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Interpersonal Emotion Regulation, Suicide Attempts, and Self-Injurious Behavior

by

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Abstract

Emotion dysregulation and intense affect have been found to differentiate people who only think about suicide from people who attempt suicide, and social support is a protective factor against suicide attempts. Prior research has not conceptualized social influences on affective processes as a cohesive process in the development and evaluation of suicide risk. The current study investigates the role of interpersonal emotion regulation (IER), or how others manage or change individuals' emotions, in both chronic and acute suicide risk. IER can contribute to chronic suicide risk by influencing intrapersonal emotion regulation long-term, and increasing acquired capability through dysregulated behaviors such as non-suicidal self-injury (NSSI). It can also be an aggravating factor in the moments preceding a suicide attempt or engagement in NSSI. To elucidate these relationships, we collected self-report measures of suicide ideation (SI), suicide attempts (SA), NSSI, and IER at two time points six weeks apart from a sample of young adults ($N = 167$). Regression analyses revealed that IER predicted SI, SA, and NSSI, but only cross-sectionally (not prospectively). Specifically, adaptive IER protected against SA, while punitive responses were associated with higher SI severity, lifetime SA, and lifetime NSSI. Contrary to expectations, invalidation/minimization buffered against lifetime NSSI. Effect sizes were stronger for analyses predicting SA and NSSI, compared to those predicting SI, suggesting that IER may differentiate between individuals who only think about suicide from those who engage in self-harm and suicidal behaviors.

Keywords: suicide risk, non-suicidal self-injury, interpersonal emotion regulation, social support

Interpersonal Emotion Regulation, Suicide Attempts, and Self-Injurious Behavior

Suicide is a leading cause of death in the United States (NIMH, 2019), but despite increased efforts over the past few decades, researchers, clinicians, and policy-makers have made slow progress in preventing and assessing suicide risk. Differentiating between individuals who only think about suicide and individuals who take action to attempt suicide is an emerging area of research that may help in reducing suicide deaths (Klonsky & May, 2014). Previous research has established that overwhelming emotions and difficulty in controlling and accepting emotions commonly precede suicide attempts (Hendin et al., 2010). Further, social relationships play a critical role in individuals' wellbeing, and lack of social support is associated with a host of serious problems, including suicide attempts (King & Merchant, 2008; Kleiman & Liu, 2013; Thoits, 2011).

Despite increasing evidence that both interpersonal and emotion-related risk factors are associated with suicidal thoughts and behavior, they have not been closely examined or conceptualized as an integrated process in the suicide literature. While most research in clinical psychology has focused on how social interactions (particularly long-term processes such as social support or coping) are perceived by the individual, it is important to recognize these interactions as dynamic, dyadic, and temporal processes (Dixon-Gordon et al., 2015). That is, compared to how individuals perceive and internalize others and their relationships *intrapersonally*, less focus is placed on how *others* influence the individual—especially in the short term. Interpersonal emotion regulation (IER), a process in which others influence and help regulate individuals' emotions, has been found to relate to various psychopathologies (for a review, see Barthel et al., 2018). However, to our knowledge, it has not been applied to suicide research. IER may play an integral role in the process of suicidal thoughts escalating to suicidal

behaviors within an acute episode spanning days, hours, or minutes. The current paper presents evidence that social influences, particularly interpersonal emotion regulation, may contribute to intense affect that poses acute risk for a suicide attempt, through maladaptive interpersonal emotion regulation or lack of access to adaptive interpersonal emotion regulation. In addition, interpersonal emotion regulation can increase chronic suicide risk, by exerting a consistent influence on the individual over time, and by altering the individual's intrapersonal emotion regulation processes.

We conceptualize our model in accordance with the fluid vulnerability theory (Rudd, 2006), which states that suicidal episodes are time-limited, and that chronic risk interacts with acute aggravating factors to trigger the suicidal mode (for a more detailed explanation of the suicidal mode, see Rudd et al., 2000). Chronic risk is an individual's baseline susceptibility to triggering of the suicidal mode, which might consist of factors such as biological loading, cognitive schemas, emotion dysregulation, etc. Rudd theorizes that chronic risk is higher in individuals who attempt suicide (compared to individuals who only think about suicide), particularly those with multiple attempt histories. In other words, the suicidal mode is more easily triggered by aggravating factors (such as a personal failure, conflict with others, or internal thoughts) in individuals who have attempted suicide multiple times than among individuals who have not attempted suicide or only attempted once. Both chronic and acute aggravating risk factors cut across four major domains that synchronously influence the suicidal mode: cognitive, affective, physiological, and behavioral. In this paper, we focus largely on short-term affective processes that interact with the other three domains to trigger a suicidal episode, potentially leading to a suicide attempt.

Emotion dysregulation in suicide risk

Emotion regulation is a widely studied process in clinical psychology, but the term is still ambiguous and may refer to a number of different processes and strategies. Generally, emotion regulation (or affect regulation, interchangeably) refers to the management or modulation of emotions. The Gross or process model (1998) is an influential conceptualization of emotion regulation that suggests it is a series of processes that includes both cognitive and behavioral responses to emotions. These include situation selection, situation modification, attention deployment, cognitive change, and response modification. Emotion regulation may also be conceptualized as a set of strategies, some of which are adaptive (i.e. acceptance, problem solving, reappraisal), and others maladaptive (i.e., avoidance, rumination, suppression) (Aldao et al., 2010). Emotion dysregulation, conversely, can be considered “a pattern of emotional experience and/or expression that interferes with appropriate goal-directed behavior” (Beauchaine, 2015, p. 876), and is a transdiagnostic factor for various psychopathologies. For a review of emotion dysregulation and psychopathology, see Beauchaine & Cicchetti (2019).

Intense and overwhelming emotions are a significant predictor of short-term suicide attempt risk (Hendin et al., 2010), and difficulty understanding, expressing, and managing emotions is associated with both suicidal ideation and attempts (Cha & Nock, 2009; Jacobson et al., 2011). Problems in emotion regulation differentiate between people who think about suicide only and those who attempt it (Zlotnick et al., 2003), as well as between individuals with history of only one attempt and those with multiple attempts (Esposito et al., 2003). Furthermore, different dimensions of emotion dysregulation may have different effects on suicide ideation and attempts. For example, perceived lack of access to emotion regulation strategies differentiates between non-attempting or non-suicidal controls and participants with a history of only one attempt, as well as between controls and participants with multiple attempts; nonacceptance of

emotions differentiates between controls and multiple-attempt participants (Rajappa et al., 2012). Furthermore, nonacceptance and lack of access to strategies also differentiate between chronic suicide ideation and declining suicide ideation in adolescents following psychiatric hospitalization (Wolff et al., 2018).

Suicide and self-harm behaviors may furthermore be considered a form of maladaptive emotion regulation, in which individuals seek to escape aversive affective sensations (i.e., emotional pain) through suicide or NSSI. Notably, non-suicidal self-injury (NSSI) is often used as a maladaptive coping strategy to disrupt or terminate intense emotions (Klonsky, 2009; Mikolajczak et al., 2009), and history of past attempts and history of NSSI are robust predictors of future suicide attempts (Asarnow et al., 2011). Law and colleagues (2015) suggest that emotionally dysregulated individuals may be at higher risk of a suicide attempt, because emotion dysregulation is not only linked to increased desire for suicide, but suicide attempts are made possible when individuals are habituated to pain through NSSI (i.e., their acquired capability for suicide increases; see Van Orden et al., 2010). In this sense, trait-level emotion dysregulation serves to increase chronic suicide risk as conceptualized in the fluid vulnerability model: overwhelming negative emotions and poor ability to manage them decrease the threshold to triggering the suicidal mode, while NSSI as maladaptive emotion regulation further increases risk via acquired capability. State-level emotion dysregulation may also be considered an aggravating factor affecting acute suicide risk. Adding to this model, we suggest social factors such as interpersonal emotion regulation can contribute to chronic risk through long-term influence on *intrapersonal* emotion regulation. Furthermore, interpersonal emotion regulation can escalate or deescalate suicidal ideation as an aggravating acute factor, potentially leading to a suicide attempt.

Interpersonal emotion regulation

The term “interpersonal emotion regulation” is used inconsistently within psychology. For example, it may refer to individuals seeking out social support from others (Niven, 2017), or using others to regulate their own emotions (Hofmann et al., 2016), usually to alleviate distress or promote positive emotions. In Zaki and Williams’ (2013) model of interpersonal emotion regulation, seeking social support would be considered *intrinsic* interpersonal emotion regulation. For example, Sam may reach out to a friend, Alex, to talk through a problem (a *response-dependent* process) or be comforted by their mere presence (a *response-independent* process). In contrast, *extrinsic* emotion regulation might occur when one acts to change *another’s* emotions—for example, if Alex notices Sam is upset and puts an arm around them. Adaptive interpersonal emotion regulation strategies include attentional deployment (i.e., distracting from a negative situation, redirecting focus on positive stimuli, etc.), cognitive change (i.e. reinterpreting a situation, rebutting negative self-schemas, etc.), soothing, validation, and problem-solving (Marroquín, 2011). Importantly, interpersonal emotion regulation is not always effective or adaptive. In the current paper, we are interested in the effects of others’ responses and behaviors on individuals (i.e., extrinsic regulation), or how interpersonal emotion regulation affects *intrapersonal* emotion regulation. We are not necessarily only interested in how social supporters effectively down-regulate negative emotions or promote positive ones, but also in how others might trigger or exacerbate negative emotions—that is, dysregulate emotions—whether purposefully or not.

A number of maladaptive interpersonal emotion regulation strategies have been found to be linked to psychopathology and other negative outcomes. Intrinsic interpersonal emotion regulation strategies such as venting or reassurance-seeking might be maladaptive. Venting may

not actually alleviate distress and may in fact increase it; individuals with depression do not engage in enough reassurance-seeking, while anxiety and borderline personality disorder are associated with excessive reassurance seeking (Dixon-Gordon et al., 2018). Marroquín (2011) suggests others might influence negative attentional bias and cognitive reframing in depression. While a social supporter might effectively brighten an individual's mood by distracting them or emphasizing positive aspects of a negative event, they might also co-ruminate, leading to a more negative mood (Rose, 2002), or over-generalize (i.e. "you always fall for the kind of person who is bad for you"). As noted by Dixon-Gordon and colleagues (2015), interpersonal emotion regulation may become ineffective or maladaptive even when "adaptive" strategies are adopted—for example, if either the target partner or interaction partner misinterprets or miscommunicates with the other, or if either has poor intrapersonal emotion regulation (i.e., lack of understanding of emotions or inability to down-regulate emotions). The target partner might also have misguided goal-directed behavior, or make poor choices in interaction partners.

Invalidation, minimization, or punitive reactions (i.e., getting angry or upset, negative communication) are other types of maladaptive interpersonal emotion regulation that have negative consequences for the target individual. This research has primarily been within the developmental literature. Emotion socialization may be considered a long-term form of interpersonal emotion regulation, and indeed supportive (vs. unsupportive) parenting and children's adaptive (vs. maladaptive) emotion regulation have a reciprocal relationship (Morelen & Suveg, 2012). Furthermore, maternal invalidation is associated with heightened anger in adolescents engaging in NSSI (Crowell et al., 2013). Similarly, low maternal validation/support coupled with high maternal problem solving moderates the relationship between negative affect and borderline personality disorder symptoms in adolescent girls (Dixon-Gordon et al., 2016).

Abuse and expressed emotion (expressions of hostility, criticism, or emotional over-involvement, especially toward persons with psychiatric disorders), which are both associated with psychopathology, NSSI, and suicide risk (Dube et al., 2001; Hooley, 2007; Liu et al., 2018; Ruscio et al., 2017), might also be considered negative forms of interpersonal emotion regulation. We sought to understand how interpersonal emotion regulation can escalate or deescalate suicidal ideation, potentially leading to a suicide attempt.

The current study

Given the effects of interpersonal emotion regulation on *intrapersonal* emotion regulation, and the important role of emotion dysregulation in self-injurious behaviors, we sought to conduct an exploratory study on the association between interpersonal emotion regulation, suicide ideation and attempts, and NSSI. Conceptualizing interpersonal emotion regulation as both a long-term characteristic affecting chronic suicide risk, as well as a short-term aggravating factor affecting acute suicide risk, we identified two aims:

1. Cross-sectionally, investigating if and how interpersonal emotion regulation, as a chronic risk factor, is related to suicide ideation severity, and lifetime non-suicidal self-injury and suicide attempts.
2. Prospectively, examining the predictive power of interpersonal emotion regulation, as an acute aggravating factor, on engagement of non-suicidal self-injury and change in severity of suicide ideation within six weeks after baseline.

Methods

Participants

Participants ($N = 167$) were recruited from an introductory psychology course in a large, metropolitan Northeast university. One hundred and thirty individuals (77.8%) in the sample

were women, and 37 were men (22.2%). Participant ages ranged from 18 to 41 ($M = 19.51$, $SD = 2.721$) and the sample was racially and socioeconomically diverse. 40.7% of the participants were Asian, Native Hawaiian, or other Pacific Islander, 23.4% were Non-Hispanic White, 20.4% were Hispanic/Latinx, 8.4% were Non-Hispanic Black or African-American, and 7.2% were of another racial group (i.e., Native American, mixed race, etc.). 17.4% of students reported \$24,999 or less in family income, 25.7% reported \$25,000–\$49,999, 14.4% reported \$50,000–\$74,999, and 18.6% reported \$75,000 or greater. 24% of students indicated they did not know, refused to answer, or did not answer how much income their family earned.

Procedure

All study procedures were approved by the Institutional Review Board of the City University of New York. Participants were recruited online to fulfill requirements for an introductory psychology course. To be eligible for participation, students were required to be 18 years old or older, and score above 18 on the Depression, Anxiety, and Stress Scale. This cutoff was selected because it met the threshold for moderate depression, severe anxiety, or moderate stress. After indicating interest, participants responded to questionnaires online, which include measures of depression, anxiety, suicide ideation and attempts, non-suicidal self-injury, interpersonal emotion regulation, social support, childhood trauma, impulsivity, emotion reactivity, and substance use. After six weeks, participants were contacted via email to complete a follow-up survey, in which they reported on measures of self-injurious thoughts and behaviors, interpersonal emotion regulation, and depressive symptoms. Participants were compensated with course credit or a \$10 Amazon gift card after completing each set of questionnaires.

Measures

Interpersonal emotion regulation. Interpersonal emotion regulation was measured via self-report using the External Emotion Regulation Questionnaire or EERQ (Marroquín, 2013), a 44-item self-report questionnaire. One item measuring co-rumination was removed due to an error in data collection. Participants were asked to think of one individual who is “most often with you when you are emotional” and to indicate how frequently the social supporter responds to negative emotions, selecting an answer from a scale from “almost never (0-10%)” to “almost always (91-100%).”

We conducted a factor analysis, which revealed four subscales: adaptive interpersonal emotion regulation, invalidation/minimization, empathy, and punitive responses. *Adaptive interpersonal emotion regulation* included 17 items such as “When I am feeling upset, this person thinks about what things I can do to change my situation,” “...accepts that whatever emotions I’m feeling are real and important,” “...reminds me about positive things in my life or around me,” “...helps me think differently about the things that led to how I’m feeling,” and “...tries to cheer me up by reminding me of my strengths.” This subscale spanned multiple constructs of interpersonal emotion regulation, from action-focused problem solving to cognitive reframing to validation. The *invalidation/minimization* subscale had six items, including “...seems to think I should not feel how I’m feeling,” “...tells me that I am over-reacting,” and “...communicates to me that the problems I’m facing are minor.” The *empathy* subscale included 4 items, such as “...feels the same things I feel in the moment” and “...is able to see things from my perspective.” *Punitive responses* had 11 items, including “...seems to want me to stop talking about how I feel,” “...does not try to comfort me,” “...gets frightened or anxious about me showing how I am feeling,” “...focuses only on the negative aspects of the current situation,”

and "...stays away from me for a little while." Rather than treating IER as one homogenous construct, these four subscales were included in analyses independently.

Overall, the EERQ had strong internal consistency, Cronbach's $\alpha = 0.82$. Internal consistencies were strong for the four subscales as well, $\alpha = .95$ for adaptive IER, $\alpha = .81$ for invalidation/minimization, $\alpha = .81$ for empathy, and $\alpha = .91$ for punitive responses. EERQ subscales were modestly test-retest reliable. For adaptive IER, $r = .50, p < 0.001$; for invalidation/minimization, $r = .41, p < 0.001$; for empathy, $r = .46, p < 0.001$; and for punitive response, $r = .59, p < 0.001$.

Suicide ideation severity. The Adult Suicidal Ideation Questionnaire (ASIQ) was used to measure severity of suicide ideation in the past month, with a higher score indicating higher severity. Twenty-five self-report items included statements such as "I thought it would be better if I was not alive," "I thought that people would be happier if I was not around," and "I thought that if things did not get better I would kill myself." Responses indicated frequency of thoughts, on a range from 0 ("I never had this thought") to 6 ("almost every day"). The ASIQ's internal consistency coefficients range from .96 to .97, while retest coefficients range from .85 to .95 (Reynolds, 2020).

Suicide attempts and non-suicidal self-injury. Using an abbreviated self-report version of the Self-Injurious Thoughts and Behavior Interview (SITBI; Nock et al., 2007), participants indicated lifetime SI, SA, thoughts of NSSI, and engagement in NSSI, and also provided information on the intensity, frequency, and circumstances of the thoughts and behaviors—as well as any methods, if applicable. A modified version of the SITBI was used for the follow-up survey, specifying thoughts and behaviors occurring in the past six weeks. The SITBI has strong test-retest reliability for suicide ideation ($\kappa = .70$), suicide attempt ($\kappa = .80$), and NSSI ($\kappa = 1.0$);

it also has strong construct validity, based on agreement with other validated measures of suicide risk (Nock et al., 2007).

Analytic plan

We used a dichotomous variable for sex, with men as the reference group. Participants' race was coded as Non-Hispanic White, Non-Hispanic Black, Hispanic, Asian or Pacific Islander, and other. The other category included mixed race and Native American individuals. We used dichotomous SA and NSSI variables, because few participants endorsed either SA or NSSI, making continuous or ordinal variables difficult to interpret.

To investigate the relationships between interpersonal emotion regulation, SI, SA, and NSSI, we ran a series of regression analyses. For Aim 1, we ran a multiple linear regression using the four IER subscales (adaptive IER, invalidation/minimization, empathy, and punitive responses) as predictors of suicide ideation severity at baseline, adjusting for sex. We then ran binary logistic regression analyses investigating the relationship between IER, SA, and NSSI. Due to the low number of participants who endorsed SA in the sample, we conducted four separate binary logistic regressions, each adjusting for sex, examining the relationship between each of the four IER subscales and SA. Lastly, we ran a binary logistic regression with all four subscales as covariates predicting endorsement of lifetime NSSI, again adjusting for sex.

For Aim 2, we ran a hierarchical linear regression with the four IER subscales reported at baseline as predictors of suicide ideation severity at follow-up. Analyses adjusted for sex, history of suicidal or self-harm behaviors (dichotomous variable combines endorsement of either SA or NSSI), and SI at baseline. Lastly, we conducted four binary logistic regressions to test whether each of the baseline IER subscales predicted engagement in NSSI in the six weeks prior to

follow-up, adjusting for NSSI history. Four separate analyses were necessary because of the low rate of NSSI endorsement at follow-up.

Results

Preliminary analyses

Of the 167 individuals who participated in the study, 14 individuals (8.4%) endorsed having attempted suicide at least once in their lifetimes. Forty-eight individuals (28.7%) endorsed engagement in NSSI in their lifetimes. The ASIQ scores at baseline ranged from 0 to 140 ($M = 27.64$ $SD = 29.51$).

SI severity, lifetime NSSI, lifetime SA, and each of the four IER subscales did not differ significantly based on race or income, though there was a trend for punitive response scores to differ by income group. We found a significant sex difference in endorsement of lifetime NSSI ($\chi^2(1) = 9.88, p < .01$), even with the disproportionately female sample, with women ($N = 45$ or 34.61% of women) more likely to endorse NSSI than men ($N = 3$ or 8.10% of men).

Of the 167 participants who completed the baseline survey, 79 participants also completed the follow-up survey (47.3%). T-tests and chi-square analyses indicated no demographic differences between participants who completed the follow-up and those who did not. There were also no differences between these two groups in mean IER subscale scores, SI severity (measured using the ASIQ) scores, or endorsement of NSSI. Of the 79 participants who completed follow-up, 5 individuals (6.3%) engaged in NSSI within the six weeks before follow-up, and the mean ASIQ score was 20.91 ($SD = 20.94$). The mean ASIQ score was significantly lower at follow-up than at baseline, $t(77) = 4.14, p < .01$. Because all five participants who engaged in NSSI were female, sex was removed as a covariate in the binary logistic regression only for this analysis.

Ninety-five (56.9%) of the 167 participants who completed baseline were recruited in November and December of the Fall semester during the 2019-2020 school year, and completed follow-up over winter recess. The other 72 participants were recruited during Spring semester of the same school year and completed follow-up throughout the rest of the semester. Of the 79 participants who completed follow-up, 59 (74.7%) were recruited during the fall semester, because at the time of this writing, many participants recruited in the spring will not have reached the six-week follow-up period yet. Chi square tests revealed participants who completed follow-up were disproportionately recruited during the fall semester, $\chi^2(1) = 19.362, p < .01$.

Cross-sectional analyses

To examine Aim 1, we conducted regression analyses to determine if active IER, invalidation/minimization, empathy, or punitive responses significantly predicted SI severity, SA, or NSSI while adjusting for sex. Greater endorsement of punitive responses from social supporters significantly predicted higher SI severity cross-sectionally, but none of the other IER subscales were significant predictors, $R^2 = .05, F(5, 161) = 2.84, p = .02$. Adaptive IER was negatively associated with endorsement of lifetime SA (Nagelkerke $R^2 = .13$), and punitive responses were positively associated with lifetime SA (Nagelkerke $R^2 = .11$). Neither invalidation nor empathy significantly predicted lifetime SA. Invalidation/minimization and punitive responses, but not adaptive IER or empathy, significantly predicted endorsement of lifetime NSSI, Nagelkerke $R^2 = .23$. Invalidation and NSSI were negatively associated, while punitive responses and NSSI were positively associated. See Table 1 for more details.

Prospective analyses

Regression analyses revealed that none of the IER subscales predicted SI severity at follow-up ($R^2 = .63, F(11, 66) = 12.69, p < .01$), or NSSI engagement within the six weeks

between baseline and follow-up (Nagelkerke $R^2 = .15$ to $R^2 = .18$). Note two of the 79 participants had missing data, so were excluded from the regression predicting SI. Sex was not included as a covariate in the regression predicting NSSI, because only women engaged in NSSI prior to follow-up. See Table 2 for more details.

Discussion

We report evidence that interpersonal emotion regulation, specifically adaptive IER, invalidation/minimization, and punitive responses, is associated cross-sectionally with suicide ideation, suicide attempts, and non-suicidal self-injury. Effect sizes were larger in analyses predicting NSSI and SA than in analyses predicting SI severity. Interpersonal emotion regulation did not significantly predict NSSI or SI severity prospectively.

Our findings suggest that interpersonal emotion regulation may play a larger role in suicidal and self-injurious behaviors than in ideation alone. Adaptive interpersonal emotion regulation (i.e., cognitive reappraisal, problem solving, cheerleading, validation, etc.) was negatively associated with suicide attempts, but not with suicide ideation. Similarly, punitive responses (i.e., expressing discomfort, withdrawing, not offering help or comfort, etc.) were more strongly associated with suicide attempts and non-suicidal self-injury than with suicide ideation, based on effect sizes. This may be due to the long-term effects other people have on intrapersonal emotion regulation. For example, individuals' emotion regulation may be socialized through the emotional responses and modeling of the people around them, particularly significant others such as parents (see review on emotion socialization, Johnson et al., 2017). Additionally, social interactions may play a crucial role in the moments directly before a suicide attempt or engagement in NSSI, which may be related to the intense affect and emotion dysregulation associated with these behaviors (Glenn et al., 2011; Hendin et al., 2010). Suicide

ideation, by contrast, may not be as closely tied to emotional states affected by other people. For example, cognitive risk factors may be more strongly associated with suicide ideation than attempts. A 2017 meta-analysis found that rumination had moderate to strong associations with both suicide ideation and attempts, but effect sizes were larger for suicide ideation than for suicide attempts (Rogers & Joiner, 2017). While cognitive and other risk factors are also imperative to understanding suicide, our findings were consistent with previous research indicating emotion dysregulation may differentiate people who only think about suicide from those who attempt it.

Punitive responses were particularly consistent in their relationship with self-injurious thoughts and behaviors, given this IER factor was the only one in the current study that significantly predicted all three outcomes cross-sectionally. One interpretation of these findings is that maladaptive interpersonal emotion regulation might be a more robust predictor of SI, SA, and NSSI than adaptive interpersonal emotion regulation. In other words, others' maladaptive responses to emotions may be more likely to induce a suicide attempt or engagement in NSSI than adaptive responses are to prevent them. Indeed, this finding is consistent with literature indicating maladaptive emotion regulation strategies such as rumination, avoidance, and suppression have larger effects on numerous forms of psychopathology than adaptive emotion regulation strategies like reappraisal and acceptance (Aldao et al., 2010). In this case, interventions for individuals at imminent risk of suicide attempts or self-harm behavior should prioritize decreasing exposure to maladaptive IER rather than increasing access to adaptive IER.

Invalidation/minimization was also a significant predictor of lifetime NSSI. However, contrary to prior research reporting emotion suppression leads to heightened negative affect and is linked to psychopathology (Hofmann et al., 2016), we found that invalidation/minimization

was negatively associated with lifetime NSSI. That is, in our sample, the more invalidation/minimization an individual experienced, the less likely they were to report having engaged in NSSI.

While invalidation and minimization are largely considered maladaptive interpersonal emotion regulation strategies, it is possible that they may provide protective effects against self-injurious behaviors in certain contexts. Emotionally dysregulated individuals may have difficulty with either “too much” emotion or “too little” emotion, or both. For example, high school students who reported high restrictive emotionality (difficulty understanding and expressing emotions) were more likely to endorse depression, suicide ideation, and suicide attempts than those who reported low restrictive emotionality (Jacobson et al., 2011). On the other hand, emotion reactivity (or high sensitivity, intensity, and duration of emotions) is higher for individuals who engage in NSSI than those who do not (Kleiman et al., 2014), and is a mediator between psychopathology (depression and borderline personality disorder) and both NSSI and SA, dependent on gender (Glenn et al., 2011). Invalidation or minimization may be more harmful for individuals who struggle with expressing emotions, but protective for those who are more emotionally reactive. Individuals with high emotion reactivity may experience intense affect incommensurate to the severity of the situation or problem they face. In certain circumstances, minimization (i.e., suggesting the person is over-reacting; that their feelings do not make sense) may function similarly to more adaptive IER strategies (i.e., showing the person that the situation is manageable and strong emotions are clouding their judgement). Notably, in the current study, the effect of invalidation/minimization is significant only in cross-sectional analyses predicting NSSI, and effect sizes in these analyses were the largest overall in the current study. Given that NSSI is associated with high emotion reactivity and dysregulation, and can be

considered a maladaptive emotion regulation strategy (Klonsky, 2009; Nock et al., 2008; Wolff et al., 2019), it is possible that individuals who engage in NSSI are more likely to be highly emotionally reactive and expressive, and that they may be buffered against NSSI if a social supporter invalidates or minimizes disproportionately intense emotions.

Additionally, it is possible that psychological risk factors such as childhood maltreatment, particularly psychological maltreatment, can moderate how individuals interpret invalidation/minimization responses. An individual with no history of abuse or maltreatment may be more likely to interpret invalidation or minimization responses as a well-intentioned attempt to down-regulate overly intense emotions, while those who have abuse histories may react more negatively to invalidation/minimization. Alternatively, individuals who have experienced invalidation previously may develop resilience to this maladaptive emotion regulation strategy.

In addition to the unexpected finding that invalidation/minimization protected against NSSI, the lack of significant effects in prospective analyses is another outcome that requires further investigation. One potential explanation is that we simply did not have enough power in the prospective analyses to detect an effect, given only five individuals endorsed NSSI engagement between baseline and follow-up. Additionally, the majority of participants who completed the follow-up were recruited in the fall semester, and completed baseline during their college final examinations, while the follow-up was completed over winter recess. The decrease in stressors may account for the reduction in mean ASIQ scores across baseline and follow-up. These logistical limitations may have played a role in our detection of these effects in prospective analyses.

We also interpret our findings considering theoretical limitations. A central consideration is whether interpersonal emotion regulation can be conceptualized as a chronic risk factor, an acute risk factor, or both—particularly in relation to the fluid vulnerability model (see Rudd, 2006). Our measure of IER had moderate test-retest reliability, suggesting that IER is not a fully stable construct. However, only our cross-sectional analyses, which conceptualized IER as a chronic risk factor for suicide risk, showed significant relationships; IER, conceptualized as an acute aggravating factor, did not predict NSSI or SI severity prospectively. These outcomes appear to be at odds with one another. We believe these gaps in theory may be addressed by increasing power and improving the operationalization of our variables. Our exploratory study design limited our conceptualization of interpersonal emotion regulation as primarily trait-like, rather than state-like. To improve the model, the effect of interpersonal emotion regulation on SI, SA, and NSSI should be measured on the scale of days to hours, rather than weeks, to capture its predictive power as an acute aggravating factor.

Future studies should consider a number of different methodologies and relevant constructs to better understand the relationship between IER and suicide risk. First, ecological momentary assessment methodologies may be used to measure changes in social interactions and emotions around and within acute suicidal episodes. Additionally, to differentiate between how individuals *perceive* others' effect on their emotions and how others *actually* act to manage and change individuals' emotions, it is necessary to conduct research with dyads. Behavioral observations, or collecting data from both members of dyads, is logistically challenging but necessary to properly elucidate the effects of interpersonal emotion regulation. Lastly, other factors such as history of trauma or maltreatment and emotion reactivity may moderate the relationship between IER and suicide risk, so future research should incorporate these as

variables in improved models. Negative urgency, or the tendency to act impulsively in response to negative emotions, is another trait that may be relevant in how individuals respond to maladaptive interpersonal emotion regulation during an intense affective state or acute suicidal episode. Social interactions may increase or fail to decrease negative emotions, leading to rash coping mechanisms through negative urgency such as NSSI, which in turn heightens acquired capability and suicide risk. For example, one study found that dysregulated behaviors such as NSSI fully mediated the relationship between negative urgency and both acquired capability and suicide attempts (Anestis et al., 2012). Consideration of relevant intrapersonal characteristics, emphasis on dyadic interactions, increased power, and focus on social and affective changes within an acute suicidal episode may clarify the relationship between interpersonal emotion regulation and suicide risk in future research.

A further consideration for future studies is that the relationship between interpersonal and intrapersonal emotion regulation may be bi-directional. While the current paper modeled the effect of external influences on an individual's emotional state, poor self-regulation may also lead individuals to choose to engage in harmful situations and social interactions. For example, emotion dysregulation is a mechanism linking childhood physical and/or sexual abuse and sexual revictimization in adulthood (Messman-Moore et al., 2010). Interpersonal and intrapersonal emotion regulation may exert influence on each other in a positive feedback loop, becoming increasingly adaptive or maladaptive over time. Future research should consider the complex and nuanced relationships between environmental, social, and personal factors, and how they mutually influence each other, in suicide risk.

Despite its limitations, the current study presents compelling exploratory findings on interpersonal emotion regulation as a potential differentiator between individuals who experience

suicidal ideation only versus those who also attempt suicide. In particular, we found that adaptive interpersonal emotion regulation was protective against suicide attempts, and that punitive responses (or maladaptive interpersonal emotion regulation) were associated with suicide ideation, suicide attempts, and non-suicidal self-injury. Other people can exert a profound effect on an individuals' mental and physical well-being, and merely evaluating the presence or absence of social support can overlook the nuances of whether those interactions are actually adaptive or maladaptive. Our findings suggest the ways people interact with others and the specific strategies they employ to regulate their emotions should be considered when evaluating suicide risk.

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Table 1. Cross-sectional Regression Analyses

Multiple Linear Regression Predicting SI Severity at Baseline					
	<u>b</u>	<u>S.E.</u>	<u>β</u>	<u>p</u>	<u>95% CI</u>
Adaptive	.05	0.19	0.03	.80	-0.33 – 0.43
Invalidation	-.89	0.52	-0.16	.09	-1.92 – 0.14
Empathy	-.82	0.67	-0.11	.22	-2.14 – 0.50
Punitive	1.01	0.39	0.28	.01*	0.24 – 1.79
Sex	10.95	5.45	0.16	.05*	0.19 – 21.71

f					
	<u>b</u>	<u>S.E.</u>	<u>OR</u>	<u>p</u>	<u>95% CI (for OR)</u>
<i>Model 1</i>					
Adaptive	-0.04	0.02	0.96	.01**	0.92– 0.99
Sex	1.76	1.08	5.83	.10	0.70 – 48.34
<i>Model 2</i>					
Invalidation	-0.12	0.05	0.99	.83	0.89 – 1.10
Sex	1.38	1.06	3.99	.19	0.50 – 31.56
<i>Model 3</i>					
Empathy	-0.07	0.07	0.94	.37	0.81 – 1.08
Sex	1.45	1.06	4.27	.17	0.54 – 34.04
<i>Model 4</i>					
Punitive	0.07	0.03	1.07	.01*	1.01 – 1.13
Sex	1.64	1.09	5.14	.13	0.61 – 43.13

Binary Logistic Regression Predicting Lifetime NSSI					
	<u>b</u>	<u>S.E.</u>	<u>OR</u>	<u>p</u>	<u>95% CI (for OR)</u>
Adaptive	0.03	0.02	1.03	.11	0.99 – 1.06
Invalidation	-0.16	0.05	0.85	.00**	0.77 – 0.94
Empathy	-0.10	0.06	0.91	.09	0.82 – 1.01
Punitive	0.12	0.04	1.13	.00**	1.05 – 1.21
Sex	2.14	0.71	8.51	.00**	2.12 – 24.24

Note: * = $p < .05$; ** = $p < .01$; $N = 167$. Men are the reference group for sex.

Table 2. Prospective Regression Analyses

Multiple Linear Regression Predicting SI Severity at Follow-Up					
	<u>b</u>	<u>S.E.</u>	<u>β</u>	<u>p</u>	<u>95% CI</u>
Adaptive	0.04	0.14	0.03	.77	-0.24 – 0.32
Invalidation	0.14	0.41	0.04	.74	-0.68 – 0.95
Empathy	0.41	0.44	0.08	.35	-2.14 – 0.50
Punitive	-0.20	0.33	-0.08	.54	-0.86 – 0.45
Sex	6.48	4.10	0.12	.12	-1.69 – 14.66
SA/NSSI (history)	-4.71	3.63	-0.11	.20	-11.94 – 2.53
SI (baseline)	0.63	0.06	0.84	.00*	0.51 – 0.75
Binary Logistic Regression Predicting NSSI Between Baseline and Follow-Up					
	<u>b</u>	<u>S.E.</u>	<u>OR</u>	<u>p</u>	<u>95% CI (for OR)</u>
<i>Model 1</i>					
Adaptive	0.01	0.03	1.01	.70	0.96– 1.07
NSSI (history)	2.11	1.15	8.21	.07	0.87 – 77.68
<i>Model 2</i>					
Invalidation	0.04	0.08	1.04	.60	0.89 – 1.23
NSSI (history)	2.16	1.15	8.64	.06	0.91 – 82.15
<i>Model 3</i>					
Empathy	0.13	0.13	1.14	.32	0.89 – 1.46
NSSI (history)	2.20	1.16	9.07	.06	0.94 – 87.99
<i>Model 4</i>					
Punitive	-0.01	0.06	0.99	.84	0.89 – 1.10
NSSI (history)	2.13	1.15	8.45	.06	0.89 – 80.06

Note: * = $p < .05$; ** = $p < .01$; $N = 89$. Men are the reference group for sex.