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The relationship between trait impulsivity, negative affective states, and urge for nonsuicidal self-injury: A daily diary study

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ABSTRACT

Theories of nonsuicidal self-injury (NSSI) and impulsivity suggest that individuals with high levels of negative urgency (e.g., those with a propensity to act rashly while experiencing negative affect) should experience the urge to engage in NSSI during negative affect states. However, previous research has not directly tested these predictions. This study used a daily diary methodology in a sample of individuals who engaged in NSSI in the last year. Participants completed self-report measures of trait impulsivity and subsequently made daily ratings of negative affect, sadness, guilt, and urge to engage in NSSI for 14 days. Our results indicated that for individuals high in negative urgency, daily sadness, but not guilt or general negative affect, was a positive predictor of urge to engage in NSSI. Meanwhile, for those low in negative urgency, sadness was unrelated to NSSI urge. Implications for theories of NSSI and treatment are discussed.

1. Introduction

Nonsuicidal self-injury (NSSI) is the intentional destruction of body tissue without suicidal intent (Nock, 2009). One theory as to why people engage in NSSI is that the behavior functions as a maladaptive strategy for coping with intense negative affect (NA; Chapman et al., 2006). Theories of impulsivity suggest that certain individuals may be more likely to engage in rash actions (e.g., NSSI) while experiencing intense affect (Cyders and Smith, 2008). Consistent with this, previous research has found evidence of increased levels of trait impulsivity in individuals with a history of NSSI (Glenn and Klonsky, 2010). However, to date, these studies have been cross-sectional and have not tested the trait by state interactions proposed by theory. To address limitations of the current research, we conducted a daily diary study to test the hypothesis that negative urgency and state affect would interact to predict daily NSSI outcomes.

1.1. The affect regulation function of nonsuicidal self-injury

One of the many proposed functions of NSSI is to reduce NA (Nock and Prinstein, 2004). More specifically, it has been proposed that the urge to engage in NSSI may occur during high NA states, and following the actual act of NSSI, NA states may be momentarily reduced (Chapman et al., 2006; Nock, 2009). Support for the affect regulation function of NSSI comes from multiple lines of research. Retrospective recall studies suggest that feelings such as tension, sadness, and anger towards the self precede NSSI (Kamphuis et al., 2007; Klonsky, 2009). However, these studies are subject to recall bias. Laboratory studies suggest that proxies for NSSI (imagery scripts, pain) led to a reduction in NA (Haines et al., 1995; Franklin et al., 2010). Still, there may be important differences between the experience of laboratory pain and actual NSSI.

To reduce the impact of these limitations, some researchers have used ecological momentary assessment (EMA), which consists of repeated assessments in the participant's natural environment. This method allows for assessment of affect in the moment (Shiffman et al., 2008). Moreover, researchers can measure changes in NA in relation to actual NSSI urges and incidents. Using EMA in a sample of adolescents, Nock et al. (2009) found that feelings such as anger towards the self and others predicted engagement in NSSI. Muehlenkamp et al. (2009) found a significant increase in NA in the hours leading up to NSSI, but no significant change in NA following the incident. Finally, Armey et al. (2011) found a significant quadratic slope for both NA and guilt (but not hostility) around NSSI incidents, meaning that in the hours leading up to engagement in NSSI, participants experienced an increase in NA and guilt and following NSSI these feelings decreased. Taken together, these results indicate that increased momentary NA may increase the likelihood of NSSI.

One limitation of the current literature is that studies have not tested the interaction between trait and state predictors proposed by theoretical models (e.g., Chapman et al., 2006). Another

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limitation is many studies have focused on NA in general. NA is composed of other lower order factors including: sadness, guilt, fear, and hostility (Watson and Clark, 1994). As the results of Armey et al. (2011) indicate, particular NA states may have a stronger relationship to NSSI than others. Finally, current research has largely focused on actual NSSI engagement. It seems probable that there would also be clinical utility in examining urges to engage NSSI as they may provide an opportunity for intervention prior to NSSI.

1.2. Nonsuicidal self-injury and impulsivity

Impulsivity is an individual difference that has been proposed as theoretically important for NSSI (Chapman et al., 2006). However, the relationship between impulsivity and NSSI in research has been inconsistent. Studies using behavioral measures of impulsivity (e.g., the continuous performance task) have found no significant differences between individuals with and without a history of NSSI (Glenn and Klonsky, 2010; Janis and Nock, 2009). On the other hand, studies have found that individuals with a history of NSSI report higher levels of self-reported impulsivity (Glenn and Klonsky, 2010; Herpertz, et al., 1997). One possible explanation for these divergent results is that individuals who engage in NSSI only perceive themselves to be more impulsive. Still, the results of a recent meta-analysis indicate that the relationship between self-report and behavioral measures of impulsivity is small (Cyders and Coskunpinar, 2011). Furthermore, each may explain unique variance in psychopathology (Bornovalova et al., 2008). An alternative explanation is that individuals who engage in NSSI are only more impulsive behaviorally while experiencing intense NA.

Psychometric work has indicated that self-report impulsivity is a multi-faceted construct consisting of five factors (Whiteside and Lynam, 2001; Cyders et al., 2007). Of these factors, negative urgency, or the tendency to engage in risky behavior during periods of NA, appears most likely to be related to NSSI. For instance, Glenn and Klonsky (2010) found that college undergraduates with a history of NSSI reported higher levels of negative urgency than those with no history of NSSI. Similarly, Snorrason et al. (2011) found that when controlling for the other impulsivity factors, negative urgency was a significant predictor of pathological skin picking, a possible form of NSSI. However, these studies are limited in that they are cross-sectional and do not examine the interaction with state affect predicted by NSSI models.

1.3. Current study

Theories of NSSI propose that the urge to engage in NSSI is likely to occur for certain individuals in negative affective states (e.g., Chapman et al., 2006). Similarly, models of impulsivity predict that individuals high in negative urgency will have a propensity to act rashly when experiencing intense levels of NA (Cyders and Smith, 2008). In spite of the parallel hypotheses of these theories, no previous study to our knowledge has tested these interactive predictions. Therefore, we conducted a daily diary study to test these predictions in a sample of participants with a history of NSSI in the last year. Participants completed self-report measures of trait impulsivity and subsequently made daily ratings of affect, NSSI, and NSSI engagement for 14 days. As mentioned below, the frequency of NSSI engagement was too low to be used in analyses. Hence, we focus our predictions on NSSI urge.

We examined three different types of NA. We focused on a subset of NA types to reduce participant burden in our daily diary protocol. To be most consistent with theories of NSSI and negative urgency (Chapman et al., 2006; Cyders and Smith, 2008), we first tested if negative urgency moderated the effect between general NA and NSSI urge. We also explored two specific types of NA: guilt and sadness. Guilt was chosen for theoretical reasons, based on the self-punishment hypothesis, which suggests that NSSI is a form of punishment meant to alleviate anger towards the self (Chapman et al., 2006; Schoenleber and Berenbaum, 2012). Also, as reviewed above, Armey et al. (2011) found that guilt, but not hostility, significantly increased leading up to NSSI. Sadness was chosen because individuals retrospectively report experiencing sadness, depression, and loneliness prior to NSSI (Kamphuis et al., 2007; Klonsky, 2009). Furthermore, sadness is a form of deactivated displeasure, which differs from other types of NA, which are activated displeasure (Yik, et al., 2011). Therefore, sadness provided an interesting contrast in terms of arousal (or activation) at negative valence. We chose not to measure daily fear because, to our knowledge, previous research has not indicated a relationship between fear and NSSI (Kamphuis et al., 2007; Klonsky, 2009). We chose not to measure daily hostility due to the theoretical argument that anger directed toward the self should be related to NSSI, while anger in general should be related to other-directed aggression (Schoenleber and Berenbaum, 2012). Furthermore, Armey et al. (2011) did not find an increase in hostility in relation to NSSI incidents. Our prediction in all three types of affect measured was that negative urgency would interact with state NA to predict NSSI urge, such that at high levels of negative urgency, higher levels of state NA would be related to an increased NSSI urge.

2. Method

2.1. Participants

We screened 1612 college undergraduates using the Deliberate Self-Harm Inventory (DSHI; see below; Gratz, 2001) for participation in this study. Eight percent of participants indicated that they had engaged in NSSI in the past 12 months, 15% indicated engaging in NSSI more than 12 months ago. To ensure the clinical relevance of the sample, we recruited individuals with at least one NSSI incident in the last year (e.g., Glenn and Klonsky, 2010; Nock and Banaji, 2007).

We recruited 67 participants (38 female) for the study via e-mail. The mean age was 19.58 years (S.D.=2.94). The median frequency of lifetime NSSI incidents was 15 (*range*=1–1000). The participants used a mean number of 3.12 methods of NSSI (S.D.=1.94). Table 1 displays the prevalence of specific NSSI methods. The average time since the last NSSI incident was six months (S.D.=4.8).

2.2. Assessment measures

2.2.1. Screening

Potential participants completed the DSHI (Gratz, 2001) on a secure website. The DSHI is a 17-item questionnaire that assesses the lifetime history of deliberate self-injury without the suicidal

Table 1
Frequency of nonsuicidal self-injury methods.

Method	Frequency	Percent
Cutting	33	50.77
Burning	20	30.77
Carved words into skin	20	30.77
Carved pictures into skin	19	29.23
Severe scratching	27	41.54
Self-biting	5	7.69
Sticking sharp object into skin	14	21.54
Head banging	16	24.62
Self-punching	18	27.69

Note. $N=67$.