

Original Research

Negative Body Attitudes as a Risk Factor for Non-Suicidal Self-Injury among College Students

Abby L. Mulay¹, Michelle L. West², Lisa Wallner Samstag¹, Elizabeth Diamond³

¹ Long Island University, Brooklyn

² Center for Early Detection and Response to Risk (CEDAR)
and Commonwealth Research Center (CRC) Of Beth Israel Deaconess Medical Center
and Harvard Medical School at Massachusetts Mental Health Center

³Wright Institute Los Angeles

Submitted to SOL: May 10th, 2016; accepted: January 04th, 2017; published: January 31st, 2017

Abstract: The aim of the current study was to examine the prevalence of non-suicidal self-injury (NSSI), as well as the relationships between emotion dysregulation, negative attitudes towards the body, and NSSI, within a sample of college students. We administered self-report measures to 143 diverse college students. Results revealed an NSSI prevalence rate of approximately 27%. Those who identified as a racial/ethnic minority were no more likely to endorse NSSI than those who identified as White/European American. There were no significant differences in emotion dysregulation between participants who endorsed NSSI and those who did not, yet negative bodily attitudes were significantly related to NSSI. Based upon the results, it is argued that negative attitudes towards the body should be considered an important risk factor in NSSI engagement among diverse college students.

Keywords: non-suicidal self-injury, emotion regulation, body attitudes, college students

Copyrights belong to the Author(s). Suicidology Online (SOL) is a peer-reviewed open-access journal publishing under the Creative Commons Licence 3.0.

Non-suicidal self-injury (NSSI) is most commonly defined as the intentional destruction or alteration of bodily tissue without conscious suicidal intent (American Psychiatric Association, 2013; Favazza, 1989). Differentiated from other self-destructive acts, NSSI does not include behaviors that have unintended negative effects (e.g., lung cancer as a result of smoking) or that are culturally sanctioned (e.g., tattoos or body piercing; Nock, 2009). Non-suicidal self-injury disorder has been included in the

Diagnostic and Statistical Manual of Mental Disorders (fifth edition; American Psychiatric Association, 2013) as a condition for further study, and researchers have found support for the presence of the disorder in samples of the general public (e.g., Andover, 2014). Although research suggests that NSSI is an important risk factor for suicide attempts (Klonsky, May, & Glenn, 2013), the majority of individuals who engage in NSSI do not attempt suicide (Wilcox, Arria, Caldeira, Vincent, Pinchevsky, & O'Grady 2012).

While estimates report a prevalence of approximately 3-6% in the general adult population (Klonsky, 2011; Plener, Allroggen, Kapusta, Brähler,

✉ Abby L. Mulay, 1 University Plaza • Brooklyn, New York 11201-5372, abbymulay@gmail.com

Fegert, & Groschwitz, 2016), research suggests that young adults are at a greater risk for NSSI, with an estimated 21.7% prevalence among adolescents seeking outpatient treatment (García-Nieto, Carballo, de Neira Hernando, de León-Martínez, & Baca-García, 2015), and an estimated 17-32% prevalence among college students (Aremiento, Hamza, & Willoughby, 2014; Whitlock, Eckenrode, & Silverman, 2006). Average reported age of NSSI onset ranges from 12.8 (Nock & Prinstein, 2004) to 16 years old (Klonsky, 2011). Common types of NSSI methods include cutting, pinching, burning, and head banging (Heath, Toste, Nedecheva, & Charlebois, 2008).

Although there is agreement that NSSI is prevalent in the young adult population, there are inconsistent findings regarding racial/ethnic and gender differences in NSSI. Kuentzel, Arbie, Boutros, Chugani, and Barnett (2012) identified important differences in NSSI behaviors in an ethnically diverse sample of college students; specifically, participants who self-identified as White were at elevated risk for NSSI compared to participants who self-identified as African American. Similarly, in a sample of diverse college students, Chesin, Moster, and Jeglic (2013) found that Asian and White students reported higher rates of NSSI, when compared to Hispanic and African American students. However, Gratz et al. (2012) found that, overall, African American youths reported higher rates of NSSI, when compared to White youths, yet rates of NSSI varied, depending upon participants' reported gender, racial background, and school level. According to the authors, African-American boys in middle school reported the highest rates for most NSSI behaviors, while White girls and African American boys reported the highest rates of cutting behaviors. Due to these inconsistent findings, further examination of the prevalence of NSSI in this population is warranted.

In spite of the racial/ethnic and gender inconsistencies found in NSSI engagement among young adults, research has demonstrated a consistent relationship between NSSI and difficulties in emotion regulation (see Andover & Morris, 2014, for a review). Emotion dysregulation is characterized by the refusal to accept emotions, difficulties managing behaviors during times of distress, and a compromised ability to recognize the informational value of emotions (Gratz & Roemer, 2004). Research suggests that individuals engage in self-injury in response to emotion dysregulation, and following engagement in the behavior, a reduction in overwhelming negative affect commonly occurs (Klonsky, 2007). This relationship has been examined extensively among college students; for example, Gratz and Roemer (2008) reported a positive relationship between emotion dysregulation and frequency of NSSI in a sample of diverse college

students, citing limited access to emotional strategies and a lack of emotional clarity as predictive factors of NSSI. In a sample of predominately female East Asian college students, Victor and Klonsky (2014) reported that those who engaged in NSSI were more likely to experience more negative emotions and fewer positive emotions, when compared to those that did not self-injure. Similarly, Anderson and Crowther (2012) found that college students with current or past engagement in NSSI endorsed more intense emotional experiences, greater difficulty identifying their feelings, and less access to emotion regulation strategies, when compared to those who reported no current or past engagement in NSSI. In sum, there is evidence suggesting that emotion dysregulation, including experience of negative emotions, difficulty identifying emotions, limited resources to regulate emotions, and use of ineffective emotion strategies, plays an important role in the maintenance of NSSI in this emerging adult population.

Research has also turned to the role of negative bodily attitudes in the relationship between emotion dysregulation and NSSI. Negative attitudes towards the body, including a lack of emotional investment in the body, may lead to engagement in NSSI. From this perspective, Orbach (1996) suggested that negative bodily attitudes may cause someone to physically harm themselves, due to feelings of dislike or disrespect towards one's body. It has since been found that, among young adults, negative attitudes towards the body significantly mediated the relationship between negative affect and NSSI (Muehlenkamp & Brausch, 2012). Similarly, within a sample of college students, low body regard was found to moderate the relationship between emotion dysregulation and NSSI (Muehlenkamp, Bagge, Tull, & Gratz, 2013). Negative affect has also been demonstrated to have an indirect effect on the relationship between negative body image and NSSI among young adults (Duggan, Toste, & Heath, 2012). Moreover, research has also suggested NSSI may occur in response to negative affect associated with disordered eating (e.g., Muehlenkamp, Peat, Claes, & Smits, 2012). Despite the apparent relationship between self-destructive behaviors, negative bodily attitudes, and emotion dysregulation, research has not yet examined whether negative attitudes towards the body contribute to the well-established relationship between emotion dysregulation and NSSI in a sample in which racial/ethnic minority students comprise the majority of the student body.

The current study had four specific aims. First, we wished to explore the prevalence of NSSI within a diverse college sample. Second, we hypothesized that there would be significant differences in NSSI endorsement between races, such that those who identify as a member of a

racial/ethnic minority group would report higher rates of engagement in NSSI, when compared to those who identify as White/European American. Third, we predicted that there would be a significant positive correlation between emotion dysregulation and frequency of NSSI behaviors, a significant negative correlation between emotion dysregulation and negative attitudes towards the body, and a significant negative correlation between negative attitude towards the body and frequency of NSSI behaviors. Finally, we hypothesized that negative attitudes towards the body would mediate the relationship between emotion dysregulation and engagement in NSSI.

Methods

Participants

After approval by the Institutional Review Board, male and female undergraduate students ($N = 143$) were recruited from an urban university in the northeastern United States. Informed consent was obtained, and participants were asked to complete a number of self-report measures online. In exchange for participation, students received course credit.

Measures

Deliberate Self-Harm Inventory (DSHI; Gratz, 2001). The DSHI is a 17-item self-report questionnaire, designed to assess the type, frequency, and severity of self-harm behaviors. Participants answer "Yes" or "No" to statements such as "Have you ever intentionally (i.e., on purpose) cut your wrist, arms, or other area(s) of your body (without intending to kill yourself)?" If the participant responds "Yes," follow up questions are presented to determine age of engagement in the behavior, frequency of the behavior, the last time the participant engaged in the behavior, how many years the participant has engaged in the behavior, and whether or not the behavior resulted in hospitalization. Gratz (2001) reported high internal consistency ($\alpha = .83$), adequate test-retest reliability ($r = .68, p < .001$), and moderate correlations with other measures of self-harm. According to Gratz (2007), engagement in NSSI is considered "clinically meaningful" if a participant endorses 10 or more instances of a self-harm behavior. Since engagement in self-injury was not normally distributed as a frequency variable, self-injury was recoded into a dichotomous (i.e., engaged in self-injury vs. no engagement in self-injury) variable. Consequently, a chi-square goodness-of-fit was conducted to determine if the measure successfully distinguished between those that endorsed NSSI and those that did not. Results supported the efficacy of the measure in the current sample, $\chi^2(1) = 31.39, p < .001$.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS is a 36 item self-report questionnaire, designed to assess deficits in emotion regulation. Answers are scored on a 5-point scale, ranging from 1 ("almost never 0-10%") to 5 ("almost always 91-100%"). Item ratings are summed to create a total score, with higher scores indicating higher levels of emotion dysregulation. The DERS comprises six subscales: Non-acceptance (e.g., "When I'm upset, I become angry with myself for feeling that way"), Goals (e.g., "When I'm upset, I have trouble getting work done"), Impulse Control Difficulties (e.g., "I experience my emotions as overwhelming and out of control"), Lack of Emotional Awareness (e.g., "I pay attention to how I feel"), Limited Access to Emotion Regulation Strategies (e.g., "When I'm upset, I believe that I will believe that I will remain that way for a long time"), and Lack of Emotional Clarity (e.g., "I am clear about my feelings"). Gratz and Roemer (2004) reported high overall internal consistency ($\alpha = .93$) and test-retest reliability ($r = .88, p < .01$). In terms of construct validity, Gratz and Roemer (2004) also demonstrated that the DERS correlated in the expected positive direction with a measure of emotion regulation (Negative Mood Regulation Scale; Catanzaro & Mearns, 1990). In a sample of female undergraduates who endorsed frequent engagement in self-harm behaviors, Gratz and Roemer (2008) reported an average overall sum of 87.44 ($SD = 19.87$) on the DERS. In the current study, Cronbach's alpha for the overall scale was .94, with Cronbach's alpha for each subscale as follows: Nonacceptance (.87), Goals (.83), Impulse (.85), Awareness (.73), Strategies (.83), and Clarity (.82).

Body Investment Scale (BIS; Orbach & Mikulincer, 1998). The BIS is a 24-item self-report measure, designed to assess emotional investment in and attitudes towards one's body. Answers range from 1 ("do not agree") to 5 ("strongly agree"). The BIS comprises four subscales: Attitudes/Feelings Towards the Body (e.g., "I am frustrated with my physical appearance"), Comfort with Touch (e.g., "I don't like it when people touch me"), Body Care (e.g., "I believe that caring for my body will improve my well-being"), and Body Protection (e.g., "I look in both directions before crossing the street"). Scores are obtained by averaging item responses within each subscale, with higher scores indicating more positive feelings towards the body. A total score can also be obtained by computing the mean of the four subscales. In a sample of 54 adolescent patients with a history of self-harm, Muehlenkamp and Brausch (2012) reported an overall mean score of 3.46 ($SD = 0.54$) on the BIS. According to Orbach and Mikulincer (1998), the BIS successfully distinguished between suicidal and nonsuicidal inpatients, and the BIS

subscale scores significantly correlated with suicidal behaviors. In the current study, Cronbach's alpha for the overall scale was .81, with Cronbach's alpha for each subscale as follows: Feelings (.84), Touch (.57), Care (.81), and Protection (.62).

Analyses

An analysis using G*Power suggested a total sample size of 107 participants to achieve adequate power (Faul, Erdfelder, Lang, & Buchner, 2007). As previously discussed, analysis of the DSHI indicated that engagement in NSSI was not normally distributed as a frequency variable, so it was recoded into a dichotomous (i.e., endorsed/not endorsed) variable. Due to the low alphas of some of the BIS subscales (i.e., BIS-Touch and BIS-Protection), they were excluded from analyses in which subscales were examined. The relationships between emotion dysregulation, negative bodily attitudes, and NSSI were investigated using correlational analyses. Independent samples *t*-tests were also conducted to examine differences in emotion dysregulation and bodily attitudes between those who endorsed NSSI and those who did not. To examine whether body investment functioned as a mediating variable between emotion dysregulation and engagement in NSSI, we utilized Hayes (2013) bootstrapping procedure for examining indirect effects using the SPSS PROCESS macro.

Results

The majority of participants were aged 18-24 ($n = 116$; 81.12%) and identified as female ($n = 99$; 69.23%). Participants reported their racial identity as African American/African Caribbean/Black ($n = 47$; 32.87%), Asian/Pacific Islander ($n = 26$; 18.19%), Latina/o ($n = 20$; 13.99%), White/European American ($n = 20$; 13.99%), and Middle Eastern ($n = 13$; 9.09%). Eleven participants (7.69%) reported that they identified as more than one racial identity. Most participants indicated that they were single, not living with a partner ($n = 123$; 86.01%), followed by married/in a domestic partnership ($n = 9$; 6.29%), divorced/separated ($n = 5$; 3.50%), and not married but living together as a couple ($n = 2$; 1.40%). Of the total sample, 38 participants (26.57%) endorsed NSSI. Of those, the majority ($n = 24$; 63.16%) reported engagement in one method of NSSI, while eight (21.05%) reported engagement in two methods, six (15.79%) reported engagement in three methods, and one (2.63%) reported engagement in six methods. The most commonly reported method of NSSI was cutting ($n = 15$; 39.47%), followed by severe scratching ($n = 8$; 21.05%), piercing the skin with sharp objects ($n = 8$; 21.05%), burning the skin with a lighter or match ($n = 6$; 15.79%), and biting the skin ($n = 5$; 13.16%). The mean number of self-harming

methods used was 1.53 ($SD = .76$), with a mean frequency of 8.6 ($SD = 10.76$) lifetime self-harming behaviors. Of those who endorsed NSSI, a total of 13 (34.21%) participants endorsed a clinically meaningful number (i.e., 10 or more; Gratz, 2007) of NSSI behaviors; however, no participants reported hospitalization as a result of engagement in NSSI. Most participants indicated that they engaged in NSSI for approximately 1 year ($n = 16$; 42.11%), while the majority of participants endorsed having engaged in NSSI 6-10 years ago ($n = 11$; 28.95%). Of those who endorsed engagement in NSSI, a total of 12 participants (31.58%) reported recent (i.e., over the past year) engagement in NSSI.

In regards to our first study aim, a chi-square test of association found no significant differences in NSSI among reported racial/ethnic identities, $\chi^2(5) = .684$, $p = .233$. Moreover, although the majority of those who reported NSSI were female ($n = 29$), there were no significant differences in NSSI between genders, $\chi^2(1) = 1.220$, $p = .269$. Finally, there were no significant difference in NSSI among age groups, $\chi^2(1) = .220$, $p = .639$.

Pearson product-moment correlations among study variables are presented in Table 1. In contrast to our prediction, results revealed no significant association between emotion dysregulation and NSSI. However, there was a significant negative relationship between emotion dysregulation and attitudes towards the body, indicating that higher levels of emotion dysregulation were associated with lower levels of emotional investment in the body. Also consistent with our hypothesis, results revealed a significant negative relationship between emotional investment in the body and engagement in NSSI, suggesting that the endorsement of negative attitudes towards the body was associated with engagement in NSSI.

Independent samples *t*-tests were then conducted to determine if there were differences between participants who reported engagement in NSSI and those who did not in DERS and BIS total and subscale scores (see Table 2). DERS-Total scores for participants who denied engagement in NSSI were not significantly different from those who reported engagement in NSSI. However, scores on the DERS-Impulse and DERS-Strategies subscales were significantly higher for those who reported engagement in NSSI, suggesting that participants with NSSI experience more difficulties with impulsive behaviors and decreased access to emotion regulation strategies. Additionally, scores on the BIS-Total and BIS-Feelings subscales were significantly lower for participants who endorsed engagement in NSSI; as such, participants who endorsed NSSI also reported more negative attitudes and feelings towards the body.

Table 1
Correlations among study variables

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1. DERStotal										
2. DERsnonacc	.788**									
3. DERsgoals	.657**	.398**								
4. DERsimpul	.840**	.691**	.444**							
5. DERsaware	.537**	.214*	.139	-.250**						
6. DERsstrat	.871**	.665**	.599**	.748**	.240**					
7. DERsclarity	.748**	.513**	.293**	.293**	.533**	.512**				
8. BIStotal	-.408**	-.288**	-.129	-.407**	-.399**	-.358**	-.316**			
9. BISfeel	-.373**	-.230**	-.244**	-.314**	-.189*	-.393**	-.274**	.730**		
10. BIScare	-.163	-.137	.072	-.254**	-.200*	-.162	-.044	.663**	.226**	
11. NSSI	.103	.128	-.003	.208*	.050	.186*	-.001	-.221**	-.246**	-.061

Note. * $p < .01$, ** $p < .05$. $N = 143$. DERS = Difficulties in Emotion Regulation Scale, Gratz & Roemer, 2004; BIS = Body Investment Scale, Orbach & Mikulincer, 1998); NSSI = non-suicidal self-injury.

Table 2
Independent samples *t*-test results for NSSI

Scales	No NSSI		NSSI		<i>t</i>	<i>df</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
DERStotal	76.63	22.66	82.24	27.57	-1.231	140	.220
DERsnonacc	11.29	4.92	12.78	5.18	-1.524	139	.130
DERsgoals	12.68	4.65	12.65	5.38	0.303	137	.976
DERsimpul	11.50	4.97	14.05	6.20	-2.509	139	.013*
DERsstrat	15.35	5.62	17.92	7.08	-2.220	138	.028*
DERsclarity	10.72	4.22	10.71	4.17	0.013	140	.989
BIStotal	3.76	0.45	3.54	0.44	2.668	138	.009*
BISfeel	3.75	0.74	3.75	0.74	2.970	137	.004*
BIScare	4.05	0.72	3.95	0.75	0.719	138	.474

Note. $N = 143$. DERS = Difficulties in Emotion Regulation Scale, Gratz & Roemer, 2004; BIS = Body Investment Scale, Orbach & Mikulincer, 1998); NSSI = non-suicidal self-injury.

In the mediation analysis, the standardized regression coefficient between the emotion dysregulation total score and the body investment total score was statistically significant ($B = -.01$; $p = .00$), as was the standardized regression coefficient between body investment total score and NSSI ($B = -1.1$; $p = .02$). The bootstrapped unstandardized indirect effect was .01, and the 95% confidence interval ranged from .00 to .02. As such, the mediating effect of negative bodily attitudes in the relationship between emotion dysregulation and NSSI was not supported.

Discussion

This study sought to explore the prevalence of NSSI, as well as examine the potential relationships between bodily attitudes, emotion dysregulation, and NSSI, in a diverse sample of college students. Importantly, the prevalence of NSSI (approximately 27%) was high in the current sample, as compared to previous research conducted in the college population (e.g., Whitlock et al., 2006). One contributing factor may be the racial and ethnic diversity of the study participants. The majority of participants identified as a member of a racial/ethnic minority group, so our findings may be consistent with previous research conducted in the college setting suggesting that minorities are more likely to engage in NSSI (e.g., Gratz et al., 2012). However, inconsistent with our hypothesis, there were no significant differences in NSSI based on race/ethnicity. Given this non-significant finding, other unmeasured factors may have contributed to the elevated prevalence of NSSI (e.g., socioeconomic status, the stressors of living in an urban environment). Additionally, although some studies have reported that women are more likely to report NSSI (e.g., Wilcox et al., 2012), our findings appear consistent with previous research suggesting that there is no gender difference in NSSI engagement (e.g., Heath et al., 2008).

In contrast to our prediction, participants who engaged in NSSI were no more likely to report overall difficulties in the emotional regulation, compared to those who did not endorse NSSI behaviors. This finding is contrary to previous research, which has demonstrated a consistent association between emotion dysregulation and NSSI (e.g., Gratz & Roemer, 2008). However, when the relationship between NSSI and emotion dysregulation was examined at the subtest level of the DERS, results suggested that engagement in NSSI might be related to high scores on some DERS subtests and low scores on others, which may contribute to the null overall relationship. Participants who reported engagement in NSSI endorsed greater difficulties in impulse control and

difficulty accessing affect regulatory strategies, when compared to those who denied engagement in NSSI. These results are consistent with previous research, which has demonstrated a relationship between NSSI and both impulsivity (Arens, Gaher, & Simons, 2012) and limited access to emotion regulation strategies (Gratz & Roemer, 2008).

Consistent with our hypothesis, there was a significant negative relationship between emotion dysregulation and negative bodily attitudes. This finding is consistent with previous research, which supports a relationship between difficulties in emotion regulation and body image concerns (e.g., Hughes & Gullone, 2011). Additionally, negative attitudes towards the body significantly differentiated between those who endorsed NSSI and those who denied NSSI, such that those who reported NSSI endorsed more negative attitudes towards the body. These findings are also consistent with previous research, which has found that body shame and low body esteem are associated with NSSI (Nelson & Muehlenkamp, 2012).

In contrast to our prediction, negative bodily attitudes did not function as a mediating variable between emotion dysregulation and NSSI. This is contrary to previous research, which suggests that poor body regard may help to explain why those who endorse emotion dysregulation are at a greater risk for engagement in NSSI (e.g., Muehlenkamp et al., 2013). It is also worth considering that the measure used to assess emotion dysregulation (i.e., the DERS; Gratz & Roemer, 2004) may not have fully captured all facets of the phenomenon. Although the DERS has been examined in a wide variety of contexts (e.g., Fowler, Charak, Elhai, Allen, Frueh, & Oldham, 2014; Kökönyei, Urbán, Reinhardt, Józán, & Demetrovics, 2014; Saritaş-Atalar, Gençöz, & Özen, 2014), this is the first study to utilize the measure in a sample where racial/ethnic minority students compose the majority of the student body. In fact, those who identify as a racial/ethnic minority may not regulate their emotions in the same way as those who identify as White/European American. For instance, some research has suggested that racial/ethnic minorities are more likely to suppress their emotions, when compared to their White/European American counterparts (Gross & John, 2003). This study did not capture the suppression of emotions, which has been associated with engagement in NSSI (Najmi, Wegner, & Nock, 2007). Therefore, it is possible that unmeasured aspects of emotion dysregulation may have better explained engagement in NSSI.

There are several important limitations of the current study. First, data were obtained via

self-report measures in an online format. Consequently, data are subject to participant memory bias, as the majority of participants reported engaging in NSSI 6 to 10 years ago. It is possible that participants were unable to accurately recall all past instances of past NSSI. Participants may have been hesitant to answer sensitive questions regarding engagement in self-injury in a truthful manner. Although engagement in NSSI was high in the current study, the small sample size may have impacted the ability to detect a significant relationship between NSSI and emotion dysregulation. Furthermore, NSSI was examined as a dichotomous variable; therefore, severity of engagement in NSSI was not examined. Consequently, we were unable to capture the differences between those who endorsed one self-harm behavior versus those who endorsed, for example, 10 self-injurious behaviors. In addition, research has focused on use of the BIS in clinical samples (e.g., Orbach, Gilboa-Schechtman, Sheffer, Meged, Har-Even, & Stein, 2006), which may limit the generalizability of the construct in a sample of non-clinical college students. Although the internal consistency reliability of BIS-Total scores was acceptable in this sample, reliabilities were lower for some BIS subscales (i.e., BIS-Touch and BIS-Protection).

Due to the small sample size of the current study, our results should be interpreted with caution. However, we argue that these constructs should continue to be empirically examined. Future research should be conducted to determine the presence and possible functions of NSSI in a large multicultural sample, as the current study suggests that NSSI is a prevalent phenomenon among those who identify as a racial/ethnic minority. Since there was no significant relationship between emotion dysregulation (as measured by the DERS) and NSSI, additional studies should continue to explore other difficulties in emotion regulation that may predict engagement in NSSI (e.g., suppression), as well as whether these strategies may predict NSSI through a lack of emotional investment in the body. Greater clarification is also needed to determine whether there are protective factors associated with cultural experience that promote the successful regulation of emotions, yet intensify the presence of negative attitudes towards the body. Finally, the relationship between negative attitudes towards the body and engagement in other forms of self-destructive behaviors should also be examined (e.g., substance use and compulsive sexual behaviors), as evidence suggests that attitudes towards the body play a role in the maintenance of high-risk behaviors.

In conclusion, the results of the current study offer further evidence for the role of attitudes towards the body in the maintenance of self-destructive behaviors; as such, we suggest that mental health care providers should consider negative attitudes towards the body as a risk factor for engagement in NSSI within this population. Furthermore, our findings potentially suggest that treatment strategies might include the fostering of positive attitudes and feelings towards the body, as previous research has suggested that interventions aimed at improving body image have enhanced outcomes among those who engage in other forms of self-destructive behaviors (e.g., Danielsen & Rø, 2012). Due to the nonsignificant relationship between emotion dysregulation and NSSI, our results also suggest that a widely used measure of emotion dysregulation may not fully capture all aspects of the construct, some of which may be more commonly used among ethnic minorities (e.g., emotion suppression).

References

- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Washington, DC: Author.
- Anderson, N. L., & Crowther, J. H. (2012). Using the Experiential Avoidance Model of non-suicidal self-injury: Understanding who stops and who continues. *Archives of Suicide Research, 16*, 124-132. doi: 10.1080/13811118.2012.667329.
- Andover, M. S. (2014). Non-suicidal self-injury disorder in a community sample of adults. *Psychiatry Research, 219*(2), 305-310. doi:10.1016/j.psychres.2014.06.001
- Andover, M. S., & Morris, B. W. (2014). Expanding and clarifying the role of emotion regulation in nonsuicidal self-injury. *The Canadian Journal of Psychiatry / La Revue Canadienne De Psychiatrie, 59*(11), 569-575.
- Arens, A. M., Gaher, R. M., & Simons, J. S. (2012). Child maltreatment and deliberate self-harm among college students: Testing mediation and moderation models for impulsivity. *American Journal of Orthopsychiatry, 82*(3), 328-337. doi:10.1111/j.1939-0025.2012.01165.x
- Armiento, J. S., Hamza, C. A., & Willoughby, T. (2014). An examination of disclosure of nonsuicidal self-injury among university students. *Journal of Community & Applied Social Psychology, 24*(6), 518-533. doi:10.1002/casp.2190
- Plener, P. L., Allroggen, M., Kapusta, N. D., Brähler, E., Fegert, J. M., & Groschwitz, R. C. (2016). The

- prevalence of Nonsuicidal Self-Injury (NSSI) in a representative sample of the German population. *BMC Psychiatry*, 16.
- Cantanzaro, S. J., & Mearns, J. (1990). Measuring generalized expectancies for negative mood regulation: Initial scale development and implications. *Journal of Personality Assessment*, 54, 546-563. doi: 10.1080/00223891.1990.9674019
- Chesin, M. S., Moster, A. N., & Jeglic, E. L. (2013). Non-suicidal self-injury among ethnically and racially diverse emerging adults: Do factors unique to the minority experience matter? *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*, 32(4), 318-328. doi:10.1007/s12144-013-9185-2
- Danielsen, M., & Rø, Ø. (2012). Changes in body image during inpatient treatment for eating disorders predict outcome. *Eating Disorders: The Journal of Treatment & Prevention*, 20(4), 261-275. doi: 10.1080/10640266.2012.689205
- Duggan, J. M., Toste, J. R., & Heath, N. L. (2013). An examination of the relationship between body image factors and non-suicidal self-injury in young adults: The mediating influence of emotion dysregulation. *Psychiatry Research*, 206(2-3), 56-264. doi:10.1016/j.psychres.2012.11.01
- Faul, F., Erdfelder, E., Lang, A.G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175-191. doi:10.3758/BF03193146
- Favazza, A. R. (1998). The coming of age of self-mutilation. *Journal of Nervous and Mental Disease*, 186(5), 259-268. doi:10.1097/00005053-199805000-00001
- Fowler, J. C., Charak, R., Elhai, J. D., Allen, J. G., Frueh, B. C., & Oldham, J. M. (2014). Construct validity and factor structure of the Difficulties in Emotion Regulation Scale among adults with severe mental illness. *Journal of Psychiatric Research*, 58, 175-180. doi: 10.1016/j.jpsychires.2014.07.029
- García-Nieto, R., Carballo, J. J., de Neira Hernando, M. D., de León-Martínez, V., & Baca-García, E. (2015). Clinical correlates of non-suicidal self-injury (NSSI) in an outpatient sample of adolescents. *Archives of Suicide Research*, 19(2), 218-230. doi:10.1080/13811118.2014.957447
- Gratz, K. L. (2001). Measurement of deliberate self-harm: Preliminary data on the Deliberate Self-Harm Inventory. *Journal of Psychopathology and Behavioral Assessment*, 23(4), 253-263. doi: 10.1023/A:1012779403943
- Gratz, K. L. (2007). Targeting emotion dysregulation in the treatment of self-injury. *Journal of Clinical Psychology*, 63(11), 1091-1103. doi: 10.1002/jclp.20417
- Gratz, K. L., Latzman, R. D., Young, J., Heiden, L. J., Damon, J., Hight, T., & Tull, M. T. (2012). Deliberate self-harm among underserved adolescents: The moderating roles of gender, race, and school-level and association with borderline personality features. *Personality Disorders*, 3(1), 39-54. doi: 10.1037/a0022107.
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41-54. doi: 10.1023/B:JOBA.0000007455.08539.94
- Gratz, K. L., & Roemer, L. (2008). The relationship between emotion dysregulation and deliberate self-harm among female undergraduate students at an urban commuter university. *Cognitive Behavior Therapy*, 37(1), 14-25. doi: 10.1080/16506070701819524
- Gross, J. J., & John, O. P. (2003). Individual difference in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348-362. doi: 10.1037/0022-3514.85.2.348
- Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. New York, NY: The Guilford Press.
- Heath, N. L., Toste, J. R., Nedecheva, T., & Charlebois, A. (2008). An examination of nonsuicidal self-injury among college students. *Journal of Mental Health Counseling*, 30(2), 137-156.
- Hughes, E. K., & Gullone, E. (2011). Emotion regulation moderates relationships between body image concerns and psychological symptomatology. *Body Image*, 8(3), 224-231. doi: 10.1016/j.bodyim.2011.04.001
- Klonsky, E. D. (2007). The functions of deliberate self-injury: A review of the evidence. *Clinical*

- Psychology Review*, 27(2), 226-239. doi:10.1016/j.cpr.2006.08.002
- Klonsky, E. D. (2011). Non-suicidal self injury in United States adults: Prevalence, sociodemographics, topography and functions. *Psychological Medicine*, 41(9), 1981-1986. doi: 10.1017/S0033291710002497
- Klonsky, E. D., May, A. M., & Glenn, C. R. (2013). Relationship between nonsuicidal self-injury and attempted suicide: Converging evidence from four samples. *Journal of Abnormal Psychology*, 122(1), 231-237. doi: 10.1037/a0030278
- Kököneyi, G., Urbán, R., Reinhardt, M., Józán, A., & Demetrovics, Z. (2014). The Difficulties in Emotion Regulation Scale: Factor structure in chronic pain patients. *Journal of Clinical Psychology*, 70(6), 589-600. doi: 10.1002/jclp.22036
- Kuentzel, J. G., Arble, E., Boutros, N., Chugani, D., & Barnett, D. (2012). Nonsuicidal self-injury in an ethnically diverse college sample. *American Journal of Orthopsychiatry*, 82(3), 291-297. doi: 10.1111/j.1939-0025.2012.01167.x
- Laye-Gindhu, A., & Schonert-Reichl, K. A. (2005). Nonsuicidal self-harm among community adolescents: Understanding the "whats" and "whys" of self-harm. *Journal of Youth and Adolescence*, 34(5), 447-457. doi: 10.1007/s10964-005-7262-z
- Muehlenkamp, J. J., Bagge, C. L., Tull, M. T., & Gratz, K. L. (2013). Body regard as a moderator of the relation between emotion dysregulation and nonsuicidal self-injury. *Suicide and Life-Threatening Behavior*, 43(5), 479-493.
- Muehlenkamp, J. J., & Brausch, A M. (2012). Body image as a mediator of non-suicidal self injury in adolescents. *Journal of Adolescence*, 35, 1-9. doi: 10.1016/j.adolescence.2011.06.010
- Muehlenkamp, J. J., Peat, C. M., Claes, L., & Smits, D. (2012). Self-injury and disordered eating: Expressing emotion dysregulation through the body. *Suicide and Life-Threatening Behavior*, 42(4), 416-425. doi:10.1111/j.1943-278X.2012.00100.x
- Najmi, S., Wegner, D. M., & Nock, M. K. (2007). Thought suppression and self-injurious thoughts and behaviors. *Behaviour Research and Therapy*, 45(8), 1957-1965. doi: 10.1016/j.brat.2006.09.014
- Nelson, A., & Muehlenkamp, J. J. (2012). Body attitudes and objectification in non-suicidal self-injury: Comparing males and females. *Archives of Suicide Research*, 16, 1-16. doi: 10.1080/13811118.2012.640578
- Nock, M. K. (2009). Why do people hurt themselves? New insights into the nature and functions of self-injury. *Current Directions in Psychological Science*, 18, 78-83. doi: 10.1111/j.1467-8721.2009.01613.x
- Nock, M. K., & Prinstein, M. J. (2004). A functional approach to the assessment of self-mutilative behavior. *Journal of Consulting and Clinical Psychology*, 72(5), 885-890. doi: 10.1037/0022-006X.72.5.885
- Orbach, I. (1996). The role of the body experience in self-destruction. *Clinical Child Psychology and Psychiatry*, 1(4), 607-619. doi:10.1177/1359104596014012
- Orbach, I., & Mikulincer, M. (1998). The Body Investment Scale: Construction and validation of a body experience scale. *Psychological Assessment*, 10(4), 415-425. doi: 10.1037/1040-3590.10.4.415
- Orbach, I., Gilboa-Schechtman, E., Sheffer, A., Meged, S., Har-Even, D., & Stein, D. (2006). Negative bodily self in suicide attempters. *Suicide and Life-Threatening Behavior*, 36(2), 136-153. doi: 10.1521/suli.2006.36.2.136
- Sarıtaş-Atalar, D., Gençöz, T., & Özen, A. (2014). Confirmatory factor analyses of the Difficulties in Emotion Regulation Scale (DERS) in a Turkish adolescent sample. *European Journal of Psychological Assessment*, doi: 10.1027/1015-5759/a000199
- Victor, S., & Klonsky, E. (2014). Daily emotion in non-suicidal self-injury. *Journal of Clinical Psychology*, 70(4), 364-375. doi: 10.1002/jclp.22037
- Whitlock, J., Eckenrode, J., & Silverman, D. (2006). Self-injurious behaviors in a college population. *Pediatrics*, 117(6), 1939-1948. doi: 10.1371/journal.pmed.1000240
- Wilcox, H. C., Arria, A. M., Caldeira, K. M., Vincent, K. B., Pinchevsky, G. M., & O'Grady, K. E. (2012). Longitudinal predictors of past-year non-suicidal self-injury and motives among college students. *Psychological Medicine*, 42(4), 717-726. doi: 10.1017/S0033291711001814