

Relationship Between Depression and Body Dissatisfaction in Women Diagnosed with Bulimia Nervosa

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Abstract: Objective: *Body dissatisfaction and depression have consistently demonstrated a positive association in women. This study sought to determine the independence of this association from bulimic symptomatology among women diagnosed with bulimia nervosa.* **Method:** *Participants were 101 women who completed a controlled treatment study of bulimia nervosa and participated in follow-up assessments 10 years later.* **Results:** *Findings indicated that baseline levels of depression were independent of and superior to bulimic symptoms in prospectively predicting body dissatisfaction at follow-up assessment.* **Discussion:** *Findings suggest that depression may be a better prognostic indicator of body dissatisfaction than bulimic symptoms in women diagnosed with bulimia nervosa. A model in which depression represents a contributing factor for the maintenance of body dissatisfaction is discussed.* © 2001 by John Wiley & Sons, Inc. *Int J Eat Disord* 30: 48–56, 2001.

Key words: *depression; body dissatisfaction; bulimia*

INTRODUCTION

Body dissatisfaction has demonstrated prognostic significance in the development of disordered eating (Patton, Johnson-Sabine, Wood, Mann, & Wakeling, 1990; Killen et al., 1996; Keel, Fulkerson, & Leon, 1997). Therefore, it is important to identify factors that contribute to the development and maintenance of body dissatisfaction. A strong association between body dissatisfaction and depression has been found in women with bulimia nervosa (BN; Cooper & Fairburn, 1993; Cooper & Hunt, 1998). It would be parsimonious to conclude that the association between body dissatisfaction and depression is due to BN. However, several studies have demonstrated a significant association

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between body dissatisfaction and depression in community-based samples of preadolescent (McCabe & Marwit, 1993; Keel et al., 1997), adolescent (Allgood-Merten, Lewinsohn, & Hops, 1990; Leon, Fulkerson, Perry, & Cudeck, 1993; Rierdan & Koff, 1997), and adult females (Taylor & Cooper, 1986; Roth & Armstrong, 1993; Joiner, Schmidt, & Singh, 1994). The existence of this association in community samples suggests two possible conclusions. First, the association between body dissatisfaction and depression could exist independently of bulimic symptoms. Supporting this conclusion, an association between increased depression and decreased ratings of physical attractiveness in non-eating-disordered individuals has long been recognized in the literature on depression (Noles, Cash, & Winstead, 1985). Alternatively, the relationship between body dissatisfaction and depression might not be independent of bulimic symptoms and their association within community samples could be due to undetected disordered eating within these nonclinical samples. If body dissatisfaction and depression share an association that is independent of bulimic symptoms, then depression may represent a factor that contributes to the development or maintenance of body dissatisfaction which, in turn, contributes to the development or maintenance of BN. Research on these associations has provided inconsistent evidence.

Some research has supported an association between depression and body dissatisfaction that is independent of the presence of bulimic symptomatology. Joiner, Wonderlich, Metalsky, and Schmidt (1995) explored associations between body dissatisfaction and depression among patients with BN, patients with depressive disorders, and among nonpsychiatric controls. Bulimic patients reported significantly greater body dissatisfaction compared with normal controls on the Eating Disorders Inventory (EDI). However, patients with depressive disorders reported greater body dissatisfaction compared with bulimic patients (Joiner et al., 1995; Joiner, Schmidt, & Wonderlich, 1997). Indeed, depression explained a greater portion of variance in EDI Body Dissatisfaction scale scores than did bulimic symptoms. In an analysis including bulimic patients and normal controls, Beck Depression Inventory (BDI) scores but not diagnostic status (bulimic vs. nonbulimic) added significantly to the explained variance of Body Dissatisfaction scores. Joiner et al. (1995) concluded, "body dissatisfaction is not a pathognomonic feature of bulimia, but an associated feature of depression or of a mixed depressive-bulimia presentation" (p.351). Thus, they found an association between body dissatisfaction and depression independent of bulimic symptoms. However, they did not find evidence of an association between bulimic symptoms and body dissatisfaction that was independent of depression.

Other investigations have provided evidence for an association between body dissatisfaction and bulimic symptoms that is independent of levels of depression. Hurley, Palmer, and Stretch (1990) compared patients with eating disorders with psychiatric control patients who comprised patients with depression. Contrary to the results of Joiner et al. (1995, 1997), Hurley et al. (1990) found significantly higher levels of body dissatisfaction measured by the EDI in bulimic patients compared with other psychiatric patients. A possible explanation for the contrary finding is that Hurley et al. (1990) controlled for age differences in their analyses and Joiner et al. (1995, 1997) did not. In the patient sample in Joiner et al. (1995, 1997), depressed patients were adolescents and bulimic patients were adults. This age difference may have contributed to the difference in body dissatisfaction between these patient samples (Joiner et al., 1995, 1997). Using community advertisements, Schlesier-Carter, Hamilton, O'Neil, Lydiard, and Malcolm (1989) recruited subjects with BN and subjects without psychiatric disorders. In this study, bulimic subjects differed from normal controls on measures of depression, "depressogenic cognitions," and bulimic symptoms and cognitions. Differences in bulimic cognitions, including body

dissatisfaction, remained after controlling for levels of depression. Thus, diagnostic status (bulimic vs. nonbulimic) was significantly associated with body dissatisfaction after controlling for depression. Results of Hurley et al. (1990) and Schlesier-Carter et al. (1989) both supported an association between BN and body dissatisfaction that was independent of depression. However, neither study explored the extent to which an association between body dissatisfaction and depression was independent of bulimic symptoms.

Finally, the work of Cooper and Hunt (1998) indicated that body dissatisfaction has independent associations with both depression and BN. This study compared 12 women with BN, 12 women with major depressive disorder (MDD), and 18 normal female controls on measures of depression, negative self-beliefs, and weight and eating cognitions. The authors found no significant difference between women with BN and MDD on measures of depression or negative self-beliefs. However, women with BN endorsed greater weight and eating cognitions (including body dissatisfaction) than women with depression and normal controls. This suggests that BN, independently of depression, is associated with increased levels of body dissatisfaction. Interestingly, women with MDD endorsed greater body dissatisfaction compared with normal controls. Because women with MDD were selected to have no history of eating pathology, the Cooper and Hunt (1998) study suggested that MDD, independently of bulimic symptoms, is associated with increased body dissatisfaction as well.

Although evidence has been inconsistent, a relationship between body dissatisfaction and depression independent of bulimic symptoms has received support from two research groups (Cooper & Hunt, 1998; Joiner et al., 1995, 1997) and thus merits further exploration. If an independent association exists, then depression may contribute to the experience and maintenance of body dissatisfaction among women diagnosed with BN.

Current Study

The purpose of the current investigation was to assess the independence of the association between depression and body dissatisfaction from bulimic symptoms within a group of women diagnosed with BN. The current study involved a 10-year follow-up of women who participated in a controlled treatment outcome study of BN between 1985 and 1987. Women were carefully evaluated for bulimic symptoms, body dissatisfaction, and depression at baseline and follow-up assessments. Thus, the independence of relationships between body dissatisfaction and depression and bulimic symptoms could be explored in analyses of concurrent and prospective associations.

METHODS

Subjects

Women with BN ($N = 125$) who completed participation in a controlled treatment outcome study between 1985 and 1987 (Mitchell et al., 1990) were sought for participation in follow-up assessments between 1996 and 1997. Of the women sought for participation, 115 (92.0%) were located and 102 (81.6%) participated. Mean (SD) duration of follow-up was 10.0 (0.7) years. The original study (Mitchell et al., 1990) recruited women who met criteria for bulimia as outlined in the 3rd ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association [APA], 1980), with the additional criterion of binge eating coupled with purging episodes occurring at least three

times per week for at least 6 months prior to study participation. Additional inclusion and exclusion criteria are reported in the original study (Mitchell et al., 1990). One woman was removed from analyses because baseline and follow-up assessments indicated that she had never met full DSM-IV criteria for BN (APA, 1994) because her binge eating episodes were not objectively large. This resulted in a sample of 101 women. No baseline measure differed significantly between women who did and did not participate in follow-up assessments ($p > .10$). Additionally, there were no significant differences among women who did and did not participate due to baseline treatment condition, $\chi^2(3) = .70$, $p = .87$. Baseline treatment condition was not associated with levels of depression, body dissatisfaction, or bulimic symptoms at follow-up ($p > .10$). The sample was predominantly Caucasian (99%) with only one non-Caucasian participant (1%). At follow-up, women were a mean (SD) age of 34.3 (5.2) years. All but one subject (1%) had completed high school, 42% had completed 4-year college degrees, and 15% had completed graduate school. The majority of the sample described their occupational level as administrative (37%) or clerical/sales (29%), with approximately 10% each reporting working in manual (11%) or professional (10%) positions. At follow-up assessment, the number of months since last binge eating or purging episodes ranged from 0 to 124 months.

Procedure

Subjects were contacted by one of the authors (JEM) by a letter that described the study and invited subjects to participate. Subjects could indicate their decision of whether or not they wished to participate by either returning an enclosed stamped postcard or by calling one of the authors (PKK). If subjects indicated an interest in participating, they were mailed consent forms and questionnaires that they were asked to complete at home. Subjects were also asked to complete an interview either over the telephone or in person. Face-to-face interviews were conducted either at the University of Minnesota's Eating Disorders research office or within subjects' homes. However, subjects living more than 1 hr from the research office were not offered the option of being interviewed in their home. Written informed consent was obtained from subjects at the time questionnaires were received, prior to the interview. Participants were paid according to the following schedule: \$50 for an office interview, \$30 for a home interview, and \$20 for a telephone interview. Across subjects, 51% participated in office interviews, 8% completed home interviews, and 41% completed telephone interviews. Among subjects completing telephone interviews, 50% lived out of state or more than 2 hr away from the research office. No significant differences were found between women who participated in face-to-face interviews compared with women who completed telephone interviews on follow-up measures (p values ranged from .63 to .98). However, women who participated in face-to-face interviews had significantly higher levels of depression at baseline compared with women who participated in telephone interviews, $t(99) = 2.04$, $p < .05$. Follow-up interview type was not associated with levels of body dissatisfaction or severity of eating disorder symptoms at baseline ($p > .90$). Interviews were audiotaped to determine reliability.

Measures

Subjects completed questionnaire and interview measures at both baseline and follow-up assessments. Relevant to the present investigation, the following measures were employed.

Hamilton Depression Rating Scale Interview

The 24-item HDRS (Hamilton, 1960) was administered to the entire sample at both baseline and follow-up assessments. This interview assesses symptoms of depression. Average correlations of scoring between two raters was $r = .88$ (Hamilton, 1960). Within the current sample, Cronbach's alpha was $r = .83$ at baseline assessment and $r = .89$ at follow-up assessment.

EDI

The 64-item EDI (Garner, Olmstead, & Polivy, 1983) was administered to the entire sample only at baseline assessment. Although the EDI comprises eight subscales, only the Body Dissatisfaction and Bulimia subscales were included in the current analyses. The Body Dissatisfaction subscale measures the belief that specific body parts, such as the hips, thighs, and buttocks, are too large. This subscale has demonstrated significant associations with other measures of body image disturbance (Garner et al., 1983) and was employed as the baseline measure of body dissatisfaction. The Bulimia subscale measures tendencies to engage in binge eating episodes. It has one item that measures thoughts of vomiting to lose weight and was employed as the baseline measure of bulimic symptom severity. Cronbach's alpha was $r = .92$ for Body Dissatisfaction and $r = .82$ for the Bulimia subscale in the current sample.

Body Shape Questionnaire

The 34-item BSQ (Cooper, Taylor, Cooper, & Fairburn, 1987) was administered to the entire sample only at follow-up assessment as a measure of body dissatisfaction (Cooper & Fairburn, 1993). The BSQ measures concerns with body shape for the preceding 4 weeks. Discriminant validity of this scale (in distinguishing between women from a community sample and women with BN) was good. The correlation between the BSQ and Body Dissatisfaction subscale of the EDI was $r(38) = .66, p < .001$ within a sample of BN patients, which suggests adequate concurrent validity (Cooper et al., 1987). Cronbach's alpha for the current sample was $r = .98$.

Structured Clinical Interview for DSM-IV, Axis I Disorders

The SCID-I interviews (First, Spitzer, Gibbon, & Williams, 1995) were employed to determine the number of months between the most recent binge eating or purging episode and the interview as a continuous measure of bulimic symptoms at follow-up assessment. Bulimic symptomatology was measured as the number of months since the last binge eating or purging episode rather than current severity of bulimic symptoms because most women no longer had bulimic symptoms at follow-up assessment. Interviewers were trained in conducting SCID-I interviews using the SCID training tapes prepared by the New York State Psychiatric Institute. Additionally, supervision was available from a licensed clinical psychologist. Kappa reliabilities for eating disorder diagnoses were $\kappa = .81$ (lifetime) and $\kappa = 1.00$ (current) in the present study.

Data Management and Analyses

For all measures involving scales, responses to at least 80% of items were required for the subject's data to be included in analyses. Thus, sample sizes differ across analyses. When at least 80% but fewer than 100% of responses were present, scale scores were prorated according to the following equation (prorated scale score = number of items \times original scale score \div number of responses). Multiple regression analyses were utilized to test the independence and strength of concurrent and prospective associations of body

dissatisfaction, depression, and bulimic symptoms. A p value of .05 was used for statistical significance. Data were analyzed using SPSS for Macintosh.

RESULTS

Three multiple regression analyses were conducted to determine the independence and relative strength of depression compared with bulimic symptoms in predicting body dissatisfaction (Table 1). All three analyses supported an association between depression and body dissatisfaction independent of their associations with bulimic symptoms. The first analysis demonstrated that both depression and bulimic symptoms significantly predicted concurrent body dissatisfaction at baseline assessment. Bulimic symptoms accounted for a larger portion of variance compared with depression; however, this may be partially attributable to method variance. Body dissatisfaction and bulimic symptoms were measured by the EDI questionnaire whereas depression was measured by interview during baseline assessments. Thus, the amount of variance in body dissatisfaction scores explained by bulimic symptoms may be inflated by a common response style on the EDI. Similar to results for baseline concurrent analyses, both depression and bulimic symptoms significantly predicted concurrent body dissatisfaction at follow-up assessment. Neither bulimic symptoms nor depression displayed greater significance in predicting body dissatisfaction in follow-up concurrent analyses. Finally, in the prospective prediction of body dissatisfaction at follow-up, baseline depression and baseline body dissatisfaction accounted for a significant portion of variance. However, baseline bulimic symptom severity did not. The prospective analyses suggest that baseline depression is both independent of and also superior to bulimic symptoms in predicting body dissatisfaction at follow-up.

Regression analyses for the prospective relationship between body dissatisfaction and depression (Table 2) indicated that baseline depression as measured by the HDRS significantly predicted body dissatisfaction as measured by the BSQ at follow-up assessment after controlling for baseline levels of body dissatisfaction. The model accounted for 16% of the variance in body dissatisfaction at long-term follow-up. Conversely, baseline body dissatisfaction did not predict depression at follow-up assessment after controlling for baseline levels of depression.

DISCUSSION

Results from this study demonstrated that the association between depression and body dissatisfaction was independent of bulimic symptoms among women diagnosed

Table 1. Regression of body dissatisfaction on bulimic symptoms and depression

	<i>N</i>	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β
Baseline concurrent	101	.21			
Bulimic symptoms			.59	.15	.36***
Depression			.22	.11	.19*
Follow-up concurrent	97	.32			
Bulimic symptoms			-7.32	1.73	-.37***
Depression			1.92	.49	.35***
Prospective	97	.19			
Bulimic symptoms			-1.22	.76	-.17
Depression			1.26	.54	.24*
Baseline body dissatisfaction			1.54	.47	.35**

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 2. Regression analyses for depression and body dissatisfaction

	<i>N</i>	<i>R</i> ²	<i>B</i>	<i>SE B</i>	β
Baseline concurrent	101	.09			.31**
Depression on body dissatisfaction			.27	.08	
Body dissatisfaction on depression			.35	.11	
Follow-up concurrent	97	.19			.44***
Depression on body dissatisfaction			.08	.02	
Body dissatisfaction on depression			2.45	.51	
Prospective—baseline to follow-up	97				
Depression on body dissatisfaction ^a		.08	.01	.08	.01
Body dissatisfaction on depression ^b		.16	1.04	.52	.20*

^aControlling for baseline depression.

^bControlling for baseline body dissatisfaction.

p* < .05. *p* < .01. ****p* < .001.

with BN. Indeed, prospective analyses indicated that depression was stronger than were bulimic symptoms in predicting body dissatisfaction. In our sample, body dissatisfaction was significantly associated with depression at baseline and follow-up assessments concurrently and baseline depression predicted levels of body dissatisfaction at follow-up assessment prospectively. Conversely, baseline body dissatisfaction did not predict levels of depression at follow-up. These results replicate and extend findings presented by Joiner et al. (1995, 1997).

Cooper and Fairburn (1993) proposed that body dissatisfaction is “a specific manifestation of the depressive symptom of self-deprecation” rather than a core feature of BN (p. 387). Body dissatisfaction may not be a core feature of BN (Joiner et al., 1995, 1997); however, it has demonstrated prognostic significance in the development of disordered eating (Patton et al., 1990; Killen et al., 1996; Keel et al., 1997). It is important to understand the factors that contribute to the development and maintenance of body dissatisfaction. The present study suggests that increased depression may contribute to increased levels of body dissatisfaction. This represents a departure from explanations made by McCarthy (1990) and Joiner et al. (1995) who proposed that body dissatisfaction increased vulnerability to depression. Notably, there may be a reciprocal relationship between body dissatisfaction and depression in which they contribute to each other. Joiner et al. (1995) suggested that body dissatisfaction increased dysphoria and that bulimic symptoms may represent an attempt to cope with the depressogenic effects of body dissatisfaction. Based on our results, one might propose that vulnerability to develop BN could be conferred through an increased tendency to experience dissatisfaction with body shape or weight as a *result* of negative affect as well. In this model, two adolescent girls may experience similar levels of depression, but the adolescent who experiences increased body dissatisfaction as a result of her dysphoria is at increased risk to develop an eating disorder. This model fits multivariate analyses presented by Killen et al. (1996) in which body dissatisfaction more than negative affect predicted the onset of bulimic syndromes in adolescent girls. Similarly, this model provides a framework for understanding how factors that confer risk for psychopathology in general interact with factors that confer risk for BN specifically. Retrospective case-control research (Fairburn, Welch, Doll, Davies, & O’Connor, 1997) suggested that negative affect serves as a general risk factor for psychopathology whereas higher premorbid body mass index (BMI) acted as a specific risk factor. Higher premorbid BMI may function as a specific risk factor by increasing translation of negative affect into body dissatisfaction. Finally, this model could further

elucidate the influence of cultural factors on the prevalence of eating disorders. Only in cultures in which thinness is an aesthetic and moral ideal might feelings of dysphoria become funneled into extreme body dissatisfaction.

Despite a number of strengths in the present investigation, a number of limitations should also be noted. First, different measures of body satisfaction and bulimic symptoms were employed at baseline and follow-up assessments. The use of different measures could introduce a source of variability unrelated to body dissatisfaction or bulimic symptoms. Notably, the association between baseline body dissatisfaction (measured by the EDI) and follow-up body dissatisfaction (measured by the BSQ) was actually stronger than the association between baseline and follow-up depression (both measured by the HDRS). This suggests good concurrent validity between the EDI Body Dissatisfaction subscale and the BSQ. Second, the prospective design of this study does not prove causal relationships between depression and body dissatisfaction. Causal relationships can only be demonstrated through experimental designs with appropriate controls. Although results of this study favor the hypothesis that depression contributes to the maintenance of body dissatisfaction, the possible impact of a third underlying variable (e.g., temperament) on both body dissatisfaction and depression cannot be excluded. Third, all subjects within our sample suffered from BN at baseline assessment. This may have restricted the range in assessing bulimic symptom severity and thus limited its contribution to variance in body dissatisfaction. However, a strong association was found between baseline bulimic symptom severity and baseline body dissatisfaction, indicating that the range of these variables was not severely restricted. Fourth, assessment of bulimic symptoms at follow-up relied on retrospective report, which tends to have limited reliability. However, lowered reliability should have attenuated the strength of associations between bulimic symptoms and depression and body dissatisfaction at follow-up. This attenuation was not observed. Finally, this study assessed a treatment-seeking sample that was not ethnically or socioeconomically diverse. Because this study followed previously identified women, we were unable to retroactively change characteristics of the sample. However, caution should be employed in generalizing these results to samples that do not seek treatment or in which demographic characteristics differ significantly.

Future research may benefit from exploring the possible causal relationship between depression and body dissatisfaction in experimental designs that also assess bulimic symptomatology. The present study replicated results of previous studies in demonstrating a significant association between body dissatisfaction and depression that is independent of bulimic symptoms. Finally, results support a model in which depression represents a contributing factor for the experience and maintenance of body dissatisfaction in women diagnosed with BN.

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REFERENCES

- American Psychiatric Association. (1980). *Diagnostic and statistical manual of mental disorders* (3rd ed.). Washington, DC: Author.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

- Allgood-Merten, B., Lewinsohn, P.M., & Hops, H. (1990). Sex differences and adolescent depression. *Journal of Abnormal Psychology, 99*, 55–63.
- Cooper, M., & Hunt, J. (1998). Core beliefs and underlying assumptions in bulimia nervosa and depression. *Behaviour Research and Therapy, 36*, 895–898.
- Cooper, P.J., & Fairburn, C.G. (1993). Confusion over the core psychopathology of bulimia nervosa. *International Journal of Eating Disorders, 13*, 385–389.
- Cooper, P.J., Taylor, M.J., Cooper, Z., & Fairburn, C.G. (1987). The development and validation of the Body Shape Questionnaire. *International Journal of Eating Disorders, 6*, 485–494.
- Fairburn, C.G., Welch, S.L., Doll, H.A., Davies, B.A., & O'Connor, M.E. (1997). Risk factors for bulimia nervosa: A community-based case-control study. *Archives of General Psychiatry, 54*, 509–517.
- First, M.B., Spitzer, R.L., Gibbon, M., & Williams, J.B.W. (1995). Structured Clinical Interview for DSM-IV Axis I disorders - Patient ed. (SCID - I/P, Version 2.0). New York: Biometrics Research Department, New York State Psychiatric Institute.
- Garner, D.M., Olmstead, M.P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders, 2*, 15–33.
- Hamilton, M. (1960). A rating scale for depression. *Journal of Neurology, Neurosurgery and Psychiatry, 23*, 56–62.
- Hurley, J.B., Palmer, R.L., & Stretch, D. (1990). The specificity of the Eating Disorders Inventory: A reappraisal. *International Journal of Eating Disorders, 9*, 419–424.
- Joiner, T.E., Schmidt, N.B., & Singh, D. (1994). Waist-to-hip ratio and body dissatisfaction among college women and men: Moderating role of depressed symptoms and gender. *International Journal of Eating Disorders, 16*, 199–203.
- Joiner, T.E., Schmidt, N.B., & Wonderlich, S.A. (1997). Global self-esteem as contingent on body satisfaction among patients with bulimia nervosa: Lack of diagnostic specificity? *International Journal of Eating Disorders, 21*, 67–76.
- Joiner, T.E., Wonderlich, S.A., Metalsky, G.I., & Schmidt, N.B. (1995). Body dissatisfaction: A feature of bulimia, depression, or both? *Journal of Social and Clinical Psychology, 14*, 339–355.
- Keel, P.K., Fulkerson, J.A., & Leon, G.R. (1997). Disordered eating precursors in pre- and early adolescent girls and boys. *Journal of Youth and Adolescence, 26*, 203–216.
- Killen, J.D., Taylor, C.B., Hayward, C., Haydel, K.F., Wilson, D.M., Hammer, L., Kraemer, H., Blair-Greiner, A., & Strachowski D. (1996). Weight concerns influence the development of eating disorders: A 4-year prospective study. *Journal of Consulting and Clinical Psychology, 64*, 936–940.
- Leon, G.R., Fulkerson, J.A., Perry, C.L., & Cudeck, R. (1993). Personality and behavioral vulnerabilities associated with risk status for eating disorders in adolescent girls. *Journal of Abnormal Psychology, 102*, 438–444.
- McCabe, M., & Marwit, S.J. (1993). Depressive symptomatology, perceptions of attractiveness, and body image in children. *Journal of Child Psychology and Psychiatry, 34*, 1117–1124.
- McCarthy, M. (1990). The thin ideal, depression, and eating disorders in women. *Behavior Research and Therapy, 28*, 205–215.
- Mitchell, J.E., Pyle, R.L., Eckert, E.D., Hatsukami, D., Pomeroy, C., & Zimmerman, R. (1990). A comparison study of antidepressants and structured intensive group psychotherapy in the treatment of bulimia nervosa. *Archives of General Psychiatry, 47*, 149–157.
- Noles, S.W., Cash, T.F., & Winstead, B.A. (1985). Body image, physical attractiveness, and depression. *Journal of Consulting and Clinical Psychology, 53*, 88–94.
- Patton, G.C., Johnson-Sabine, E., Wood, K., Mann, A.H., & Wakeling, A. (1990). Abnormal eating attitudes in London schoolgirls: A prospective epidemiological study. Outcome at twelve month follow-up. *Psychological Medicine, 20*, 383–394.
- Rierdan, J., & Koff, E. (1997). Weight, weight-related aspects of body image, and depression in early adolescent girls. *Adolescence, 32*, 615–624.
- Roth, D., & Armstrong, J. (1993). Feelings of Fatness Questionnaire: A measure of the cross-situational variability of body experience. *International Journal of Eating Disorders, 14*, 349–358.
- Schlesier-Carter, B., Hamilton, S.A., O'Neil, P.M., Lydiard, R.B., & Malcolm, R. (1989). Depression and bulimia: The link between depression and bulimic cognitions. *Journal of Abnormal Psychology, 98*, 322–325.
- Taylor, M.J., & Cooper, P.J. (1986). Body size overestimation and depressed mood. *British Journal of Clinical Psychology, 25*, 153–154.