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Personality Dimensions in Bulimia Nervosa, Binge Eating Disorder, and Obesity

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Abstract

Objective—The purpose of this investigation was to examine differences in personality dimensions among individuals with bulimia nervosa, binge eating disorder, non-binge eating obesity and a normal weight comparison group as well as to determine the extent to which these differences were independent of self-reported depressive symptoms.

Method—Personality dimensions were assessed using the Multidimensional Personality Questionnaire in 36 patients with bulimia nervosa, 54 patients with binge eating disorder, 30 obese individuals who did not binge eat, and 77 normal weight comparison participants.

Results—Participants with bulimia nervosa reported higher scores on measures of stress reaction and negative emotionality compared to the other three groups, and lower well-being scores compared to the normal weight comparison and the obese samples. Patients with binge eating disorder scored lower on well-being and higher on harm avoidance than the normal weight comparison group. In addition, the bulimia nervosa and binge eating disorder groups scored lower than the normal weight

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group on positive emotionality. When personality dimensions were re-analyzed using depression as a covariate, only stress reaction remained higher in the bulimia nervosa group compared to the other three groups and harm avoidance remained higher in the binge eating disorder than the normal weight comparison group.

Conclusions—The higher levels of stress reaction in the bulimia nervosa sample and harm avoidance in the binge eating disorder sample after controlling for depression indicate that these personality dimensions are potentially important in the etiology, maintenance, and treatment of these eating disorders. Although the extent to which observed group differences in well-being, positive emotionality and negative emotionality reflect personality traits, mood disorders, or both is unclear, these features clearly warrant further examination in understanding and treating bulimia nervosa and binge eating disorder.

1. Introduction

Personality characteristics have been hypothesized to be important variables in etiological models of eating disorders and are potentially critical for both the development and maintenance of these symptoms [1–8]. Numerous studies have investigated the role of personality in eating disorders, with most reviews observing that eating disorder samples generally score higher than non-eating disorder comparison groups on measures of personality disorders, impulsivity, obsessive compulsive traits, and perfectionism [9–12]. The extent to which these results are due to underlying group differences, eating disorder maintenance factors, or a “scar” from the eating disorder symptoms is unclear.

In addition to comparisons between eating disorder and non-eating disorder samples, a number of studies have investigated personality differences between different eating disorder subgroups. These findings have been inconsistent with some observing differences among subgroups and others finding few or no such differences [9,11]. These inconsistencies may be due, in part, to different measurement strategies, definitions, and sampling procedures (e.g., treatment-seeking vs. community participants). Notably, most of these comparisons among eating disorder groups have been made between anorexia nervosa and bulimia nervosa (BN), or within subtypes of anorexia nervosa; few studies have examined personality differences utilizing more broadly defined eating disorder and weight disorder samples including obesity, binge eating disorder (BED) and other types of eating disorders, not otherwise specified [9]. For this reason, personality differences among a wider range of eating and weight disorder subgroups are not well understood.

Another source of confusion in understanding the role of personality in eating disorders is the issue of whether personality is conceptualized dimensionally or categorically. Although many studies have examined the co-occurrence of categorically-defined personality disorders in those with eating disorders [9,13], this literature is complicated by inconsistent definitions and measurement. Numerous problems are associated with the categorical classification of personality (especially personality disorders), including heterogeneity within categories, high rates of comorbidity, and longitudinal instability [14]. As a result of these limitations, the advantages of measuring personality dimensionally rather than categorically (or using a combination of both approaches) have been increasingly emphasized [6,15,16]. In the context of the ongoing revision of the DSM, a number of researchers have argued for the adoption of a dimensional classification system of personality psychopathology as a way of increasing diagnostic validity [17,18].

Finally, personality studies of individuals with eating disorders have often neglected to examine the relationship between personality and mood disturbance, particularly depression. Given the high co-occurrence of mood disorders in eating disorders [19], investigating the relationship between depressive symptoms and personality is especially important for

understanding both phenomena and their role in eating disorders. Although the complex interaction between depression and personality is unclear [20], the impact of depressive symptoms on self-report questionnaires including personality measures is an important consideration [21]. Of particular concern is the impact of depressive symptoms in biasing recall toward more negative global self-appraisals [22]. The potential impact of depressive symptoms in the in personality measurement may explain some of the inconsistent findings among previous studies of personality and eating disorders. In summary, several important issues remain unclear in the eating disorders and personality literature. The first issue is the extent to which personality characteristics differ among a wider range of eating and weight disorder subgroups including BED and obese individuals who do not binge eat. In addition, although many studies have evaluated personality disorders and personality disturbances in eating disorders using categorical definitions, fewer have measured personality dimensions using instruments that do not exclusively measure psychopathology. Finally, many studies have not examined measures of depression in the context of personality assessment.

The purpose of this investigation was to compare personality dimensions in eating and weight disorders among four groups of women: individuals with BN, individuals with BED, normal weight control participants (NWC), and obese participants without eating disorder symptoms. In addition, this study aimed to examine the impact of depression on personality dimensions by using depressive scores as a covariate.

2. Method

2.1 Participants

Study participants included 197 adult females (average age = 36.05, SD = 12.42, range = 18–64). Thirty-six females who were diagnosed with DSM-IV purging BN were recruited at baseline from a BN treatment outcome study examining different types of group psychotherapy and body image [23,24]. Fifty-four women were recruited at baseline from a BED treatment outcome study comparing therapist-led and self-help group therapy [25,26]. These individuals were diagnosed with DSM-IV BED using the Structured Clinical Interview for DSM-IV [SCID; 27]. The 77 NWC participants, who were recruited from an introductory psychology class and received class credit for their participation, were administered the Restraint Scale [28] were required to score below 16 for inclusion as a non-dieting control participant (average score = 9.46, SD = 4.06). The non-binge eating obese participants (OB, n = 30; defined as BMI > 30) were recruited from the community and paid twenty dollars for their participation. As part of the screening, they were administered the eating disorder module of the SCID to ensure that they had no current or past eating disorder symptoms, including binge eating. Group differences were observed for age, with the BN (mean = 26.03, SD = 6.50) and NWC (mean = 22.71, SD = 4.90) samples significantly younger than the BED (mean = 42.43, SD = 10.07) and the OB (mean = 44.67, SD = 9.41) groups ($F = 55.05$, $p < .000$). For body weight, the BED (mean = 34.66, SD = 7.57) and OB (mean = 36.13, SD = 6.38) samples had higher average body mass indexes compared to the BN (mean = 21.12, SD = 2.51) and NWC (mean = 22.33, SD = 2.89) samples ($F = 62.02$, $p < .000$). Participants in all four samples were primarily Caucasian (92.5%) with no group differences in ethnic status.

2.2 Instruments

The Multidimensional Personality Questionnaire MPQ [29] is a 300-item self-report questionnaire with responses presented in a true-false format. This instrument, derived iteratively using factor analytic and rational procedures, was designed as a dimensional measure of personality traits and temperament domains. The MPQ has eleven personality scales: Well-being (i.e., cheerful, optimistic), Social Potency (i.e., decisive, persuasive, socially dominant), Achievement (i.e., ambitious, hard working), Social Closeness (i.e.,

affiliative, sociable, warm), Stress Reaction (i.e., nervous, easily upset), Alienation (i.e., experiences self as a victim, betrayed), Aggression (i.e., vindictive, hurts others intentionally), Control (i.e., cautious, careful), Harm Avoidance (i.e., cautious, does not like danger), Traditionalism (i.e., conventional, conservative), and Absorption (i.e., responsiveness to visual and auditory stimuli). The MPQ subscales load onto three higher order factors: Positive Emotionality (PE), Negative Emotionality (NE), and Constraint (CON). Individuals who score high on PE are prone toward positive emotions and positive engagement in various domains. PE has also been found to be associated with reward sensitivity [30]. The PE factor is composed of scores from the Well-being, Social Potency, Achievement, and Social Closeness scales. The NE factor reflects stress, alienation, negative engagement, and negative affect [31,32] and consists of scores from the Stress Reaction, Alienation, and Aggression scales. It has been found to be associated with other measures of neuroticism [33]. CON measures self-control, caution, timidity, traditionalism, and avoidance of danger [29,31] and reflects scores on the Harm Avoidance, Traditionalism, and Control scales. Low levels of CON have been associated with high levels of sensation seeking and impulsivity [34].

The MPQ has well-established reliability, with internal consistency coefficients ranging from .79 to .89 [29,35] and test-retest reliability of .82 to .92 for 30 days [29]; more recent data suggests that the MPQ scales and factors also demonstrate longer-term stability over time [33]. The MPQ was designed to minimize overlap among the scales, ensuring fidelity, combined with a breadth of personality dimensions for good bandwidth [29,33]. Although the MPQ was designed to be used in non-clinical samples, its validity has been supported in psychiatric samples as well [36] and it has been used in several previous studies of eating disorder symptoms [37,38,39].

The Beck Depression Inventory (BDI) [40] is a 21-item self-report measure of depressive symptoms. This widely used measure has well-established psychometric properties supporting its use, including internal consistency coefficients above .80 and convergent validity with other measures of depression [41].

2.3 Procedures

This investigation was approved by the Human Subjects Committee of the Institutional Review Board at the University of Minnesota. All participants provided informed written consent before taking part in this study.

The MPQ and BDI were administered to participants in paper and pencil format. The BN and NWC participants completed the questionnaires in the context of larger assessment batteries [23,24], as did the BED participants [25,26]. The OB participants were screened by phone prior to completing the questionnaires at the research center.

2.4 Statistical Analyses

Initial group differences were examined using two separate MANOVAs: one for higher order factors, one for subscales. Multivariate analyses were used to reduce Type I error because of significant intercorrelations among MPQ subscales and higher order factors that have been observed in previous samples [29] and the fact that these variables are theoretically related [42]. Post-hoc tests (Tukey's B) were used to determine group differences if the overall MANOVA was significant. Separate covariate analyses using the BDI as the covariate were conducted using MANCOVAs for higher order factors and subscales to examine the impact of depression on personality scores given previous observed correlations between mood and MPQ scores [29]. Alpha levels were set at .05.

3. Results

3.1 MPQ Higher Order Factors

For higher order factors, the overall MANOVA was significant ($F = 3.32$, $p < .001$). As shown in Table 1, post hoc analyses indicated that the BN group scored higher than the NWC group on the Negative Emotionality factor, and lower than the NWC group on the Positive Emotionality factor. In addition, the BED sample scored lower than the NWC group on the Positive Emotionality factor. No differences were observed for the Constraint factor.

3.2 MPQ Subscales

The overall MANOVA was significant for the MPQ subscales ($F = 3.64$, $p < .001$). Post-hoc analyses shown in Table 1 indicate that the BN and BED groups scored significantly lower than the NWC group and the BN group scored significantly lower than the OB on the Well-Being subscale. On the Stress Reaction subscale, the BN group had a significantly higher score than the other three groups. The BED sample scored higher than the NWC group on the Harm Avoidance subscale. Although the overall F value for the Social Closeness scale was significant ($F = 3.12$, $p = .027$), no group differences were significant in the post hoc analyses.

3.3 Covariate Analyses

As shown in Table 1, significant group differences were observed for depression as measured by the BDI ($F = 19.57$, $p < .001$) with the BN and BED groups reporting higher scores than the NWC and OB groups. Using BDI score as the covariate, the overall group effect for the higher order factors was no longer significant ($F = 1.14$, $p = .333$). However, the group effect for the MANCOVA using depression as the covariate for subscale scores did remain significant ($F = 2.26$, $p < .001$). Stress Reaction remained significant ($F = 6.24$, $p < .001$), with the BN group scoring significantly higher than the other groups (estimated means: BN = 15.0; BED = 10.7; OBC = 10.3 ; NWC = 11.9). Harm Avoidance ($F = 4.67$, $p = .004$) also remained significant, with the BED sample scoring higher than the NWC group (estimated means: BN = 18.1; BED = 21.3; OBC = 19.2; NWC = 17.7). In the covariate analysis, Well-Being was no longer significant for group effect ($F = 1.43$, $p = .236$).

To rule out the potential impact of age on group differences, post-hoc MANCOVAs were conducted using age as a covariate for higher order factors and subscales, and a post-hoc ANCOVA was conducted using age as a covariate for BDI scores, all of which were non-significant.

4. Discussion

This comparison of personality dimensions among eating and weight disordered groups suggests that individuals with BN are prone to experience more negative emotions and less contentment, as well as be more reactive to stress, than individuals with BED, obese individuals who do not binge eat, and normal-weight individuals without eating disorders. Elevated scores of stress reactivity in BN were independent of depression scores, suggesting that these individuals are generally more nervous, upset, and troubled by guilt than the other groups [29]. These findings are consistent with previous studies that have observed higher stress reactivity and neuroticism scores in BN compared to non-eating disorder samples using the MPQ and other personality assessment instruments [37,38,43–46].

The results of this investigation also indicate that individuals with BED reported higher harm avoidance scores than the non-dieting, normal weight control sample, suggesting that individuals with BED may be more averse to danger and adventure. This difference was independent of current depression and is consistent with previous findings of high harm

avoidance in other eating disorder diagnostic groups [47–48]. The reason for elevated harm avoidance is unclear but may be related to attempts to avoid painful situations, which has been hypothesized to explain high harm avoidance scores among individuals with borderline personality disorder [20]. The absence of group differences other than harm avoidance between individuals with BED and obese non-binge eaters is consistent with previous findings [49] and suggests that those with BED may be similar in many respects to those of comparable weight who do not binge eat.

In this study, individuals with BN reported lower positive emotionality, lower well being, and higher negative emotionality compared to NWC participants (as well as lower well being scores compared to the OB group), and individuals with BED reported lower well being scores compared to the NWC group. However, these differences were not independent of depression in the subsequent covariate analyses. The extent to which measures of negative emotionality and positive emotionality traits are influenced by self-reported depressive symptoms is unclear. Although it is possible that the apparent differences in negative emotionality, positive emotionality, and well being are simply artifacts of depression, it is likely that measures of depression and personality used in this study overlap in their measurement of both "state" and "trait" aspects of negative affect. The extent to which these group differences are best understood as personality traits, mood disorders, or both is unclear; however, negative emotionality, positive emotionality, and well being clearly should be targeted in the treatment of BN and BED and should be continue to be examined for their role in the etiology and maintenance of these disorders.

Several limitations should be considered in interpreting the results of this study. First, the BN and BED samples include participants in two different treatment trials, meaning that the two eating disorder groups were treatment seeking. Berkson's bias [50] indicates that individuals with psychopathology who seek treatment may have greater co-occurring psychopathology than those who do not seek treatment. Thus, the participants with BN and BED in this study may not be representative of individuals in the community with these eating disorders who do not seek treatment. In addition, data from all four groups were obtained at different time points, which may have exaggerated between-group differences. A significant consideration in the current study is the difficulty in reliably assessing personality in individuals with eating disorders due to the effect of these symptoms on personality measures [6]. An additional concern is the extent to which these personality "traits" are stable over time. For example, elevated harm avoidance scores in patients with borderline personality disorder have been found to be reduced over the course of treatment [20]; for this reason, future research should investigate the stability of personality dimensions among different eating and weight disorder subgroups over time. In addition, future studies should examine the impact of controlling for anxiety as well as depression on personality measures in eating disorders. Finally, because this investigation is correlational and not longitudinal, no direction of causality can be inferred: whether these personality dimensions are etiological or maintenance factors, byproducts of the eating disorder or of "maladjustment" [51], or some combination is unclear and needs further study using repeated measure designs.

In summary, stress reactivity appears to be especially important in understanding and treating BN and harm avoidance is crucial to understanding and treating BED. In addition, high negative emotionality, low positive emotionality, and low well being are notable features of BN and BED and although the extent to which these variables are independent of depression is unclear, they clearly necessitate focus in treatment. Treatments for eating disorders that focus on mood tolerance and coping skills may be particularly effective, including dialectical behavior therapy [52–54] and the revised version of cognitive-behavior therapy [55], as well as Integrative Cognitive-Affective Therapy [56,57], a newly developed treatment that focuses on self-directed style, interpersonal patterns, and emotion. The potential efficacy of these types of

interventions on personality dimensions and treatment outcome requires future study among all types of eating disorder subgroups.

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Table 1

Mean (standard deviation) Scores for the Multidimensional Personality Questionnaire (MPQ) and the Beck Depression Inventory (BDI)

	Bulimia Nervosa (BN) n=36	Normal Weight Control (NWC) n=77	Binge Eating Disorder (BED) n=54	Obese Control (OB) n=30	F	p	Group Differences[1] (No Covariate)	Group Differences[1] (BDI as Covariate)
MPQ Factors								
Constraint	160.9 (13.2)	157.5 (14.2)	161.7 (13.9)	160.6 (16.4)	1.07	.362	ns	ns
Negative Emotionality	135.1 (14.8)	126.9 (13.2)	128.1 (13.6)	126.6 (16.3)	3.09	.028	BN > NWC	ns
Positive Emotionality	143.9 (15.2)	155.0 (13.6)	147.4 (13.1)	149.3 (13.1)	6.52	.000	NWC > BN	ns
Subscales								
Well Being	12.0 (6.7)	19.3 (4.9)	15.4 (7.3)	16.9 (6.8)	12.14	.000	NWC > BN, BED OB > BN	ns
Social Potency	10.2 (5.6)	12.1 (6.4)	11.4 (6.2)	10.4 (5.8)	1.09	.355	ns	ns
Achievement	11.8 (5.2)	11.7 (5.0)	10.9 (5.0)	11.4 (4.7)	.32	.807	ns	ns
Social Closeness	14.3 (4.3)	16.2 (5.0)	14.3 (5.0)	13.6 (4.6)	3.12	.027	ns	ns
Stress Reaction	17.7 (5.8)	10.2 (6.1)	12.2 (5.3)	9.6 (6.0)	15.79	.000	BN > NWC BED, OB	BN > NWC, BED, OB
Alienation	3.9 (4.0)	2.6 (2.9)	2.5 (3.6)	2.9 (3.7)	1.61	.188	ns	ns
Aggression	4.6 (3.9)	4.6 (3.4)	3.2 (2.5)	3.4 (3.3)	2.53	.059	ns	ns
Control (vs. Impulsivity)	13.7 (5.0)	14.6 (5.2)	13.7 (4.5)	15.0 (4.6)	.78	.506	ns	ns
Harm Avoidance	18.7 (5.7)	17.6 (5.6)	21.3 (4.5)	19.2 (5.2)	5.19	.002	BED > NWC	BED > NWC
Traditionalism	14.9 (4.7)	14.4 (5.6)	15.4 (6.2)	14.7 (5.9)	.32	.811	ns	ns
Absorption	14.3 (6.2)	17.7 (7.9)	14.9 (7.0)	15.4 (7.3)	2.63	.051	ns	ns
BDI	14.9 (7.4)	4.9 (5.3)	12.5 (9.0)	7.5 (7.7)	19.57	.000	BN, BED > NWC, OB	

[1] $p < .05$