck Personality Inventory (EPI; Eysenck & Eysenck, 1965)

This inventory consists of 57 questions with a Yes–No response format. One scale measures neuroticism (emotional instability and overreactivity), a second scale measures extraversion (gregariousness and impulsiveness), and a third "lie" scale assesses the candor of each participant. Substantial research has demonstrated that the neuroticism and extraversion scales reliably measure two major personality dimensions (Cline, 1972; Lanyon, 1972; Tellegen, 1978).

2.2.7. Peer and Media Influence Scales

The Peer Influence Scale consisted of 11 items that asked how frequently participants encounter cues from peers to maintain or attain a thin body shape. The Media Influence Scale consisted of 10 items that asked participants to report their level of interest in magazines, television shows, and other mass media that promote a thin body ideal. Both scales have a 5-point Likert-type response format and were adapted from the Perceived Sociocultural Pressure Scale developed by Stice, Nemeroff, and Shaw (1996). Stice et al. reported a Cronbach's alpha of .88 and test–retest reliability of .93 for their scale.

2.2.8. Weight ratio (Wtr)

Measurements of actual body weight have been found to correlate well with participants' self-reported weight, with r values between .96 and .99 (Attie & Brooks-Gunn, 1989). In this study, a weight ratio—each participant's reported weight divided by the standard weight for women of that height—was calculated for each participant to account for differences in current body weight due to height. Standard weight values were derived from actuarial tables of the Metropolitan Life Insurance Company (1996).

2.3. Procedure

Participants completed this study in six groups, with each group having between 12 and 28 participants in it. The BIA was the first measure completed by participants. Following the BIA, each participant reported her age, height, and weight. Participants then completed the other measures in the following order: the FAD, the Peer and Media Influence Scales, the BSQ, the EPI, the BDI, and the EDQ. All information obtained from participants was obtained anonymously, except that participants had signed a consent form before the study began. After completing the questionnaires, each participant received a debriefing form that provided basic information about the study.

3. Results

Data were gathered from 120 women college students. Data from five other women students were deleted from the study because their questionnaires were incomplete. As originally scored, an increase in Peer, Media, and BSQ scores reflected a decrease in the variables measured by those questionnaires (peer influence, media influence, and body

dysphoria, respectively). The scores on those three questionnaires were reversed prior to their inclusion in the data analyses for this study, however, so that higher scores would indicate more of each of those three variables.

Table 1 lists the correlations for the major variables in this study. EDQ scores were significantly correlated with BSQ scores, the discrepancy scores (Diff) from the BIA, the Wtr, BDI scores, and the measure of peer influence, but were not significantly correlated with measures of extraversion, neuroticism, and media influence. The magnitude of the correlations between BSQ scores and other measures was usually greater than the magnitude of the correlations between discrepancy scores from the BIA (Diff) and the other measures. For example, the correlation of BSQ and EDQ scores (.63) was significantly greater than the correlation of Diff and EDQ scores (.40) [$t(117)=3.57$, $P<.001$]. An exception was the correlation of Diff scores and Wtrs (.61). That correlation was significantly greater than the correlation of BSQ scores and Wtrs (.45) [$t(117)=2.43$, $P<.05$].

3.1. Preliminary regression analyses

A regression analysis was used to determine which measure of body dysphoria was the better predictor of bulimic behavior (i.e., EDQ scores)—the BSQ or the discrepancy (Diff) between CBI and IBI as indicated by the silhouettes of the BIA. Both variables were standardized to have a mean of 0 and a standard deviation of 1 before being included in the regression analysis. The results are shown in Table 2. When BSQ and Diff were the only predictors in the regression model, BSQ scores were statistically significant in predicting EDQ scores, but Diff scores were not significantly related to EDQ scores. Therefore, in subsequent analyses, only BSQ scores were used as the measure of body dysphoria.

A similar regression analysis demonstrated that BDI scores were statistically significant in predicting EDQ scores but that neuroticism scores were not significantly related to EDQ

Table 1
Means, standard deviations, and correlations for the variables

Variable	*M*	S.D.	EDQ	E	N	BDI	Wtr	Peer	Media	BSQ	Diff
EDQ	22.57	6.88	–								
E	13.79	3.72	.11	–							
N	13.07	4.88	.23	−.17	–						
BDI	10.43	7.71	.44**	.22	.64**	–					
Wtr	1.05	0.28	.31**	−.07	−.07	.03	–				
Peer	32.64	7.82	.52**	.03	.32**	.24*	.00	–			
Media	33.75	8.27	.20	.15	.37**	.14	−.24	.45**	–		
BSQ	47.88	17.58	.63**	−.19	.40**	.42**	.45**	.53**	.27*	–	
Diff	0.83	1.66	.40**	−.14	.08	.23	.61**	.07	−.16	.58**	–

EDQ = Eating Disorder Questionnaire; E = Extraversion; N = Neuroticism; BDI = Beck Depression Inventory; Wtr = weight ratio; Peer = Peer Influence Scale; Media = Media Influence Scale; BSQ = Body Shape Questionnaire; Diff = discrepancy scores from the BIA.

* $P<.01$.

** $P<.001$.

Table 2
Regression coefficients for predicting EDQ scores from BSQ and Diff scores

Predictors	Coefficient	t	P
Intercept	22.57	46.12	<.0001
BSQ	4.17	6.92	<.0001
Diff	.34	.57	>.05
$R^2 = .40$			

EDQ = Eating Disorder Questionnaire; BSQ = Body Shape Questionnaire; Diff = discrepancy scores from the BIA.
R^2 refers to variance accounted for by both BSQ and Diff.

scores. For that reason, and because the neuroticism and depression measures were highly correlated ($r = .64$ in this study), only BDI scores were included in subsequent analyses.

3.2. Multiple regression analyses

Next, multiple regression analyses were carried out predicting EDQ scores from the other variables. The first analysis was performed to determine whether any of the FAD subscales would be significant predictors of EDQ scores when entered into a regression model with BSQ, extraversion (E), BDI, and Wtr. A backwards elimination analysis showed that none of the FAD subscales were significant predictors (<.05) in this model. After eliminating the subscales as predictors, E, BDI, Wtr, peer influence (Peer), media influence (Media), BSQ, and the cross-products of those variables were included in a backwards elimination analysis. To facilitate interpretation of the results, all predictors were standardized prior to creating cross-products. The resulting regression equation is shown in Table 3. The model accounted for 61% of the variance in EDQ scores.

Table 3
Regression coefficients for predicting EDQ scores from E, BDI, Wtr, Peer, Media, and BSQ

Predictors	Coefficient	t	P
Intercept	21.91	48.09	<.0001
BSQ	3.24	4.85	<.0001
E	1.68	3.82	<.0005
Peer	1.50	2.72	<.01
BDI	1.48	3.10	<.005
Wtr	.33	.58	>.05
Media	−.11	−.22	>.05
Wtr × Media	−1.38	2.87	<.005
Wtr × BDI	1.16	2.64	<.01
Media × BSQ	1.13	2.33	<.05
$R^2 = .61$			

EDQ = Eating Disorder Questionnaire; BSQ = Body Shape Questionnaire; E = Extraversion; Peer = Peer Influence Scale; BDI = Beck Depression Inventory; Wtr = weight ratio; Media = Media Influence Scale.
The coefficients in this table are unstandardized coefficients from a regression analysis in which predictors were first standardized to have a mean of 0 and a standard deviation of 1.
R^2 refers to variance accounted for by all simple effects and interactions listed in this table.

3.2.1. Simple effects

Table 3 indicates that 21.91, the intercept value is the predicted EDQ score for individuals who are at the mean on all other predictors in the equation. The large positive coefficient for BSQ indicates that for individuals at the mean on all other variables, each one-standard-deviation increase in body shape dissatisfaction leads to corresponding increase in EDQ of 3.24 points. The other lower-order coefficients are interpreted similarly so that, for example, a one-standard-deviation increase in peer influence leads to a 1.50 point increase in EDQ for individuals whose scores are at the mean on all other predictors.

3.2.2. Interactions

There were three significant interactions in the regression model. The first of these significant interactions, BSQ × Media, is shown in Fig. 1. This interaction indicates that, for individuals at the mean on all other variables, the relation between body shape

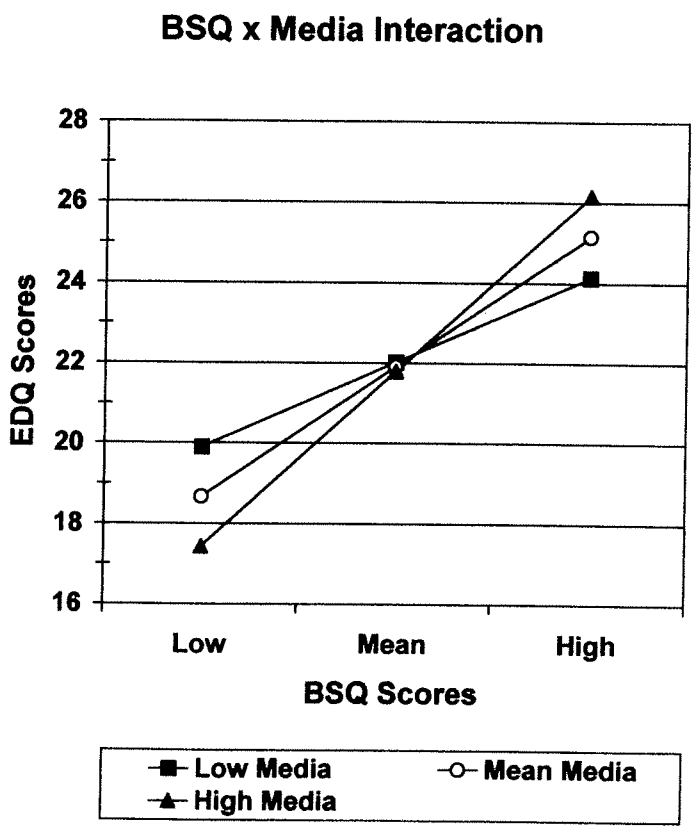

Fig. 1. EDQ scores as a function of scores on the BSQ and Media Influence Scale (Media) when all other predictors are at their means. Low scores for both BSQ and Media are at one standard deviation below the mean; high scores are at one standard deviation above the mean.

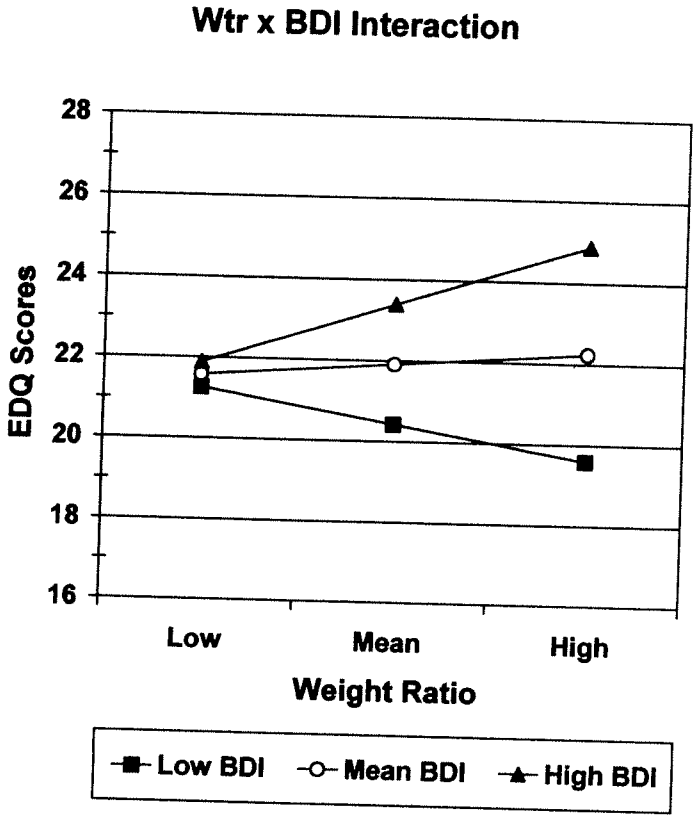

Fig. 2. EDQ scores as a function of Wtr and scores on the BDI when all other predictors are at their means. Low scores for both Wtr and BDI are at one standard deviation below the mean; high scores are at one standard deviation above the mean.

dissatisfaction (BSQ scores) and bulimic behaviors (EDQ scores) differed significantly at different levels of media influence. Fig. 1 indicates that higher levels of media influence tend to amplify the effect of body dissatisfaction on bulimic behavior. The relationship of body dissatisfaction and bulimic behavior is strongly positive at high media influence [$b = 4.36$, $t(110) = 5.07$, $P < .0001$],[1] and still positive but less than half as strong at low media influence [$b = 2.11$, $t(110) = 2.69$, $P < 001$].

The second significant interaction, Wtr × BDI, is shown in Fig. 2. The figure shows that, holding all other variables constant, for individuals who were at the mean on depression, Wtr had little or no relation to bulimic behavior. For individuals who were one standard deviation above the mean on depression, reported bulimic behavior increased as Wtr increased [$t(110) = 2.11$, $P < .05$]. Thus, an increase in Wtr seems to be a better predictor of

[1] Significance tests for the regression slopes at plus or minus one standard deviation from the mean follow the procedure described by Aiken and West (1991, pp. 18–19).

bulimic behavior in depressed women than in women who are not depressed. Also, it appears that for individuals at the mean on the other variables, those who were depressed did not show elevations in bulimic behavior unless their Wtr was high. In addition, women who had high Wtrs did not show high levels of disordered eating habits unless they were also depressed.

The third significant interaction, Wtr × Media, is shown in Fig. 3. The middle line in this figure is the same as in Fig. 2 and indicates that for individuals at the mean on all other variables, increases in Wtr had little or no relation to bulimic behavior. Fig. 3 also shows that for women reporting high levels of media influence, bulimic behavior decreased as Wtr increased [$t(110) = -1.21$, $P = .23$]. Conversely, for women who reported low levels of media influence, bulimic behavior increased as Wtr increased [$t(110) = 2.88$, $P < .05$]. This result was contrary to the expectation that participants would be more likely to engage in bulimic behaviors if they reported both greater influence from media images promoting a thin body ideal and had higher than average Wtrs.

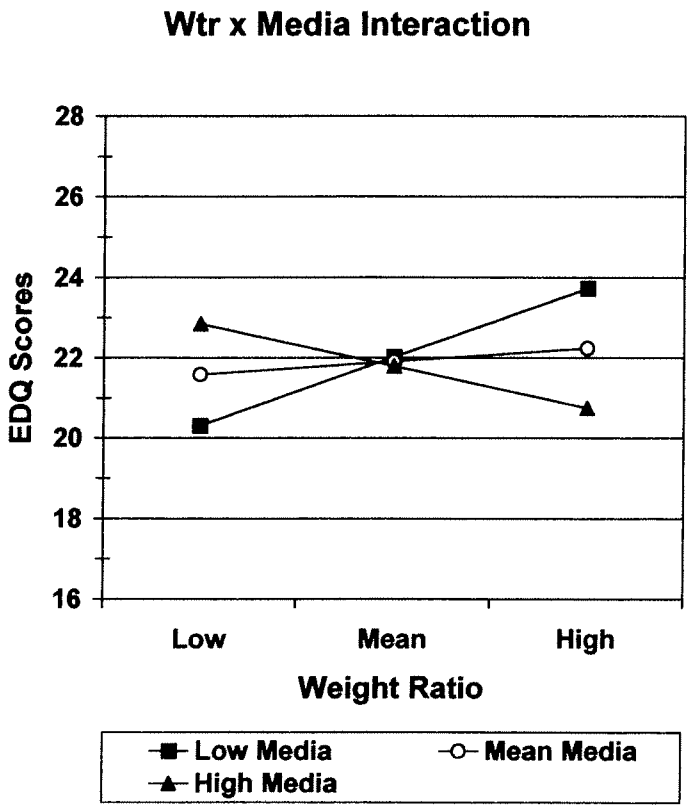

Fig. 3. EDQ scores as a function of Wtr and scores on the Media Influence Scale (Media) when all other predictors are at their means. Low scores for both Wtr and Media are at one standard deviation below the mean; high scores are at one standard deviation above the mean.

4. Discussion

One of the main goals of this study was to examine whether self-report measures of family functioning and of the influence of peer groups and the media predict bulimic behavior in college students. Family functioning was shown to be a poor predictor of bulimic behavior, whereas peer influence was a significant predictor. That result was consistent with a previous study that failed to link family dysfunction to an increased risk of developing eating disorders in a nonclinical sample of college women, except in the presence of mediating factors such as sexual abuse (Hastings & Kern, 1994). Although reports of family dysfunction are quite common among women in treatment for bulimia (Kerr et al., 1991), few studies have identified a direct relation between family dysfunction and disordered eating patterns occurring at nonclinical levels. Women with bulimia often display a strong tendency to evaluate their family relationships and experiences in a negative light, perhaps because so many of them are depressed (Polivy & Herman, 1993). This bias complicates efforts to assign a causal role to the family environment in the development of eating disorders.

The results of this study indicate that perceived peer pressure to maintain a thin body shape appears to have a direct relation to bulimic behavior, but the basis for this relationship is unclear. Cattarin and Thompson (1994) suggested that when adolescent girls gain weight and are teased about it by their peers, the teasing causes them to develop negative feelings about their body shape, which then leads to the development of eating disorders. Alternatively, Crandall (1988) discounted the role of body dysphoria, arguing that activities such as binge eating and purging are largely acquired through peer modeling and increase when group norms favor such behaviors.

Although media influence was not in itself a significant predictor of bulimic behavior, it was shown in this study to interact with body dysphoria and with the Wtr to increase the likelihood of bulimic behavior. As shown in Fig. 1, greater media influence predicted increased levels of bulimic behavior in women who reported negative feelings about their body shape. This result seems to reinforce the widely held view that exposure to media images of thin actresses and models encourages bulimic behavior in women who are insecure about their body shape. In support of this position, Stice et al. (1994) identified body dysphoria as an "important mediator" of the effects of media exposure on eating-disordered behavior. In the current study, greater media influence was associated with lower levels of bulimic behavior in women who reported low body dysphoria. Women with low body dysphoria may perceive their body shape as being consistent with the media-projected ideal, and increasing media exposure may make that consistency more salient, reducing the likelihood of bulimic behaviors. In other words, among women who are satisfied with the shape of their bodies, higher levels of media influence appear to lead to increasing validation of their satisfaction so that they are even less likely to engage in bulimic behavior than women who are satisfied with their bodies but have low levels of media influence. The nature of the other interaction, that of media influence and Wtr (e.g., bulimic behavior in women reporting high levels of media influence decreased as Wtr increased; see Fig. 3), is difficult to interpret and has not appeared elsewhere in the research literature.

It has been well established that depression is frequent among women with either clinical or subclinical levels of bulimic behavior (Ellis, 1998; Nichols, 1998; Williamson et al., 1985), so the finding in this study that depression was a significant predictor of bulimic behavior and also moderated the effects of Wtr on bulimic behavior was unsurprising. The finding that an increase in Wtr is a better predictor of bulimic behavior in depressed women than in women who are not depressed suggests that depression is strongly linked to the development of eating disorders in overweight women.

There is inconsistency in the evidence of a possible relationship between extraversion and bulimic behavior. Extraversion failed to reach statistical significance as a predictor of bulimic behavior in previous studies using the EPI and the EDQ with nonclinical samples of adolescent and college-aged women (Ellis, 1998; Nichols, 1998; Rahmatian, 1994). Although EDQ scores were not significantly correlated with scores for the Extraversion scale of the EPI in the current study (.11), a regression analysis indicated that extraversion was a significant predictor of EDQ scores after controlling for other variables. One possible reason that extraversion was a significant predictor of bulimic behavior in this study is that the Extraversion scale of the EPI assesses both gregarious and impulsive behavior (Tellegen, 1978). Given the impulsive nature of some bulimic behaviors such as binge eating and purging, future studies of the relationship between personality characteristics and eating disorders might do well to examine extraversion and impulsivity as separate dimensions.

The second major goal of this study was to determine whether the BSQ (Cooper et al., 1987), a verbal measure of body dysphoria, was a better predictor of bulimic behavior than the widely used BIA, in which participants are asked to compare their CBI and IBI to a series of silhouettes (Williamson et al., 1989). The superiority of the BSQ indicates that participants' responses on this verbal measure, which asks questions about specific areas of the body, may reflect their feelings of body dysphoria more accurately than a generalized silhouette. For example, a college student who feels that her abdomen is much too large but possesses an otherwise thin physique might select a relatively thin silhouette as her "current body size" on the BIA because this figure is the one that most closely resembles her body overall. However, she may respond "strongly agree" to several items on the BSQ such as "My abdominal area is much larger than I would like it to be" and "Have you felt that it is not fair that other women are thinner than you?"

This study raised several important questions that could benefit from further research. For instance, longitudinal studies could clarify the nature of peer influence on bulimic behavior and address whether it is stronger in high school or college, or if there is a difference. Future research with other samples of young women might also confirm that verbal measures of body dysphoria are more predictive of bulimic behavior than the silhouette measure, even though the silhouette measure is the more commonly used instrument in research on eating disorders.

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