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From Urges to Action: Negative Urgency and Nonsuicidal Self-Injury in an Acute Transdiagnostic Sample

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Abstract

Objective: Urgency–rash action during strong emotion–is a robust correlate of nonsuicidal self-injury (NSSI). This study tested whether urgency is associated with time between NSSI urges and NSSI, and sought to replicate the finding that urgency is associated with NSSI history.

Methods: Participants attending a partial hospitalization program ($N = 669$) completed self-report measures of urgency, NSSI history and latency, and psychiatric symptoms.

Results: Consistent with previous research in clinical samples, rates of lifetime engagement in NSSI were high. Using logistic regression to predict short vs. long latency between urges and NSSI, no significant relationship emerged between negative urgency and latency to self-injure. Negative urgency more than doubled the likelihood of NSSI history ($p < .001$, OR = 2.39). In addition, exploratory analyses revealed several links between NSSI latency and negative urgency.

Conclusion: Results confirm that urgency is robustly related to NSSI, yet also suggest that more research is needed to understand how urgency relates to the parameters of NSSI within those who self-injure. Use of retrospective self-report measures may limit the ability to test links between urgency and latency of NSSI.

Keywords

urgency; impulsivity; NSSI

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Nonsuicidal self-injury (NSSI), defined as the intentional destruction of body tissue without intent to die (American Psychiatric Association, 2013), is a widespread clinical phenomenon. Although estimates of its prevalence vary considerably, evidence from epidemiological studies of adults in the United States show lifetime rates of NSSI engagement of 5.9% (Klonsky, 2011). In contrast, much higher rates of 11% to 49.5% have been reported in clinical samples (Glenn & Klonsky, 2013; Selby, Bender, Gordon, Nock, & Joiner, 2012). In addition to harm directly caused by NSSI, engagement in NSSI is linked to a range of other poor outcomes, including higher rates of suicidal behavior (Klonsky, May, & Glenn, 2013; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). Given these dire outcomes, there is a critical need to identify the causes, correlates, and consequences of NSSI.

To date, many studies have tested the degree to which impulsiveness relates to NSSI, based on theoretical conceptualizations of self-injury as an impulsive act (e.g., Evans, Platts, & Liebenau, 1996). However, impulsivity is a multifaceted construct, and some aspects of impulsiveness may be more relevant for understanding NSSI than others (Glenn & Klonsky, 2010). Meta-analytic evidence confirms that although not all aspects of impulsivity map onto NSSI outcomes, NSSI is strongly related to the personality characteristic of *urgency* (Hamza, Willoughby, & Heffer, 2015). Defined as rash action in response to strong emotion (Whiteside & Lynam, 2001; Cyders & Smith, 2008), urgency encompasses tendencies towards impulsive action in response to negative emotions (negative urgency, Whiteside & Lynam, 2001), as well as impulsive reactions to positive emotion (positive urgency, Cyders et al., 2007). Evidence from meta-analyses of impulsivity and NSSI identifies negative urgency as having the strongest link to self-injury (Hamza et al., 2015), over and above other dimensions of impulsivity, such as sensation seeking (Berg, Latzman, Bliwise, & Lilienfeld, 2015).

Beyond cross-sectional evidence, results of one prospective study found that negative urgency predicts the onset of NSSI in college students (Riley, Combs, Jordan, & Smith, 2015), providing compelling evidence for negative urgency as an important contributor to self-injurious behavior. To a lesser extent, positive urgency has also been identified as a correlate of NSSI. Some evidence indicates that people with a history of NSSI show elevations in positive urgency compared to those who do not engage in NSSI (Claes et al., 2015; Dir, Karyadi, & Cyders, . Another study found that engagement in NSSI was a significant mediator of the relationship between positive urgency and suicidal behavior (Anestis, Tull, Lavender, & Gratz, Thus, both variants of impulsive reactivity to emotion appear to be relevant for understanding who engages in NSSI.

Compared to the extensive literature illustrating elevated urgency scores in those with NSSI history compared to those without NSSI, much less is known about how urgency influences NSSI in individuals who have already engaged in this behavior. Negative urgency is associated with more frequent engagement in NSSI and a wider variety of types of self-injury (Dir et al., 2013), while other evidence shows that negative urgency in the context of sad mood predicts urges to self-injure (Bresin, Carter, & Gordon, 2013). These findings suggest that urgency may contribute to NSSI via a shortened latency between experiencing an urge and engaging in NSSI (Maxfield & Pepper, 2018). This premise is supported by

experimental findings showing that both variants of urgency are linked to basic deficits in overriding prepotent responses (Cyders & Coskunpinar, 2011; Dekker & Johnson, 2018; Johnson, Tharp, Peckham, Sanchez, & Carver, 2016), which in theory would make it more difficult to delay acting on a strong urge.

Despite this rationale, only one other study to date has considered how urgency might shape the time course of NSSI. Contrary to hypotheses, this study (conducted in an undergraduate sample) found no evidence to support the hypothesis that negative urgency would correlate with a shorter time duration between self-reported urges and action (Maxfield & Pepper, 2018). However, studies of NSSI composed of clinical samples differ from those drawing from student samples in a number of ways that may have influenced this outcome. Specifically, clinical samples are characterized by higher overall rates of people engaging in NSSI (for review see Nock, 2010), and sex differences in rates of NSSI that are not observed in non-clinical samples, with NSSI more commonly reported among women in clinical settings (Bresin & Schoenleber, 2015; Fox et al., 2018). Many studies also find elevated levels of urgency in people with psychiatric disorders, compared to control participants (e.g., Hoptman, Antonius, Mauro, Parker, & Javitt, 2014; Muhtadie, Johnson, Carver, Gotlib, & Ketter, 2013). Here too, sex differences may potentially play a role: levels of negative urgency are comparable among men and women, yet some evidence suggests that positive urgency may be higher among men (Cyders, 2013). Finally, samples drawn from clinical populations are also likely to show higher rates of other symptoms that are known correlates of NSSI, including depression (Bentley, Casiello-Robins, Vittorio, Sauer-Zavala, & Barlow, 2015; Fox et al., 2015; Selby et al., 2012) and anxiety (Bentley et al., 2015; Selby et al., 2012). Thus, the primary goal of the present study was to test whether urgency is correlated with shorter latency between self-harm urges and action in an acute transdiagnostic clinical sample.

Aims and Hypotheses

The aims of this study were twofold. First, we sought to replicate the finding that individuals who report a history of NSSI would report significantly higher levels of negative urgency, compared to individuals who do not engage in NSSI, using a large transdiagnostic treatment-seeking sample. Although links between urgency and NSSI are well-established, much of the evidence for this relationship comes from non-clinical samples. For example, each of the five studies included in Hamza and colleagues' (2015) meta-analysis of urgency and NSSI was conducted in a non-clinical sample. Moreover, studies assessing NSSI-urgency links in clinical samples have often focused on specific diagnostic groups, such as substance use disorders (Anestis et al., 2014; Lynam, Miller, Miller, Bornovalova, & Lejuez, 2011) or eating disorders (Claes et al., 2015). We hypothesized that elevated negative urgency scores would differentiate those with a history of NSSI from those not reporting NSSI, even when accounting for demographic variables that influence NSSI (sex, age), and accounting for the high level of symptomatic acuity expected in this population.

In addition, we hypothesized that sex would be a significant moderator of the link between positive urgency and NSSI history; specifically, we predicted that positive urgency would predict a history of NSSI among men, but not among women. This hypothesis was based

primarily on evidence that men report higher levels of positive urgency than women (Cyders, 2013), as well as more frequent engagement in risky behaviors during positive mood states (Cyders & Smith, 2010). Although some evidence suggests that the relationship between positive urgency and outcomes does not vary between men and women (Cyders, 2013), this evidence is based primarily on college student samples rather than clinical samples. Given the focus on acute clinical samples in the present study, and the evidence for greater positive urgency in men, we predicted that positive urgency could be linked to both greater likelihood of NSSI history and shorter urge-action latencies among men. Finally, we included participant age in all analyses, given that younger age has been linked with frequency of NSSI in a clinical sample (Anestis et al., 2014), and that a meta-analysis identified age as a moderator of predictors of NSSI (Fox et al., 2015).

The second aim of this study was to evaluate whether negative urgency is meaningfully related to latency between self-harm urges and behavior. Despite a previous null finding in a study testing this hypothesis in undergraduates (Maxfield & Pepper, 2018), we predicted that a relationship between NSSI latency and urgency would emerge in an acute clinical population. We predicted that among those with a history of NSSI, higher negative urgency would correlate with shorter self-reported latency between NSSI urge and action. As with the first aim, we also predicted that sex would significantly moderate this relationship, with positive urgency significantly predicting shorter latency to NSSI action among men, but not among women. Finally, we conducted exploratory analyses examining whether urgency and latency between urges and behaviors differ by the type of NSSI or total number of types of NSSI.

Method

Participants and Treatment Setting

Participants (N = 669) were patients receiving treatment at a partial hospital program at a private, non-profit psychiatric hospital in New England from March to December 2015, and from September 2017 to February 2018 (the urgency scales were not administered from January 2016 through August 2017, so this time period was excluded). The partial hospital program treats adults (age 18 or older) with a broad range of psychiatric disorders (including mood, anxiety, personality, and psychotic disorders). Approximately half of the patients are referred to the partial hospital from the community by outpatient treatment providers and half transition from higher levels of psychiatric care such as inpatient hospitalizations. The goal of the partial hospital program is to quickly (i.e., 1 to 2 weeks) stabilize acute symptoms and facilitate patients' transition back to outpatient care. Patients attend the partial hospital program during the day and return home in the evening. Demographic and clinical characteristics of the sample are presented in Table 1.

Measures

Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009)[1].— The ISAS is a brief self-report measure that assesses NSSI behaviors over the individual's lifetime. The ISAS assesses types of NSSI that the individual has engaged in using a 12-item checklist that includes cutting, biting, burning, carving, pinching, pulling hair, severe

scratching, banging or hitting self, interfering with wound healing, rubbing skin against a rough surface, sticking self with needles, and swallowing dangerous substances. For the purposes of the present study, two additional categories were added: “embedding objects into other skin or body” and “other”. If other was selected, participants were prompted to write-in a description of the NSSI not listed; one of the study’s authors (ADP) reviewed responses for this category to verify that these responses met criteria for NSSI; answers were recoded if the participant’s response clearly indicated a behavior that did not meet criteria for NSSI (e.g., suicide attempts, unhealthy lifestyle behaviors, etc.). Three additional items from the ISAS were administered to assess age of first incidence of NSSI, most recent incidence of NSSI (e.g., today, within last 7 days), and amount of time elapsing between urge to engage in NSSI and acting on the urge (e.g., less than 1 hour, 1-3 hours). Specifically, this question asks “Typically, how much time elapses from the time you have the urge to self-harm until you act on the urge?” Participants were prompted to answer these three questions if they endorsed any of the 14 types of NSSI from the checklist[2]. The ISAS has demonstrated excellent internal consistency, good reliability (one- to four-week test-retest), and construct validity in college students (Klonsky & Olino, 2008).

Short UPPS-P Impulsive Behavior Scale (UPPS-P; Lynam, Smith, Whiteside, & Cyders, 2006; SUPPS-P; Cyders, Littlefield, Coffey, & Karyadi, 2014).—The SUPPS-P is a brief version of the UPPS-P (Lynam et al., 2006) comprised of 20 items that assess five distinct traits related to impulsive behavior using a 4-point Likert-type scale anchored at 1 (*agree strongly*) and 4 (*disagree strongly*). For the present study, only the subscales of negative urgency (e.g., “When I am upset I often act without thinking”) and positive urgency (e.g., “I tend to lose control when I am in a great mood”) were included. These scales were administered as part of an admission assessment for the program. The SUPPS-P has demonstrated adequate reliability and validity (Cyders et al., 2014); in the present study, reliability was acceptable for the negative urgency scale (α = .78) and excellent for the positive urgency scale (α = .91).

Generalized Anxiety Disorder Scale – 7 items (GAD-7; Spitzer, Kroenke, Williams, & Löwe, 2006).—The GAD-7 is self-report questionnaire that assesses symptoms of generalized anxiety disorder over the past two weeks (Spitzer et al., 2006). Response options range from 0 (i*not at all*) to 3 (*nearly every day*), with total scores ranging from zero to 21, and higher scores indicating greater severity of anxiety symptoms. The GAD-7 has demonstrated good reliability and construct validity (Kroenke, Spitzer, Williams, Monahan, & Löwe, 2007; Löwe et al., 2008; Spitzer et al., 2006), and has been validated as a measure of symptoms of general anxiety in a psychiatric hospital setting (Beard & Björgvinsson, 2014). In the current sample, the GAD-7 had good internal consistency (α = .87).

[1]ISAS data reported in the current study are partially overlapping (52.8%) with data from a previous publication (Jarvi, Hearon, Batejan, Gironde, & Björgvinsson, 2017); however, no previous analyses of ISAS and urgency have been reported.
[2]Due to the need for brevity in questionnaires administered in an acute clinical setting, the version of the ISAS used in the present study did not include Section II (Functions of NSSI), nor did it include 3 questions from the full measures assessing pain, presence of others, or desire to stop NSSI behaviors.

Behavior and Symptom Identification Scale – 24 items (BASIS-24; Cameron et al., 2007).—The BASIS-24 is a self-report assessment of psychopathology over the past week. In the present study, we used the six items assessing symptoms of depression and functioning that comprise the depression/functioning subscale (e.g., "feel sad or depressed?"). Response options ranged from 0 (*no difficulty/none of the* time) to 4 (*extreme difficulty/all of the* time) on a 5-point Likert type scale, with the total subscale score ranging from zero to 24 and higher scores indicating worse depression and functioning. The BASIS-24 has demonstrated good reliability and validity as a measure of psychopathology and functioning (Cameron et al., 2007). Internal consistency for the depression subscale in this sample was good ($\alpha = .87$).

Procedure

As part of standard clinical care at the partial hospital program, participants completed a computerized battery of self-report measures at admission to the program. Measures were administered using REDCap (Research Electronic Data Capture), a secure, web-based application designed to support data collection for research studies (Harris et al., 2009). The admission (pre-treatment) assessment included the ISAS, history of NSSI, the SUPPS-P, the GAD-7 and the BASIS-24 depression and functioning subscales. In addition to self-report measures, primary diagnoses for each patient (determined by the patient's program psychiatrist) were extracted from the medical record. Patient data were initially used to inform treatment planning and monitor patient progress. We obtained informed consent from patients to use their de-identified clinical data for research purposes. The local Institutional Review Board approved all procedures.

Analysis Plan

Analyses were conducted using SPSS Version 24.0 (IBM Corp., Armonk, NY). Group differences (NSSI vs. no NSSI) for demographic, clinical, and impulsivity variables were tested using *t*-tests with Cohen's *d* for effect size estimates. Separately, within the NSSI group, parallel analyses tested those who reported a short latency of NSSI urges to action (<1 hour) as compared to those who reported longer latency (1+ hour). This dichotomization of the time course of NSSI urges was chosen a priori because (1) inspection of the plots of responses to this item revealed a non-normal distribution, with approximately half the sample reporting less than one hour and half reporting one of the response options indicating more than one hour, and (2) because we hypothesized that any delay of greater than one hour between an urge and an action was less likely to be related to an impulsive process. Finally, prediction of NSSI status and NSSI latency by urgency, and moderation by sex, were tested with two parallel hierarchical logistic regression models controlling for primary diagnosis, age, and current symptoms of anxiety and depression (all confidence intervals reported are 95%). Follow-up exploratory analyses tested links between NSSI characteristics, sex, and negative and positive urgency.

Results

As shown in Table 1, nearly half (47.4%) of partial hospital patients reported lifetime engagement in some form of NSSI. Before conducting primary analyses, independent

sample *t*-tests were conducted to assess the influence of sex on primary study outcomes; Pearson correlations were used to assess influence of age. These analyses showed that men reported greater positive urgency than did women, $t(661) = -3.48$, $p = .001$, $d = .27$, and that women reported higher levels of depression, $t(660) = 4.22$, $p < .001$, $d = .33$ and anxiety, $t(659) = 3.61$, $p < .001$, $d = .28$. Older age showed a weak but significant negative correlation with positive urgency, $r(661) = -.09$, $p = .02$. No significant relationships between negative urgency and demographic variables emerged.

Urgency and NSSI History

As shown in Table 2a, participants with history of NSSI reported higher levels of negative urgency and greater symptoms of anxiety and depression. Also, significantly more women reported NSSI than did men, and those who engaged in NSSI were significantly younger than those who did not. Positive urgency was marginally higher in those who reported a history of NSSI, but this did not reach the threshold of significance ($p = .09$). To test whether negative urgency was significantly related to NSSI status over and above other clinical and demographic variables, a hierarchical logistic regression with NSSI history (dichotomized yes/no) as the dependent variable was conducted, with predictors including age and sex in block 1, symptoms of anxiety (GAD-7) and depression (BASIS-24 Depression/Functioning) in block 2, primary diagnosis in block 3 (with Major Depressive Disorder (MDD) entered as the reference category), and negative and positive urgency in the final block. The final model was significant, χ^2 (9) = 123.94, $p < .001$; Nagelkerke $R^2 = .24$; and the final block that included urgency scores significantly added to model fit, χ^2 (2) = 35.39, $p < .001$. In this model, history of NSSI was significantly related to female sex ($B = -.57$, $SE = .18$, Wald = 9.40, $p = .002$, OR = .57 [CI: .40-.82]), younger age ($B = -.05$, $SE = .008$, Wald = 46.89, $p < .001$, OR = .95 [CI: .94-.96]), and higher depression symptoms ($B = .38$, $SE = .14$, Wald = 7.46, $p = .006$, OR = 1.46 [CI:1.11-1.91]). In addition, negative urgency was a significant predictor of history of NSSI, $B = .87$, $SE = .16$, Wald = 30.80, $p < .001$, OR = 2.39 (CI:1.76—3.25). Anxiety symptoms (OR = .98, $p = .39$), positive urgency (OR = .85, $p = .23$), and primary diagnosis ($p > .15$ for each category) did not significantly contribute to the model.

Interaction terms of sex and urgency (negative and positive) were next added to the model, to test whether sex moderated potential links between urgency and NSSI status. Although the overall model remained significant, $\chi^2(11) = 126.78$, $p < .001$; Nagelkerke $R^2 = .25$; the addition of interaction terms in this block did not significantly improve the model, $\chi^2(2) = 2.85$, $p = .24$.

Urgency and Urge-Action Latency within NSSI Group

Of the 317 individuals who reported NSSI, 287 also completed the item assessing latency between urges and action. More than half (58.9%, $n = 169$) of these participants reported engaging in NSSI within one hour of experiencing an urge to do so. The remainder of participants reported engaging in NSSI within 1-3 hours (17.8%, $n = 51$), 4-6 hours (3.8%, $n = 11$), 7-12 hours (3.8%, $n = 11$), or 13-24 hours (15.7%, $n = 45$). Table 2b shows overall differences between participants reporting a short latency between urge and action (<1 hour, $n = 172$) and those reporting a longer latency (1+ hour, $n = 121$). No group differences

emerged in these analyses, with the exception of significantly older age in the short latency group.

In parallel to the logistic regression analyses reported for prediction of NSSI history, logistic regression was used to test the likelihood that a participant endorsing a history of NSSI demonstrated a short (<1 hour) or long (1+ hour) urge-action latency. Predictors of short vs. long latency included age and sex in block 1, symptoms of anxiety (GAD-7) and depression (BASIS-24 Depression/Functioning) in block 2, primary diagnosis in block 3, and negative and positive urgency in the final block. The final model with all predictors included was significant, $\chi^2(9) = 21.36$, $p = .01$; Nagelkerke $R^2 = .10$), and the inclusion of the final block with the urgency scales significantly improved model fit, $\chi^2(2) = 7.12$, $p = .03$. In this model, latency to self-injure was significantly predicted only by age and positive urgency. Specifically, older age significantly predicted membership in the short latency group, $B = -.03$, $SE = .01$, Wald = 5.89, $p = .02$, OR = .97 (CI: .94 — .99), whereas positive urgency predicted membership in the long latency group, $B = .49$, $SE = .20$, Wald = *6.23*, $p = .01$, OR = 1.64 (CI:1.11 — 2.42). No other variables, including negative urgency, significantly contributed to the model ($p > .08$ for each variable). The overall model remained significant with the addition of interaction terms for sex with negative urgency, $\chi^2(11) = 26.76$, $p = .005$; Nagelkerke $R^2 = .12$; however, the addition of interaction terms did not significantly contribute, $\chi^2(2) = 5.41$, $p = .07$.

Exploratory Analyses

Given the significant sex difference that emerged in our sample, we conducted exploratory analyses of sex differences in all NSSI characteristics, to build upon previous research indicating sex differences in NSSI in clinical samples (e.g., Bresin & Schoenleber, 2015). Table 3 illustrates sex differences in NSSI characteristics, with women reporting engaging in significantly more types of NSSI and higher rates of several NSSI subtypes including cutting, pinching, severe scratching, and interfering with wound healing. In contrast, men reported higher rates of NSSI via hitting. However, women and men did not differ in age of NSSI onset or recency of self-harm.

Additional exploratory analyses were conducted to evaluate relationships between urgency and NSSI methods, based on some previous research suggesting that urgency is related to engagement in specific types of NSSI and to more variety in NSSI methods (e.g., Claes & Muehlenkamp, 2013; Dir et al., 2013). On average, participants with a history of NSSI reported using at least three separate methods ($M = 3.15$, SD = 2.16; Table 3). Some previous research suggests a link between negative urgency and variety of NSSI methods (e.g., Dir et al., 2013); accordingly, we tested whether urgency was related to the overall number of types of NSSI endorsed, as well as whether urgency was related to endorsement of specific types of self-injury. A hierarchical linear regression was conducted with age and sex in Block 1, followed by positive and negative urgency in the following blocks, to evaluate whether urgency contributes to an overall greater number of NSSI methods endorsed. Although significant, relatively little variance in the overall number of NSSI methods was explained by these variables; $F(4, 310) = 7.19$, $p < .001$, adjusted $R^2 = .073$. In this model, higher negative urgency scores were related to a greater number of NSSI

methods endorsed at a trend level, β = .12 , p = .05, R^2 change = .01. In addition, Spearman's rank correlations were used to test the relationship between negative and positive urgency and specific NSSI methods, with a Bonferroni correction applied to both sets of analyses to account for the large number of comparisons (corrected p-value threshold: .05/14 = .004). These analyses revealed weak but significant correlations emerged between negative urgency and hair pulling (r = .17, p = .002) and interfering with wound healing (r = .19, p = .001); no significant correlations emerged for positive urgency and specific forms of NSSI.

In parallel, we considered whether short vs. long latency to self-injury was related to these same aspects of NSSI. As shown in Table 2b, individuals with short vs. long NSSI latency did not differ in the overall number of NSSI methods endorsed. Chi-square analyses were next used to compare those with short vs. long latency with the presence or absence of individual categories of NSSI engagement (using the same corrected Bonferroni-corrected p-value as above, p = .004). No significant differences emerged in these analyses, with the exception of cutting, which was more prevalent in the long latency group (68.6%) as compared to the short latency group (51.5%), $\chi^2(1) = 8.44$, p = .004. In addition, a trend emerged supporting more frequent engagement in "banging or hitting" in the short latency group (52.1%) vs. 39.8% in the long latency group; however, this difference did not survive the correction for multiple comparisons, $\chi^2(1) = 4.18$, p = .04.

Discussion

Given the prevalence and adverse consequences of NSSI in clinical samples, there is a significant need to understand transdiagnostic traits that influence this behavior. The present study tested the relationship between history of NSSI, latency to engage in NSSI, and urgency in a large treatment-seeking sample of adults with acute psychiatric disorders. Building on previous research showing strong links between negative urgency and NSSI, this study demonstrates that among patients presenting for acute psychiatric treatment, negative urgency more than doubles the likelihood that a given patient endorses a history of NSSI, above and beyond other clinical and demographic influences. However, we did not find support for the hypothesis that urgency would be higher among patients who report shorter latencies between urges and NSSI.

Nearly half of patients who completed the present study reported a lifetime history of NSSI, with the majority of these individuals indicating that they had engaged in NSSI within the past year. These findings are consistent with high rates of NSSI reported in other clinical samples (e.g., Selby et al., 2012), and given the range of psychiatric diagnoses reported in this study's partial hospital setting, results are also consistent with recent conceptualizations of NSSI as a transdiagnostic concern (Bentley et al., 2015). Prominent sex differences also emerged, with significantly higher rates of NSSI among women presenting to the partial hospitalization program: of patients reporting NSSI, nearly two-thirds were female, and women in the present sample reported higher rates of several specific types of NSSI. These findings are consistent with recent meta-analyses illustrating sex differences for NSSI engagement in treatment-seeking samples (Bresin & Schoenleber, 2015, Fox et al., 2018).

The first aim of this study was to test whether negative urgency is significantly related to history of NSSI in an acute naturalistic treatment setting. Results conclusively supported our hypothesis that negative urgency is linked with a higher likelihood of NSSI history. Exploratory analyses also revealed some evidence of a link between negative urgency and a higher overall number of NSSI methods, consistent with prior research (Dir et al., 2013). Despite the significant influence of sex differences in NSSI noted above, negative urgency remained a significant predictor of NSSI history when accounting for sex. Moreover, and in contrast to hypotheses, urgency did not interact with participant sex in predicting NSSI history, despite higher levels of positive urgency among men in our sample. Overall, this finding extends previous reviews of the link between impulsivity and NSSI by demonstrating that the link between negative urgency and NSSI remains robust when tested in an acute naturalistic setting. Notably, the magnitude of the difference in negative urgency between those with and without NSSI in the present study (Cohen's *d* of .56) was very similar to the magnitude of this difference reported in a previous meta-analysis (*d* of .59, reported by Hamza et al., 2015). Thus, this medium-sized effect appears to be consistent across different types of samples and settings.

The replication of this consistent relationship between negative urgency and NSSI has several implications for clinicians who treat patients in acute short-term treatment settings. Given the typically short duration of hospital treatment, brief measures that provide meaningful clinical information are important tools for this setting. The short version of the negative urgency measure used in the present study (Cyders et al., 2014) encompasses only four items, yet showed significant links to NSSI history. In addition to its practicality, the use of short urgency measures, together with other demographic and clinical factors, may help to identify patients who engage in NSSI but are reluctant to report this behavior. Finally, previous research shows that negative urgency longitudinally predicts the onset of NSSI in college students (Riley et al., 2015). One goal for future research is to test the extent to which brief urgency measures predict the course of NSSI in acute clinical settings.

The second aim of this study was to test the extent to which negative urgency differentiates individuals who engage in NSSI relatively quickly after experiencing an NSSI urge, as compared to those who delay longer. This hypothesis was not supported. In contrast to hypotheses, positive urgency was found to be related to membership in the longer latency group, and there was no evidence that sex differences significantly moderated this effect. Although unexpected, the null finding regarding negative urgency replicates a recent similar analysis conducted in a college student sample (Maxfield & Pepper, 2018). Across these two studies, self-reported latency to engage in NSSI following an urge is unrelated to negative urgency.

There are several potential explanations for this null result. First, the retrospective, self-reported nature of assessing latency to NSSI used in the present study is vulnerable to misreporting the actual amount of time that elapses between NSSI urges and action. This limitation is potentially exacerbated by the finding that impulsivity is associated with difficulties with time estimation (Wittman & Paulus, 2008). Another potential source of inaccuracy in reporting latency stems from the phrasing of the ISAS question used in the present study, which asks respondents about "typical" latencies between urges and NSSI.

Participants may differ in how they interpret “typical,” or they may experience a range of different latencies between urges and action that do not fall into a “typical” pattern, leading to further difficulty in accurately capturing latency. A separate limitation in using self-report measures is that participants may interpret “urge” differently—participants may not be uniform in their awareness of when an urge arises, which further complicates measurement.

A more robust method for future studies would be to use methods such as ecological momentary assessment (EMA) in order to measure the duration between urges and NSSI in real time. This approach has yielded promising results in understanding links between urgency and NSSI, with one study finding that negative urgency interacts with negative mood to predict NSSI urges (Bresin et al., 2013), and another showing that impulsive urges can predict NSSI in borderline personality disorder (Ammerman, Olino, Coccaro, & McCloskey, 2017). Other recent evidence shows that urgency is reliably associated with multiple behaviors and emotion captured via EMA, including negative mood and problematic behaviors (Sperry, Lynam, Walsh, Horton, & Kwapil, 2016). However, these methods have not yet been applied to the question of duration between urges and injury itself. A recent review of the EMA and NSSI literature shows that EMA methods can reliably document changes in emotion that occur prior to NSSI (Rodríguez-Blanco, Carballo, & Baca-García, 2018). Thus, future studies could integrate trait measures of urgency with momentary assessments of emotion and thoughts about NSSI to determine whether individuals who score higher on trait urgency scales have shorter latencies between affective triggers and engagement in NSSI.

Another explanation for this null finding involves the functions of NSSI. Individuals engage in NSSI for many different reasons (Nock & Prinstein, 2004; Klonsky & Glenn, 2009), and we did not assess functions of NSSI in the present study. Some functions of NSSI, such as emotion regulation and NSSI as escape/avoidance behavior, have been associated with negative urgency, while other functions, such as NSSI to avoid suicidal ideation, are not associated with urgency (Claes & Muehlenkamp, 2013). Other evidence suggests a link between negative urgency and high levels of shame-proneness as joint predictors of more frequent engagement in NSSI (Wielgus, Hammond, Fox, Hudson, & Mezulis, 2018), suggesting that links between urgency and interpersonal functions of NSSI may be important to explore. Given the clinical heterogeneity among the relatively large sample used in the present study, it is likely that participants have different motivations for NSSI that could affect the latency between urges and action. For example, people who engage in NSSI to regulate negative emotion might be more likely to have a short duration between urges and action if negative urgency is high. In addition, the same individual may have different motivations for NSSI at different times, further underscoring the need for EMA methods to elucidate potential intra-individual differences. Future studies would do well to assess motivations for self-injury as a potential moderator of links between urgency and NSSI.

Finally, it is important to consider the possibility that negative urgency is in fact not related to latency to self-injure. Latency to engage in NSSI could be tied to alternative cognitive and affective mechanisms potentially shared by NSSI and negative urgency, such as inhibition deficits or distress intolerance. If future studies using different methodology find similar null findings, it will be important to consider alternative mechanisms that warrant study.

Positive urgency (rash action during strong positive mood states) was also unexpectedly related to a higher likelihood that individuals would report longer delays between urges and NSSI. Although some previous research identifies a link between higher levels of positive urgency and some aspects of NSSI (Anestis et al., 2014; Claes et al., 2015; Dir et al., 2013), we are not aware of previous theory or experimental findings to suggest that impulsive reactions to positive mood would lead to a longer delay between urges and NSSI. Given the unexpected nature of this finding and the relatively small size of the effect, we cannot rule out the possibility that this finding is spurious. Nevertheless, this discrepancy points to the need to assess multiple affective dimensions of urgency in future research on NSSI and impulsivity.

Strengths of the study include the large, transdiagnostic psychiatric sample. The large sample size ensured adequate power to detect even small effects; thus, we can be confident that the failure to support the primary hypothesis regarding NSSI latency is not due to a lack of power. Several limitations of the present study are also important to note. As discussed above, this study relies on a self-report, retrospective measure of duration between self-harm urges and action, and thus is susceptible to potential under- or over-estimation of this critical time. Symptom measures were similarly brief and self-reported, which limits the ability to fully control for comorbid current psychopathology. Also, patients included in this present study were predominantly white, non-Hispanic/Latino individuals; thus, generalizability is limited by the lack of racial and ethnic diversity in our sample.

In summary, this study illustrates the strong relationship between negative urgency and history of NSSI in an acute, treatment-seeking sample. Together with previous meta-analyses documenting links between urgency and NSSI, this study shows that high levels of negative urgency are a robust feature of individuals who report a history of NSSI. Although we did not find support for the hypothesis that latency to self-injure would be related to urgency, future research using more robust EMA methods and incorporating measurement of NSSI functions may help to clarify if urgency accelerates the latency between urges and action.

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Table 1

Demographic and Clinical Characteristics of Sample

Demographic and Clinical Characteristics	**N (%) or *M*(SD)**	
Sex (% female)	382 (57.1)	
Age	32.61 (13.60)	
Race		
American Indian or Alaskan Native	1 (0.2)	
Asian	28 (4.3)	
African American or Black	10 (1.5)	
White	584 (88.9)	
Do Not Know	3 (0.5)	
More Than One Race	31 (4.7)	
Marital Status		
Never Married	425 (63.6)	
Married	58 (8.7)	
Living with Partner	5 (0.7)	
Divorced/Separated	148 (22.2)	
Widowed	32 (4.8)	
Hospitalized in Psychiatric Program Last 6 Mos.		
Yes	297 (44.5)	
No	370 (55.5)	
S-UPPS		
Positive Urgency	1.91 (0.77)	
Negative Urgency	2.70 (0.74)	
Any NSSI	317 (47.4)	
Primary Diagnosis	***N***	**(%)**
Major Depressive Disorder	388	58.0%
Bipolar Disorder	153	22.9%
Anxiety Disorders/OCD/PTSD	77	11.5%
Primary Psychotic Disorder	43	6.4%
Diagnosis not available	8	1.2%

Table 2

Descriptive Statistics and Group Differences for Total Sample and for Participants with History of NSSI

A. Total Sample (N=669)						B. NSSI History (N=287)				
Variable	**NSSI**	**No NSSI**	**t-test/χ^2**	***N***	***d***	**<1 Hour**	**+1 Hour**	**t-test/χ^2**	***n***	***d***
Neg. Urgency	2.91 (.68)	2.51 (.74)	-7.26^{***}	669	.56	2.97 (.67)	2.88 (.69)	1.07	287	.13
Pos. Urgency	1.96 (.77)	1.86 (.77)	−1.71	663	.13	1.95 (.78)	2.04 (.76)	−1.03	286	−.12
Age	28.66 (10.63)	36.17 (14.95)	7.54^{***}	667	−.58	30.05 (11.20)	25.69 (8.59)	3.56^{***}	286	.42
Sex (% female)	64.35	50.57	12.94^{***}	669		60.95	67.80	1.41	287	
GAD-7	12.46 (5.03)	11.13 (5.43)	-3.27^{**}	661	.25	12.85 (4.65)	11.74 (5.49)	1.79	282	.21
BASIS-Dep	2.58 (.84)	2.24 (.98)	-4.79^{***}	662	.37	2.63 (.83)	2.46 (.82)	1.76	286	.21
NSSI Age	-	-	-	-	-	17.34 (8.46)	15.94 (6.36)	1.58	281	.19
# NSSI Types	-	-	-	-	-	3.22 (2.10)	3.20 (2.21)	.08	287	.01

Note.

* significant at $p < 0.05$;

** significant at $p < 0.01$;

*** significant at $p < 0.001$.

d = Cohen's *d*.

Table 3

Characteristics of NSSI in Men and Women (N = 317)

ISAS Item	Women N(%) or M(SD)	Men N(%) or M(SD)	*t* or χ^2
NSSI onset age (*n* = 306)	16.38 (7.41)	16.98 (7.73)	−.67
Most recent NSSI (*n* = 308)			2.92
Today	7 (3.5%)	1 (0.93%)	
Within the last 7 days	37 (18.5%)	16 (14.81%)	
Within the last 30 days	44 (22%)	26 (24.07%)	
Within the last 6 months	41 (20.5%)	26 (24.07%)	
Within the last year	21 (10.5%)	11 (10.19%)	
More than a year ago	50 (25%)	28 (25.93%)	
Type of NSSI Endorsed (*n* = 317)			
Cutting	135 (66.18%)	49 (43.36%)	15.54***
Biting	48 (23.53%)	21 (18.58%)	1.04
Burning	44 (21.57%)	25 (22.12%)	.01
Carving	18 (8.82%)	4 (3.54%)	3.14
Pinching	57 (27.94%)	20 (17.70%)	4.15*
Pulling Hair	65 (31.86%)	34 (30.01%)	.11
Severe Scratching	78 (38.24%)	18 (15.93%)	17.24***
Banging or Hitting Self	88 (43.14%)	63 (55.75%)	4.64*
Interfering with wound healing	102 (50.0%)	40 (35.40%)	6.27*
Rubbing skin against rough surface	21 (10.29%)	10 (8.85%)	.17
Sticking self with needles	18 (8.82%)	5 (4.42%)	2.09
Swallowing dangerous substances	15 (7.35%)	7 (6.19%)	.15
Embedding objects	2 (0.98%)	3 (2.65%)	1.31
Other SIB	2 (0.98%)	6 (5.31%)	5.54*
Total NSSI Methods Endorsed (*n* = 317)	3.40 (2.25)	2.70 (1.91)	263.85**

Note.

* significant at $p < 0.05$;

** significant at $p < 0.01$;

*** significant at $p < 0.001$