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Original Publication Citation

La Guardia, A. C., Cramer, R. J., Bryson, C. N., & Emelianchik-Key, K. (2020). Analysis of personality, suicide, and self-injury in emerging adulthood. *Journal of College Counseling, 23*(1), 57-70. doi:10.1002/jocc.12149

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Analysis of Personality, Suicide, and Self-Injury in Emerging Adulthood

Amanda C. La Guardia, Robert J. Cramer, Claire N. Bryson,
and Kelly Emelianchik-Key

Nonsuicidal self-injury (NSSI) is a maladaptive coping strategy that is of significant clinical concern for behavioral health professionals in college settings. Relationships between NSSI, acquired capability for suicide, interpersonal cognitions, and five-factor model personality traits were assessed in a survey-based study that included 192 young adults in a college setting. Results indicated that those with an affirmative suicide attempt history, greater acquired capability for suicide, and elevated neuroticism had an increased likelihood of lifetime NSSI.

Keywords: nonsuicidal self-injury, emerging adulthood, personality, acquired capability, thwarted belonging

Nonsuicidal self-injury (NSSI) is an intentional behavioral coping mechanism that leads to bodily damage (e.g., cutting, burning, hitting oneself). Adolescent and young adult populations report exceedingly high prevalence rates for NSSI—between 15% and 45% (e.g., Jacobson, Muehlenkamp, Miller, & Turner, 2008; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006)—with comparable rates across cultures and genders (Klonsky, Victor, & Saffer, 2014; Muehlenkamp, Claes, Havertape, & Plener, 2012). Lower lifetime rates have been found for adults, with the highest lifetimes rates among psychiatric populations (Klonsky et al., 2014). When one accounts for methodological differences (e.g., factors associated with assessment, definitions, participation) within the past 15 years, NSSI rates have been consistent across publications from various countries (Swannell, Martin, Page, Hasking, & St John, 2014).

Developmental changes in cognitive processing and emotional coping occur throughout adolescence and young adulthood (Arnett, 2007) because of changes in expectations of living associated with this developmental stage, such as autonomy and competence (Emery, Heath, & Mills, 2016). Research indicates that the onset of NSSI behaviors during the college years may be associated with impulsivity and negative urgency (Riley, Combs, Jordan, & Smith, 2015), as well as motives linked to mental distress and coping with situational stressors (Wilcox et al., 2012). Typically, individuals who engage in self-injury do so as negative stress coping or affective coping (Kharsati & Bhola, 2014), as opposed to acting on a desire to end one's life; in fact, NSSI

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has been associated with a desire to avoid suicide (Victor, Styer, & Washburn, 2015). However, engaging in NSSI behaviors also increases the likelihood of suicide attempt in college student populations (Wilcox et al., 2012).

Emerging adulthood theory (Arnett, 1998, 2000) may provide an appropriate developmental backdrop to contextualize NSSI among college students in order to allow for useful clinical treatment decision-making in college counseling centers. Two facets of the theory appear relevant. First, in light of findings that suggest that NSSI often functions as unhealthy coping (Klonsky, 2007; Trepal, Wester, & Merchant, 2015), it may be that NSSI is a coping pattern associated with emerging adult-specific stressors surrounding college adjustment and search for identity (i.e., those critical factors associated with emerging adulthood stress; Arnett, 2000). Second, emerging adulthood (ages 18–29 years) is a time of low volitional control (i.e., high impulsivity; Arnett, 1998, 2000), potentially enhancing NSSI risk among college students. In this study, we sought to clarify the distinctions between contributing factors via modeling of lifetime NSSI risk using both suicide attempt history and theoretically driven individual differences. To provide a framework for these goals, we first briefly review suicide-related theory and personality theory to contextualize the two conceptual frameworks examined in this article.

Suicide and NSSI

Suicide-related behavior (i.e., ideation, attempt, and death by suicide; Osman et al., 2001; Silverman, Berman, Sanddal, O'Carroll, & Joiner, 2007) possesses an intricate relationship with NSSI. For instance, longitudinal research indicates that NSSI may predict suicidal behavior (attempts) and may be a better predictor of future suicide attempts when compared with all other associated risk factors (e.g., Whitlock et al., 2013). The interpersonal-psychological theory of suicide (IPT; Joiner, 2005) is a widely investigated theory of suicide that may offer insight into NSSI among young adults, especially when considered through a developmental lens (i.e., emerging adult theory). IPT purports that suicidal ideation results from the presence of two interpersonal cognitions (i.e., thwarted belongingness and perceived burdensomeness) that relate to a desire to end one's own life, but the desire itself is not enough to instigate a fatal suicidal act. According to IPT, an individual's capacity for suicide likely stems from conditioned responses to repeated painful events or experiences (e.g., self-injurious behavior), referred to as *acquired capability* (Joiner, 2005).

Moreover, Nock et al. (2006) indicated that NSSI behaviors together with a history of suicide attempts are associated with individuals who report longer histories of NSSI, multiple methods of NSSI, and a lack of physical pain during the act of self-injury. To date, separate studies have examined components of IPT with NSSI. Recent college sample data suggest a direct association between the acquired capability for suicide and NSSI (Brackman, Morris, & Andover, 2016). Additionally, Chu, Rogers, and Joiner (2016) examined perceived burdensomeness and thwarted belongingness as mediators of the

link between NSSI history and baseline and future suicidal ideation. They found cross-sectional evidence for associations of both interpersonal cognitions with NSSI history (Chu et al., 2016). In this study, we sought to integrate the three components of IPTS (i.e., perceived burdensomeness, thwarted belongingness, and acquired capability), as well as the role of suicide attempt history, in evaluating lifetime NSSI among college students.

Personality and NSSI

The Big Five (or five-factor model; FFM) personality traits represent broad dimensions of personality, namely, openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (Costa & McCrae, 1992). Conceptually speaking, adults possess varying levels of all five personality dimensions that, in combination, subsequently influence attitudes, adaptations, and behaviors (McCrae & Costa, 2003). Recent research examining FFM trait associations with a measure of general self-injury risk (i.e., not NSSI behavior per se) found that self-injury risk was associated with higher neuroticism, less conscientiousness, and less extraversion (Stroud, Cramer, La Guardia, Crosby, & Henderson, 2015). Furthermore, Kiekens et al. (2015) indicated that for some Dutch and Belgian adolescents, neuroticism was positively associated with NSSI, whereas agreeableness and conscientiousness were negatively associated with NSSI. Additionally, You, Lin, Xu, and Hu (2016) reported similar findings with a group of Chinese high school students, with neuroticism positively associated with NSSI, and agreeableness and extraversion negatively associated with NSSI. Further research with young adult populations may be useful in developing an understanding of the ubiquity of potential links with personality traits toward the goal of improving NSSI risk assessment and approaches to clinical treatment, particularly in college settings.

The Present Study

The purpose of this study was to bring together disparate literature concerning NSSI associations with suicide attempts and two theories (i.e., the FFM and IPTS) to facilitate a better understanding of theory-driven risk factors among young adults in higher educational settings. We did so by controlling for gender, given that the literature highlights persistent disparities in NSSI symptom behaviors between males and females (Andover, Primack, Gibb, & Pepper, 2010; Claes, Vandereycken, & Vertommen, 2007; Whitlock et al., 2011). Simultaneous examination of competing theories applied to NSSI offered the advantage of identifying the strongest predictors of NSSI while accounting for other critical factors. Additionally, examination of theory-based predictive models of NSSI might aid in identifying targets for health assessment or campus community-based approaches to reduce NSSI risk. Specifically, we hypothesized that lifetime NSSI would be positively indicated by (a) acquired capability for suicide, (b) suicide attempt history, and (c) neuroticism, given

that these appear to be the most robust constructs as suggested by separate bodies of previous literature. Furthermore, we explored how NSSI might be associated with other aspects of the FFM and IPTS.

Method

Procedure

Approval for this study was obtained from a university institutional review board (IRB). The board's review and approval included (a) consent language concerning no penalty for study withdrawal, (b) IRB committee review of wording of suicide language, and (c) provision of mental health resource information both on and off campus (e.g., the American Psychological Association's online psychologist locator). No adverse events were reported. Data were collected via a survey-based cross-sectional study procedure. Inclusion criteria were (a) being 18 years of age and (b) being currently enrolled in an undergraduate psychology course toward completion of academic requirements for course credit at a southern university in the United States. This study was completed as part of a larger research endeavor involving online surveys at two time points and that used participant-generated ID numbers. At Time 1, participants completed a general demographics form and two measures about IPTS and the personality traits associated with the FFM (in addition to other measures not pertinent to the present study). Following the completion of the demographics form and measures at Time 1, participants were notified 6 to 8 weeks later that the Time 2 measure was available for completion. At Time 2, participants completed a measure of self-harming behaviors included in the present analysis.

Participants

A total of 192 students (167 women [87.0%], 25 men [13.0%]) completed the requirements for this study. The mean age of the participants was 20.00 years ($SD = 3.34$). Regarding race/ethnicity, most participants identified as White ($n = 112$, 58.3%), followed by Hispanic, Latina/o, or Spanish ($n = 35$, 18.2%); African American or Black ($n = 29$, 15.1%); biracial ($n = 11$, 5.7%); Asian American ($n = 4$, 2.1%); and Native American ($n = 1$, 0.5%). Eight participants (4.2%) reported a suicide attempt history. (Percentages may not total 100 because of rounding.)

Measures

Gender and suicide attempt history. Gender was defined as either self-reported male or female identity. Suicide attempt histories were gathered from participants' response to one item on the Suicide Behavior Questionnaire-Revised (SBQ-R; Osman et al., 2001): "Have you ever thought about or attempted to kill yourself?" (p. 454). Participants rated the item on a 4-point Likert-type scale ranging from 1 (*never*) to 4 (4a = *I have attempted to kill myself, but did not want to die*, 4b = *I have attempted to kill myself, and really hoped to*

die). All SBQ-R response options to this question beyond 1 indicate some level of suicide-related behavior history, with the response option of 4 solely indicating that the person has attempted suicide in his or her lifetime. Thus, this variable was collapsed for those indicating responses 1 to 3 versus those responding 4, providing a cutoff point for no suicide attempt history versus having a suicide attempt history. Therefore, suicide attempt history was dichotomized in this study to reflect no history versus presence of any history (i.e., no/yes).

Interpersonal Needs Questionnaire (INQ). Developed by Van Orden, Cukrowicz, Witte, and Joiner (2012), the INQ measures individuals' current beliefs regarding the cognitive-affective aspects of the interpersonal theory of suicide. Items are rated on a 7-point Likert-type scale ranging from 1 (*not at all true for me*) to 7 (*very true for me*). Nine items assess the extent to which respondents feel the absence of connection to others (Thwarted Belongingness subscale), and six items assess the extent to which they feel like a burden to people in their lives (Perceived Burdensomeness subscale). Both the Perceived Burdensomeness and Thwarted Belongingness subscales have demonstrated good internal consistency ($\alpha = .89$ and $.85$, respectively; Van Orden et al., 2012). Regarding construct validity, both INQ subscales have demonstrated significant associations in expected directions with a range of conceptually related indicators of well-being. For example, the Perceived Burdensomeness subscale was negatively associated with measures of self-liking and self-competence, and the Thwarted Belongingness subscale was positively associated with a measure of loneliness and negatively associated with a measure of social support.

Acquired Capability for Suicide Scale (ACSS). The ACSS (Van Orden, Witte, Gordon, Bender, & Joiner, 2008) assesses an individual's fearlessness of death and perceived tolerance for physical pain. The scale consists of 20 items, which are rated on a 5-point Likert-type scale ranging from 0 (*not at all like me*) to 4 (*very much like me*). The ACSS has demonstrated good internal consistency ($\alpha = .88$) in both student and clinical outpatient samples (Smith, Cukrowicz, Poindexter, Hobson, & Cohen, 2010). Moreover, the ACSS has demonstrated significant positive associations with theoretically supported measures, such as painful events and suicide attempt history (Van Orden et al., 2008).

Big Five Inventory (BFI). The BFI (John, Naumann, & Soto, 2008) is a 44-item instrument designed to measure the Big Five personality traits of openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. Respondents rate the degree to which they agree with each self-statement on a 5-point Likert scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*). Sixteen items are reverse scored. Alpha reliabilities for the BFI subscales range from $.75$ to $.90$ (John et al., 2008). Regarding validity, the BFI subscales have demonstrated large, significant positive correlations with other Big Five measures (e.g., the NEO Five-Factor Inventory; Costa & McCrae, 1989), with construct validity coefficients ranging from $.62$ to $.90$.

Deliberate Self-Harm Inventory—Short Version (DSHI-S). The original DSHI (Gratz, 2001) is a 17-item questionnaire that assesses deliberate, direct destruction or alteration of body tissue (without suicidal intent but severe enough to cause damage or scarring; Gratz, 2001). In the short version of

the questionnaire (i.e., the DSHI-S; Lundh, Karim, & Quilisch, 2007), 16 types of self-harm are listed (two burning and cutting items are combined from the original), and the final item asks whether any of the self-harm has ever resulted in hospitalization or medical treatment. Respondents rate how often they have engaged in a behavior using a 4-point Likert-type scale, with 0 = *never*, 1 = *once*, 2 = *more than once*, and 3 = *many times*. DSHI-S score validity has been observed such that those endorsing lifetime NSSI more than once reported lower scores on measures of self-esteem and mindfulness when compared with those engaging in less frequent NSSI (Lundh et al., 2007). For the present study, we used two DSHI-S scores in our analyses: the summed total score and the dichotomous score (no/yes).

Results

Table 1 presents the zero-order correlations, descriptive statistics, and internal consistency values for all variables of interest. All measures demonstrated acceptable internal consistency, except for a somewhat low value for the Conscientiousness subscale of the BFI. Suicide attempt history, perceived burdensomeness, thwarted belongingness, acquired capability for suicide, and neuroticism all demonstrated significant, yet modestly sized, positive bivariate associations with NSSI. Extraversion and conscientiousness both demonstrated significant, yet modestly sized, negative bivariate associations with NSSI.

Prior to hypothesis testing, we conducted a power analysis using G*Power (Version 3.1; Faul, Erdfelder, Lang, & Buchner, 2007) with the following parameters in a regression-based framework: an alpha level of .05, a power of .80, a medium effect size, and 11 predictors. The required sample size necessary for model estimation was 123. Thus, our sample size of 192 students was adequate.

Table 2 presents the results of two regression models predicting NSSI from demographic, IPTS, and FFM variables. In the multiple regression model (Model 1), the DSHI-S total score was used, and in the binary logistic regression model (Model 2), the DSHI-S dichotomous score (no/yes) was used. (Each model controlled for days between Time 1 and Time 2 administration.) All continuous predictors were centered before analyses. For Model 1, $F(11, 177) = 5.59, p < .001$, adjusted $R^2 = .21$ ($n = 189$), affirmative indicators of increased lifetime NSSI (in order of effect size largest to smallest) were an endorsement of a suicide attempt history, acquired capability for suicide, neuroticism (all supporting our hypothesis), and agreeableness. Conscientiousness demonstrated a negative relationship with lifetime NSSI, with an approximate effect size equal to those for neuroticism and agreeableness.

We conducted supplemental hierarchical regression models (i.e., Model 2) to examine whether IPTS or FFM variables accounted for larger collective increases in model effect size. When IPTS variables were added controlling for FFM and other predictor variables, the adjusted R^2 increase was .06. When FFM variables were added controlling for IPTS and other predictor variables, the adjusted R^2 increase was also .06.

TABLE 1
Zero-Order Correlations, Descriptive Statistics, and Internal Consistency Values for All Variables of Interest

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	M	SD	α	% EN
1. Days	—	.01	.05	.05	.09	-.08	-.08	-.03	-.06	-.01	-.13	.03	-.10	49.90	11.41		
2. Male		—	-.08	-.07	-.05	.32*	-.31*	.08	.14*	.06	.01	-.02	-.02				13.0
3. SA			—	.18*	.06	-.07	.18*	.01	.03	.02	-.03	.31*	.21*				4.2
4. PB				—	.39*	.01	.30*	-.26*	-.01	-.12	-.24*	.25*	.21*	8.30	5.03	.93	
5. TB					—	.04	.27*	-.41*	-.15*	-.37*	-.27*	.21*	.26*	20.71	11.00	.88	
6. AC						—	-.28*	.11	.07	-.10	-.02	.14*	.23*	41.16	12.95	.82	
7. Neuro							—	-.37*	-.04	-.21*	-.22*	.24*	.26*	3.07	0.77	.82	
8. Extra								—	.21*	.16*	.24*	-.14*	-.19*	3.25	0.83	.86	
9. Open									—	.21*	.10	.02	.07	3.75	0.56	.76	
10. Agree										—	.37*	.02	-.08	3.80	0.59	.75	
11. Cons											—	-.24*	-.17*	3.61	0.54	.68	
12. DSHI-S total												—	.64*	2.14	4.27	.84	
13. DSHI-S dich													—				38.0

Note. % EN = percentage endorsed; Days = number of days between data collection time points (Time 1 and Time 2); Male = male gender as reference group; SA = suicide attempt history (yes as reference group); PB = perceived burdensomeness; TB = thwarted belongingness; AC = acquired capability for suicide; Neuro = neuroticism; Extra = extraversion; Open = openness to experience; Agree = agreeableness; Cons = conscientiousness; DSHI-S = Deliberate Self-Harm Inventory-Short Version; total = total score; dich = dichotomous score (no/yes).
* $p < .05$.

TABLE 2

Hierarchical Regression Analyses Predicting Nonsuicidal Self-Injury

Predictor	DSHI-S Total Score					DSHI-S Dichotomous Score (No/Yes)					
	<i>B</i>	<i>SE</i>	β	<i>p</i>	η^2_p	<i>B</i>	<i>SE</i>	Wald ^a	<i>p</i>	OR	95% CI
Days	0.04	0.29	.01	.88	<.001	-0.22	0.19	1.30	.25	0.80	[0.55, 1.17]
Male	0.03	0.92	.00	.97	<.001	0.10	0.58	0.03	.86	1.11	[0.35, 3.49]
SA	5.35	1.42	.25	<.001	.07	2.69	1.17	5.25	.02	14.67	[1.47, 145.98]
PB	0.27	0.32	.06	.39	.004	0.09	0.19	0.22	.64	1.09	[0.75, 1.60]
TB	0.52	0.34	.12	.13	.01	0.40	0.21	3.66	.06	1.49	[0.99, 2.24]
AC	1.00	0.31	.23	.001	.06	0.88	0.21	17.86	<.001	2.42	[1.61, 3.65]
Neuro	0.91	0.35	.21	.01	.04	0.64	0.23	7.73	.005	1.89	[1.21, 2.98]
Extra	-0.02	0.33	.00	.96	<.001	-0.28	0.21	1.78	.18	0.75	[0.50, 1.14]
Open	0.04	0.30	.01	.89	<.001	0.22	0.20	1.29	.25	1.25	[0.85, 1.84]
Agree	0.88	0.32	.21	.007	.04	0.22	0.21	1.18	.27	1.25	[0.83, 1.87]
Cons	-0.87	0.31	-.20	.006	.04	-0.27	0.20	1.81	.18	0.77	[0.52, 1.13]

Note. For the hierarchical regression analyses, three participants from the total sample ($N = 192$) were dropped because of incomplete data. Boldface values denote significant predictors. DSHI-S = Deliberate Self-Harm Inventory–Short Version; OR = odds ratio; CI = confidence interval; Days = number of days between data collection time points (Time 1 and Time 2); Male = male gender as reference group; SA = suicide attempt history (yes as reference group); PB = perceived burdensomeness; TB = thwarted belongingness; AC = acquired capability for suicide; Neuro = neuroticism; Extra = extraversion; Open = openness to experience; Agree = agreeableness; Cons = conscientiousness.

^a $df = 1$.

Overall, the set of predictors demonstrated good model fit, Hosmer-Lemeshow $\chi^2(8) = 8.23$, $p = .40$, in predicting NSSI group membership, $\chi^2(11) = 56.75$, $p < .001$, Cox-Snell $R^2 = .26$, Nagelkerke $R^2 = .35$ ($n = 189$). As can be seen in Table 2, the following characteristics indicated an increased likelihood of endorsement of NSSI: affirmative suicide attempt history, greater acquired capability for suicide, and elevated neuroticism (in support of our hypothesis). Regarding suicide attempt history, only 36.1% of the participants with no suicide attempt history fell in the affirmative NSSI category. Of the participants with a suicide attempt history, 87.5% fell in the affirmative NSSI category. Affirming a suicide attempt history was associated with a 14.67 times greater likelihood of reporting NSSI. Inspection of odds ratios suggested that for each point increase in acquired capability for suicide, participants were 2.42 times more likely to report lifetime NSSI. Finally, for every 1-point increase in neuroticism, participants were 1.89 times more likely to report lifetime NSSI.

We conducted supplemental hierarchical regression models (i.e., Model 2) to examine whether IPTS or FFM variables accounted for more substantial collective increases in model effect size. When FFM variables were added controlling for IPTS and other predictor variables, the Cox-Snell R^2 increase was .07, and the Nagelkerke R^2 increase was .10. When IPTS variables were added controlling for FFM and other predictor variables, the Cox-Snell R^2 increase was .12, and the Nagelkerke R^2 increase was .16.

Discussion

The results of this study indicate that a participant's suicide attempt history, acquired capability for suicide, and neuroticism are associated with increased likelihood of lifetime NSSI, supporting our hypothesis. This pattern was consistent across models, further supported by the effect sizes of these variables (i.e., largest effects among the tested variables). Exploratory testing also showed some support for an association between NSSI with higher agreeableness and lower conscientiousness (one of two models). Additionally, a considerable proportion of participants who had attempted suicide endorsed NSSI.

Moreover, those with increased acquired capability for suicide were more likely to endorse self-injurious behaviors. Collectively, these findings support NSSI as a potential process component of IPTS, while also highlighting that it may be important to evaluate the differences between those who endorse NSSI and have a suicide attempt history and those who endorse NSSI but do not have a suicide attempt history. Indeed, acquired capability may serve to explain the differences between those two groups (Van Orden et al., 2008), and thus as the coping purpose of NSSI fails, a suicide attempt may become more likely.

In a study conducted by Muehlenkamp and Gutierrez (2007), adolescents who reported self-injury and a previous suicide attempt were at higher risk for active suicidal ideation, reported fewer reasons for living, and were more likely to experience more significant levels of depressive symptoms compared with adolescents who reported self-injury but no previous suicide attempts. Furthermore, Victor and Klonsky (2014) indicated in their meta-analysis that, beyond suicidal ideation, the strongest predictors of a suicide attempt history were NSSI frequency, the number of methods used to engage in NSSI, and hopelessness. Given the conceptual relationship between these findings and Joiner's (2005) IPTS model, it is essential to consider issues of acquired capability in order to determine the risk of a future suicide attempt for those engaging in NSSI. Our study demonstrated that acquired capability was associated with increased lifetime NSSI as well as endorsement of NSSI; thus, acquired capability may also play a role in future suicide attempt for individuals who engage in NSSI. This possible link is consistent with other research concerning this construct (Brackman et al., 2016; Willoughby, Hefner, & Hamza, 2015).

In line with previous research indicating a strong neuroticism–self-injury link (e.g., Kiekens et al., 2015; Mullins-Sweatt, Lengel, & Grant, 2013; Stroud et al., 2015), neuroticism contributed significantly to our regression model, suggesting that the young adult participants in our study with elevated neuroticism had an increased likelihood of lifetime NSSI. Critical aspects of neuroticism (e.g., angry hostility, depressiveness, self-consciousness, stress vulnerability, impulsivity; Costa & McCrae, 1992; Mullins-Sweatt et al., 2013) may play particular roles in this consistent association. As with previous studies, we found varying results for agreeableness and conscientiousness depending on how NSSI was measured. For example, findings by Kiekens et al. (2015) were consistent with one of our models (the model using the DSHI-S total

score) but different from another (the model using the dichotomized lifetime score) in that agreeableness was positively associated with NSSI behaviors. One potential explanation for the inconsistent findings is that the participants in Kiekens et al.'s study were mostly male, whereas ours were primarily female. Furthermore, varying findings within our models and in Kiekens et al.'s study highlight the importance of consistency in how NSSI is measured.

Implications for Theory, Research, and College Counseling

This study is one of the first to offer a competing theory test of two well-established perspectives in the behavioral health or social psychiatric fields. Aspects of both the FFM and IPTS showed utility in understanding the risk for lifetime NSSI among young adult college students. Additionally, follow-up hierarchical regression models suggested that both the FFM and IPTS constructs added approximately equivalent unique contributions to the explanation of variance in NSSI (as measured by the DSHI-S total score). However, when the DSHI-S dichotomous score was used, the IPTS constructs explained approximately 5% to 6% greater unique variance in NSSI compared with the FFM traits. Thus, the results of our regression models examining personality and IPTS theoretical components together offer partial theoretical validation and extension to understanding NSSI. Specifically, assumptions concerning the roles of trait emotional instability and acquired capability for suicide with NSSI are validated by our findings.

At minimum, further empirical testing of these models in association with NSSI is warranted, especially in vulnerable populations, or longitudinal methods may be used. As suggested by our findings, individuals who engage in NSSI may be prone to anxiety, stress, emotional vulnerability, or dysregulation as related to neuroticism, conscientiousness, and acquired capability for suicide. Additionally, future research regarding these characteristics may focus prospectively on the potential mediating pathways from personality trait dispositions to engaging in NSSI via acquired capability for suicide (and vice versa) through to engaging in a suicide attempt. Understanding these links may be especially important for transitionally aged youth (ages 16–24 years) in college settings, especially given findings regarding NSSI maintenance and emotional regulation/behavioral reasoning for the behavior in college student populations (Saraff, Trujillo, & Pepper, 2015).

Regarding college mental health, assessment of NSSI practices may be best accomplished using the DSHI-S or other measures that evaluate typology, frequency, and behavioral purpose. Behavioral health assessment of NSSI may benefit from incorporation of neuroticism, acquired capability, conscientiousness, and suicide attempt history as a means of further evaluating potential risk factors. Likewise, health education and training programs for those interfacing with at-risk college students could include these traits and characteristics as potential features requiring special attention. Finally, our findings support the notion that behavioral health intervention for NSSI among college students may focus on established therapies (e.g., family counseling [Wester, Ivers,

Villalba, Trepal, & Henson, 2016], dialectical behavior therapy [Koerner & Dimeff, 2007]) that can address associated factors, such as impulsivity, stress vulnerability, connectedness, and susceptibility to factors of social contagion (i.e., aspects of key risk factors in our study). Because of factors associated with stress vulnerability and connectedness as well as potentially stress-inducing developmental issues common for transitionally aged youth, evaluation of preferences for counseling may also be appropriate in both practice and future research with college students engaging in NSSI (e.g., Hatchett, 2015).

When determining prevention and intervention strategies for college-age students, counselors should keep in mind findings indicating that emotional regulation for young adults tends to be problem focused, involve repetitive thoughts, include expressive repression, and may be grounded in cultural or ethnic experience (Voon, Hasking, & Martin, 2014; Wester & Trepal, 2015), all of which are linked to identity exploration and formation (Arnett, 2000; Blumengarten, 2008; Ekman & Söderberg, 2012). Although our study did not indicate a predictive association between endorsement of NSSI and aspects of IPTS, such as thwarted belongingness and perceived burdensomeness, a correlational relationship did exist between these variables. Thus, it seems prudent to recommend that counselors consider inclusion of assessment of thwarted belongingness and perceived burdensomeness in order to evaluate existence of factors that may contribute to risk for suicide, especially given recent research findings indicating that individuals with no NSSI history have higher levels of ethnic belonging and interpersonal support (Trepal et al., 2015).

Limitations

Methodologically, the limitations of this study include a cross-sectional design, limited measurement scope of suicide attempt history, restricted categorization of gender (e.g., failure to account for transgender individuals), lack of a comparison group, and a low internal consistency value for the Conscientiousness subscale of the BFI. Therefore, conclusions are tentative concerning the potential for causality, directionality, comprehensiveness of the suicide-NSSI link, extension of our findings to transgender-identifying individuals, and results regarding conscientiousness. With respect to generalizability, participants included college students from one university campus, and the sample was predominantly female. Finally, we were not able to determine how exposure to survey items at Time 1 might have influenced responses to items at Time 2 because of the nature of the design (i.e., no comparison group). Future research on college student NSSI, personality, and IPTS should correct for these limitations.

Conclusion

In this study, we evaluated distinctions between factors contributing to NSSI via modeling of lifetime NSSI risk using both suicide attempt history and theoretically driven individual differences understood through the framework of Arnett's (2000) theory of emerging adulthood. Our findings indicated that

aspects of the FFM (e.g., elevated neuroticism), IPTS (i.e., acquired capability), and suicide attempt history showed utility in understanding risk for lifetime NSSI among young adult college students. Thus, assessment of risk for individuals engaging in NSSI should include evaluation of the intersectionality between suicidal ideation, past attempts, aspects of neuroticism, and length of engagement in self-injurious behaviors (as a function of acquired capability), as well as developmentally typical perspectives common in young adulthood.

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