

# Laxative Misuse and Behavioral Disinhibition in Bulimia Nervosa

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**Abstract: Objective:** Various reports suggest that purging with laxatives is associated with greater behavioral impulsivity in bulimia nervosa (BN) patients. We investigated the extent to which laxative misuse corresponds to specific impulse-control problems. **Method:** Participants included bulimic women who misuse laxatives (BNL+;  $n = 12$ ), bulimic women who do not misuse laxatives (BNL-;  $n = 33$ ), and healthy normal eaters (NE;  $n = 26$ ). Participants completed the Go/No-Go discrimination task (a well-validated computerized measure of response disinhibition), as well as self-report questionnaires of impulsivity, eating symptoms, and general psychopathology. **Results:** Compared with the other groups, the BNL+ group made more commission errors on the Go/No-Go under cues for punishment, indicating they were more disinhibited when faced with possible negative outcomes. Compared with the BNL- group, the BNL+ group was also more likely to differ from the NE group on self-reported impulsivity. There were no differences between the two bulimic groups on eating symptoms and the three groups did not differ in terms of general psychopathology. **Discussion:** Findings suggest that, controlling for eating symptoms and psychopathology, laxative misuse among BN patients is associated with difficulty inhibiting incorrect responses in the face of perceived threats. © 2002 by Wiley Periodicals, Inc. *Int J Eat Disord* 33: 92–97, 2003.

**Key words:** laxative use; bulimia nervosa; behavioral impulsivity; impulse-control problems

## INTRODUCTION

Between 14% and 27% of women with bulimia nervosa (BN) misuse laxatives to purge as a part of their eating disorder symptoms (Neims, McNeill, Giles, & Todd, 1995). According to available studies (Bulik, Sullivan, Joyce, & Carter, 1995; Mitchell, Boutacoff,

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Hatsukami, Pyle, & Eckert, 1986; Pryor, Wiederman, & McGilley, 1996), laxative misuse may indicate a more severe eating disturbance (e.g., increased binge eating, self-induced vomiting, and body image disturbances) as well as greater psychopathology (e.g., more severe depression symptoms or personality disturbances). Laxative misuse among BN patients has also been associated with self-report indices of impulsivity (Favaro & Santonastaso, 1998; Favazza, DeRosear, & Conterio, 1989). The current study was designed to determine whether, controlling for severity of eating symptoms and other psychopathology, bulimics who misuse laxatives (BN+) exhibit more impulsivity than bulimics who do not misuse laxatives (BN-) on a well-validated behavioral measure of response disinhibition, the Go/No-Go discrimination task (Newman, Widom, & Nathan, 1985).

## METHOD

### Participants

Forty-five women (aged 18–40) were recruited voluntarily at a specialized eating disorders outpatient clinic. They met BN criteria as defined in the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association [APA], 1994). DSM-IV criteria for BN were established using items from the Eating Disorders Examination (EDE; Fairburn & Cooper, 1993). The BNL+ group ( $n = 12$ ) reported purging with laxatives at least once within the previous 3 months, as per relevant items on the EDE. Mean  $\pm$  *SD* laxative use for BNL+ was  $9.08 \pm 8.48$  days per month (in the preceding 3 months). The BNL- group ( $n = 33$ ) reported not using laxatives at any time in the previous 3 months.

Healthy, normal-eater (NE;  $n = 26$ ) control women were recruited via local newspaper advertisements. They had no identifiable eating disturbance according to clinical interviews, self-report scales, and had never received treatment for an eating disorder. The women reported no episodes of purging via laxatives in the previous 3 months.

The ages of the NE, BNL-, and BNL+ groups did not differ,  $F(2,68) = .09$ ,  $p = .89$ . Means ( $\pm$ *SDs*) were, respectively, 24.6 ( $\pm 7.1$ ), 24.5 ( $\pm 6.7$ ), and 25.6 ( $\pm 5.9$ ) years. The groups also did not differ on mean body mass index:  $F(2,68) = .11$ ,  $p = .91$ . Means ( $\pm$ *SDs*) for NE, BNL-, and BNL+ were, respectively, 22.0 ( $\pm 1.9$ ), 22.1 ( $\pm 3.2$ ), and 21.7 ( $\pm 2.3$ ) kg/m<sup>2</sup>.

### Measures

#### Eating Disorder Diagnoses and Symptoms

The EDE (Fairburn & Cooper, 1993) establishes the presence and severity of all BN symptoms and has well-established psychometric properties. The Eating Attitudes Test-26 (EAT-26; Garner, Olmsted, Bohr, & Garfinkel, 1982) is a 26-item self-report scale that has proven reliability and validity for BN.

#### Comorbid Psychopathology

The Diagnostic Interview Schedule, Version 4 (DIS-4; Bucholz et al., 1991; Lepage et al., 1996) is a self-administered structured interview used widely to assess DSM-IV (APA, 1994) Axis-I disorders. We focused on major depressive disorder (MDD), generalized anxiety disorder (GAD), and posttraumatic stress disorder (PTSD). The Dimensional Assessment of Personality Pathology-Basic Questionnaire (DAPP; Livesley et al., 1992)

provides comprehensive dimensional assessments of trait psychopathology. The DAPP subscales, 12–16 items each, have alphas ranging from .87 to .94. We selected Affective Instability (labile affects) and Self-Harm (self-damaging behaviors), which are relevant to the assessment of borderline traits. With permission of the authors, we have developed a French translation of the DAPP, the reliability of which (according to conventional indices) is similar to that of the English version.

### **Impulsivity**

The Go/No-Go Discrimination Task (Newman et al., 1985) is a computerized test that measures response disinhibition. Disinhibition is measured by “commission errors” (false-positive responses) to four reward/punishment conditions wherein participants win or lose small sums of money. The Barrat Impulsivity Scale-Version 11 (BIS; Barrat, 1985) is a well-validated self-report scale that measures motor, cognitive, and nonplanning impulsivity. The BIS is widely used in impulsivity studies (Wolfe, Jimerson, & Levine, 1994).

### **Procedure**

The study received institutional Research Ethics Board approval and participants gave informed consent before testing. Testing required two or three sessions that took place at an outpatient eating disorders clinic of a large urban teaching hospital.

## **RESULTS**

### **Eating Symptoms**

As the NE group was selected for absence of eating disorders, comparisons on eating symptoms were conducted between the bulimic groups only. To determine if laxative misusers had greater eating disturbance, the BNL– and BNL+ groups were compared on the EDE and EAT-26. The BNL– and BNL+ groups did not differ on EDE items (during the preceding 28 days) including (1) number of days of binge eating, 16.1 versus 18.8 ± *SD* 7.6 versus 8.3 ( $t = 1.04, p = \text{ns}$ ), or episodes of binge eating, 27.8 versus 37.6 ± *SD* 23.1 versus 36.1 ( $t = 1.07, p = \text{ns}$ ), (2) number of days of self-induced vomiting, 14.3 versus 14.5 ± *SD* 11.1 versus 11.8 ( $t = .06, p = \text{ns}$ ), or episodes of self-induced vomiting, 32.2 versus 36.1 ± *SD* 31.9 versus 42.0 ( $t = 0.32, p = \text{ns}$ ), (3) number of days when exercised intensely, 11.7 versus 12.0 ± *SD* 10.9 versus 12.4 ( $t = .06, p = \text{ns}$ ), or (4) when used diuretics, 0.16 versus 1.00 ± *SD* 0.63 versus 2.89 ( $t = 1.00, p = \text{ns}$ ). The EAT-26 final scores did not differ between groups ( $t = 0.83, p = \text{ns}$ ). Means for BNL– and BNL+ were 39.4 versus 42.2 ± *SD* 10.2 versus 9.8. The two bulimic groups had otherwise comparable levels of severity of eating symptoms.

### **Comorbid Psychopathology**

To determine if laxative misusers had greater comorbid psychopathology, the NE, BNL–, and BNL+ groups were compared on frequency (preceding 12 months) of MDD, GAD, PTSD, using pair-wise chi-square or Fisher’s exact tests as appropriate. Data were available for 25 NE, 31 BNL–, and 9 BNL+ participants. None of the pair-wise contrasts

was significant, indicating that the groups did not differ in the prevalence of these disorders. The number of cases (NE, BNL-, BNL+) per group meeting criteria were, respectively, MDD (2, 13, 1), GAD (0, 0, 1), and PTSD (1, 4, 2). To further compare comorbid psychopathology, comparisons on the DAPP were made via analysis of variance (ANOVA). A significant group effect was found on the Self-Harm ( $F = 20.0, p < .001$ ) subscale. Post-hoc Newman-Keuls tests ( $ps < .05$ ) indicated that the NE ( $1.14 \pm 0.30$ ) group had lower scores than did either the BNL- ( $2.35 \pm 1.03$ ) or the BNL+ ( $2.90 \pm 1.34$ ) group and that the two bulimic groups did not differ on Self-Harm. A significant group effect was found on the Affective Instability ( $F = 19.6, p < .001$ ) subscale. Post-hoc Newman-Keuls tests ( $ps < .05$ ) indicated that the NE ( $2.51 \pm 0.77$ ) group had lower scores than did either the BNL- ( $3.64 \pm 0.65$ ) or the BNL+ ( $3.73 \pm 0.95$ ) group and that the two bulimic groups did not differ on Affective Instability. Results indicate that the BNL+ group seemed to have roughly equivalent levels of general psychopathology compared with the BNL- group and that laxative misuse did not reflect general increases in associated psychopathology.

### Impulsivity

The Go/No-Go and BIS results are presented in Table 1. On the Go/No-Go, a significant group effect was found for the punishment-punishment condition,  $F(2,66) = 3.56, p = .034$ . Post-hoc Newman-Keuls tests showed that the BNL+ group made more commission errors than either the NE or the BNL- group (both  $ps < .05$ ) and that the latter two groups did not differ from each other. None of the three other Go/No-Go conditions showed significant group differences. Results indicate that the BNL+ group was more disinhibited than the other groups when faced specifically with cues for punishment (i.e., the prospect of losing money). On the BIS, group effects were found on the Attention,  $F(2,66) = 6.25, p < .005$ , and Motor subscales,  $F(2,66) = 7.26, p < .005$ . Post-hoc Newman-Keuls indicated the BNL+ group to have higher Attention scores than did the NE group ( $p < .05$ ) and that both bulimic groups had higher scores ( $ps < .05$ ) than the NE group on the Motor subscale. No other significant group differences were found on the BIS. BIS results indirectly suggest increased impulsivity in the BNL+ group compared with the other groups. Together with the Go/No-Go, findings suggest that laxative abusers may have been more impulsive than the other groups.

Table 1. Impulsivity measures

	NE ( $N = 25$ )	BNL- ( $N = 32$ )	BNL+ ( $N = 12$ )	$F(2, 66)$	$p$
Go/No-Go commission errors					
Reward-reward	10.8 (9.2)	10.3 (10.6)	15.9 (12.1)	1.35	ns
Reward-punishment	7.7 (7.2)	7.1 (6.1)	10.7 (10.5)	1.50	ns
Punishment-reward	12.5 (10.1)	13.2 (12.6)	11.8 (10.2)	0.80	ns
Punishment-punishment	8.6 <sub>a</sub> (9.4)	7.5 <sub>a</sub> (6.6)	15.3 <sub>b</sub> (12.0)	3.56	.034
BIS					
Attention	2.10 <sub>a</sub> (0.43)	2.39 <sub>a,b</sub> (0.47)	2.69 <sub>b</sub> (0.62)	6.25	.005
Motor	2.06 <sub>a</sub> (0.41)	2.44 <sub>b</sub> (0.45)	2.52 <sub>b</sub> (0.47)	7.26	.005
Nonplanning	2.01 (0.38)	2.10 (0.41)	2.34 (0.36)	2.78	ns

Note: BIS = Barrat Impulsivity Scale; BNL- = bulimic women who do not misuse laxatives; BNL+ = bulimic women who misuse laxatives; NE = healthy normal eater. Means with different postscripts (a,b) differ significantly by Newman-Keuls post hoc tests. Standard deviations are shown in parentheses.

## DISCUSSION

The current study compared bulimic women who report purging with laxatives within the previous 3 months, bulimic women not using laxatives in the same period, and non-eating-disordered women on measures of eating disturbance, associated psychopathology, and impulsivity. Results suggested that the laxative-misusing group was more disinhibited, or impulsive, than the other groups. Laxative misusers made a greater number of commission errors under cues for punishment on the Go/No-Go task (Table 1), suggesting that they were more likely, when faced with the possibility of an adverse event (i.e., losing money), to make disinhibited responses. Previous research has linked Go/No-Go commission errors to a variety of impulsive behaviors including aggression, borderline personality disorder, and alcoholism (LeMarquand, Benkelfat, Pihl, Palmour, & Young, 1999; Leyton et al., 2001). Indirect support for increased impulsivity in the laxative misusers came from the BIS (Table 1). The laxative-misuser group had higher self-report scores on BIS Attention and Motor subscales than the control group. Although the bulimic groups did not differ on the BIS, we interpret the results as indirect evidence that impulsivity characterizes laxative misuse. Further, Go/No-Go and BIS results are consistent with previous findings linking cognitive and self-report indices of impulsivity among BN patients (Ferraro, Wonderlich, & Jolic, 1997; Kaye, Bastiani, & Moss, 1995).

Consistent with previous reports (Fahy & Eisler, 1993; Lacey, 1990), the bulimic groups did not differ on measures of binge eating, self-induced vomiting, diuretic use, or compulsive exercise, indicating that laxative use was not otherwise associated with increased eating symptoms. Similarly, the three groups did not differ on the measures of general psychopathology (i.e., DIS-4 and DAPP). In summary, the findings suggest that, controlling for eating symptoms and psychopathology, laxative misuse for purging is associated with disinhibited responding under cues for punishment. Phenomenologically, the perceived threat may be weight gain and laxative use the impulsive attempt at its prevention.

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