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Impulsivity and the generation of negative life events: The role of negative urgency

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ABSTRACT

According to the stress generation hypothesis, individuals vulnerable to depression are prone to experience stressors that are in some measure dependent on their behaviors and characteristics (i.e., dependent stressors). Although this phenomenon has also been suggested to be relevant to other forms of psychopathology, the research to date has been equivocal. As a preliminary step towards clarifying the potential role of stress generation in other disorders, one promising approach may be to examine maladaptive behavioral processes relevant to different forms of psychopathology. The current study assessed impulsivity in general, and negative urgency specifically, in relation to stress generation. Participants ($N = 201$) completed baseline self-report measures of depression symptoms and five dimensions of impulsivity (i.e., negative urgency, sensation seeking, lack of premeditation, and lack of perseverance). At four-week follow-up, they completed a measure of life events that had occurred since baseline. Negative urgency, but none of the other impulsivity dimensions, predicted higher occurrences of negative dependent events during follow-up, after covarying gender and baseline depression. Negative urgency did not predict events that were independent of individuals' behaviors. Negative urgency may contribute to the stress generation effect, and future study of this association in the context of impulsivity-related psychopathology is warranted.

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1. Introduction

Stressful life events feature prominently in the etiology of various forms of psychopathology (Hammen, 2005; O'Connor, Rasmussen, & Hawton, 2010; Walker, Mittal, & Tessner, 2008). Understanding the contexts wherein these stressors occur is important insofar as it may ultimately inform intervention efforts. Although life stress studies have traditionally focused on documenting the pathogenic effect of stressors (i.e., stress exposure models of psychopathology), researchers have increasingly given consideration to the possible transactional relation between stressors and psychopathology or related vulnerabilities. In particular, the stress generation hypothesis (Hammen, 1991) posits that depressed or depression-prone individuals, when compared to those without such vulnerability, (i) tend to experience higher rates of life stressors that are at least in part dependent on their own behaviors and characteristics (i.e., dependent events), but (ii) do not differ in rates of fateful events outside their control (i.e., independent events). This hypothesis has received substantial empirical support (for reviews, see Hammen, 2006; Liu & Alloy, 2010).

Although predominantly studied in relation to depression, the stress generation hypothesis may also be relevant to other psychopathology (Hammen, 2006). Indeed, several studies have examined this possibility, particularly with bipolar disorder and anxiety disorders. The findings to date, however, have been decidedly mixed (see Liu & Alloy, 2010). Despite these equivocal findings, there are compelling reasons to suspect stress generation to be pertinent to different forms of psychopathology, suggesting the need for further research in this area. Bipolar disorder, for example, is often characterized by impulsivity and risk-taking behaviors (Holmes et al., 2009; Strakowski et al., 2010), characteristics that have been suggested to account in some measure for the occurrence of stressors in bipolar individuals' lives (Johnson & Miller, 1997; Johnson & Roberts, 1995). Deficits in impulse control have been similarly associated with self-harm (i.e., suicidal behaviors and non-suicidal self-injury [NSSI]; Glenn & Klonsky, 2010; Klonsky & May, 2010), and addictive disorders (MacKillop et al., 2011).

In attempting to ascertain the potential relevance of stress generation to these varying forms of psychopathology, it may be well also to consider the role of related risk factors as possible predictors of dependent stressors. Indeed, Hammen (2006) suggested that it may be such variables, rather than diagnosable disorders per se, that best account for the stress generation effect, especially as past studies of stress generation in depression have found it to occur during periods of remission (Chun, Cronkite, & Moos, 2004;

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Daley et al., 1997; Hammen & Brennan, 2002). Impulsivity is a promising candidate in this regard, given its aforementioned role in multiple manifestations of psychopathology. It should be noted, however, that impulsivity is a multidimensional construct, a neglect of which may obscure its relation with other clinically relevant phenomena (Klonsky & May, 2010). One facet of impulsivity of particular note is negative urgency, or the tendency to act rashly when experiencing negative affect (Cyders & Smith, 2008; Whiteside & Lynam, 2001). It has been found to differentiate between suicidal and non-suicidal individuals (Klonsky & May, 2010), been implicated in problematic drinking (Simons, Dvorak, Batien, & Wray, 2010), and relative to other dimensions of impulsivity, better distinguished individuals who engage in NSSI from those who do not (Glenn & Klonsky, 2010). Although impulsivity in general, and negative urgency specifically, have not been previously examined in relation to stress generation, negative urgency, along with sensation seeking, predicts risky sexual behaviors (Deckman & DeWall, 2011), and alone is the best predictor, relative to other facets of impulsivity, of an array of behavior-related problems (e.g., family/social and legal difficulties) in substance dependent individuals (Verdejo-García, Bechara, Recknor, & Pérez-García, 2007).

Given these considerations, the current study examined negative urgency in the context of stress generation. We hypothesized that negative urgency would predict higher rates of prospectively occurring negative dependent events but not negative independent events, after covarying other facets of impulsivity (i.e., sensation seeking, lack of premeditation, and lack of perseverance) and baseline depression symptoms. Given previous research associating female gender with stress generation (see Liu & Alloy, 2010 for a review), gender was also treated as a covariate.

2. Method

2.1. Participants

A total of 201 undergraduates from a large, public university participated in an IRB-approved online study in exchange for research credits (mean age = 20.47, SE = .28, and 84.1% female). Approximately 53.2% of the sample was Caucasian, 20.9% Asian, 12.9% African American, and 12.9% was another ethnicity.

2.2. Procedure

Participants were assessed at two time-points, separated by 4 weeks (mean = 27.6 days, SE = .03). All participants completed the follow-up assessment within the same semester as study enrollment and prior to final exams so as to avoid potential confounds relating to time of participation (e.g., rates of stressful life events during the weeks of final exams may be particularly high, whereas rates of these events may be lower during summer or winter breaks). Additionally, the duration of this follow-up interval was chosen so as to ensure a reasonable level of retention, given that participants in the follow-up assessment were reimbursed with research credits, while also being of sufficient duration to allow for meaningful variability in the types of life events under consideration. At the initial time-point, participants completed measures of depression symptoms (BDI-II) and impulsivity (UPPS). At the four-week follow-up assessment, they completed a measure of life events (CLSI) that had occurred since the initial time-point. A total of 325 participants completed baseline measures, and 201 participants from that group (62%) completed the follow-up assessment. A series of independent samples *t*-tests and chi-square test revealed no significant differences on any relevant study variables between those who did and did not complete the follow-up assessment. In many cases, those who did not complete the fol-

low-up assessment had already fulfilled their research requirements for the semester by the time of their follow-up target date.

2.3. Measures

2.3.1. Depression symptoms

The Beck Depression Inventory-II (BDI-II; Beck, Brown, & Steer, 1996) is a 21-item self-report measure of current depression symptoms. Items were scored on Likert scales ranging from 0 to 3, with higher scores reflecting greater depression severity. Internal consistency was found to be excellent in the current sample ($\alpha = .91$).

2.3.2. Impulsivity

The UPPS Impulsive Behavior Scale (Whiteside & Lynam, 2001) is a 45-item questionnaire assessing four dimensions of impulsivity. The negative urgency subscale consisted of 12 items (e.g., "When I am upset I often act without thinking"). The 12-item sensation seeking subscale assessed individual inclinations towards excitement and stimulation (e.g., "I quite enjoy taking risks"). The 11-item (lack of) premeditation subscale reflected the tendency to think through the possible consequences of a behavior before acting (e.g., "I am a cautious person"). The 10-item (lack of) perseverance subscale measured the tendency to persist in completing tasks despite boredom or fatigue (e.g., "I finish what I start"). All items were on 4-point Likert scales (1 = "Agree strongly" and 4 = "Disagree strongly"), and each subscale was coded such that higher scores reflected greater impulsivity. Cronbach's α was .81, .87, .86, and .81 for negative urgency, sensation seeking, (lack of) premeditation, and (lack of) perseverance, respectively.

2.3.3. Negative life events

The College Life Stress Inventory (CLSI; Kohn, Lafreniere, & Gurevich, 1990) is a 75-item self-report measure of the occurrence of life events relevant to college students. For the current study, the CLSI was used to assess the occurrence of life events between the initial time-point and the four-week follow-up. Only negative life events were included in the present analyses. The first and second authors individually rated each event as either dependent or independent, and discordant ratings were resolved by consensus between the raters. Excellent inter-rater reliability was found ($\kappa = .89$). The final set of items consisted of 18 negative dependent events (e.g., "Cheating on your boyfriend or girlfriend" and "Difficulties with family members") and 12 negative independent events (e.g., "Your best friend was depressed" and "Death of a pet to whom you were close or attached").

3. Results

Table 1 presents bivariate correlations between the main study variables. Female gender and baseline depression symptoms were positively associated with number of prospectively occurring negative dependent, but not independent, events. Correlations between the four impulsivity dimensions were generally low to moderate. Of the impulsivity dimensions, negative urgency and lack of premeditation correlated positively with negative dependent events, and only sensation seeking correlated with negative independent events.

Given previous research implicating depression and female gender in stress generation (Hammen, 2006; Liu & Alloy, 2010), both variables were covaried in all analyses. Sensation seeking, lack of premeditation, and lack of perseverance were similarly treated as covariates so as to allow for a determination of the unique contribution of negative urgency to the stress generation effect. As detailed in Table 2, a pair of hierarchical linear regression

Table 1
Bivariate correlations, means, and standard errors among study variables.

	1	2	3	4	5	6	7	8
1. Female gender	–							
2. Baseline depression	.082	–						
3. Negative urgency	–.002	.278***	–					
4. Lack of premeditation	<.001	.078	.188**	–				
5. Lack of perseverance	–.066	.295***	.353***	.578***	–			
6. Sensation seeking	–.007	–.263***	.117	.060	–.225**	–		
7. Negative dependent events	.159*	.251**	.242**	.144*	.099	.108	–	
8. Negative independent events	.043	.098	.081	.026	.023	.140*	.318***	–
Mean	–	7.304	28.906	21.716	20.274	31.846	1.318	1.338
Standard error	–	.563	.406	.390	.351	.520	.092	.086

* $p < .05$.** $p < .01$.*** $p < .001$.**Table 2**
Hierarchical linear regressions of predictors of negative dependent and independent events.

Predictor	Negative dependent events							Negative independent events						
	B	SE	t	β	R ²	ΔR^2	f ²	B	SE	t	β	R ²	ΔR^2	f ²
<i>Step 1</i>					.126	–						.041	–	
Female gender	.490	.239	2.05*	.14				.119	.234	0.51	.04			
Baseline depression	.045	.012	3.82***	.28				.020	.012	1.77	.13			
Sensation seeking	.031	.013	2.43	.18				.031	.012	2.46*	.19			
Lack of premeditation	.026	.020	1.31	.11				–.004	.020	–0.20	–.02			
Lack of perseverance	<.001	.023	0.02	.01				.009	.023	0.40	.04			
<i>Step 2</i>					.146	.02*						.041	–	
Female gender	.487	.237	2.05*	.14			.02	.118	.235	0.50	.04			
Baseline depression	.039	.012	3.22**	.24			.05	.020	.012	1.67	.13			
Sensation seeking	.023	.013	1.78	.12				.030	.013	2.30*	–.02			.03
Lack of premeditation	.029	.020	1.45	–.06				–.004	.020	–0.19	.03			
Lack of perseverance	–.015	.024	–0.63	.13				.008	.024	0.32	.18			
Negative urgency	.036	.017	2.11*	.16			.02	.003	.017	0.20	.02			

* $p < .05$.** $p < .01$.*** $p < .001$.

analyses was conducted, regressing negative dependent events and negative independent events, respectively, on baseline depression symptoms, gender, negative urgency, sensation seeking, lack of premeditation, and lack of perseverance. All five covariates were entered simultaneously as predictors in Step 1 of both regression models, with negative urgency entered in Step 2. Greater negative urgency was prospectively associated with higher rates of negative dependent events over the follow-up period. Among the covariates, only baseline depression symptoms and female gender predicted elevated rates of negative dependent events. In contrast, negative urgency was not prospectively associated with negative independent events. Amongst covariates, only higher sensation seeking predicted greater occurrence of negative independent events.

Although none of the predictors evidenced multicollinearity based on their VIFs, suppressor effects were observed in both of the regression models (for more details regarding suppressor variables, see Cohen & Cohen, 1983; Tabachnick & Fidell, 1996; Tzelgov & Avishai, 1991). Specifically, lack of perseverance was positively correlated with prospectively occurring negative dependent events, but had a negative regression coefficient in the model with negative dependent events as the criterion variable and negative urgency also entered as a predictor. Similarly, lack of premeditation was positively correlated with negative independent events, but had a negative regression coefficient when considered simultaneously with sensation seeking and lack of perseverance also included as predictors in a regression model. To address this issue, additional analyses were conducted with lack of perseverance excluded from the regression model with dependent events as the criterion variable, and lack of premeditation excluded from the

regression model with independent events as the criterion variable. In the former case, negative urgency remained a significant predictor of dependent events, and in the latter case, its association with independent events remained non-significant.

4. Discussion

The current study is the first to examine impulsivity in general, and negative urgency in particular, within a stress generation framework. Consistent with previous findings (Liu & Alloy, 2010), female gender and depression symptoms predicted higher levels of negative dependent events over the four-week follow-up period. More importantly, and consistent with our hypotheses, negative urgency uniquely predicted greater occurrences of negative dependent events, but not the occurrence of negative independent events. Moreover, sensation seeking, lack of premeditation, and lack of perseverance did not uniquely predict negative dependent events, suggesting that the stress generation effect may be specific to negative urgency when considered relative to other facets of impulsivity. These findings are suggestive of the possibility that individuals who have a tendency to respond rashly when confronted with negative affect inducing stimuli, rather than effectively negotiate a resolution of related current stressors, may instead be more likely to exacerbate them unknowingly or to generate new ones.

Given previous research implicating negative urgency in a variety of psychopathology (e.g., Glenn & Klonsky, 2010; Klonsky & May, 2010; Verdejo-García et al., 2007), our findings, although preliminary, may be valuable inasmuch as they suggest a means

through which stress generation may be examined in relation to different forms of psychopathology characterized by specific deficits in impulse control. It may be, for example, that these forms of psychopathology are associated with greater negative dependent events, with negative urgency in some measure accounting for this difference.

In addition to this possibility, it is important to elucidate the mechanisms underlying the stress generation process from a public health perspective, given the large role that behavior-dependent events have in negative health outcomes in both children and adults (Mokdad, Marks, Stroup, & Gerberding, 2004; Ozer, Macdonald, & Irwin, 2002). Insofar as negative dependent events, in contrast to independent events, can be modified or prevented, risk factors associated with stress generation may serve as promising targets of interventions. To the extent that negative urgency accounts for dependent stressors, individuals with this behavioral tendency could be made aware of its association with more negative, rather than positive, outcomes. In addition, such individuals may benefit from interventions focusing on emotion regulation strategies so as to cope better with future negatively valenced stimuli and to allow for exercising a more deliberated response.

The current findings should also be interpreted within the context of the study limitations. First, the use of a self-report assessment of negative life events may be sensitive to participants' subjective interpretation biases (see Hammen, 2006; Liu & Alloy, 2010). Additionally, the absence of contextual information available with interview-based measures of life events may have limited accuracy in discriminating between dependent and independent events. This limitation may in part account for the finding that sensation seeking predicted negative independent events. Indeed, the majority of the few other studies to find associations between stress generation predictors and independent events have similarly relied on self-report measures of life events (Liu & Alloy, 2010). Future research may benefit from interviews featuring contextual threat assessments (Brown & Harris, 1978) so as to allow for a clearer evaluation of the relation between objective occurrence of stressors and putative risk factors, as well as cleaner differentiation between dependent and independent events. Second, the current study utilized an undergraduate community sample, thus potentially limiting the generalizability of the present findings to clinical populations. Therefore, it will be important for future studies to utilize samples derived from patient populations so as to determine the clinical relevance of the current findings. Third, it should be noted that the effect of negative urgency accounted for 2% of the variance in prospectively occurring negative dependent events. It may also be noted, however, that this represents unique variance not accounted for by other variables (i.e., gender, depression symptoms, sensation seeking, lack of premeditation, and lack of perseverance). Nonetheless, the results reflect the need for further research to assess other potential predictors of stress generation beyond those considered in the current study. Finally, caution should be exercised in generalizing the current findings to other age groups, particularly adolescents, as previous research has shown age differences in various aspects of impulsivity (Steinberg et al., 2008, 2009). Given that impulsive tendencies generally decline with age, one interesting possibility to be considered in future research is whether the association between negative urgency and dependent stressors is more pronounced in a younger sample than is featured in the present study.

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