Comparing Anorectics and Bulimics on Measures of Depression, Anxiety, and Anger

CYNTHIA A. BREAUX, M.S.
J. KELLY MORENO, Ph.D.

Seventeen anorectics and 33 bulimics, all female inpatients at Santa Barbara Cottage Hospital's eating disorder unit, and 57 non-eating-disordered female controls from undergraduate psychology classes at Cal Poly State University, San Luis Obispo, were compared on measures of depression, anxiety, and anger. Results indicated that both anorectics and bulimics differed from controls on depression, anxiety, and three of the six scales assessing anger. Bulimics and anorectics, however, did not significantly differ from each other in terms of depression, anxiety, and anger. The implications of these results for practice and research with eating-disordered persons are discussed.

Research exploring how anorexia and bulimia compare in regard to depression, anxiety, and anger is limited. While few in number, many of these studies agree that, compared to anorexia, more depression and more psychopathology in general seem to be associated with bulimic behavior (Laessle et al., 1989; Norman & Herzog, 1983). However, a general consensus is far from established. Additional comparative research may help to further distinguish between anorexia and bulimia.

Cynthia Breaux, M.S., is a doctoral student in counseling psychology at the University of Maryland. J. Kelly Moreno, Ph.D., is a faculty member, Psychology and Human Development Department at California Polytechnic State University, San Luis Obispo.

Bulimia and Depression, Anxiety, and Anger

Several studies have found bulimia to be associated with mood disturbances. Schlesier-Carter, Hamilton, O'Neil, Lydiard and Malcolm (1989) examined depression and bulimia in 29 bulimic women and 16 female controls drawn from the general population. Bulimics were found to have significantly higher Beck Depression Inventory (BDI) scores than controls. Weiss and Ebert (1983) assessed 15 bulimics and 15 controls on several dimensions including anxiety and depression. Based on the Symptom Checklist-90, the authors found bulimics to be higher in anxiety, depression, and obsessive-compulsive behavior than controls.

Two similar studies (Goebel et al., 1989; Williamson et al., 1987) have examined the severity of bulimia and its relation to depression and other psychopathology. In both studies, results of the BDI showed that as purging increased, depression intensified. Other psychopathology, notably anxiety, measured by the MMPI and the Symptom Checklist-90R, was associated with high-frequency purging when compared with controls.

Anger and anxiety have frequently been studied as precipitants of binge eating in bulimics. Two studies (Leon et al., 1985; Teusch, 1988) using self-report measures found that managing anxiety and anger were motives for binge-purging in a majority of bulimics. Also, the predominant mood experienced by subjects was shame/guilt, followed by depression; anxiety and anger were ranked third and fourth, respectively.

Anorexia Nervosa and Depression, Anxiety, and Anger

Throughout the literature on anorexia and mood disorders, anorexia seems to be associated most often with depression. Using evidence across several studies, Szmukler (1987) has pointed out the enhanced risk for affective disorder in the relatives of anorectic probands (affected individuals) as compared to controls. Similarly, Strober, Lampert, Morrell, Burroughs and Jacobs (1990) obtained results suggesting an intergenerational transmission of disorders and significantly higher rates of a mood disorder among relatives of 280 adolescent anorectic probands with coexisting depression.

Although there is limited research on anorexia and anxiety disorders, one study compared anxiety among 10 restricting anorectics, 10 bulimic anorectics, 10 bulimics, and 10 controls from various treatment facilities in Vancouver, Canada (Buree et al., 1990). A self-report inventory was used to assess anxiety before, during, and after a meal. Findings indicated that anorectic and bulimic subjects appeared to be anxious in general, but particularly when eating.

Address correspondence to: Cynthia Breaux, University of Maryland, Counseling Center, Room 0105 Shoemaker Building, College Park, MD 21045.

Research examining the relationship between anger and anorexia is also scarce. But one study of 60 marathon runners (Yates et al., 1983) postulated that both anorectics and runners appear to be uncomfortable with anger, characteristically inhibiting the direct expression of emotion. Runners, the authors assert, vent their anger through physical exertion, while the unexpressed anger of anorectics leads to depression.

Comparing Mood Disturbances in Anorectics and Bulimics

The articles reviewed to this point have discussed possible relationships of anorexia and bulimia to other specified disorders. The following literature compares the specific eating disorders with one another.

Laessle, Wittchen, Fichter and Pirke (1989) compared four groups of eating-disordered female patients: 21 with anorexia nervosa who rigidly restricted food intake, 20 with anorexia who had bulimic symptoms, 23 with bulimia who had a prior history of anorexia, and 27 with bulimia alone. Results showed that minor mood disorders were equally distributed across all four groups. However, all patients with bulimic symptomatology were found to have a similar lifetime history of psychiatric disturbances, irrespective of past or current episodes of anorexia. This similarity suggests a possible psychopathology associated specifically with those who exhibit bulimic symptoms. Also, data supported the idea that major mood disorders may be related to bulimia. Moreover, while the eating disorder groups showed more anxiety disorders than the general population, the three bulimic groups showed rates significantly higher than those of anorectic restrictors.

In a related study, Norman and Herzog (1983) compared 10 restricting anorectics, 15 bulimic anorectics, and 14 normal-weight bulimics from an eating disorders clinic. Results on the MMPI indicated that depression was the highest scale in both anorectic groups, with bulimic anorectics reporting the highest levels of depression. The bulimic group scored higher in depression than restricting anorectics, but their most elevated scale was the psychopathic deviate scale, indicating high anger and depression. This supports the Laessle et al. (1989) finding that, compared to anorexia, bulimia is associated with a greater degree of depression and other psychological problems.

A study by Rosen, Murkofsky, Steckler, and Skolnick (1989) disputed the hypothesis that bulimic symptoms alone are associated with more disturbances. Nineteen restricting anorectic, 23 bulimic anorectic, and 72 normal-weight bulimic inpatients took the EDI, the Eating Attitudes Test, the Zung Self-Rating Depression Scale, and the Hamilton Rating Scale for Depression. Findings indicated that the bulimic anorectic group showed the greatest degree of psychopathology overall.

Summary

There is some evidence to suggest that eating-disordered persons are more depressed, anxious, and angry than those in the general population. Most of this research has focused on bulimics, however, with fewer studies comparing anorectics versus controls, and fewer still comparing anorectics with bulimics. In addition, the majority of research studies focus on the relationship between eating disorders and depression. Thus, the purpose of this study was to explore how anorectics and bulimics may differ from one another and from the general population on measures of depression, anxiety, and anger. Given the emphasis on food- and weight-related behavior for making a differential diagnosis between eating disorders in the DSM-III-R, differences found herein may illuminate other features to aid in discriminating between eating disorder types. Also, such differences may highlight important avenues for treatment planning and therapy with the eating-disordered patient. With these points in mind, the hypothesis for this study was the following: Bulimics will manifest more depression, anxiety, and anger than anorectics, who in turn will manifest more of these disturbances than controls.

METHOD

Subjects

Fifty female inpatients at a central California hospital's eating disorder unit who met the DSM-III-R (APA, 1987) criteria for eating disorders served as subjects. Of the 50 subjects, 17 were diagnosed with anorexia nervosa, and 33 with bulimia nervosa. As age distribution was positively skewed, the median age of 19 years was the most reflective of central tendency (ages ranged from 15 to 49 years). The mean weight of subjects was 113.6 pounds with a range of 63 to 176 pounds. The majority of subjects were single (76%) and Caucasian (92%). Fifty-four percent of the subjects were students, 9% worked full time, 7% were unemployed. The subjects' mean number of years of education was 13.2.

Fifty-seven female undergraduate students from an introductory psychology class and an upper-division abnormal psychology class served as a control group. The median age of the control group was 20, with a range of 17 to 41 years. The mean weight of the control subjects was 126.4 pounds (range from 102 to 160). The majority of controls were single (90%) and Caucasian (74%). Fifty-four percent of the control group were full-time students; 7% worked full time and 28% worked part time in addition to attending school. The control group's mean number of years of education was 14.6.

Procedure

Women admitted for an eating disorder to the Eating Disorders Unit at the hospital between December 1989 and December 1991 were diagnosed by the unit physician and the attending psychiatrist. Within 72 hours of admission, all patients were given a battery of psychological tests by staff psychologists. Included among the tests were standardized measures of depression, anxiety, and anger. After the patients completed the tests, psychologists scored, analyzed, and reported the results in psychological evaluations. Psychological evaluations were placed in the patients' charts and used for treatment planning.

Following patient discharge from the unit, the charts were moved to the Medical Records department of the hospital. A master-level research assistant in clinical psychology then accessed all test data and coded it according to a coding scheme developed earlier. A doctoral-level research assistant entered the data into the computer for statistical analysis.

The same tests used to assess depression, anxiety, and anger in the eating-disordered subjects were administered to the control group of female undergraduate students. In addition, control subjects were screened for eating disorders with the Eating Disorders Inventory. Further screening questions accompanied a demographics sheet that students were asked to fill out. Specifically, subjects were included as controls if they met two criteria. First, they could score no higher than nine on the Drive for Thinness scale of the Eating Disorders Inventory. Nine was used as a cut-off score because it was approximately one standard deviation above the mean score for the normative group in the Eating Disorders Inventory manual. They also could score no higher than four on the Bulimia scale because four was approximately one standard deviation above the normative group. Second, if subjects had been diagnosed, had received psychotherapy, had undergone inpatient or outpatient treatment, or had been prescribed medication for anorexia or bulimia, or were 20% over average weight as prescribed by the Metropolitan Life Insurance Weight Chart (1959) (because of the possibility of binge-eating), they were eliminated from the study. Tests were hand-scored by the author, and resultant data for individual scores were coded and entered into a computer for analysis by the doctoral-level research assistant.

Instruments

The measures described below were chosen for two reasons: 1) they are psychometrically sound, with established reliability and validity (Beck & Steer, 1984; Beck et al., 1988; Biskin, 1990; Fydrich et al., 1992); and 2) they are well-known and widely used measures, thus providing consistent mood assessment across studies.

The State-Trait Anger Expression Inventory (STAXI) (Spielberger, 1983) was used to measure several aspects of anger. The STAXI is made up of 44 items representing two general areas: anger experience and anger expression. Anger experience is represented by two 10-item scales: State Anger and Trait Anger. Trait Anger includes two four-item subscales: Angry Temperament and Angry Reaction. Anger expression is represented by three eight-item scales: Anger-in, Anger-out, and Anger Control. A total Anger Expression score may be computed from the latter three scales.

The Beck Depression Inventory (BDI) (Beck et al., 1979) contains 21 items, which are rated from 0 to 3 in terms of intensity (Beck & Steer, 1984). The ratings are summed to calculate total depression scores.

The Beck Anxiety Inventory (BAI) (Beck et al, 1988) was developed for the purpose of differentiating anxiety from depression while maintaining convergent validity (Beck et al., 1988). The BAI consists of 21 items, each of which describes a common symptom of anxiety. Items include physical, emotional, behavioral, and cognitive symptoms. The respondent answers how much he or she has been bothered by each symptom over the past week according to a scale ranging from 0 (not at all) to 3 (severely—I could barely stand it), and responses are summed.

The Eating Disorder Inventory (EDI) (Garner et al., 1983) is a self-report instrument measuring eight behavioral and psychological traits that are common among anorectics and bulimics (Swassing, 1989). Besides measuring these traits, the test discriminates between anorectic and bulimic symptomatology (Swassing, 1989).

RESULTS

Beck Depression Inventory

A one-way ANOVA indicated a significant difference among groups ($F(2, 103) = 39.13$, $p<.001$) on the BDI (see Table 1). A post hoc LSD test indicated that a significant difference ($p < 05$) existed between anorectics and controls and bulimics and controls. No significant difference was found between anorectics and bulimics. The mean score for anorectics was 24.9 and the mean score for bulimics was 21.4, both in the moderate-severe depression range.

Beck Anxiety Inventory

Similar results were obtained on the BAI (see Table 1). A one-way ANOVA indicated a significant difference among groups ($F(2, 90) = 27.48$, $p < .001$) with a post hoc LSD test showing that a significant difference ($p < .05$) occurred between anorectics and controls and bulimics and controls. No significant difference was found between anorectics and bulimics. The

TABLE 1
Comparison of Scores on Measures of Mood

Measures of Mood	Groups		
	Anorectics	Bulimics	Controls
BDI[ab]			
Mean	24.94	21.41	5.98
S.D.	12.71	12.74	6.24
BAI[ab]			
Mean	21.09	22.20	6.95
S.D.	10.42	12.47	7.60
STAXI State[ab]			
Mean	16.08	16.07	10.86
S.D.	6.30	6.69	1.56
STAXI Trait			
Mean	19.31	19.81	17.56
S.D.	5.60	4.60	5.69
STAXI Temperament			
Mean	6.31	5.93	6.00
S.D.	2.50	1.98	2.95
STAXI Reaction[b]			
Mean	9.38	10.44	8.54
S.D.	2.90	2.55	2.92
STAXI In[ab]			
Mean	19.85	20.78	15.91
S.D.	6.78	4.96	4.85
STAXI Out			
Mean	16.08	14.22	14.23
S.D.	3.57	3.15	3.13
STAXI Con			
Mean	23.46	22.74	24.26
S.D.	5.24	3.80	5.17
STAXI Expression[ab]			
Mean	27.69	28.41	20.95
S.D.	9.88	10.18	9.63

a = anorectics differ significantly from controls.
b = bulimics differ significantly from controls.

mean score for anorectics was 21.1 and the mean score for bulimics was 22.2, indicating moderate-severe anxiety.

State-Trait Anger Expression Inventory

Significant differences were found on three of the six STAXI scales and one of the two subscales (see Table 1). Scores on the State Anger scale, assessing intensity of anger at the time of test-taking, were found to be significantly different among groups ($F(2, 94) = 16.90$, $p < .001$) when analyzed with a one-way ANOVA. A post hoc LSD test indicated that a significant difference ($p < .05$) existed between anorectics and controls

and bulimics and controls, with no differences found between anorectics and bulimics. The mean scores of anorectics and bulimics were identical and placed both groups in the 86th percentile (the 25th to 75th percentile is the normal range; above the 75th percentile is considered high).

A one-way ANOVA indicated a significant difference among groups ($F(2, 94) = 4.21$, $p < .01$) on the Angry Reaction. The Angry Reaction is a subscale of the STAXI Trait Anger Scale (assessing the disposition to experience anger) and measures the tendency to express anger when criticized or treated unfairly by other individuals. A post hoc LSD test showed that a significant difference ($p < .05$) occurred between bulimics and controls only. The mean score of the bulimic group placed them between the 69th and 78th percentile.

One-way ANOVAs indicated significant differences among groups on the Anger-in ($F(2, 94) = 9.31$, $p < .001$) and the Anger Expression scale ($F(2, 94) = 6.39$, $p < .002$). The Anger-in measures the frequency with which angry feelings are suppressed and the Anger Expression assesses anger expression, whether it is held in, directed outward, or both. Results of a post hoc LSD test showed that a significant difference ($p<.05$) existed between anorectics and controls and between bulimics and controls for both scales. No significant differences were found between anorectics and bulimics on either scale. The mean score for anorectics on the Anger-in placed them in the 83rd percentile; the mean score for bulimics put them in the 87th percentile. There are no normative percentiles reported for female adults on Anger Expression. Normative percentiles were reported for female college students, however. Compared with this group, mean scores for both eating disorders placed them in about the 55th percentile, which is in the normal range. The control group's mean fell at the 30th percentile.

One-way ANOVAs indicated no significant differences among groups for the Trait Anger scale, the Angry Temperament subscale, the Anger-out scale, or the Anger Control scale (range $F(2,94) = .09$, $p = .91$ to $F(2, 94) = 1.89$, $p = .16$).

DISCUSSION

Anorectics and bulimics appear to be more depressed, anxious, and angry than non-eating-disordered persons. Also, it appears that anorectics and bulimics do not differ from each other with regard to these mood disturbances. Moreover, both groups seem to have a unique way of experiencing and expressing anger; they often have intense angry feelings, but suppress them. Bulimics alone, however, appear to become especially angry at the criticism or perceived affronts levied by others in contrast to non-eating-disordered persons.

The findings of this study were concordant with prior research literature linking depression and bulimia. The associations between bulimia and

anxiety and anger are less established. These emotions have often been regarded as cues for deviant eating behavior rather than general mood disturbances. Also, anger has been studied as an aspect of measures designed to assess many characteristics (e.g., the MMPI) rather than being specifically targeted, as in this study.

Anorexia and depression have also been associated in the research literature, with less attention paid to anxiety and anger, although the DSM-III-R recognizes the possible co-existence of obsessive-compulsive disorder with anorexia. Results of this study, however, link anorexia with all three mood disturbances. These results could be due to the fact that the subjects were inpatients, suggesting that the effects of starvation need to be considered. However, Norman and Herzog (1983) found the same results in outpatients with less severe anorexia, suggesting that the starvation effects suffered by hospitalized anorectics may not offer a sufficient explanation.

Significant results also might have been found for anorectics due to the type of control group. The Anger Expression scores of the eating-disordered groups were high relative to the control group, but not when compared with normative data. True, normative data were missing for the adult female comparison group, but the norms for female college students reflected that anorectics and bulimics are in the normal range. In contrast, the controls fall within the 30th percentile on the norms for college students, suggesting that they might be an unusually even-tempered group.

The most surprising aspect of this study is the lack of mood differences between anorectics and bulimics, especially since other research has found differences (Casper et al., 1980; Garner & Garfinkel, 1985; Goebel et al., 1989; Norman & Herzog, 1983; Schlesier-Carter et al., 1989; Williamson et al., 1987). Three explanations for the discrepancy can be offered: 1) Moderate differences could have been masked by the small number of subjects in the anorectic group (n = 17). Further research with a larger group may provide the power necessary to uncover more modest differences. 2) Anorectics in this study may not have been screened for bulimic symptoms. Given such differentiation, results consistent with prior findings may have emerged. 3) Perhaps anorectics and bulimics are simply more alike than different.

REFERENCES

American Psychiatric Association. (1987). *Diagnostic and statistical manual of mental disorders* (3rd ed. rev.). Washington, DC: APA.

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: Psychometric properties. *Journal of Consulting and Clinical Psychology, 56*, 893–897.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). *Cognitive therapy of depression.* New York: Guilford.

Beck, A. T., & Steer, R. A. (1984). Internal consistencies of the original and revised Beck Depression Inventory. *Journal of Clinical Psychology, 40*, 1365–1367.

Biskin, B. H. (1990). Reviewer in J. J. Kramer & J. C. Conoley (Eds.), *The supplement to the tenth mental measurements yearbook* (pp. 241–242). Lincoln, NE: The University of Nebraska Press.

Buree, B. U., Papageorgis, D., & Hare, R. D. (1990). Eating in anorexia nervosa and bulimia nervosa: An application of the tripartite model of anxiety. *Canadian Journal of Behavioral Science, 22*, 207–218.

Casper, R. C., Eckert, E. D., Halmi, K. A., Goldberg, S. C., & Davis, J. M. (1980). Bulimia: Its incidence and clinical importance in patients with anorexia nervosa. *Archives of General Psychiatry, 37*, 1030–1035.

Fydrich, T., Dowdall, D., & Chambless, D. L. (1992). Reliability and validity of the Beck Anxiety Inventory. *Journal of Anxiety Disorders, 6*, 55–61.

Garner, D. M., & Garfinkel, P. E. (1985). *Handbook of psychotherapy for anorexia nervosa and bulimia*. New York: Guilford.

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*, 15–34.

Goebel, M., Spalthoff, G., Schulze, C. & Florin, I. (1989). Dysfunctional cognitions, attributional style and depression in bulimia. *Psychosomatic Research, 33*, 747–752.

Kramer, J. J., & Conoley, J. C. (1990). *The supplement to the tenth mental measurements yearbook*. Lincoln, NE: The University of Nebraska Press.

Laessle, R. G., Wittchen, H. U., Fichter, M. M., & Pirke, K. M. (1989). The significance of subgroups of bulimia and anorexia nervosa: Lifetime frequency of psychiatric disorders. *International Journal of Eating Disorders, 8*, 569–574.

Leon, G. R., Carrol, K., Chernyk, B., & Finn, S. (1985). Binge eating and associated habit patterns within college student and identified bulimic populations. *International Journal of Eating Disorders, 4*, 43–57.

Metropolitan Life Insurance Company. (1959). New weight standards for men and women. *Statistical Bulletin, 40* 1–4.

Norman, D. K., & Herzog, D. B. (1983). Bulimia, anorexia nervosa and anorexia nervosa with bulimia: A comparative analysis of MMPI profiles. *International Journal of Eating Disorders, 2* 43–52.

Rosen, A. M., Murkofsky, C. A., Steckler, N. M., & Skolnick, N. J. (1989) A comparison of psychological and depressive symptoms among restricting anorexic, bulimic anorexic, and normal-weight bulimic patients. *International Journal of Eating Disorders, 8*, 657–662.

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*, 322–335.

Spielberger, C. D., Jacobs, G., Russell, S., & Crane, R. S. (1983). Assessment of anger: The State-Trait Anger Scale. In C. D. Spielberger & J. N. Butcher (Eds.), *Advances in personality assessment* (pp. 89–131). Philadelphia: LEA.

Strober, M., Lampert, C., Morrell, W., Burroughs, J., & Jacobs, C. (1990). A controlled family study of anorexia nervosa: Evidence of familial aggregation and lack of shared transmission with affective disorders. *International Journal of Eating Disorders, 9*, 239–253.

Swassing, C. S. (1989). Reviewer in J. C. Conoley & J. J. Kramer (Eds.), *The tenth mental measurements yearbook* (p. 275). Lincoln, NE: The University of Nebraska Press.

Szmukler, G. I. (1987). Some comments on the link between anorexia nervosa and affective disorder. *International Journal of Eating Disorders, 6*, 181–189.

Teusch, R. (1988). Level of ego development and bulimics' conceptualizations of their disorder. *International Journal of Eating Disorders, 5*, 607–615.

Weiss, S. R., & Ebert, M. H. (1983). Psychological and behavioral characteristics of normal-weight bulimics and normal-weight controls. *Psychosomatic Medicine, 45*, 293–303.

Williamson, D. A., Prather, R. C., Upton, L., Davis, C. J., Ruggiero, L., & Van Buren, D. (1987). Severity of bulimia: Relation with depression and other psychopathology. *International Journal of Eating Disorders, 1*, 39–47.

Yates, A., Leehey, K., & Shisslak, C. M. (1983). Running—An analogue of anorexia? *New England Journal of Medicine, 308*, 251–255.