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## The importance of loss of control while eating in adolescents with purging disorder

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### Abstract

**Objective**—Although many individuals with purging disorder (PD) report loss of control (LOC) eating, it is unclear whether they differ from those who do not, or from other eating disorders involving purging and/or LOC.

**Method**—We compared PD with LOC (PD-LOC), PD without LOC (PD-noLOC), bulimia nervosa (BN), and anorexia nervosa-binge/purge subtype (AN-B/P) on measures of eating-related and general psychopathology in treatment-seeking adolescents.

**Results**—PD-LOC comprised ~30% of PD diagnoses. PD-LOC and PD-noLOC did not differ from one another, or from BN and AN-B/P, on most measures of psychopathology, with some exceptions. PD-noLOC was similar to AN-B/P ( $p=.99$ ) and significantly different from BN on eating concerns ( $p<.001$ ), while PD-LOC was similar to BN, AN-B/P, and PD-noLOC on this measure ( $p=.06$ ). PD-LOC reported higher self-esteem than BN, AN-B/P, and PD-noLOC ( $p<.001$ ).

**Discussion**—PD was largely similar to other eating disorders characterized by purging, regardless of whether LOC eating was present.

### Keywords

Loss of control; binge eating; purging disorder; classification; child; adolescent

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Purging disorder (PD) is characterized by recurrent purging in the absence of binge eating [i.e., consumption of an objectively large amount of food accompanied by loss of control (LOC) while eating], and concomitant shape/weight overvaluation among non-underweight individuals.<sup>1</sup> Given its status as a provisional diagnosis requiring further study,<sup>2</sup> individuals

with PD are currently classified in the residual category of “other specified feeding or eating disorder” (OSFED), despite having similar psychosocial profiles as AN and BN.<sup>1</sup> Since PD shares behavioral features with AN and BN (restrictive eating, LOC eating),<sup>3,4</sup> it is unclear whether PD is a unique diagnostic entity or a variant of these disorders. Further clarity on PD’s distinctiveness from AN and BN, especially in adolescents (in whom research on PD is limited,<sup>5</sup> despite the disorder’s frequent origins in adolescence<sup>6</sup>), is critical to establish its clinical significance and inform future eating disorders nosology.

When first recognized in 2001, PD was labeled “subjective BN” to describe a syndrome analogous to BN without objectively large binges.<sup>7</sup> However, this terminology stationed PD as a variant of BN despite a lack of evidence thereof; emphasized the *absence* of objective binges rather than the *presence* of purging; and failed to include individuals who purge without *subjective* binges. PD was formally identified in 2005, informed by findings that women who purge did not meaningfully differ with respect to eating-related or general psychopathology on the basis of binge size (objectively vs. subjectively large).<sup>8</sup> Binge size has long been a contentious topic in the literature since eating disorders nomenclature has historically required both LOC *and* objectively large size for binge episodes, despite findings suggesting that LOC predicts distress and impairment irrespective of episode size.<sup>9</sup> Furthermore, the presence and frequency of LOC eating is associated with poorer psychosocial functioning in PD,<sup>3,10,11</sup> suggesting that LOC may be a marker of illness severity.

Some researchers suggest that eliminating the overeating requirement from the BN criteria would better accommodate the experience of many individuals by including those who purge following *subjective* binges, which would be more parsimonious than including PD as a separate diagnosis.<sup>12</sup> However, 20-50% of those with PD deny any recent LOC eating.<sup>3,5</sup> Such individuals may be better conceptualized as having atypical AN binge/purge subtype (AN-B/P)<sup>13</sup> given similarities between PD and AN in eating-related attitudes and cognitions<sup>4,14</sup> and findings that almost all individuals with AN-B/P report purging.<sup>15</sup> To date, no studies have examined variability *within* PD (including related research from our group<sup>5</sup>), that is, whether individuals with PD who report subjective binges differ in meaningful ways from those who do not, and from those with BN or AN-B/P. This question could have important implications for eating disorders nosology, particularly in clarifying whether subsets of individuals with PD could be classified with atypical BN or AN-B/P, and guiding future prospective research on distinctions between diagnostic groups characterized by purging. Thus, the current study aimed to investigate the construct validity of PD with and without subjective binge eating as compared to BN and AN-B/P. We expected that PD *with* subjective binges would share more psychosocial similarities with BN, whereas PD *without* subjective binges would share more similarities with AN-B/P.

## Methods

### Participants

Participants were 245 children and adolescents, ages 9-18 years, presenting to The University of Chicago and Stanford University for eating disorders treatment through an outpatient clinic ( $n=81$ ; 33.1%) or randomized controlled trials ( $n=164$ ; 66.9%). In the

current study, participants had to meet criteria for BN ( $n=128$ ), AN-B/P ( $n=38$ ), or OSFED-PD type ( $n=79$ ). All protocols were approved by the respective Institutional Review Boards.

## Measures

Participants were assessed after providing informed consent/assent and before initiating treatment. Weight and height were measured using a calibrated digital or balance-beam scale and a stadiometer, respectively.

The Eating Disorder Examination (EDE)<sup>16</sup> is a well-validated,<sup>17</sup> semi-structured interview assessing eating disorder cognitions, attitudes, and behaviors [including restraint, eating concerns, shape concerns, and weight concerns; objective and subjective binge eating; and purging, which, in the current study, encompassed self-induced vomiting and laxative, diuretic, or enema use for weight control, to maintain consistency across diagnoses with the proposed PD criteria<sup>1</sup>] over the last 3 months (current  $\alpha=.90$ ). Interviewers were trained by expert raters to administer the EDE, and regular meetings occurred at each site to promote inter-rater reliability, especially around potentially ambiguous constructs such as overeating (“eating what most people would consider an unusually large amount of food”) and LOC (“feeling like you just could not stop eating, even if you wanted to”).<sup>16</sup> EDE data were used to approximate diagnoses of BN [*objective* binge eating (with or without *subjective* eating binges) and purging at least once a week, on average, for the last 3 months], AN-B/P [ 85% expected body weight (EBW) with episodes of LOC eating and/or purging in the past 3 months], and OSFED-PD (>85% EBW and purging at least once a week, on average, for the last 3 months without any *objective* eating binges). OSFED-PD was further divided into groups with (PD-LOC;  $n=23$ ; 29.1%) and without (PD-noLOC;  $n=56$ ; 70.9%) *subjective* binge eating in order to address the research question. Notably, of the 38 adolescents diagnosed with AN-B/P, 3 endorsed binge eating without any purging; 24 endorsed purging without any binge eating; and 11 endorsed both binge eating and purging.

The Beck Depression Inventory (BDI)<sup>18</sup> is a well-validated self-report questionnaire assessing affective and somatic depressive symptoms (current  $\alpha=.93$ ).

The Rosenberg Self-Esteem Scale (RSE)<sup>19</sup> is a self-report measure of global self-esteem with good psychometrics in youth (current  $\alpha=.88$ ).

## Statistical Analysis

Analyses were conducted in SPSS 23.0. Chi-square tests and ANOVA were used to evaluate group demographic and anthropometric differences. ANCOVA with post-hoc Tukey tests were used to assess group psychosocial differences.

## Results

Participants [ $M$  age=16.2±1.5y;  $M$  %EBW=105.99±23.77 (%EBW was utilized as a measure of weight status to better capture the variability in age- and sex-adjusted body mass index among underweight individuals in our sample)] were primarily female ( $n=230$ ; 94.3%) and Caucasian ( $n=168$ ; 69.1%). Groups differed on age, %EBW, and race/ethnicity ( $ps<.05$ ). AN-B/P and PD-LOC were significantly younger than BN ( $ps .02$ ); PD-noLOC did not

differ from any other group on age ( $p = .06$ ). AN-B/P had significantly lower %EBW than all other groups ( $p < .001$ ), none of which differed from one another in %EBW ( $p = .08$ ). Finally, non-Hispanic Whites were overrepresented in AN-BP and underrepresented in BN, while non-White individuals were overrepresented in BN but underrepresented in AN-BP. There were no group gender differences ( $p > .05$ ).

Adjusting for age, race/ethnicity, and %EBW, groups differed on EDE Eating Concern and RSE Total Score ( $p < .001$ ). Individuals with BN endorsed greater eating concerns than PD-noLOC and AN-B/P ( $p = .008$ ), but did not differ from PD-LOC ( $p = .06$ ). PD-noLOC did not differ from PD-LOC or AN-B/P on eating concerns. PD-LOC reported significantly higher self-esteem than BN, AN-B/P, and PD-noLOC ( $p < .001$ ), none of which differed from one another ( $p = .70$ ).

## Discussion

We compared PD to two established eating disorder diagnoses (AN-B/P and BN) with shared features. PD without LOC was more common (~70%) than PD with LOC (~30%), which is contrary to previous findings<sup>3</sup> and may reflect our young, treatment-seeking sample. We also found that across most psychosocial measures, PD with and without LOC were indistinct from one another, and from AN-B/P and BN. In partial support of our hypothesis, PD-noLOC was similar to AN-B/P and significantly different from BN on Eating Concern, while PD-LOC was similar to BN, AN-B/P, and PD-noLOC on this measure. PD-LOC reported higher self-esteem than BN, AN-B/P, and PD-noLOC. Overall, results suggest that PD subgroups have similar psychosocial profiles despite differences in LOC eating, which contradicts previous research highlighting the importance of LOC in the psychopathology of adult PD<sup>3,10,11</sup> and may indicate that the significance of LOC in PD varies across the lifespan.

Based upon findings that all four diagnostic groups (all of which endorsed recurrent LOC eating and/or purging) displayed similar psychosocial functioning, our results support a proposed classification scheme in which eating disorder diagnoses are categorized according to behavioral similarities.<sup>20</sup> However, in light of the modest sample sizes (especially for PD-LOC and AN-B/P) and the limited measures available in the current study, future research is warranted to better understand the most appropriate classification scheme for PD. Another option is to modify the BN and/or AN criteria to subsume PD, regardless of LOC eating, although clinical trials are needed to determine if these individuals respond to AN or BN treatments. Additional limitations include the cross-sectional design and the exclusively treatment-seeking, adolescent sample. Strengths include the representative adolescent eating disorders treatment sample, including both self-referred and recruited participants, and the use of well-validated measures of psychopathology (despite some measures lacking validation in children as young as 9). Furthermore, this was the first study, to our knowledge, to examine behavioral variability *within* PD in relation to psychosocial correlates.

PD appears to be largely similar to other eating disorders characterized by purging, regardless of whether LOC eating is present. Future studies should continue to explore factors, including prospective outcomes such as treatment response, that distinguish and

unite these diagnostic entities, in order to improve eating disorder nosology and inform tailoring of prevention and intervention efforts.

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**Table 1**  
Participant demographic and psychosocial characteristics by group,  $M \pm SD$  unless otherwise specified

	Full sample (n=245)	BN (n=128)	AN-B/P (n=38)	PD-LOC (n=23)	PD-noLOC (n=56)	Test results
<i>Demographic and anthropometric factors</i>						
Age, years	16.2±1.5	16.4±1.4 <sup>a</sup>	15.6±1.8 <sup>b</sup>	15.3±1.9 <sup>ab</sup>	16.2±1.4 <sup>ab</sup>	$F(3,244)=5.75; p=.001$
Female, n (%)	230 (94.3)	122 (96.1)	37 (97.4)	20 (87.0)	51 (91.1)	$\chi^2(3, N=244)=4.76; p=.19$
% expected body weight	105.99±23.77	114.22±25.62 <sup>a</sup>	78.18±4.76 <sup>b</sup>	105.83±14.97 <sup>a</sup>	106.27±13.52 <sup>a</sup>	$F(3,241)=30.72; p<.001$
		Non-Hispanic White	33 (86.8)	16 (69.6)	40 (71.4)	
Race/ethnicity, n (%)	75 (30.9)	47 (37.3)	5 (13.2)	7 (30.4)	16 (28.6)	$\chi^2(3, N=243)=8.17; p=.04$
		Non-White, mixed race, and/or Hispanic				
<i>Psychosocial factors</i>						
EDE Restraint	3.4±1.6	3.4±1.6	3.5±1.5	2.7±1.7	3.5±1.4	$F(3,233)=1.95; p=.12$ ; partial eta squared=.02
EDE Shape Concern	3.8±1.5	4.1±1.5	3.1±1.6	3.5±1.3	3.7±1.4	$F(3,233)=2.19; p=.09$ ; partial eta squared=.03
EDE Weight Concern	3.5±1.5	3.8±1.6	2.8±1.5	3.3±1.3	3.6±1.4	$F(3,233)=1.95; p=.12$ ; partial eta squared=.02
EDE Eating Concern	2.6±1.4	3.1±1.4 <sup>a</sup>	2.0±1.2 <sup>b</sup>	2.2±1.5 <sup>ab</sup>	2.2±1.1 <sup>b</sup>	$F(3,233)=7.53; p<.001$ ; partial eta squared=.09
BDI Total Score	22.8±11.5	23.7±11.3	20.4±11.5	20.9±11.4	23.1±12.2	$F(3,233)=.77; p=.51$ ; partial eta squared=.01
RSE Total Score	16.3±7.7	16.1±7.9 <sup>b</sup>	14.4±6.1 <sup>b</sup>	24.9±6.7 <sup>a</sup>	14.1±6.2 <sup>b</sup>	$F(3,209)=12.45; p<.001$ ; partial eta squared=.15

Note: BN=bulimia nervosa; AN-B/P=anorexia nervosa, binge/purge subtype; PD-LOC=purging disorder with loss of control eating; PD-noLOC=purging disorder without loss of control eating; EDE=Eating Disorder Examination (range=0-6; higher scores indicate greater eating-related psychopathology); BDI=Beck Depression Inventory (range=0-63; higher scores indicate higher depressive symptoms); RSE=Rosenberg Self-Esteem Scale (range=0-30; higher scores indicate higher self-esteem). Differing superscript letters indicate significant differences at  $p<.05$ . All analyses adjust for age, % expected body weight, and race/ethnicity.