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I Want You to Want Me: Interpersonal Stress and Affective Experiences as Within-Person Predictors of Nonsuicidal Self-Injury and Suicide Urges in Daily Life

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Objective: To investigate near-term risk for self-injurious urges, we evaluated how within-person changes in internalizing and externalizing negative affect, as well as interpersonal rejection and criticism, impact subsequent nonsuicidal self-injury (NSSI) and suicide urges in daily life.
Method: Young adult women ($N = 62$) from an ongoing community cohort study with past-year self-injurious thoughts completed a 21-day ecological momentary assessment protocol. We used multilevel path analyses to model within-person effects of negative affect and interpersonal stress on subsequent suicide and NSSI urges within several hours.
Results: When modeled simultaneously, within-person changes in internalizing, but not externalizing, negative affect predicted later self-injurious urges. Rejection and criticism predicted later self-injurious urges, with rejection showing a unique relationship to NSSI urges specifically. Effects of rejection and criticism on later NSSI and suicide urges were mediated by internalizing negative affect; rejection also retained a significant direct effect on NSSI urges.
Conclusion: Interpersonal stressors may be potent near-term risk factors for self-injurious urges by increasing internalizing negative affect among vulnerable individuals. The direct role of rejection and criticism on self-injurious urges is less clear, particularly for suicide. These findings have implications for understanding processes underlying self-injurious urges, as well as designing real-time interventions for these experiences in daily life.

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Self-injurious thoughts and behaviors (SITB) include a range of distinct, but related, phenomena, such as suicide attempts, nonsuicidal self-injury (NSSI), and thoughts, urges, or plans to engage in these behaviors (Nock, 2009). Although these experiences are conceptually distinct, they frequently co-occur (Hamza, Stewart, & Willoughby, 2012), and greater severity of one SITB can increase the likelihood of other SITB (Victor & Klonsky, 2014a). SITB are associated with multiple types of psychopathology (Bentley, Cassiello-Robbins, Vittorio, Sauer-Zavala, & Barlow, 2015), large societal costs (Czernin et al., 2012), and, of greatest concern, death by suicide (Ribeiro et al., 2016). In spite of decades of research on SITB at the between-persons level, which tells us generally who is at risk, we still know little about when and under what conditions vulnerable individuals may be more likely to experience SITB (i.e., within-person changes that contribute to near-term fluctuations in SITB). Identification of processes that prospectively and proximally increase likelihood of self-injurious urges at the individual level is necessary to improve our theoretical understanding of these phenomena and to develop novel, just-in-time interventions to prevent self-injurious behavior and death by suicide.

AFFECTIVE EXPERIENCES AND SITB

Theoretical models and empirical research at the between-person level highlight how negative affect contributes to SITB. NSSI is commonly used to decrease or avoid aversive negative affect (Chapman, Gratz, & Brown, 2006; Klonsky, 2007), and suicidality can be a response to complex negative affective experiences, such as psychache (Shneidman, 1993) and hopelessness (Beck, Kovacs, & Weissman, 1975). Recently, innovative theories of suicide have highlighted how entrapment (O'Connor, 2011) and pain together with hopelessness about improvements in pain (Klonsky & May, 2015) contribute to suicide ideation. Empirical research has often focused on depression and anxiety as broad indices of negative affect relevant to SITB; for example, a systematic review of 30 studies addressing this topic included only one study that assessed specific types of negative affect related to SITB (Moller, Tait, & Byrne, 2013).

Although studies at the between-person level support the relationship between painful negative emotions and SITB, they fail to explain why and how urges to engage in these behaviors vary over time within any individual's daily life. Thus, research parsing within- and between-person variance is needed to identify how affective experiences contribute to proximal changes in SITB risk. The few within-person studies published thus far using ecological momentary assessment (EMA) methods, which provide intensive repeated measures of dynamic experiences such as mood and SITB, have shown within-person increases in negative affect are proximally associated with SITB in daily life (Muehlenkamp et al., 2009). Much of this work has focused on negative affect broadly (Anestis et al., 2012; Bresin, 2014) or on internalizing emotions, such as sadness, anxiety, and shame (Bresin, Carter, & Gordon, 2013), as near-term predictors of SITB. In some cases, research suggests a bidirectional relationship between negative affect and SITB; for example, among adults with borderline personality disorder, negative affect and NSSI show a bidirectional relationship in daily life (Houben et al., 2017).

Research assessing how SITB relates to within-person changes in different types of negative emotions, including both internalizing emotions and externalizing emotions such as anger, has yielded mixed results. For example, in an EMA study of young adults, NSSI episodes were preceded by increases in both types of emotions over the course of hours (Armey, Crowther, & Miller, 2011). In an EMA study of community adolescents, internalizing emotions were the most commonly endorsed affective precipitants to thoughts of NSSI and suicide; externalizing emotions were also quite common, however, and were more strongly

associated with thoughts of suicide than with thoughts of NSSI (Nock, Prinstein, & Sterba, 2009). In a daily diary study assessing young adults with a history of NSSI and disordered eating, NSSI behaviors were most often reported in the context of feeling overwhelmed, sad/worthless, and rejected/hurt, although roughly one quarter of NSSI episodes occurred in response to feeling angry at others (Turner, Yiu, Claes, Muehlenkamp, & Chapman, 2016). In research with adults using structured interview methods to assess the 48 hr prior to a medically serious suicide attempt, both internalizing and externalizing emotions increased in the hours prior to an attempt (Bagge, Littlefield, & Glenn, 2017). These data suggest that both internalizing and externalizing negative emotions may precede SITB, with some evidence speaking to the relative importance of internalizing negative affect as a near-term risk factor, particularly for NSSI. Importantly, much of the aforementioned research evaluating multiple types of negative affect in relation to SITB (with the exception of Armey et al., 2011) has relied on participants' retrospective recall of experiences that preceded SITB, reported following a SITB episode, rather than assessing affective states regularly over the course of hours, days, or weeks and linking these to later SITB.

INTERPERSONAL EXPERIENCES AND SITB

Modern theoretical work also highlights interpersonal factors in the development and maintenance of self-injurious thoughts and urges, such as the roles of perceived burdensomeness and thwarted belongingness in suicidal desire (Joiner, 2007) and the protective role of connectedness against high levels of suicide ideation (Klonsky & May, 2015). Empirical work has also shown that interpersonal stress is associated with SITB at the between-person level. Individuals with a history of NSSI report more peer victimization (van Geel, Goemans, & Vedder, 2015) and interpersonal conflicts (Selby, Bender, Gordon, Nock, & Joiner, 2012) than those without NSSI. Elevated levels of interpersonal stress have been found for adults who attempted suicide (Brodsky, Groves, Oquendo, Mann, & Stanley, 2006) as well as in psychological autopsy research with youth who died by suicide (Brent et al., 1993). Research also suggests that perceived criticism is associated with suicidal thoughts and behaviors through its impact on feelings of belongingness (Hagan & Joiner, 2015). Experiencing interpersonal stress in the context of low social support is also prospectively associated with SITB among youth (Mackin, Perlman, Davila, Kotov, & Klein, 2017).

Interpersonal stress has also been shown to correspond to near-term, within-person changes in SITB risk, although direct comparisons focused on stressor specificity have been limited. In addition, as described earlier, many studies assessed antecedents to SITB after the SITB itself had already occurred, which may be subject to recall bias. For example, adolescents and young adults assessed with EMA retrospectively reported that suicide and NSSI thoughts were often preceded by conflicts, rejection, or criticism from others (Nock et al., 2009). Conflicts were the most common antecedents of both NSSI and suicide thoughts, followed by rejection and then criticism, although differences in prevalence between these types of stressors were not evaluated statistically (Nock et al., 2009). Among young adults reporting daily on NSSI behaviors and related stressors, the most common retrospectively reported stressors occurring prior to NSSI were arguments/conflicts, being isolated/alone, feeling another person was disappointed in the participant, being let down/having a promise broken, and being rejected, although these stressors were not directly compared (Turner et al., 2016). Further, adults interviewed following a medically serious suicide attempt were significantly more likely to report an acute interpersonal life event on the day of their suicide attempt than on the day prior, with events related to one's

spouse or partner showing the greatest effect; noninterpersonal life events did not differ in prevalence across the days assessed (Bagge, Glenn, & Lee, 2013; Bagge, Lee, et al., 2013).

Some research using real-time, rather than retrospective, assessments of potential predictors and correlates also highlights the role of interpersonal factors in SITB risk. Among adults with a past-year history of attempted suicide, increases in feeling like a burden on others, but not loneliness, predicted subsequent increases in suicidal thoughts assessed with EMA (Kleiman et al., 2017). In a study of adults with personality disorders, rejection and isolation predicted subsequent NSSI over the course of hours, but other interpersonal stressors were not assessed (Snir, Rafaeli, Gadassi, Berenson, & Downey, 2015). Taken together, these studies are consistent with research highlighting the relationship between rejection and psychopathology (Slavich, O'Donovan, Epel, & Kemeny, 2010); however, more research is needed to directly compare rejection with other interpersonal stressors, such as criticism, as near-term risk factors for SITB, particularly suicide ideation.

JOINT CONTRIBUTIONS OF INTERPERSONAL AND INTRAPERSONAL EXPERIENCES AND SITB

Although previous research strongly supports affective experiences and interpersonal stress as risk factors for SITB, it is less clear how these experiences contribute to near-term SITB risk when considered jointly as dynamic within-person processes. At the between-person level, parental and peer relationship characteristics have been found to relate to NSSI indirectly through their impact on emotion dysregulation in young adults (Yurkowski et al., 2015). The reverse, however, has also been found among adolescents; relationship problems predicted later NSSI, while negative affect only predicted later NSSI indirectly through relationship problems (You, Leung, & Fu, 2012). Although interpersonal stress and negative affect have a bidirectional relationship in daily life (Hepp et al., 2017), research focusing on these constructs as they relate to SITB at the within-person level remains lacking.

THE PRESENT STUDY

This study sought to clarify near-term risk factors for NSSI and suicide urges in the daily lives of young adult women using EMA methodology. Research indicates that NSSI urges are associated with frequency of NSSI itself (Washburn, Juzwin, Styer, & Aldridge, 2010) and that more intense thoughts about NSSI predict increased odds of engaging in NSSI behaviors (Nock et al., 2009). Meta-analytic work demonstrates that the desire for suicide predicts subsequent attempted suicide and death by suicide (Ribeiro et al., 2016), as well as poorer self-efficacy to cope with suicidal crises, which prospectively predicts suicide attempts (Czyz et al., 2016). Participants completed assessments of affective states, interpersonal stressors, and urges for NSSI and suicide multiple times per day for 21 days, allowing us to focus on within-person changes in stress and affect that temporally precede self-injurious urges. We examined within-person momentary changes (relative to each person's average levels) in affective experiences and interpersonal stressors as predictors of subsequent self-injurious urges over the course of hours. Our specific questions and corresponding hypotheses are described below.

Question 1: What affective experiences most strongly predict self-injurious urges?

We considered how within-person increases in internalizing negative affect (Internalizing NA; e.g., fear, shame, sadness) and externalizing negative affect (Externalizing NA; e.g., hostility, anger, irritability) related to later urges for NSSI and suicide. We focus explicitly on negative affect, given research suggesting that

SITB are most often preceded by increased negative, but not decreased positive, affect (Claes, Klonsky, Muehlenkamp, Kuppens, & Vandereycken, 2010; Victor, Glenn, & Klonsky, 2012). On the basis of literature emphasizing the relationship of SITB with Internalizing NA (Victor & Klonsky, 2014b) and self-directed negative affect, such as shame (Schoenleber, Berenbaum, & Motl, 2014), we hypothesized that in univariate analyses, within-person increases in Internalizing NA would positively predict subsequent urges for both NSSI and suicide, while increases in Externalizing NA would show a statistically significant, but weaker, relationship to later self-injurious urges. In a multivariate context, we hypothesized that increases in Internalizing NA, but not Externalizing NA, would retain a unique significant relationship to within-person changes in NSSI or suicide urges.

Question 2: What Interpersonal Stressors most Strongly Predict Self-Injurious Urges?

We evaluated how feeling insulted or criticized (Criticism) and feeling rejected, abandoned, excluded, or left out (Rejection) in daily life was associated with subsequent changes in desire to engage in NSSI or suicide. We hypothesized that in univariate analyses, intraindividual increases in each type of interpersonal stress would positively predict subsequent NSSI and suicide urges. On the basis of research showing that rejection is a more commonly reported antecedent to NSSI and suicide thoughts than criticism (Nock et al., 2009; Turner et al., 2016), as well as research suggesting that the impact of criticism on suicidality is mediated by decreases in belongingness, which is consistent with feeling rejected or excluded (Hagan & Joiner, 2015), we hypothesized that Rejection, but not Criticism, would remain significantly associated with subsequent within-person changes in each type of self-injurious urge in a multivariate context.

Question 3: Does Affect Mediate the Relationship between Interpersonal Stress and Self-Injurious Urges?

We considered whether the prospective relationship between interpersonal stress and NSSI and suicide urges would be mediated by changes in negative affect associated with the stressor. We hypothesized that given the strong relationships between negative affect and both social rejection (Leary, 2015) and critical feedback (Reijntjes, Dekovic, Vermande, & Telch, 2008), there would be no significant direct effect of either type of interpersonal stress on NSSI and suicide urges when negative affect was included as a mediator of this relationship, but that interpersonal stressors that were significantly related to self-injurious urges in earlier analyses would have significant indirect effects on later NSSI or suicide urges through negative affect.

METHODS

Participants and Recruitment Procedures

Participants were recruited from the Pittsburgh Girls Study (PGS), a longitudinal community cohort study of women who have been followed from ages 5 to 8 at study onset (2000/2001) to present. The PGS includes 2,450 women recruited from an urban area, oversampling neighborhoods in which at least 25% of resident families were living at or below the federal poverty level (see Keenan et al., 2010 for further information on study design).

This substudy was designed to evaluate the relationships between personality, affect, impulsive aggression toward others, and SITB. Women who completed a PGS assessment from 2014 to 2017, were at least 18 years old at the time of the assessment, and endorsed aggressive behavior (physical, verbal, or relational) and/or SITB in the year prior to assessment were potentially eligible to participate. In order to ensure adequate within-person variability in these constructs during the EMA protocol, women were then further screened by telephone to assess

recency of their aggressive behaviors and/or SITB, and only women who reported aggression or SITB in the month prior to screening were invited to participate. A total of 166 women consented to participate; four women subsequently dropped out of the EMA portion of the study (completing less than five of 42 scheduled assessments during week 1 of the EMA, followed by no assessments in week 2 or 3), leaving 162 women with usable EMA data.

Due to our focus on within-person predictors of NSSI and suicide urges, we restricted analyses to women who reported at least one urge to engage in NSSI or suicidal behavior within the past year (n = 63). One participant was an outlier on all EMA indices of interest, including self-injurious urges (values 3–16 standard deviations above the mean). This participant was excluded from further analysis, leaving 62 participants with past-year self-injurious urges in our final data set. Participants ranged in age from 18 to 24 (M = 22.0, SD = 1.6) and primarily identified as African American (71.0%) or non-Hispanic Caucasian (24.2%). All participants identified as female, and most identified as heterosexual (62.3%). Most participants were employed full-time or part-time (58.1%), and over half (56.5%) were receiving public assistance for which eligibility is tied to low income, such as Medicaid.

Although our analyses were limited to self-injurious urges in daily life, we have provided some information about types of lifetime SITB reported at baseline to characterize our sample. All participants reported a history of suicide ideation, a large majority (67.7%) reported NSSI thoughts, and over half (54.8%) reported NSSI behaviors. Interestingly, suicide plans (33.9%) were less common than suicide attempts (41.9%). The average participant endorsed three types of lifetime SITB (M = 3.0, SD = 1.3). Almost two-thirds (64.5%) reported past-month SITB; the most common types of recent SITB were suicidal thoughts (53.2%) and NSSI thoughts (32.3%). Details on the demographic and SITB characteristics of the sample are given in Table 1.

TABLE 1
*Descriptive characteristics of sample (*N = *62)*

Demographics	Mean (SD) *or* % (n)
Age	22.00 (1.55)
Race and ethnicity	
Non-Hispanic Caucasian	24.19 (15)
Non-Hispanic African American	69.35 (43)
Hispanic African American	1.61 (1)
Multiracial/biracial	4.84 (3)
Employment	
Employed full-time	27.42 (17)
Employed part-time	30.65 (19)
Unemployed—homemaker	3.23 (2)
Unemployed—on disability	0 (0)
Unemployed—not working	38.71 (24)
Receiving public assistance	56.45 (35)
Sexual orientation	
Heterosexual	61.29 (38)
Gay, lesbian, or homosexual	11.29 (7)
Bisexual	25.81 (16)
Not sure	1.61 (1)
Self-injurious thoughts and behaviors (SITB)	
Lifetime	
Suicide ideation	100 (62)
Suicide plan	33.87 (21)
Suicide attempt	41.94 (26)
Nonsuicidal self-injury (NSSI) thoughts	67.74 (42)
NSSI behaviors	54.84 (34)
Past-month SITB	64.52 (40)
Number of lifetime SITB types	2.98 (1.27)

Each SITB type was assessed using the following wording: suicide ideation ("thoughts of killing yourself"), suicide plan ("actually made a plan to kill yourself"), suicide attempt ("made an actual attempt to kill yourself in which you had at least some intent to die"), NSSI thoughts ("thoughts of purposely hurting yourself without wanting to die, for example, cutting or burning"), NSSI behaviors ("actually engaged in NSSI"). Number of lifetime SITB types refers to the number of types (0 to 5) a person has experienced in their lifetime, regardless of the frequency reported for any specific SITB type.

General Study Procedures

Eligible participants were invited to the laboratory to complete self-report questionnaires and semistructured diagnostic

interviews, as well as to receive training on completing the EMA portion of the study. At the conclusion of the session, participants were provided with a study cellular phone to complete EMA entries over the subsequent three weeks. Participants were compensated for their participation in the laboratory and EMA components of the study. All study procedures were conducted in accordance with the Human Research Protection Office at the University of Pittsburgh (Institutional Review Board Protocol Number: PRO13050 549).

Ecological Momentary Assessment Procedures

The EMA protocol included three weeks (21 days) of assessment prompts (i.e., "beeps"); each beep was comprised of a text message to the study phone with a link to a secure, password-protected Web server, and followed by up to two reminders. Each day included one beep 15 minutes after participants' self-reported wake time, in addition to six beeps at pseudo-random intervals between the morning beep and participants' self-reported bedtime (seven beeps total per day). All beeps included items to assess participants' affect, while random beeps, but not the morning beep, also included assessments of interpersonal stress and self-injurious urges. Participants were able to complete assessments at any time before the next beep, with the exception of the last beep of the day, which stayed open until 3 AM. Further details of the EMA protocol (e.g., randomization of beeps, timing of reminders, ongoing monitoring of data collection) can be found in the work by Scott and colleagues (Scott et al., 2017).

Participant compliance was encouraged through a payment structure that incentivized completion of at least 85% of EMAs (125 assessments of 147 total). Participants completed between 35 and 141 entries, with a median of 122.5 (M = 110.58, SD = 28.75). Slightly under half of participants (n = 29, 46.8%) achieved 85% compliance; over two-thirds (n = 43, 69.4%) completed at least 70% of expected entries, and 80.6% (n = 50) completed at least 50% of expected entries. As our analyses involved the use of lagged variables from within the same day of assessment, we were primarily concerned with the amount of time between assessments within, rather than across, each day. Participants completed assessments a median of 2.27 hr apart (M = 4.35, SD = 6.08). In order to ensure that our assessment of affect at each beep was distinct from that at previous beeps, we removed assessments that occurred within 15 min of a prior beep. Eliminating such assessments removed 82 (1.18%) of a total of 6,938 assessment entries across the 62 participants, yielding 6,856 entries across all participants.

Ecological Momentary Assessment Measures

Affective Experiences. At every beep, including morning assessments, participants rated the extent to which they felt a series of emotions in the 15 min prior to the beep using a 1–5 Likert scale, where 1 indicated "not at all" and 5 indicated "extremely." By taking the mean of two subsets of these items, we constructed scales for Internalizing NA (ashamed, guilty, scared, lonely, sad) and Externalizing NA (hostile, irritable, angry at others, annoyed, mad). Using methods described by Cranford et al. (2006), each scale demonstrated acceptable between- and within-person reliability (Internalizing NA: .98 and .76; Externalizing NA: .97 and .86). Although these constructs were moderately correlated (r = .52, p < .001), their variance inflation factor (VIF) was 1.36, indicating absence of significant multicollinearity. Intraclass correlation coefficients (ICCs) indicated that 39.7% of the variance in Internalizing NA and 21.5% of the variance in Externalizing NA were at the between-person level, meaning a majority of the variability in these constructs occurred within individuals over time.

Interpersonal Experiences. At each random beep (i.e., all except morning assessments), participants were asked "Since the

last prompt have you" followed by "felt insulted or criticized" (Criticism) and "felt rejected, abandoned, excluded, or left out" (Rejection). No questions regarding interpersonal experiences were included in the morning assessment, which occurred 15 minutes after participants' self-reported wake time. Participants rated these items on a 1–5 Likert scale, ranging from 1 (not at all) to 5 (extremely). Most participants endorsed some experience of Rejection (88.71%) and Criticism (79.03%) during the EMA; Rejection was endorsed at 9.79% (n = 577) and Criticism was endorsed at 6.83% (n = 403) of entries. Although these experiences can and do co-occur, the correlation between Rejection and Criticism was moderate (r = .44, p < .001), and their VIF was low (1.24), arguing against multicollinearity. ICC estimates indicated that most of the variance in these constructs occurred within individuals over time, with only 9.6% of the variance in Criticism and 16.9% of the variance in Rejection at the between-person level.

Self-Injurious Urges. At each random beep (i.e., all except morning assessments), participants were asked "Since the last prompt, have you," followed by "felt an urge or wanted to harm or injure yourself on purpose, without wanting to die (such as wanting to cut or burn yourself)?" and "felt the urge or wanted to make a suicide attempt?" These questions were not included in the morning assessment, due to its close proximity to awakening. These items were rated on the same 1-5 Likert scale used for Rejection and Criticism described above.

Slightly less than half of participants (45.16%) reported urges or desire for NSSI during the EMA, and roughly one quarter (25.81%) reported suicide urges. Across all beeps, NSSI urges occurred more frequently (n = 127, 2.16%) than suicide urges (n = 53, 0.90%). As the Likert scale scores for these items were highly skewed, even after removing participants who never endorsed these urges during EMA (NSSI urge skewness = 5.91, suicide urge skewness = 8.10), we categorized each beep based on the presence or absence of these urges, rather than using the Likert scale score. ICCs for suicide and NSSI urges were .05 and .11, respectively, indicating that 5%–11% of the variability in these constructs was due to person-level differences, with the remainder of this variability occurring at the within-person level.

Laboratory Measures

Demographics. A study-designed questionnaire to assess demographic characteristics was administered to each participant prior to completing the EMA protocol. Demographic variables included gender identity, age, sexual orientation, marital status, number of children, educational attainment, employment status, type of housing, and receipt of public assistance.

Beck Depression Inventory (BDI-II). The BDI-II (Beck, Steer, & Brown, 1996) is a commonly used measure of depressive symptoms and psychological distress, both of which are related to SITB. Participants' scores ranged from 2 to 41, with an average score of 21.15 (SD = 9.79), which is consistent with moderate depressive symptoms. The internal consistency of the BDI-II in this sample was good (Cronbach's alpha = .88).

Self-Injurious Thoughts and Behaviors Interview (SITBI). The SITBI (Nock, Holmberg, Photos, & Michel, 2007) is a structured interview assessing history of suicidal thoughts, plans, gestures, and attempts, as well as NSSI thoughts and behaviors. The SITBI was used to determine presence of lifetime, past-year, and past-month SITB prior to the EMA portion of the study. As suicide gestures were defined in the interview as having "done something to lead someone to believe that you wanted to kill yourself, when you really had no intention of doing so," we excluded suicide gestures from our composite measures of SITB. Although the SITBI assesses self-injurious thoughts and behaviors, only NSSI ideation and suicide ideation were considered as inclusion criteria and as the past-month self-injurious urge covariate described below.

Both the SITBI and the SIDP-IV (see below) were administered by research staff with a bachelor's degree or higher who were trained to reliability by a doctoral-level clinical psychologist (LNS) with expertise in personality disorder assessment. Assessors received didactic, observational, and in vivo training prior to administering interviews, in addition to biweekly consultation with the trainer throughout the study. A randomly selected subsample of videotaped SITBI assessments from participants included in these analyses (n = 15; 24.2%) were rated by an independent clinical judge. Results demonstrated excellent interrater agreement for past-month self-injurious ideation (κ = .84) and past-year self-injurious ideation (κ = 1).

Structured Interview for DSM-IV Personality (SIDP-IV). The SIDP-IV (Pfohl, Blum, & Zimmerman, 1997) is a semistructured diagnostic interview for DSM-IV-TR (APA, 2000) personality disorders. Each diagnostic criterion was rated on a 0–3 scale (0 = not present, 1 = subthreshold, 2 = present, 3 = strongly present). Although participants completed the full SIDP-IV, only results for borderline personality disorder (BPD) are reported here, given the strong relationship between BPD and SITB (Black, Blum, Pfohl, & Hale, 2004). Participants had an average of 3.47 BPD diagnostic criteria rated ≥2 (SD = 1.93), and over one quarter of participants (27.42%) met diagnostic threshold for BPD (i.e., ≥5 symptoms). We used the sum of BPD item scores, excluding the item assessing SITB, as a dimensional measure of BPD severity. This summary scale had adequate internal consistency (Cronbach's alpha = .75).

SIDP-IV reliability was calculated based on a randomly selected subsample of videotaped assessments from participants included in these analyses (n = 9; 14.3%). Results demonstrated good interrater agreement for BPD dimensional scores (ICC = .86).

Analytic Techniques and Procedures

We conducted multilevel path analyses using *Mplus* version 8 (Muthén & Muthén, 2017) to evaluate the within-person relationships between affective experiences, interpersonal stress, and self-injurious urges during the EMA protocol. We used Bayesian analyses to obtain standardized point estimates for the fixed effects of our variables of interest at the within- and between-person levels. Bayesian Markov chain Monte Carlo (MCMC) estimation is robust for use with nonnormal data and small sample sizes (Biesanz, Falk, & Savalei, 2010; Ozechowski, 2014; Price, 2012) and provides more stable parameter estimates than maximum-likelihood methods (Ozechowski, 2014). In Bayesian MCMC modeling, exact p values for two-tailed significance testing are not available; statistical significance is determined by estimating a credibility interval (CI) for each parameter, and 95% CIs that do not include 0 indicate that a parameter is statistically significant for α = .05. Variable priors were estimated in *Mplus* based on median values from observed data. Model convergence was determined using the default convergence criterion in *Mplus*, in which potential scale reduction factor (PSR) values close to 1 indicate convergence. First, each model was set to complete at least 500 iterations, after which the model estimate would terminate upon reaching a PSR value close to 1. Second, the same model was reanalyzed with a minimum of at least twice as many iterations as were required to reach convergence in the first analysis, or 2,000 iterations, whichever was larger, to ensure that PSR values did not increase. Models presented here had final PSR values ranging from 1.006 to 1.07, indicating satisfactory convergence. For mediation analyses, indirect effects were calculated as the product of component path coefficients at the within-person and between-person levels, and standard errors and 95% credibility intervals for indirect effects were calculated using the methods of Yuan and MacKinnon (2009).

Both outcomes of interest (NSSI urges and suicide urges) were modeled simultaneously as categorical (binary) variables using a Bernoulli response distribution based on a probit link function. Variables were person-mean-centered for within-person predictors

and grand-mean-centered for between-person predictors. Because our hypotheses focused on effects at the within-person level, it was important to disaggregate within- and between-person effects for our constructs of interest. Therefore, any EMA affect or interpersonal stress variable entered at the within-person level was person-mean-centered, and each participant's mean score on that variable across all EMA entries was then grand-mean-centered and included at the between-person level. Thus, effects at the within-person level can be interpreted as within-person changes relative to one's own mean level. Our outcomes of interest were within-person change in likelihood of NSSI urges and suicide urges at time *t* prospectively predicted by within-person changes in affect and interpersonal stress at time *t-1*. Lagged values from prior entries were only calculated for beeps within the same assessment day.

RESULTS

Assessing Possible Covariates

Given the robust associations demonstrated in the literature between depression, BPD, and history of SITB with subsequent self-injurious urges, we included depressive symptoms, BPD symptoms, and self-injurious ideation in the month prior to the EMA as covariates in all analyses. We evaluated other potential covariates using individual multilevel analyses with NSSI and suicide urges as outcomes, retaining those that were statistically significant ($p < .05$) for either outcome.

At the between-person level, we considered non-Hispanic White race, age, receipt of public assistance, and number of EMA entries completed as potential covariates; none of these constructs were significantly related to NSSI or suicide urges during the EMA. At the within-person level, neither time elapsed since the first EMA nor time elapsed since the most recent EMA was associated with NSSI or suicide urges.

We also considered presence or absence of concurrent and lagged substance use as covariates due to the previously demonstrated relationship between these constructs and subsequent increases in suicide ideation among adults (Bagge, Littlefield, Conner, Schumacher, & Lee, 2014), as well as associations between substance use, particularly alcohol, and proximal suicidal behavior (Bagge, Lee, et al., 2013). Concurrent alcohol use was positively associated with suicide urges and NSSI urges, and concurrent drug use was negatively associated with suicide urges. Lagged alcohol use was negatively associated with suicide urges; lagged drug use was not associated with either outcome.

Based on these analyses, our models included depression symptoms, BPD symptoms, and past-month NSSI or suicide urges as between-person covariates, and concurrent alcohol use, concurrent drug use, and prior (beep $t - 1$) drug use as within-person covariates. As Bayesian estimation does not account for missing data on exogenous variables (e.g., covariates), missing data for these constructs was addressed by estimating the variance of that covariate in the model.

Question 1: What Affective Experiences most Strongly Predict Self-Injurious Urges?

We first evaluated two separate models in which affective experiences (Internalizing NA or Externalizing NA) at $t - 1$ predicted time t NSSI urges and suicide urges at the within-person level. In the first model, Internalizing NA was significantly positively associated with likelihood of subsequent NSSI urges and suicide urges. Externalizing NA was also significantly associated with later NSSI urges and suicide urges in the univariate analysis.

We then constructed a multivariate model in which both Internalizing and Externalizing NA at time $t - 1$ relate to time t NSSI urges and suicide urges, to determine the relative importance of each type of NA to near-term risk of self-injurious urges. Consistent with hypotheses, when Internalizing and Externalizing NA were entered simultaneously as predictors of NSSI and suicide urges,

Internalizing NA was significantly related to greater likelihood of later NSSI urges, while Externalizing NA was not. The same pattern was found for suicide urges; when controlling for Externalizing NA, Internalizing NA retained a significant positive relationship to later suicide urges, but Externalizing NA did not predict later suicide urges when controlling for Internalizing NA. Mean levels of both types of NA did not relate to suicide or NSSI urges at the between-person level. A summary of these results is given in Tables 2 and 3.

Question 2: What Interpersonal Stressors Experiences most Strongly Predict self-Injurious Urges?

Following the pattern described above, we began with separate models of each interpersonal stress variable (Criticism or Rejection) at time $t - 1$ predicting time t NSSI urges or suicide urges. As hypothesized, when considered separately, Rejection and Criticism both predicted increases in likelihood of subsequent NSSI urges and suicide urges. We then entered both Rejection and Criticism as predictors simultaneously. In the multivariate context, Rejection had a significant effect on likelihood of later NSSI urges, although Criticism did not. Contrary to our hypotheses, neither Rejection nor Criticism remained a significant predictor of suicide urges in the multivariate model in which both were entered simultaneously. Mean levels of Rejection and Criticism did not relate to likelihood of either type of urge at the between-person level. Full results for these analyses are given in Tables 4 and 5.

TABLE 2
Univariate analyses of affective experiences and within-person changes in NSSI urges and suicide urges

	NSSI Urges		Suicide Urges	
	B (SD)	95% CI	B (SD)	95% CI
Internalizing NA				
Within-Person Level				
Drug use (t)	−0.06 (0.06)	−0.17, 0.04	**−0.30 (0.15)**	**−0.65, −0.06**
Alcohol use (t)	0.09 (0.05)	−0.002, 0.18	**0.16 (0.06)**	**0.04, 0.27**
Alcohol use (t − 1)	−0.02 (0.05)	−0.13, 0.08	**−0.29 (0.14)**	**−0.57, −0.06**
Internalizing NA (t − 1)	**0.24 (0.04)**	**0.17, 0.31**	**0.23 (0.06)**	**0.11, 0.34**
Between-Person Level				
Mean Internalizing NA	0.19 (0.17)	−0.18, 0.49	−0.13 (0.20)	−0.51, 0.26
Past-Month Urges	0.13 (0.18)	−0.23, 0.45	0.23 (0.19)	−0.15, 0.58
Depression Symptoms	0.20 (0.23)	−0.27, 0.62	0.25 (0.21)	−0.21, 0.60
BPD Symptoms	0.16 (0.19)	−0.24, 0.51	−0.22 (0.18)	−0.51, 0.17
Externalizing NA				
Within-Person Level				
Drug use (t)	−0.07 (0.05)	−0.18, 0.04	**−0.31 (0.15)**	**−0.65, −0.07**
Alcohol use (t)	0.09 (0.05)	−0.004, 0.17	**0.16 (0.06)**	**0.05, 0.27**
Alcohol use (t − 1)	−0.02 (0.05)	−0.14, 0.07	**−0.29 (0.14)**	**−0.58, −0.06**
Externalizing NA (t − 1)	**0.18 (0.04)**	**0.10, 0.26**	**0.19 (0.07)**	**0.06, 0.32**
Between-Person Level				
Mean Externalizing NA	0.20 (0.18)	−0.34, 0.36	−0.24 (0.20)	−0.60, 0.19
Past-Month Urges	0.18 (0.18)	−0.19, 0.48	0.27 (0.19)	−0.11, 0.61
Depression Symptoms	0.27 (0.22)	−0.22, 0.64	0.27 (0.20)	−0.19, 0.60
BPD Symptoms	0.15 (0.19)	−0.24, 0.51	−0.18 (0.18)	−0.60, 0.19

B = standardized point estimate; SD = posterior standard deviation; 95% CI = 95% credibility interval. Bolded cells are statistically significant at $p < .05$. All within-person dimensional variables were person-mean-centered, and all between-person dimensional variables were grand-mean-centered.

TABLE 3
Multivariate analysis of affective experiences and within-person changes in NSSI urges and suicide urges

	NSSI Urges		Suicide Urges	
	B (SD)	95% CI	B (SD)	95% CI
Within-Person Level				
Drug use (t)	−0.06 (0.06)	−0.18, 0.04	**−0.31 (0.13)**	**−0.57, −0.07**
Alcohol use (t)	0.10 (0.05)	−0.003, 0.18	**0.16 (0.05)**	**0.05, 0.26**
Alcohol use (t − *1)*	−0.02 (0.05)	−0.13, 0.08	**−0.29 (0.13)**	**−0.58, −0.07**
Internalizing NA (t − *1)*	**0.24 (0.05)**	**0.15, 0.33**	**0.19 (0.07)**	**0.05, 0.33**
Externalizing NA (t − *1)*	0.01 (0.06)	−0.11, 0.12	0.06 (0.09)	−0.12, 0.22
Between-Person Level				
Mean Internalizing NA	0.49 (0.26)	−0.05, 0.92	0.06 (0.28)	−0.48, 0.65
Mean Externalizing NA	−0.42 (0.27)	−0.90, 0.14	−0.29 (0.29)	−0.84, 0.27
Past-Month Urges	0.18 (0.17)	−0.17, 0.50	0.25 (0.18)	−0.14, 0.57
Depression Symptoms	0.19 (0.22)	−0.26, 0.59	0.25 (0.20)	−0.22, 0.58
BPD Symptoms	0.21 (0.18)	−0.18, 0.53	−0.18 (0.19)	−0.50, 0.21

B = standardized point estimate; SD = posterior standard deviation; 95% CI = 95% credibility interval. Bolded cells are statistically significant at $p < .05$. All within-person dimensional variables were person-mean-centered, and all between-person dimensional variables were grand-mean-centered.

Question 3: Does Affect Mediate the Relationship between Interpersonal Stress and Self-Injurious Urges?

To evaluate direct and indirect effects of interpersonal stress on self-injurious urges, we tested a model in which within-person increases in Rejection and Criticism had indirect effects on subsequent NSSI and suicide urges through their effects on Internalizing and Externalizing NA (see Figure 1 for a path diagram of the hypothesized within-person model). Specifically, we modeled the effects of both Rejection and Criticism at $t - 1$ on changes in Internalizing and Externalizing NA at $t - 1$ (controlling for the autoregressive effects of $t - 2$ Internalizing and Externalizing NA), as well as the effects of changes in $t - 1$ Internalizing and Externalizing NA on time t NSSI and suicide urges. We also included the direct effects of Rejection and Criticism at $t - 1$ on time t NSSI and suicide urges, controlling for Internalizing and Externalizing NA as mediators.

As hypothesized, there were significant indirect effects of within-person increases in Rejection and Criticism on NSSI urges and suicide urges through changes in Internalizing NA; both Rejection and Criticism predicted within-person increases in Internalizing NA, and in turn, increases in Internalizing NA predicted increased odds of subsequent NSSI and suicide urges. Although Rejection and Criticism each predicted significant increases in Externalizing NA, there were no significant indirect effects of Rejection and Criticism on self-injurious urges through Externalizing NA, as Externalizing NA was not associated with later NSSI or suicide urges in the multivariate context. The indirect effects of Rejection and Criticism on NSSI and suicide urges through Internalizing NA were specific to the within-person level; there were no statistically significant indirect effects of mean levels of Rejection or Criticism on overall likelihood of NSSI or suicide urges during the EMA through Internalizing or Externalizing NA.

After accounting for the indirect effects described above, there were no significant direct effects of Criticism on either type of self-injurious urge, and no direct effect of Rejection on suicide urges. There remained, however, a significant direct effect of Rejection on later NSSI urges, meaning that Rejection contributed to the prediction of NSSI urges above and beyond its role in increasing

TABLE 4
Univariate analyses of interpersonal stressors and within-person changes in NSSI urges and suicide urges

	NSSI Urges		Suicide Urges	
	B (SD)	95% CI	B (SD)	95% CI
Rejection Univariate				
Within-Person Level				
Drug use (t)	−0.05 (0.06)	−0.16, 0.06	**−0.33 (0.14)**	**−0.64, −0.10**
Alcohol use (t)	0.08 (0.05)	−0.01, 0.17	**0.16 (0.06)**	**0.04, 0.26**
Alcohol use (t − 1)	−0.03 (0.06)	−0.14, 0.07	**−0.29 (0.14)**	**−0.58, −0.05**
Rejection (t − 1)	**0.20 (0.03)**	**0.13, 0.27**	**0.12 (0.05)**	**0.01, 0.23**
Between-Person Level				
Mean Rejection	0.24 (0.16)	−0.10, 0.54	−0.07 (0.18)	−0.42, 0.28
Past-Month Urges	0.15 (0.17)	−0.19, 0.46	0.24 (0.19)	−0.15, 0.58
Depression Symptoms	0.30 (0.21)	−0.14, 0.65	0.20 (0.21)	−0.24, 0.56
BPD Symptoms	0.12 (0.19)	−0.27, 0.46	−0.21 (0.19)	−0.53, 0.21
Criticism Univariate				
Within-Person Level				
Drug use (t)	−0.07 (0.05)	−0.18, 0.03	**−0.34 (0.15)**	**−0.67, −0.09**
Alcohol use (t)	0.09 (0.05)	−0.007, 0.17	**0.17 (0.06)**	**0.06, 0.28**
Alcohol use (t − 1)	−0.03 (0.05)	−0.15, 0.06	**−0.29 (0.14)**	**−0.58, −0.07**
Criticism (t − 1)	**0.13 (0.04)**	**0.06, 0.20**	**0.14 (0.05)**	**0.04, 0.23**
Between-Person Level				
Mean Criticism	0.21 (0.16)	−0.14, 0.49	−0.13 (0.17)	−0.47, 0.20
Past-Month Urges	0.13 (0.17)	−0.23, 0.44	0.25 (0.19)	−0.14, 0.60
Depression Symptoms	0.30 (0.21)	−0.17, 0.66	0.22 (0.21)	−0.23, 0.58
BPD Symptoms	0.14 (0.19)	−0.24, 0.49	−0.22 (0.18)	−0.52, 0.18

B = standardized point estimate; SD = posterior standard deviation; 95% CI = 95% credibility interval. Bolded cells are statistically significant at $p < .05$. All within-person dimensional variables were person-mean-centered, and all between-person dimensional variables were grand-mean-centered.

Internalizing NA. Full results for this model are given in Table 6.

DISCUSSION

Understanding the within-person processes that contribute to self-injurious urges in daily life is critically important not only to improve our theoretical understanding of these phenomena, but also to improve risk assessment and crisis intervention during periods of elevated risk for these urges and associated behaviors. To our knowledge, this is one of the first studies to directly compare the roles of internalizing and externalizing affective experiences as within-person predictors of self-injurious urges. By identifying the unique role of internalizing negative emotions, such as shame, anxiety, and sadness, this work has implications for developing and testing interventions focused on decreasing or managing internalizing negative affect among individuals at high risk of SITB. These findings also highlight potential mechanisms of effectiveness in treatments that decrease SITB, such as dialectical behavior therapy (Neacsiu, Rizvi, & Linehan, 2010), in which individuals learn specific skills to decrease and tolerate negative emotions, as well as skills to improve interpersonal relationships.

Our results also indicate that feeling rejected, excluded, abandoned, or left out is more strongly predictive of subsequent NSSI urges than feeling insulted or criticized and that this relationship is at least partially mediated by changes in internalizing negative

TABLE 5
Multivariate analysis of interpersonal stressors and within-person changes in NSSI urges and suicide urges

	NSSI Urges		Suicide Urges	
	B (SD)	95% CI	B (SD)	95% CI
Within-Person Level				
Drug use (t)	−0.05 (0.06)	−0.16, 0.06	**−0.34 (0.13)**	**−0.60, −0.09**
Alcohol use (t)	0.08 (0.05)	−0.01, 0.17	**0.16 (0.06)**	**0.05, 0.26**
Alcohol use (t − *1)*	−0.03 (0.06)	−0.15, 0.07	**−0.30 (0.15)**	**−0.63, −0.05**
Rejection (t − *1)*	**0.20 (0.04)**	**0.11, 0.27**	0.07 (0.06)	−0.05, 0.18
Criticism (t − *1)*	0.02 (0.05)	−0.07, 0.11	0.10 (0.06)	−0.01, 0.21
Between-Person Level				
Mean Rejection	0.21 (0.25)	−0.29, 0.69	0.01 (0.22)	−0.43, 0.45
Mean Criticism	0.02 (0.25)	−0.48, 0.48	−0.12 (0.21)	−0.54, 0.26
Past-Month Urges	0.14 (0.17)	−0.21, 0.48	0.26 (0.20)	−0.18, 0.58
Depression Symptoms	**0.29 (0.21)**	**0.19, 0.65**	0.21 (0.20)	−0.21, 0.54
BPD Symptoms	0.11 (0.18)	−0.23, 0.47	−0.21 (0.19)	−0.53, 0.23

B = standardized point estimate; SD = posterior standard deviation; 95% CI = 95% credibility interval. Bolded cells are statistically significant at $p < .05$. All within-person dimensional variables were person-mean-centered, and all between-person dimensional variables were grand-mean-centered.

affect. Previous research at the between-persons level has yielded mixed results with respect to whether individuals with a history of NSSI are, on average, more sensitive to rejection than individuals with no such history (Groschwitz, Plener, Groen, Bonenberger, & Abler, 2016; Schatten, Andover, & Armey, 2015); our findings suggest that regardless of one's overall propensity to experience negative affect following rejection, increases in perceived rejection at the *within-person* level are associated with increased odds of NSSI urges among high-risk individuals. This finding is consistent with prior work suggesting that having fewer close relationships predicts worse SITB outcomes, such as moving from NSSI to suicidal behaviors (Whitlock et al., 2013), and suggests that identifying strategies to cope with or prevent experiences of rejection or exclusion may be important tools for those at high risk of NSSI.

Although within-person changes in both rejection and criticism were associated with later suicide urges through changes in internalizing negative affect, neither type of interpersonal stressor had a significant direct effect on suicide urges in the multivariate context. These results must be interpreted with caution given that suicide urges were rare and power is likely limited to find unique effects of multiple predictors in this study. However, tentatively, these results may indicate that interpersonal stress, of the magnitude captured in our sample, is less strongly related to suicidality than to NSSI. It is also possible that specific characteristics of rejection or criticism are less relevant to understanding near-term risk for suicide urges than the overall magnitude of changes in internalizing negative affect.

Taken together, these results are noteworthy due to the characteristics of our sample and study methodology. Most previous work in this area has been limited by the use of retrospective self-reports, which are prone to recall biases that can impact reliability and external validity; in contrast, this study involved intensive longitudinal assessments administered in daily life over several weeks, improving both the ecological validity of our results and our ability to evaluate prospective relationships between interpersonal stress, affect, and self-injurious urges. Further,

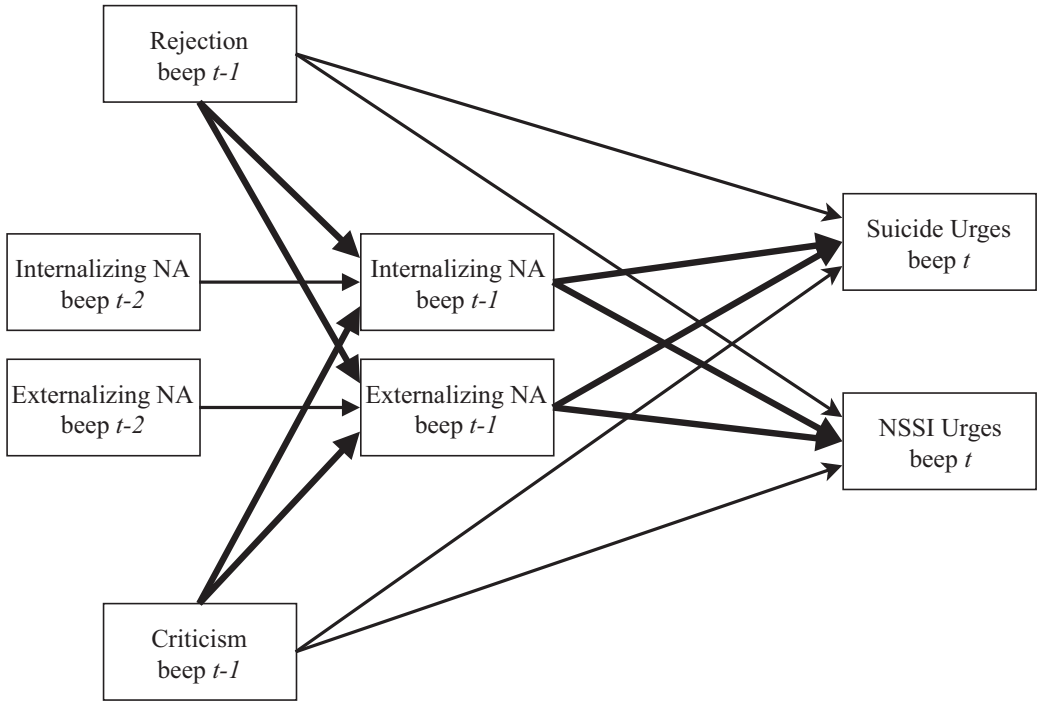

Figure 1. Path diagram of mediation model predicting self-injurious urges from Rejection and Criticism through internalizing and externalizing negative affect. Rejection, Criticism, NSSI urges, and suicide urges were assessed at each beep regarding these experiences at any time since the last beep (prompt). Internalizing and externalizing negative affect were assessed at each beep with respect to the 15 min prior to that beep. Thinner arrows signify tested direct and autoregressive effects, and thicker arrows signify tested indirect effects.

research in this area primarily involves either community samples of adolescents, convenience samples of undergraduate students, or adults seeking psychiatric treatment. Although it is important to understand the processes that underlie self-injurious urges in these groups, it is unclear to what extent findings from these populations generalize to other groups at risk of SITB. This study involved a sample of young adult women with a history of SITB who were primarily African American and predominantly low income, a group that is historically underrepresented in this type of research.

Although our findings provide valuable information about within-person processes that contribute to self-injurious urges, the study is not without limitations. First, our sample was restricted in age (18–24) and comprised entirely of women; future research will need to replicate these findings in both older and younger age groups, as well as among men. Second, while our use of EMA methodology has clear benefits with respect to ecological validity, we are unable to evaluate how much attention or care participants were taking when responding to each EMA beep, which may have implications for the reliability of our EMA measures. Further, the ability to respond to each beep until the following beep was received may have contributed to recall or other biases, and we are unable to evaluate how changes in stress or affect that occurred during a single window between two beeps, rather than across windows for multiple beeps, may relate to risk for self-injurious urges. Third, self-injurious urges were relatively uncommon during the EMA portion of the study, particularly suicide urges, which has implications for statistical power and for

TABLE 6
Interpersonal stressors and the mediating role of internalizing NA on within-person change in suicide urges

	Suicide Urges at time t		NSSI Urges at time t		Internalizing NA at time t − *1*		Externalizing NA at time t − *1*	
Within-Person Predictors	B (SD)	95% CI	B (SD)	95% CI	B (SD)	95% CI	B (SD)	95% CI
Drug use (t)	**−0.31 (0.15)**	**−0.65, −0.06**	−0.06 (0.06)	−0.17, 0.06				
Alcohol use (t)	**0.16 (0.06)**	**0.04, 0.26**	0.09 (0.05)	−0.01, 0.18				
Alcohol use (t − *1*)	**−0.30 (0.16)**	**−0.65, −0.05**	−0.01 (0.06)	−0.12, 0.09				
Internalizing NA at t − *2* (ar)					**0.44 (0.02)**	**0.41, 0.47**		
Externalizing NA at t − *2* (ar)							**0.32 (0.02)**	**0.28, 0.35**
Rejection at t − *1* (a)					**0.26 (0.02)**	**0.23, 0.30**	**0.16 (0.02)**	**0.13, 0.20**
Criticism at t − *1* (a)					**0.11 (0.02)**	**0.07, 0.14**	**0.29 (0.02)**	**0.25, 0.32**
Internalizing NA at t − *1* (b)	**0.20 (0.08)**	**0.05, 0.35**	**0.17 (0.05)**	**0.07, 0.26**				
Externalizing NA at t − *1* (b)	−0.02 (0.11)	−0.24, 0.19	0.02 (0.07)	−0.11, 0.14				
Indirect Effect: Rejection at t − *1* (a*b)	**0.10 (0.04)**	**0.03, 0.19**	**0.08 (0.02)**	**0.03, 0.12**				
Indirect Effect: Criticism at t − *1* (a*b)	**0.05 (0.02)**	**0.01, 0.10**	**0.04 (0.01)**	**0.01, .0.6**				
Direct Effect: Rejection at t − *1* (c′)	−0.03 (0.07)	−0.17, 0.11	**0.13 (0.05)**	**0.04, 0.22**				
Direct Effect: Criticism at t − *1*	0.03 (0.07)	−0.11, 0.18	−0.07 (0.05)	−0.18, 0.03				
	Person Mean Suicide Urges		Person Mean NSSI Urges		Person Mean Internalizing NA		Person Mean Externalizing NA	
Between-Person Predictors	B (SD)	95% CI	B (SD)	95% CI	B (SD)	95% CI	B (SD)	95% CI
Past-Month Urges	0.27 (0.17)	−0.11, 0.57	0.14 (0.16)	−0.18, 0.43				
Depression Symptoms	0.26 (0.19)	−0.17, 0.58	0.22 (0.20)	−0.18, 0.60				
BPD Symptoms	−0.21 (0.17)	−0.50, 0.15	0.12 (0.17)	−0.22, 0.44				

(continued)

TABLE 6
(continued)

Between-Person Predictors	Person Mean Suicide Urges		Person Mean NSSI Urges		Person Mean Internalizing NA		Person Mean Externalizing NA	
	B (SD)	95% CI	B (SD)	95% CI	B (SD)	95% CI	B (SD)	95% CI
Mean Rejection (a)					**0.58 (0.19)**	**0.16, 0.90**	0.38 (0.21)	−0.07, 0.75
Mean Criticism (a)					0.12 (0.20)	−0.30, 0.52	0.24 (0.21)	−0.19, 0.65
Mean Internalizing NA (b)	0.01 (0.28)	−0.54, 0.54	0.28 (0.27)	−0.31, 0.72				
Mean Externalizing NA (b)	−0.26 (0.26)	−0.72, 0.27	−0.46 (0.23)	−0.82, 0.08				
Indirect Effect: Mean Rejection (a*b)	0.03 (1.30)	−2.63, 2.68	0.49 (0.67)	−0.65, 2.02				
Indirect Effect: Mean Criticism (a*b)	0.01 (0.70)	−1.55, 1.60	0.08 (0.44)	−0.62, 1.17				
Direct Effect: Mean Rejection (c′)	0.01 (0.21)	−0.39, 0.43	0.16 (0.26)	−0.33, 0.65				
Direct Effect: Mean Criticism (c′)	−0.08 (0.18)	−0.44, 0.26	0.08 (0.23)	−0.39, 0.49				

B = point estimate; SD = posterior standard deviation; 95% CI = 95% credibility interval. All point estimates are standardized except those labeled Indirect Effects, which are unstandardized. Bolded cells are statistically significant at $p < .05$. All within-person dimensional variables were person-mean-centered, and all between-person dimensional variables were grand-mean-centered.

generalizability to more chronically suicidal individuals. Fourth, our results speak to within-person changes in the *desire* to engage in NSSI or suicidal behavior, not to the behaviors themselves; consistent with the ideation to action framework (Klonsky & May, 2014), our findings should not be interpreted to necessarily explain how individuals move from wanting to engage in NSSI or suicide to acting on those urges. There is, however, strong evidence connecting the desire for NSSI and suicide with actual engagement in NSSI behaviors (Nock et al., 2009; Washburn et al., 2010) and suicide attempts (Czyz et al., 2016). Fifth, while our findings were statistically significant and robust to included covariates, the estimated effect sizes for our constructs of interest were often smaller than those for other proximal covariates included in the model, such as alcohol or substance use; future research should investigate how these factors may be temporally or causally related. Sixth, the use of single items to assess distinct negative emotions (e.g., sadness, anger, fear) precluded analyses investigating whether certain types of negative affect *within* the internalizing or externalizing domains may be more or less strongly associated with NSSI and suicide urges. Further, due to the timing and structure of the EMA protocol, we were unable to compare our model with an alternative mediation model in which negative affect had indirect effects on NSSI and suicide urges through changes in perceived rejection or criticism; future research involving more frequent assessment of interpersonal stressors may better allow for testing of competing models. Finally, EMA data were based on self-report, which limits our ability to draw conclusions about interpersonal stress itself, rather than participants' perceptions about interpersonal experiences, which may not directly correspond to rejection or criticism observed or intended by others.

Despite these limitations, this study provides valuable insights into the within-person experiences and emotional states that most directly contribute to near-term risk for self-injurious urges. By understanding these processes as they unfold in the minutes to hours preceding an experience of self-injurious urges, researchers may be able to better identify targets for clinical intervention to prevent SITB among high-risk individuals in daily life.

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