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Dimensions of Impulsivity in Relation to Eating Disorder Recovery

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Abstract

Objective—Impulsivity is associated with eating pathology, but different dimensions of impulsivity have not been extensively studied in the eating disorders. The current study examined the relationship between four facets of impulsivity and eating disorder recovery status.

Method—Females formerly seen for an eating disorder were categorized as having an eating disorder ($n=53$), partially recovered ($n=15$), or fully recovered ($n=20$) based on a diagnostic interview and physical, behavioral, and psychological indices. These groups and non-eating disorder controls were compared on impulsivity facets from the UPPS Impulsive Behavior Scale (UPPS): Urgency (negative urgency), Premeditation (lack of), Perseverance (lack of), and Sensation Seeking.

Results—Negative urgency (the tendency to engage in impulsive behavior to alleviate negative affect) was related to recovery. The fully recovered group and controls experienced significantly less negative urgency than those with a current eating disorder; the partially recovered group did not differ from the eating disorder group.

Discussion—Findings suggest that negative urgency may be a particularly important facet of impulsivity to target in therapeutic intervention for eating disorders, especially among those with a history of binge eating and/or purging. Future longitudinal work is needed to test a potential causal relationship between negative urgency and eating disorder recovery.

Keywords

impulsivity; negative urgency; eating disorders; anorexia nervosa; bulimia nervosa

Impulsivity differentiates those with eating disorders from controls¹ and is linked to eating pathology severity.² The association between impulsivity and bulimia nervosa (BN) is well established; personality clusters characterized by impulsivity emerge in samples with BN,^{3,4} and bulimic symptoms are associated with impulsivity, assessed in multiple ways.^{2,5,6} Findings related to anorexia nervosa (AN) are more mixed,^{2,5,7} with general support for the AN binge-eating/purging subtype demonstrating elevated impulsivity. In the context of experiencing distress, individuals with AN and BN both struggle to inhibit impulsive

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behaviors.⁸ The current study examines how different dimensions of impulsivity may be related to eating disorder recovery.

Higher levels of impulsivity are associated with poorer outcomes from BN,⁹ and case study intervention work found that reduced impulsivity preceded decreased binge eating,¹⁰ suggesting a link between impulsivity and recovery. Some evidence associates the novelty seeking aspect of impulsivity with recovery from AN; due to the rigidity involved in restriction in AN, decreased inhibition may aid in recovery.¹¹ However, when measured as self-harm, shoplifting, and promiscuity, impulsivity predicted poorer outcomes from AN.¹² These findings suggest that impulsivity may impede eating disorder recovery, but more research is needed to clarify the domains of impulsivity most important to recovery.

Traditional assessments of impulsivity are unidimensional, focusing on acting without thinking. However, this conceptualization ignores the nuanced nature of impulsivity.¹³ One facet, negative urgency, or the tendency to act impulsively in order to alleviate negative affect, appears to be particularly strongly related to maladaptive behaviors such as eating pathology.¹⁴ Negative urgency has been shown to predict bulimic symptoms,¹⁵ even after controlling for negative affect.^{16,17} Indeed, binge eating may be conceptualized as an impulsive action intended to reduce negative affect.¹⁸ The link with negative urgency appears to be stronger for binge eating/purging disorders (e.g., BN, binge-eating/purging subtype of AN) than restricting subtype AN.¹⁹

The purpose of the current study was to investigate whether dimensions of impulsivity (negative urgency, lack of premeditation, lack of perseverance, sensation seeking) are linked differentially to eating disorder recovery status. We hypothesized that those who were fully recovered would experience less negative urgency compared to those partially recovered or those with a current eating disorder.

Method

Participants and Procedure

Participants were recruited from current and former female eating disorder patients (ages 16 and older) seen from 1996-2007 at a primary care and referral clinic specializing in children and adolescents. Of the 273 patients eligible for participation, 118 (43.2%) could not be contacted, four were deceased (1.5%), and 55 (20.1%) were not willing to participate, leaving a final sample of 96 patients (35.2%). Thus, of the 151 eating disorder patients contacted, 63.6% participated. These rates are comparable to those of other first follow-ups of eating disorder patients over long time periods.²⁰ Controls were recruited from the same primary care clinic ($n = 17$) and a university campus, including introductory psychology courses ($n = 50$). Eligible controls were females ages 16 and older who were screened via a phone diagnostic interview for no current or past eating disorders or severe eating pathology.

All participants (current/former patients and controls) provided written consent and completed the same study measures (survey, interview), receiving financial compensation (for introductory psychology students: course credit) for participating. This study was approved by the university's institutional review board.

Measures

Impulsivity

The UPPS Impulsive Behavior Scale (UPPS)¹³ is a 45-item impulsivity inventory assessing four facets: Urgency (negative urgency), acting impulsively to alleviate negative mood; (lack of) Premeditation, acting without reflecting on the consequences of one's actions; (lack of) Perseverance, struggling with focus on tasks that may be boring or difficult; and Sensation Seeking, enjoying and pursuing activities that are exciting and potentially dangerous. Items are scored on a 4-point scale: *disagree strongly-agree strongly*. Reliability and validity of the UPPS has been demonstrated.^{13,14,21} In the current study, coefficient alphas were: Urgency (.92), Premeditation (.89), Perseverance (.85), Sensation Seeking (.88).

Eating disorders status

Measures and conceptualizations related to eating disorder status and recovery followed guidelines proposed by Bardone-Cone and colleagues.²² To determine whether criteria for a current eating disorder were met, we used the Structured Clinical Interview for DSM-IV²³ for diagnoses of AN—excluding the amenorrhea requirement, BN, and Eating Disorder Not Otherwise Specified (EDNOS). To determine physical recovery, we computed body mass index (BMI) from measured weight and height; for the minority without an in-person interview (17%), we used self-reported weight and height for BMI. To determine behavioral recovery (i.e., no binge eating, purging, or fasting in the past three months), we used portions of the Eating Disorders Longitudinal Interval Follow-up Evaluation Interview²⁴ to ask, week by week, about these behaviors over the past three months. To determine psychological recovery, we used the Eating Disorder Examination-Questionnaire (EDE-Q),²⁵ a well-validated 36-item measure that assesses disordered eating thoughts/behaviors over the past four weeks, yielding four subscales: Restraint, Eating Concern, Weight Concern, Shape Concern.

Based on the above data, participants were categorized into one of four groups. Active eating disorder cases ($n = 53$) had a current eating disorder: AN (17%), BN (6%), and EDNOS (77%), most with bulimic-type presentations. The fully recovered group ($n = 20$) did not have an eating disorder, had a BMI of at least 18.5 kg/m², reported no binge eating, purging, or fasting in the prior three months, and scored within 1 *SD* of age-matched community norms²⁶ on each of the EDE-Q subscales. This operationalization of eating disorder recovery has been validated.²² Of the fully recovered group, 55% had a history of AN, 35% a history of BN, and 35% a history of EDNOS. (The percentages sum to more than 100% since across their lifetime, participants may have met criteria for more than one eating disorder.) The partially recovered group ($n = 15$) met all the criteria of full recovery except for psychological recovery. Of the partially recovered group, 73% had a history of AN, 27% a history of BN, and 20% a history of EDNOS. Controls ($n = 67$) had no history of an eating disorder. Of note, eight of the participants did not meet criteria for an eating disorder or either definition of recovery, most reporting some binge eating or purging in the past three months; these individuals are not included in the *n*s listed above.

Data Analysis

Groups were compared on the set of impulsivity dimensions using multivariate analysis of covariance (MANCOVA) controlling for age, followed by analysis of covariance (ANCOVA) and Bonferroni-corrected pairwise comparisons. Effect sizes of partial eta squared (η_p^2) are reported where .01 is considered a small effect, .06 a medium effect, and .14 a large effect.²⁷ In an exploratory fashion, these same analyses were performed separately among those with a history of regular binge eating and/or purging (at least once per week) as part of an eating disorder, and among those with no history of regular binge eating and/or purging.

Results

Participants' ages ranged from 16-40 ($M = 21.78$ years, $SD = 4.28$) and most identified as Caucasian (91.6%). The four groups were similar in terms of race, but differed in age ($F(3, 151) = 15.44$, $p < .001$), with controls significantly younger ($M = 19.46$, $SD = 1.88$) than the others (fully recovered: $M = 24.55$, $SD = 4.89$; partially recovered: $M = 23.53$, $SD = 5.80$; active eating disorder: $M = 23.18$, $SD = 4.39$); analyses included age as a covariate. The three eating disorder groups did not significantly differ in number of years since eating disorder onset, BMI at start of treatment, or percentage with a lifetime AN diagnosis.

Based on MANCOVA, groups differed on levels of impulsivity dimensions; findings from follow-up ANCOVAs and Bonferroni-corrected pairwise comparisons are reported in Table 1. Both controls and the fully recovered group had significantly lower levels of negative urgency compared to the active eating disorder group; the partially recovered group did not differ significantly from the active eating disorder group. While groups differed on sensation seeking, the difference was driven by controls having higher levels than the active eating disorder group. Groups did not differ on lack of premeditation or lack of perseverance. Given small sample sizes (in particular, the fully and partially recovered groups) and the related limited statistical power, we also report effect sizes of Cohen's d for all pairwise comparisons in Table 2. Of note, the large effect between the fully and partially recovered groups on negative urgency was not detected in the pairwise comparisons (this involved sample sizes of 20 and 15). There were also some small-to-medium effects not detected for sensation seeking, namely both the fully recovered and partially recovered groups in comparison to the active eating disorder group.

Among the sample with an eating disorder history, 63 (72%) had eating disorders involving regular binge eating and/or purging (BN, AN-binge-eating/purging subtype, EDNOS with binge eating and/or purging), and 25 (28%) had no history of regular binge eating and/or purging. The MANCOVA among those without a history of binge eating and/or purging (67 controls, 9 fully recovered, 5 partially recovered, 11 active eating disorder) was non-significant: $F = 1.22$, Wilks' lambda = .85, $p = .273$. However, in the sample with a history of regular binge eating and/or purging (including the controls as a comparison group), the MANCOVA remained significant: $F = 5.37$, Wilks' lambda = .62, $p < .001$, $\eta_p^2 = .15$. Follow-up ANCOVAs found that groups differed on negative urgency ($F = 19.38$, $p < .001$, $\eta_p^2 = .32$); both the controls ($M = 2.07$, $SD = .60$; $n = 67$) and the fully recovered group (M

= 2.06, $SD = .44$; $n = 11$) displayed significantly less negative urgency than either the partially recovered group ($M = 2.87$, $SD = .71$; $n = 10$) or active eating disorder group ($M = 2.94$, $SD = .62$; $n = 42$). Groups also differed on sensation seeking ($F = 2.70$, $p = .049$, $\eta_p^2 = .06$) and lack of perseverance ($F = 2.77$, $p = .044$, $\eta_p^2 = .06$), however, no pairwise comparison was significant. Groups did not differ on lack of premeditation ($F = .66$, $p = .580$, $\eta_p^2 = .02$).

Discussion

As hypothesized, fully recovered participants reported significantly less negative urgency than the active eating disorder group and, in a subsample focused on those with a history of binge eating and/or purging, the fully recovered individuals also displayed less negative urgency than the partially recovered group. Furthermore, fully recovered individuals were remarkably similar to controls on negative urgency. These negative urgency findings strengthen prior work examining urgency and eating disorders.¹⁹ Other facets of impulsivity less successfully distinguished groups; namely, lack of premeditation and lack of perseverance did not differ by recovery status, although there was some evidence that among individuals with a history of regular binge eating and/or purging, there may be group differences in lack of perseverance.

The current findings promote negative urgency as the most important impulsivity dimension for recovery. This may be particularly true among individuals with an eating disorder history involving regular binge eating and/or purging (i.e., BN, AN-binge-eating/purging subtype, EDNOS with binge eating and/or purging), which is in line with research supporting negative urgency as more strongly linked to bulimic symptoms than other impulsivity facets.^{28,29} However, given the reduced sample size and power when restricting analyses to those with an eating disorder history without regular binge eating and/or purging, null findings for this group should be interpreted with caution.

The association between lower negative urgency and recovery directs attention to Dialectical Behavior Therapy (DBT). DBT was originally developed to help individuals with borderline personality disorder improve distress tolerance without taking rash action to diminish negative feelings, but this approach appears to be effective across disorders involving emotion dysregulation.³⁰ Indeed, meta-analytic work supports DBT as effective in decreasing disordered eating.³¹ Should changes in negative urgency precede recovery, it may be that negative urgency serves as a mediator for treatment such as DBT and eating disorder outcomes/recovery.

One study limitation is the relatively small sample size, which could have made it harder to detect meaningful group differences on other impulsivity facets, in particular lack of perseverance, due to limited statistical power. Other limitations include the low participation rate from the potential pool of participants and the lack of demographic diversity (both potentially affecting generalizability), the self-reported weight for a small minority of the sample, the cross-sectional design, and the reliance on self-report measures. It is imperative that future research examine the relation between eating disorder recovery and impulsivity facets longitudinally to investigate if reductions in impulsivity, in particular negative

urgency, precede or are a consequence of recovery. Alternatively, recovery and negative urgency changes may reciprocally affect each other, or other factors may produce changes in both recovery status and negative urgency (e.g., experience with distress tolerance interventions).

Another important area of future research involves considering the relationship between impulsivity and recovery in groups characterized by the presence or absence of a history of binge eating and/or purging. Impulsivity is most robustly related to eating disorders with a binge eating or purging component,¹⁹ and the current findings suggest that negative urgency is particularly related to recovery among those with this behavioral history. Larger sample sizes are needed to replicate these findings and to attain the power to examine impulsivity among those with restricting AN where dimensions other than negative urgency, such as sensation seeking,¹¹ may be relevant to recovery.

In conclusion, fully recovered individuals reported less negative urgency when compared to the active eating disorder group both in the full sample and in the subsample with a history of binge eating and/or purging; this was not true for the partially recovered group. This work highlights the propensity to act impulsively when experiencing negative emotions as an important factor in eating disorders, and directs future research to examine the potential for a reduction of this tendency to be core to comprehensive recovery.

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Table 1
Comparison of Dimensions of Impulsivity Across Eating Disorder Status Groups

Impulsivity Construct	Active ED (<i>n</i> = 53)	Partially recovered (<i>n</i> = 15)	Fully recovered (<i>n</i> = 20)	Controls (<i>n</i> = 67)	Significance	Pair-wise comparisons
Multivariate effect, controlling for age: $F = 4.41, p < .001, \text{Wilks' lambda} = .71, \eta_p^2 = .11$						
Negative Urgency	2.77 (.72)	2.62 (.75)	2.11 (.52)	2.07 (.60)	$F(3, 150) = 12.29, p < .001, \eta_p^2 = .20$	C < PR, AED FR < AED
Lack of Premeditation	2.11 (.58)	2.12 (.78)	2.07 (.50)	2.03 (.54)	$F(3, 150) = .11, p = .954, \eta_p^2 = .002$	---
Lack of Perseverance	2.06 (.60)	1.87 (.70)	1.81 (.35)	1.79 (.44)	$F(3, 150) = 2.07, p = .106, \eta_p^2 = .04$	---
Sensation Seeking	2.25 (.73)	2.46 (.65)	2.58 (.69)	2.76 (.57)	$F(3, 150) = 3.54, p = .016, \eta_p^2 = .07$	C > AED

Note. ED = Eating Disorder. AED = Active Eating Disorder. PR = Partially Recovered. FR = Fully Recovered. C = Controls. Higher scores mean more impulsivity on the particular dimension. Pairwise comparisons listed are significant at least at $p < .05$. Inferential statistics include age as a covariate, but descriptive statistics (means, standard deviations) are reported as unadjusted for the covariate so that they can be compared to other studies.

Table 2
Effect Sizes (Cohen's d) for Pairwise Comparisons of Means of Impulsivity Dimensions
Adjusted for Age

	Negative Urgency	Lack of Premeditation	Lack of Perseverance	Sensation Seeking
Controls vs. Fully recovered	-.10	-.03	.11	.01
Controls vs. Partially recovered	-.88	-.12	-.04	.26
Controls vs. Active ED	-1.10	-.10	-.41	.59
Fully recovered vs. Partially recovered	-.78	-.10	-.15	.25
Fully recovered vs. Active ED	-1.00	-.07	-.51	.58
Partially recovered vs. Active ED	-.22	.02	-.37	.34

Note. ED = Eating Disorder. Effect sizes were computed using the ANCOVA model means (marginal means after adjusting for the covariate of age) and the square root of the mean squared error. Cohen's d effect sizes may be interpreted where .2 is small, .5 is medium, and .8 is large.²⁷ Bonferroni-adjusted pairwise comparisons that were significant in the ANCOVAs are in bold.

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