Interpersonal Stress and Nonsuicidal Self-Injury Disorder in Veterans: An Ecological Momentary Assessment Study

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Abstract

Intro: Nonsuicidal self-injury (NSSI) is associated with marked functional impairment and is a robust predictor of suicide attempts. Prevalence rates of NSSI, and self-directed violence more broadly, are elevated among military veterans. Despite the inclusion of interpersonal difficulty in the diagnostic criteria for NSSI disorder, the relationship between interpersonal risk factors and NSSI is not well-characterized, especially among veterans. This ecological momentary assessment (EMA) study investigated the hypothesis that interpersonal stressors and associated distress would precede and predict NSSI urge and engagement—but not vice versa—via cross-lagged multilevel modeling.

Method: Forty veterans with NSSI disorder completed a 28-day EMA protocol with three daily prompts assessing NSSI urges, NSSI engagement, the occurrence of interpersonal stressors, and associated subjective interpersonal distress.

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Results: Interpersonal stressors preceded and predicted subsequent NSSI urges, but not NSSI engagement, whereas subjective interpersonal distress preceded and predicted both NSSI urges and NSSI engagement.

Conclusion: Results identified interpersonal stressors as a risk factor for NSSI urges, and interpersonal distress as a risk factor for both NSSI urges and NSSI engagement. Findings highlight the importance of temporally assessing interpersonal factors related to NSSI and suggest that interpersonal distress may be a modifiable risk factor for NSSI.

Nonsuicidal self-injury (NSSI) is the intentional destruction of one's body tissue without suicidal intent and for purposes not socially sanctioned (International Society for the Study of Self-Injury, 2018; Klonsky, 2007). NSSI is associated with marked functional impairment and is a robust predictor of suicidal thoughts and behaviors, especially among military veterans (Franklin et al., 2017; Kearns et al., 2021; Nichter et al., 2021; Villatte et al., 2015). Prevalence rates of lifetime NSSI are approximately 5% in the adult general population, although veterans endorse higher rates of NSSI engagement (Klonsky, 2011; Swannell et al., 2014). Rates of lifetime NSSI in non-treatment seeking veterans range from 4% to 16% with prevalence rates as high as 62% in veterans seeking treatment for posttraumatic stress disorder (PTSD; Bryan et al., 2014; Kachadourian et al., 2021; Kimbrel et al., 2015; Kimbrel et al., 2018; Lear et al., 2021).

Although historically understood within the context of borderline personality disorder, NSSI occurs transdiagnostically (e.g., PTSD, major depressive disorder; Bentley et al., 2015; Patel et al., 2021), and NSSI disorder was recently defined in the Diagnostic and Statistics Manual – 5th Edition (American Psychiatric Association, 2013). A diagnosis of NSSI disorder requires NSSI engagement on at least five separate occasions within the past year, with the expectation that NSSI will relieve negative thoughts or feelings, resolve an interpersonal difficulty, and/or generate positive feelings. Additionally, NSSI must be preceded by at least one of the following: negative thoughts or feelings or an interpersonal problem, preoccupation with NSSI that is difficult to control, or frequent thoughts of NSSI. Although originally defined as a "disorder for future study," research since the publication of DSM-5 supports the validity of NSSI disorder as a distinct disorder associated with significant impairment and distress (Buelens et al., 2020; Gratz et al., 2015; Kiekens et al., 2018; Zetterqvist et al., 2013).

Despite high rates of NSSI among veterans and the inclusion of interpersonal difficulty in the diagnostic criteria for NSSI disorder, there is limited understanding of the relationship between interpersonal factors and NSSI in this population (Mastin et al., 2020). NSSI can be conceptualized as an emotion regulation strategy maintained by four automatic processes (Hooley & Franklin, 2018; Klonsky, 2006; Nock & Prinstein, 2004). According to the Four-Function Model (Nock & Prinstein, 2004), NSSI is automatically reinforced because this behavior regulates unwanted interpersonal or intrapersonal states through positive or negative reinforcement. In civilian populations, interpersonal stress (e.g., anger at someone)

is strongly associated with risk for NSSI engagement (Cawley et al., 2019; Muehlenkamp et al., 2013) and negative interpersonal experiences increase the likelihood of NSSI urges and engagement (Turner et al., 2016; Victor, Hipwell, et al., 2019). However, it is unclear if interpersonal stress is a risk factor for NSSI because NSSI helps regulate interpersonal experiences (e.g., reduce social responsibilities or increase social support) or if interpersonal stressors cause distress that NSSI serves to regulate (e.g., reducing negative emotions associated with an argument). Veterans may be at particular risk for interpersonal stressors as they transition from highly structured military service with clear social and behavioral expectations to less structured civilian life with less social support (Martin et al., 2016; Mastin et al., 2020). To this end, constructs related to interpersonal distress such as thwarted belongingness, social alienation, and low social support are associated with higher rates of suicidal ideation, suicide attempts, and NSSI in veterans (Baer et al., 2018; Chu et al., 2018; Nock et al., 2014). However, understanding of the directionality of these relationships is limited due to reliance on cross-sectional approaches.

Ecological momentary assessment (EMA) offers a promising approach to address the existing gap in understanding the relationship between interpersonal distress and NSSI. EMA allows for real-time data gathering on emotions, cognitions, and behaviors while individuals are in their natural environments (Bolger et al., 2003). EMA typically involves multiple assessments per day over several weeks and can therefore delineate antecedent and subsequent phenomena (e.g., establish directionality of interpersonal factors and NSSI). A systematic review in veterans demonstrated feasibility of EMA in this population, but found few studies assessing interpersonal factors and no studies examining NSSI outcomes (Gromatsky et al., 2020). More recent EMA studies assessing NSSI in veterans highlight the relationship between NSSI and particular contemporaneous and affective states such as anger, however the role of interpersonal factors is still largely unexamined (Dillon, Glenn, Dennis, LoSavio, et al., 2021; Dillon, Glenn, Dennis, Mann, et al., 2021).

This gap in using EMA to understand the relationship between interpersonal factors and NSSI extends beyond veteran populations. Systematic reviews of EMA studies in the general population noted a paucity of studies that assessed interpersonal factors (e.g., interpersonal distress, negative interpersonal events) and emphasized this as an important future direction (Hepp et al., 2020; Rodríguez-Blanco et al., 2018). To date, EMA studies assessing interpersonal factors primarily include adult women, with findings that both interpersonal stress and interpersonal conflict are risk factors for NSSI urges and engagement (Turner et al., 2016; Victor, Scott, et al., 2019). More recently, Hepp and colleagues (2021) used EMA to demonstrate that *endorsing* negative interpersonal events as distressing predicted NSSI urges and engagement, not the occurrence of a negative interpersonal event alone.

The present study utilized EMA to better understand the relationship between interpersonal factors and NSSI urges and engagement in veterans with NSSI disorder. NSSI urges are associated with increased likelihood of engaging in NSSI and with a higher frequency of NSSI (Nock et al., 2009; Washburn et al., 2010). Thus, NSSI urges may represent a crucial intervention stage. Improved understanding of antecedents to NSSI urges may promote efforts to prevent NSSI engagement. To our knowledge, this is the first study to examine

temporal relationships between interpersonal factors and NSSI among veterans with NSSI disorder and one of the first to temporally examine interpersonal risk factors for NSSI in a sample of predominantly adult men. The present study is a follow-up analysis to Dillon and colleagues' investigation of the intrapersonal functions of NSSI which identified anger as the most common intrapersonal state preceding NSSI (Dillon, Glenn, Dennis, LoSavio, et al., 2021; Dillon, Glenn, Dennis, Mann, et al., 2021). While intrapersonal functions of NSSI are endorsed more frequently, interpersonal functions of NSSI are also common and most individuals engaging in NSSI endorse more than one function of this behavior (Turner et al., 2012; Taylor et al., 2018). A series of multilevel cross-lagged path models were utilized to test the hypothesis that negative interpersonal events and interpersonal distress would precede and predict subsequent NSSI urges and engagement but not vice versa. A cross-lagged approach is necessary to establish directionality of these effects and therefore represents an improvement on previous approaches in the literature that more simply modeled the relationship between NSSI and interpersonal factors.

Methods

Participants and Procedures

Veterans with NSSI disorder ($N = 40$) completed a 28-day EMA protocol. The EMA protocol was part of a larger study ($N = 128$) examining the effects of NSSI on functioning (#I01CX001486). Veterans were recruited through the Durham Veterans Affairs Health Care System (VAHCS) based on 1) referrals by VAHCS clinicians; 2) chart reviews indicating a history of PTSD or other mental health condition treatment; and 3) inclusion in research recruitment databases. Recruitment efforts targeted veterans seeking treatment for PTSD and other mental health conditions based on high rates of observed NSSI within this population and underreporting of NSSI in medical records (Kimbrel et al., 2017; Kimbrel et al., 2018).

Veterans were first contacted via mailings and phone calls and then completed an initial phone screen to assess basic eligibility. All study participants attended an in-person screening appointment to verify eligibility. Veterans eligible for the parent study had previously served in the United States military, were over the age of 18, met criteria for at least one DSM-5 diagnosis (excluding bipolar and schizophrenia disorders), and were willing to complete study procedures. This study included 40 veterans who met criteria for NSSI disorder and participated in the EMA protocol (one additional veteran met criteria for NSSI disorder but declined EMA participation; see Dillon, Glenn, Dennis, Mann, et al., 2021 for full study details). All study procedures were approved by the Durham VAHCS Institutional Review Board.

Measures

Diagnostic Measures—The semi-structured *Clinician-Administered Nonsuicidal Self-Injury Disorder Index* (CANDI; Gratz et al., 2015) was administered to diagnose NSSI disorder. The CANDI demonstrates good interrater reliability ($\kappa = .83$) and adequate internal consistency ($a = .71$). Master's level clinicians administered the CANDI with all NSSI disorder diagnoses confirmed during a weekly consensus review meeting supervised by a licensed psychologist with expertise in NSSI. The *Structured Clinical Interview for DSM-5*

(SCID-5; First, Williams, Karg, & Spitzer, 2015) assessed current and lifetime history of psychiatric disorders. Master's level clinicians, trained and supervised by a licensed psychologist, administered the SCID-5 with excellent interrater reliability (Fleiss' kappa = .92).

Ecological Momentary Assessment—EMA assessments were collected using an Android app developed for this study that was pre-installed on a study-provided smartphone over 28 days. Prior to EMA data collection, all participants completed a training session where a 14-hour wake period and a 10-hour sleep period were defined. Three random alarm prompts spaced approximately four hours apart alerted participants to complete assessments during the wake period. A sampling frequency of three entries per day administered approximately every four hours was selected based on our previous protocols with Veterans where compliance was high (Beckham et al., 2013; Mitchell et al., 2014). The 28-day sampling period was selected to have sufficient power to detect a small effect size assuming a base rate of four NSSI events per week per participant based on previous EMA studies of NSSI (Armey et al., 2011; Nock et al., 2009). If participants did not respond to alarm prompts, these alarms were repeated five minutes later with a final alarm 30–40 minutes later. Participants were also able to delay alarms by five to 40 minutes or put alarms in a "sleep" mode for one to four hours increments for situations not conducive to responding (e.g., driving, in a meeting).

Questions assessed whether participants had experienced NSSI urges or engaged in NSSI in the past four hours, as well as psychosocial stressors. Participants were also instructed to complete an EMA entry when they engaged in NSSI or experienced an NSSI urge. Items assessing NSSI urges and engagement were modeled after previous EMA studies assessing NSSI behaviors (Armey et al., 2011; Nock et al., 2009). Interpersonal stress was measured with dichotomous ("*Have you been experiencing an interpersonal problem with another person that has caused you stress during the past four hours?*"; yes/no response) and continuous ("*How much stress has this interpersonal problem caused you during the past four hours?*"; 0 = "none", 1 = "a little", 2 = "moderate", 3 = "quite a bit", 4 = "extreme") prompts. Asking participants about the occurrence of an interpersonal stressor and the subjective distress associated with this stressor was based on the format of measures assessing daily life stressors (e.g. Daily Stress Inventory, Brantley et al., 1987; Daily Experiences Survey, Hokanson et al., 1992). One item broadly assessing the occurrence of an interpersonal stressor rather than a checklist of specific interpersonal events was used to reduce participant burden.

Participants were compensated based on completion of EMA prompts: $250 for completion of 75–100% of prompts, $170 for 50–74%, $100 for 25–49%, and $50 for 0–25%. Compliance rates were high for prompted entries (81.6%; $M = 68.51$, $SD = 16.54$) and participants also completed a large number of self-initiated entries ($M = 86.35$, $SD = 15.90$). Prior to primary data analyses, rates of EMA completion were analyzed by demographic (i.e., age, gender, race) and clinical variables (i.e., PTSD, major depressive disorder [MDD] diagnoses) with no significant relationships found (all ps >.05).

Data Analytic Plan

Multilevel cross-lagged path modeling assessed the direction of the association between interpersonal stress, NSSI urges, and NSSI engagement over time. Multilevel models consisted of each EMA entry (level one) grouped by participant (level two). Cross-lagged models allow for examination of the directional relationship between variables over time (Kearney, 2018). In this study we examined the effects of interpersonal stress on NSSI urges and engagement as well as whether previous NSSI urges and engagement predicted subsequent interpersonal stress. NSSI urges and NSSI engagement were examined in separate models as were the two interpersonal stress variables, resulting in four separate models (see Figure 1). Separate models allowed for examination of differential effects of experiencing an interpersonal stressor versus subjective distress ratings associated with the stressor and NSSI outcomes. Pending evidence that one or more of the cross-lagged effects were non-significant in a given model, the model was re-created without the non-significant effect(s). A chi-square difference test utilizing the Satorra-Bentler scaled chi-square (Satorra & Bentler, 2001) was then used to test whether the second, simpler model fit the data as well as the initial model, as indicated by a non-significant chi-square test. Analyses were performed in SAS 9.4 and Mplus 8 using robust maximum likelihood estimation to model both dichotomous (i.e., NSSI urge, NSSI engagement, occurrence of an interpersonal stressor) and continuous (i.e., subjective ratings of distress related to interpersonal stressor) outcomes. To ensure appropriate autoregressive and subsequent relationships were analyzed, only EMA entries less than six hours apart were used (62.6% of all entries). A priori power calculations based on effective sample size (i.e., the number of independent observations available for this study adjusted for within-individual correlations; Diggle et al., 1994) determined our models would have sufficient power to detect a small effect size based on an expected frequency of four NSSI events per participant per week observed in previous EMA studies (e.g., Nock et al., 2009). Participants in the present study engaged in an average of 7.2 NSSI behaviors per week and reported an average of 19.1 NSSI urges per week confirming sufficient power to detect small to large effects.

Results

Participant information and EMA entry descriptors are presented in Table 1. NSSI urges were reported in 19.3% ($n = 388$) of all EMA entries and NSSI engagement was reported in 9.3% ($n = 187$) of all EMA entries. Approximately 38.2% of all NSSI urges were accompanied by concurrent NSSI engagement. Participants could endorse multiple NSSI engagement behaviors with wall/object punching endorsed as the most common (61.0%), followed by hitting oneself (40.1%), biting (32.1%), scratching (28.9%), cutting (20.3%), banging head (10.7%), and burning oneself (1.6%). Participants endorsed experiencing an interpersonal stressor in 19.3% ($n = 388$) of EMA entries but generally endorsed minimal subjective distress ($M = 0.21$, $SD = 0.77$).

Results of the multilevel cross-lagged path models are presented in Figure 1.

Occurrence of Interpersonal Stressors

The lagged effect of experiencing an interpersonal stressor on subsequent NSSI urge was significant ($b = 0.78$, Odds Ratio [OR] = 2.18, $p < .01$), whereas the lagged effect of NSSI urge on experiencing a subsequent interpersonal stressor was not significant (see Figure 1A). The chi-square difference test comparing a simplified model without the lagged effect of NSSI urge on interpersonal stressor was not significant, $X^2(1) = 0.97$, $p = .32$, indicating that inclusion of the lagged effect did not improve model fit. In contrast, the lagged effect of experiencing an interpersonal stressor on subsequent NSSI engagement was not significant (see Figure 1B). The lagged effect of NSSI engagement on experiencing a subsequent interpersonal stressor was also non-significant. In turn, evidence from the chi-square difference test indicated that dropping both cross-lagged effects from the model did not decrease model fit, $X^2(2) = 3.95$, $p = .14$.

Subjective Interpersonal Distress

The lagged effect of interpersonal distress on subsequent NSSI urge was significant ($b = 0.38$, OR = 1.46, $p < .01$), whereas the lagged effect of NSSI urge on interpersonal distress was not significant (see Figure 1C). According to the chi-square difference test comparing the fully cross-lagged model to one in which the lagged effect of NSSI urge on interpersonal distress was omitted, inclusion of this lagged effect did not improve model fit, $X^2(1) = 0.92$, $p = .34$. Similarly, the lagged effect of interpersonal distress on subsequent NSSI engagement was significant ($b = 0.20$, OR = 1.22, $p < .01$), whereas the lagged effect of NSSI engagement on interpersonal distress was not significant (see Figure 1D). The chi-square difference test comparing a simplified model without the lagged effect of NSSI engagement on interpersonal distress to the fully cross-lagged model was not significant, $X^2(1) = 0.19$, $p = .66$, indicating that inclusion of this lagged effect did not improve model fit.

Discussion

The present study utilized EMA and multilevel cross-lagged path models to test the hypothesis that interpersonal stressors and higher levels of interpersonal distress would precede and predict subsequent NSSI urges and engagement but not vice versa. Results were partially consistent with our hypothesis. Interpersonal stressors preceded and predicted NSSI urges but not engagement, while higher levels of interpersonal distress preceded and predicted both NSSI urges and engagement. Results of this study are the first to demonstrate temporal relationships between interpersonal factors and NSSI among veterans with NSSI disorder. Findings from this study also address the gap in current understanding of interpersonal risk factors for NSSI more broadly, especially in men.

Findings from this study emphasize the role of interpersonal factors on NSSI urges and engagement and provide support for the inclusion of interpersonal difficulty in the diagnostic criteria for NSSI disorder (American Psychiatric Association, 2013). Results are also in line with emerging evidence from previous EMA studies that interpersonal stress and conflict are risk factors for NSSI urges (Turner et al., 2016; Victor et al., 2019). This also suggests a generalization of previous findings based on predominantly female participants

to the current study sample of predominantly male and veteran individuals. The present study extends results of a similar study with adult women which found that interpersonal stressors alone did not predict subsequent NSSI engagement (Hepp et al., 2021). In contrast to Hepp and colleagues, interpersonal stressors in the present study preceded and predicted subsequent NSSI urges. In line with findings of Hepp and colleagues, the present study also found that interpersonal distress preceded and predicted NSSI engagement. The finding that interpersonal stressors preceded and predicted subsequent NSSI urges in the present study (in contrast to Hepp and colleagues) may be explained by sample differences. The present study was comprised of primarily adult men with PTSD and MDD whereas the participants in Hepp and colleagues study were primarily adult women with lower rates of MDD and PTSD.

The finding that interpersonal distress preceded NSSI engagement, but not vice versa, supports the conceptualization of NSSI as an emotion regulation strategy (Hooley & Franklin, 2018; Klonsky, 2006). According to the Four-Function Model (Nock & Prinstein, 2004), NSSI is maintained by four automatic reinforcement processes (i.e., decreasing negative internal states, increasing positive internal states, decreasing interpersonal demands, and increasing positive response from others). Although NSSI can function to manage unwanted interpersonal states, this function is less common than intrapersonal functions and most NSSI behaviors are not revealed to others (Taylor et al., 2018; Hooley & Franklin, 2018). Interestingly, Turner and colleagues (2016) found that engagement in NSSI when revealed to others actually increased perceived social support. A higher prevalence of intrapersonal functions of NSSI may explain why the occurrence of an interpersonal stressor in the present study preceded NSSI urges but not engagement, while the distress related to this interpersonal stressor preceded both NSSI urges and engagement. Another explanation for the finding that only interpersonal distress preceded NSSI engagement may be that Veterans identified an event that is generally understood as an interpersonal stressor (e.g., verbal argument) but this was not necessarily associated with the degree of distress necessitating emotion regulation via NSSI. To this end, interpersonal stressors were endorsed in 20% of EMA entries but the average interpersonal distress rating indicated a minimal level of associated distress.

An important clinical implication of these findings is the recognition of interpersonal distress as a modifiable risk factor for NSSI. The occurrence of interpersonal stressors and subjective interpersonal distress demonstrated lower stability than NSSI urges and engagement suggesting these interpersonal factors are more adaptable to change. While the *occurrence* of interpersonal stressors may be amenable with conjoint therapy (e.g., couples and family interventions), subjective interpersonal distress associated with these events is a compelling treatment target at the individual level. To this end, evidence suggests psychosocial interventions with interpersonal effectiveness and emotion regulation components such as Dialectical Behavior Therapy (DBT; Linehan, 2020) and Mentalization-Based Therapy (MBT; Allen & Fonagy, 2006) may be effective for targeting NSSI behaviors (Calati & Courtet, 2016; Witt et al., 2021). However, DBT and MBT, to date, demonstrate limited efficacy based on results of meta-analyses for reducing NSSI behaviors, underscoring the need to better understand modifiable risk factors (Hawton et al., 2016; Witt et al., 2021). Accordingly, and in line with current findings, there is emerging support for

novel interventions targeting NSSI behaviors and suicide risk that emphasize interpersonal skills and social support with some preliminary but promising results (Andover et al., 2017; Ammerman et al., 2021; Goodman et al., 2021; Wilks et al., 2019).

This is one of the first studies to temporally examine interpersonal stress and distress as predictors of NSSI in veterans, a population with elevated risk for NSSI and suicide, and thus represents an important contribution. However, results should be interpreted in line with study limitations. First, although the study was sufficiently powered to detect small effects, the relatively small sample size limits generalizability of findings. In addition to a diagnosis of NSSI disorder, the majority of veterans also met criteria for lifetime PTSD or MDD. Given the relationships observed between interpersonal factors and both PTSD (e.g., social selection theory and social causation theory; Shallcross et al., 2016) and MDD (e.g., social signal transduction theory; Slavich et al., 2014), it will be important to replicate findings in individuals without these disorders. Considering this was also a predominantly male sample, generalization of findings to other populations may be limited. Furthermore, the timeframe between EMA prompts was relatively large (up to six hours) which may limit findings, especially with regards to relationships between events and distress endorsed at nighttime and the following morning (i.e., typically a 10-hour interval). There were also likely interindividual differences in the interpretation of EMA prompts, in particular the endorsement of what constitutes an "interpersonal stressor" and relative degrees of interpersonal distress. Single items assessing interpersonal stress and distress, respectively, were chosen to reduce participant burden in responding to multiple EMA surveys per day. Consequently, replication of study results utilizing a more comprehensive measure of interpersonal stress is needed to generalize findings. Single item measures have demonstrated significant predictive validity compared with multiple item measures in EMA studies (Song et al., 2022), however, exclusive use of single items in the present study precludes more rigorous psychometric investigation. Finally, this study did not assess contextual factors such as the type of relationship and person associated with endorsed interpersonal stress (e.g., colleague, romantic partner) which may differentially impact the relationship between interpersonal factors and risk for NSSI.

These limitations notwithstanding, this study is one of the first to temporally examine the relationship between interpersonal factors and NSSI in veterans. Experiencing an interpersonal stressor preceded and predicted NSSI urges, but did not predict engagement in NSSI behaviors. In contrast, subjective ratings of interpersonal distress in response to interpersonal events preceded and predicted both NSSI urges and NSSI engagement. Thus, an important clinical implication of this study is the identification of interpersonal distress as a modifiable risk factor for NSSI. These findings also highlight the potential effectiveness of interventions targeting interpersonal factors to reduce NSSI engagement and other related outcomes. Future research should continue to temporally assess interpersonal risk factors for NSSI using a similarly dimensional approach in order to better understand this relationship and further extend the present findings. Better understanding of not only when interpersonal stressors occur and the associated distress but also in what context, such as the type of interpersonal stressor and relationship affected, can inform relevant treatment approaches to reduce NSSI behaviors.

Acknowledgments

Data Availability Statement:

The dataset analyzed during the current study are available from the corresponding author on reasonable request.

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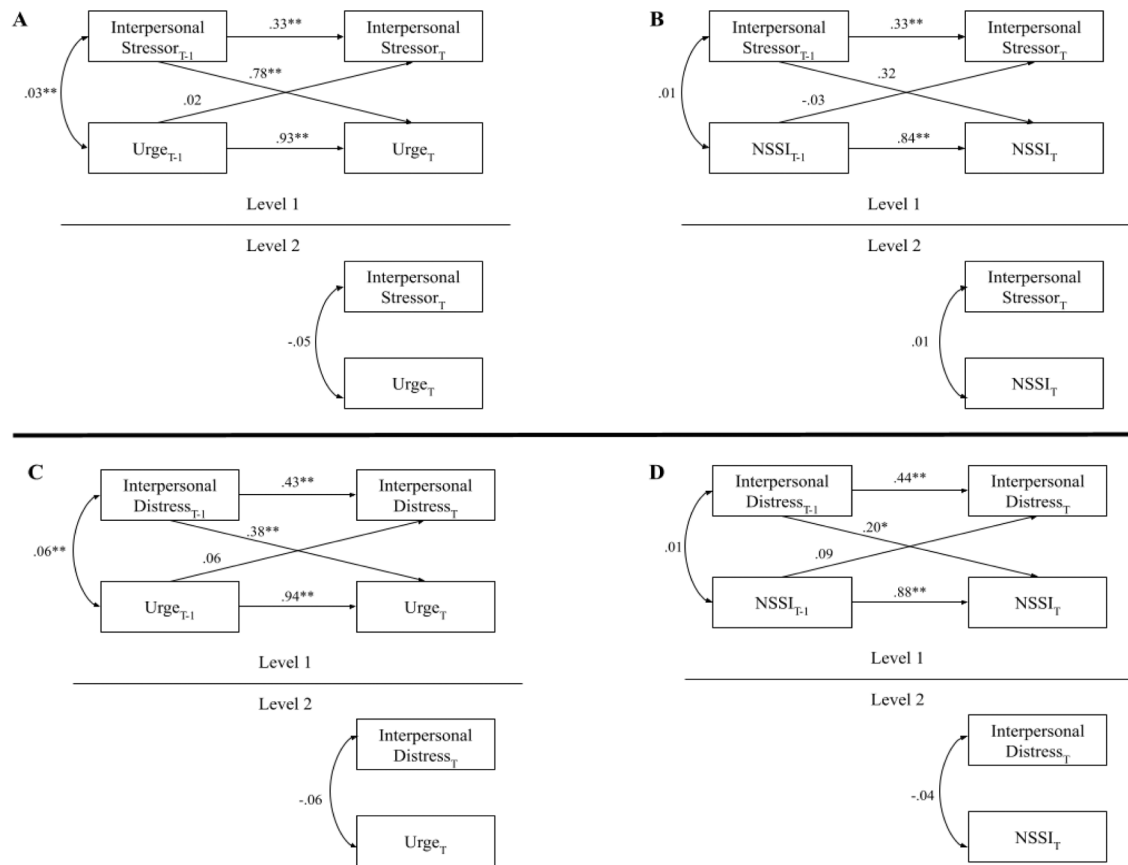
Figure 1. Multilevel Cross-Lagged Path Models of Interpersonal Stress, Nonsuicidal Self-Injury Urges, and Nonsuicidal Self-Injury Engagement

Note: Cross-lagged path models of interpersonal stress and interpersonal distress on NSSI urge and engagement. Level 1 represents within-person relationships, Level 2 represents between-person relationships. NSSI urge and engagement are dichotomous and thus corresponding coefficients may be exponentiated for odds ratios. *p<.05, **p<.01.

Table 1

Demographic Characteristics

Participant Demographics	
Age, years	46.7 ± 12.8
Men % (*n*)	72.5% (*29*)
Marital status	
Single	45.0% (*18*)
Married/Partnered	55.0% (*22*)
Education level %, (*n*)	
Some/completed high school	12.5% (*5*)
Some college/trade/certification	40.0% (*16*)
Associate degree	20.0% (*8*)
Bachelor's degree	22.5% (*9*)
Graduate degree	5.0% (*2*)
Race % (*n*)	
White	45.0% (*18*)
Black/African American	52.5% (*21*)
More than one race endorsed	2.5% (*1*)
Comorbid Diagnoses[a]	
Posttraumatic stress disorder	92.5% (*37*)
Major depressive disorder	92.5% (*37*)
EMA Diary Descriptors	
Entries per person	43.8 ± 14.0
NSSI urges % (*n*)	19.3% (*388*)
NSSI engagement % (*n*)	9.3% (*187*)
Interpersonal stressor % (*n*)	19.3% (*388*)
Interpersonal distress	0.2 ± 0.8

Note:

[a]34 veterans, 85%, met diagnostic criteria for both posttraumatic stress disorder and major depressive disorder. Data presented as mean ± standard deviation unless otherwise indicated, EMA = ecological momentary assessment, NSSI = Nonsuicidal self-injury. Diary descriptors are based on EMA entries occurring within 6 hours of a previous reading.