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Examining Sexual Assault Victimization and Loneliness as Risk Factors Associated with Non-
Lethal Self-Harm Behaviors in Female College Students: Is It Important to Control for
Concomitant Suicidal Behaviors?

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Abstract

The present study examined sexual assault victimization and loneliness as predictors of self-harm behaviors in a sample of 224 female college students. Results from conducting regression analysis indicated that both sexual assault victimization and loneliness were unique and significant predictors of self-harm behaviors. This pattern remained even after controlling for concomitant suicidal behaviors. Interestingly, in a post-hoc analysis predicting suicidal behaviors, it was found that loneliness, but not sexual assault victimization, was the only unique and significant predictor after controlling for self-harm behaviors. Some implications of the present findings for understanding self-harm behaviors in female college students and the importance of controlling for suicidal behaviors in studies of self-harm behaviors (and vice versa) are discussed.

Keywords: Sexual Assault Victimization; Loneliness; Self-Harm Behaviors; Suicidal Behaviors; Female College Students

Examining Sexual Assault Victimization and Loneliness as Risk Factors Associated with Non-Lethal Self-Harm Behaviors in Female College Students: Is It Important to Control for Concomitant Suicidal Behaviors?

Non-lethal self-harm behavior has typically been defined as deliberate and direct destruction or alteration of body tissue *without* conscious suicidal intent (Favazza, 1998; Guerreiro et al., 2013; Selby, Kranzler, Fehling, & Panza, 2015), and it has become a serious problem in adolescent and young adult populations (Carvalho et al., 2015), especially among females. For example, Whitlock, Eckenrode, and Silverman (2006) found that over 17% of college students reported engaging in some form of self-harm behavior (e.g., cutting, skin-picking, & hair-pulling), with this pattern being more pronounced in female college students compared to male college students (see also, Bresin & Schoenleber, 2015). In turn, engaging in self-harm behaviors has often been found to be positively associated with a wide range of negative outcomes and behaviors, including suicidal behaviors in college students (e.g., Fliege et al., 2006; Gollust, Eisenberg, & Golberstein, 2008; Paul, Tsypes, Eidlitz, Ernhout, & Whitlock, 2015). Accordingly, it would be important to identify risk factors that are associated with self-harm behaviors in female college students.

Findings from studies on *sexual assault*, broadly defined as any sexual act that takes place without the victim's consent (e.g., unwanted sexual touching, forcible penetration; Polusny & Arbisi, 2006), indicate that female college students are often the victims of sexual assault (e.g., Aosved, Long, & Voller, 2011; Gross, Winslett, Roberts, & Gohm, 2006; Lawyer, Resnick, Bakanic, Burkett, & Kilpatrick, 2010; Palmer, McMahon, Rounsaville, & Ball, 2010; Turchik & Hassija, 2014). For example, Krebs, Lindquist, Warner, Fisher, and Martin (2009) found that an alarming 20% of female college students in their sample experienced some type of sexual

assault (e.g., drug-facilitated sexual assault, physically forced sexual assault) since entering college. Although experience of early childhood sexual abuse has been positively linked to self-harm behaviors in adults (e.g., Campbell, Keegan, Cybulska, & Forster, 2007; Gunter, Chibnall, Antoniak, Philibert, & Hollenbeck, 2011; Noll, Horowitz, Bonanno, Trickett, & Putnam, 2003), including in college student populations (Gratz, Conrad, & Roemer, 2002), less is known about the association between adult sexual assault victimization and self-harm behaviors among college students. Indeed, of the few studies available, recent sexual assault victimization (over the past year) has been found to be positively associated with self-harm behaviors in a national sample of college students (Taliaferro & Muehlenkamp, 2015). Nonetheless, researchers have argued that the general lack of studies investigating proximal or recent stressors associated with self-harm behaviors in adults remains a serious limitation in the extant empirical literature (Fliege, Lee, Grimm, & Kapp, 2009). Accordingly, it would be important to determine if the potentially damaging experience of recent sexual assault victimization represents an important risk factor associated with self-harm behaviors in female college students.

Beyond sexual assault victimization, however, there are a number of reasons to expect that individual differences variables. In particular, *loneliness*, defined by feelings and thoughts of being isolated and disconnected from others (Russell, Peplau, & Cutrona, 1980), may also play an important role in predicting self-harm behaviors in female college students. First, studies on loneliness over the past 30 years have indicated that it is a reliable correlate and predictor of a wide range of negative psychological outcomes (e.g., depression, anxiety, & stress; see Heinrich & Gullone, 2006, for a review). Second, and relatedly, studies in college student populations have shown that loneliness is a reliable predictor of other serious types of self-destructive behaviors, including suicidal behaviors (e.g., Chang et al., 2015; Hirsch, Chang, & Jeglic, 2012;

Lamis, Ballard, & Patel, 2014; Stravynski & Boyer, 2001). Finally, because females, compared to males, place greater value on pursuing and maintaining close interdependent relationships (Cross & Madson, 1997; Stewart & McDermott, 2004), the chronic perception of being alone or disconnected from others may, therefore, represent a particularly distressful experience for females. Accordingly, there are a number of reasons why one might expect loneliness to represent an important risk factor associated with self-harm behaviors in female college students.

To date, however, no study has yet examined the role of sexual assault victimization and loneliness as potential risk factors associated with self-harm behaviors in female college students. In that regard, given the strong overlap between self-harm behaviors and suicidal behaviors (Fliege et al., 2006; Hawton et al., 2015), it would not only be important to determine if sexual assault victimization and loneliness are important unique predictors of self-harm behaviors, but to also determine if the pattern that emerges is largely unchanged after controlling for concomitant levels of suicidal behaviors. For example, the identification of risk factors that are specific to non-lethal self-harm behaviors in adults might help clarify differences between self-harm and suicidal behaviors (McAllister, 2003). Unfortunately, researchers studying self-harm behaviors have often not controlled for concomitant suicidal behaviors (e.g., Gutierrez, Osman, Barrios, & Kopper, 2001; Gunter et al., 2011; Hay & Meldrum, 2010). As a result, it remains impossible to determine if findings from such studies apply uniquely to the prediction of self-harm behaviors, to suicidal behaviors, to both types of self-destructive behaviors, or to neither of these self-destructive behaviors.

Purpose of the Present Study

Given these concerns, we conducted the present study in a female college student sample to address two specific objectives: 1) to determine if sexual assault victimization and loneliness

are risk factors associated with self-harm behaviors; and 2) to determine if the obtained findings in predicting self-harm behaviors remain even after controlling for concomitant suicidal behaviors.

Based on our review of past research findings indicating that sexual assault victimization and loneliness are positively linked to self-harm behaviors (e.g., Gratz et al., 2002; Giletta, Scholte, Engels, Ciairano, & Prinstein, 2012; Taliaferro & Muehlenkamp, 2015), we expected to find support for the contention that both of these risk factors will be uniquely predictive of self-harm behaviors in female college students. Indeed, as previously noted, Chang et al. (2015) found that both loneliness and sexual assault victimization were significant unique predictors of outcomes conceptually related to self-harm behaviors, namely, suicidal behaviors. However, because self-harm and suicidal behaviors are also empirically related to each other (e.g., Gutierrez et al., 2001; Selby et al., 2015), we expected the extent to which sexual assault victimization and loneliness remain uniquely predictive of self-harm behaviors would likely be lowered, but remain significant, after controlling for suicidal behaviors.

Methods

Participants

Two hundred and thirty female college students were recruited from a university in the Southeast United States. Participants' ages ranged between 18 and 53 with a mean of 21.32 ($SD = 4.32$). A majority of the participants indicated that they were European American (88.3%), followed by African American (5.7%), Asian American (2.2%), Latina American (1.7%), and "Other" (2.1%). Of this initial sample, six participants did not complete the survey and their responses were omitted from subsequent analysis.

Measures

Sexual Assault Victimization. Four individual self-report questions from the National College Health Assessment survey (ACHA-NCHA; Hoban, 2007) were used to assess for sexual assault victimization among various dimensions, namely, verbal threat (“Within the last school year, have you experienced verbal threats for sex against your will?”), unwanted sexual touching (“Within the last school year, have you experienced sexual touching against your will?”), attempted sexual penetration (“Within the last school year, have you experienced attempted penetration against your will?”), and completed sexual penetration (“Within the last school year, have you experienced sexual penetration against your will?”). Respondents are asked to answer each question with either “yes” or “no”, where a “yes” response was coded as having experienced sexual assault victimization.

Loneliness. The revised UCLA Loneliness Scale (R-UCLA; Russell et al., 1980) was used to assess for loneliness. The scale consists of 20 items, half of which describe non-lonely thoughts (e.g., “There are people I feel close to”), while the other half characterizes feelings of loneliness (e.g., “I feel isolated from others”). Respondents are asked to rate the statements on the frequency with which they experience these thoughts and feelings using a 4-point Likert-type scale, ranging from 1 (*never*) to 4 (*often*). Higher scores on the R-UCLA indicate greater levels of loneliness.

Self-Harm Behaviors. The Self-Harm Inventory (SHI; Sansone, Wiederman & Sansone, 1998) was used to assess for self-harm behaviors. The SHI is a 22-item measure that asks participants whether or not they have engaged in a particular self-harm behavior (e.g., “Have you ever intentionally, or on purpose cut yourself?”). Respondents are asked to answer each question with either “yes” or “no”, where a “yes” response was coded as having engaged in a self-harm behavior. Higher scores on the SHI indicate greater engagement in self-harm behaviors.

Suicidal Behaviors. The Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001) was used to assess for suicidal behaviors. The SBQ-R is a 4-item measure that assesses for key aspects of suicidal behaviors, namely, lifetime ideation and/or suicide attempt (“Have you ever thought about or attempted to kill yourself?”), frequency of suicide ideation over the past 12 months (“How often have you thought about killing yourself in the past year?”), threat of suicide attempt (“Have you ever told someone that you were going to commit suicide or that you might do it?”), and likelihood of suicidal behavior in the future (“How likely is it that you will attempt suicide someday?”). The responses for each item are given total points and are measured across a 5- to 7-point Likert-type scale, for example, ranging from 0 or 1 (*never*) to 5 (*very often*) or 6 (*very likely*). Higher scores on the SBQ-R indicate greater suicidal behaviors.

Procedure

Approval for the study was obtained from the Institutional Review Board prior to data collection. Participants received either course-required credit or extra credit upon completion of the survey. Most of the participants were recruited from Introductory Psychology classes. All participants provided written informed consent.

Results

Correlations, means, and standard deviations for all study measures are presented in **Table 1**. Consistent with past research, all of the correlations were highly significant ($p < .001$) and in the expected direction. For example, sexual assault victimization was positively correlated with loneliness ($r = .25, p < .001$), self-harm behaviors ($r = .30, p < .001$), and suicidal behaviors ($r = .26, p < .001$). Similarly, loneliness was positively correlated with self-harm behaviors ($r = .38, p < .001$) and suicidal behaviors ($r = .49, p < .001$). As expected, self-harm behaviors and suicidal behaviors were found to be positively correlated with each other ($r = .50, p < .001$).

To determine the role of sexual assault victimization and loneliness as risk factors of self-harm behaviors in female college students, we conducted a multiple regression analysis in which sexual assault victimization and loneliness were entered simultaneously as predictors. To determine whether any of the predictors accounted for a small, medium, or large amount of the variance in self-harm behaviors, we used Cohen's (1977) convention for small ($f^2 = .02$), medium ($f^2 = .15$), and large effects ($f^2 = .35$) as a general guide. Results of this analysis are presented in **Table 2**. As the table shows, sexual assault victimization and loneliness were, as a predictor set, found to account for a medium ($f^2 = .23$) 19% of variance in self-harm behaviors, $F(2, 221) = 25.76, p < .001$. Within the predictor set, both sexual assault victimization ($\beta = .22, p < .001$) and loneliness ($\beta = .33, p < .001$) were found to be significant and unique predictors of self-harm behaviors.

Next, to determine if the obtained findings remained after controlling for suicidal behaviors, we conducted a hierarchical regression analysis. In this case, suicidal behaviors (as a control variable) was entered in Step 1. Sexual assault victimization and loneliness were entered as a set in Step 2. Results of this analysis are presented in **Table 3**. As the table shows, although suicidal behaviors was found to account for a medium ($f^2 = .33$) 25% of variance in self-harm behaviors, $F(1, 222) = 74.89, p < .001$, it is worth noting that the sexual assault victimization and loneliness predictor set was still found to account for a small ($f^2 = .05$), but significant 5% of additional unique variance in self-harm behaviors, $F(2, 220) = 7.44, p < .01$. Consistent with the previous regression results, both sexual assault victimization ($\beta = .16, p < .01$) and loneliness ($\beta = .15, p < .05$) remained significant and unique predictors of self-harm behaviors, although the magnitude of their unique association was reduced.

Given these results, we were curious to determine if sexual assault victimization and loneliness were similarly involved in predicting suicidal behaviors, after controlling for self-harm behaviors. Accordingly, we conducted a post-hoc analysis in which we conducted another hierarchical regression analysis. In this case, however, self-harm behaviors (as a control variable) was entered in Step 1. Sexual assault victimization and loneliness were entered as a set in Step 2. Results of this analysis are presented in **Table 4**. As the table shows, although self-harm behaviors was found to account for a medium ($f^2 = .33$) 25% of variance in self-harm behaviors, $F(1, 222) = 74.89, p < .001$, it is worth noting that the sexual assault victimization and loneliness predictor set was found to account for a medium ($f^2 = .12$) 11% of additional unique variance in suicidal behaviors, $F(2, 220) = 18.60, p < .001$. Interestingly, within the predictor set, loneliness ($\beta = .34, p < .001$) emerged as the *only* significant and unique predictor of suicidal behaviors.

Taken together, loneliness was found to be a common risk factor associated with self-harm and suicidal behaviors in female college students. In contrast, sexual assault victimization was found to be a specific risk factor associated with self-harm behaviors, but not with suicidal behaviors, in female students.

Discussion

Given that few studies have been conducted to identify important proximal risk factors associated with self-harm behaviors (Fliege et al., 2009), the present study sought to determine if sexual assault victimization and loneliness were important risk factors associated with this type of self-destructive behavior in female college students. As expected, our initial regression findings indicated that both sexual assault victimization and loneliness were important unique predictors of self-harm behaviors. Noteworthy, these initial findings indicated that loneliness was 1.5 times stronger a predictor of self-harm behaviors, than was sexual assault victimization ($\beta =$

.33 & .22, respectively). However, in our subsequent analysis that controlled for suicidal behaviors, loneliness and sexual assault victimization were found to be more comparable in magnitude ($\beta = .15$ & $.16$, respectively) as unique predictors of self-harm behaviors.

Interestingly, when we conducted a post-hoc regression analysis, this time with self-harm behaviors controlled for, we found loneliness, but *not* sexual assault victimization, to be a significant and unique predictor of suicidal behaviors.

Taken together, our findings have at least three important implications for theory, research, and treatment/prevention relevant to the study of self-destructive behaviors in young adult females. First, our findings indicate that both sexual assault victimization and loneliness represent important unique risk factors associated with non-lethal self-harm behaviors (controlling for suicidal behaviors) in female college students. Accordingly, it would be useful for researchers, practitioners, and administrators to work collaboratively on identifying, developing, and implementing effective and sustainable campus-wide programs that help prevent sexual assault victimization on college campuses (Carmody, Ekhomu, & Payne, 2009; Koss, Wilgus, & Williamsen, 2014). Additionally, because some researchers have argued that engaging in self-harm behaviors represents a form of avoidant coping intended to deal with emotionally difficult, traumatic experiences (e.g., Andover, Pepper, & Gibb, 2007; Mikolajczak, Petrides, & Hurry, 2009), it may prove useful for mental health professionals to help those who have become victims of sexual assault learn how to apply more effective coping strategies to manage the emotional trauma they might be experiencing (e.g., problem-solving skills training; D’Zurilla, 1986; Nezu, Nezu, & D’Zurilla, 2013; Westefeld & Heckman-Stone, 2003). Second, because sexual assault victimization was not found to be a unique predictor of lethal suicidal behaviors (controlling for self-harm behaviors), our findings raise the possibility that past results showing

sexual assault victimization to be positively linked to suicidal behaviors may be confounded due to an overlap in the conceptualization and/or measurement of suicidal behaviors and self-harm behaviors in adults (e.g., Gutierrez et al., 2001). Thus, researchers interested in studying self-harm behaviors may benefit by controlling for suicidal behaviors, and vice versa, in order to identify results that are specific to the self-destructive behavior under study.

Third, and finally, the finding that loneliness in female college students was found to be uniquely and positively associated with both greater engagement in non-lethal self-harm behaviors and greater lethal suicidal behaviors points to the possibility that loneliness might represent an important transdiagnostic vulnerability factor involved across different types of self-destructive behaviors (Cacioppo & Patrick, 2008). Indeed, given that loneliness in female college students has also been positively linked to other serious psychological and physical health problems (Heinrich & Gullone, 2006), including eating disorders/disturbances (e.g., bulimic symptoms, body dissatisfaction; Chang, Kahle, Yu, & Hirsch, 2014; Wright & Pritchard, 2009), our findings underscore the potential health benefits of providing programs to female college students that help foster the development of supportive interpersonal networks (Ponzetti & Cate, 1988; Stokes & Levin, 1986) and target the reduction of loneliness (e.g., reduce maladaptive social cognitions; see Masi, Chen, Hawkey, & Cacioppo, 2011, for a review).

Some Limitations of the Present Study

Although the present study provides some important findings involving the unique role of sexual assault victimization and loneliness in predicting self-harm behaviors in female college students, some limitations to the present study are worth noting. First, because our sample was predominantly European American, it would be important to determine if similar or different findings emerge when studying more diverse ethnic or racial groups. For example, according to

Bryant-Davis, Chung, and Tillman (2009), the prevalence rate of sexual assault victimization, including rape, has typically been found to be higher in African American females compared to European American females. Thus, it would be important to determine if sexual assault victimization represents a unique risk factor associated with self-harm behaviors in diverse ethnic and racial groups that are differentially exposed to such victimization. Second, although the present study focused on the prediction of self-harm behaviors, it would be useful to determine if sexual assault victimization and loneliness continue to be significant and unique predictors of other important outcomes (e.g., eating disturbances, depressive symptoms) in female college students. Third, and relatedly, although we were interested in testing a prediction model involving sexual assault victimization and loneliness as predictors of self-harm behaviors, our findings do not preclude the possibility that self-harm behaviors may play an important role in increasing the risk of sexual assault victimization and loneliness in female students. Thus, building on the present findings, prospective studies would be useful for examining the extent to which sexual assault victimization and loneliness predict changes in self-harm behaviors over time in female college students.

Concluding Comments

In summary, we conducted the present study to determine if sexual assault victimization and loneliness represent important and unique risk factors associated with self-harm behaviors in female college students. Consistent with expectations, both risk factors were found to be significant predictors of self-harm behaviors in female students. This pattern remained even after controlling for concomitant suicidal behaviors. Alternatively, after controlling for self-harm behaviors, loneliness, but not sexual assault victimization, was found to be a significant predictor of suicidal behaviors in female students. Thus, the present findings point to the centrality of

loneliness across self-destructive behaviors, and the specificity of sexual assault victimization to self-harm behaviors, but not to suicidal behaviors, in female college students. In that regard, our findings provide a valuable context for appreciating why it would be important to control for suicidal behaviors when studying self-harm behaviors (and vice versa), if we are to develop a more comprehensive understanding of the complex factors that may place young adult females at heightened risk for engaging in self-destructive behaviors.

References

- Andover, M. S., Pepper, C. M., & Gibb, B. E. (2007). Self-mutilation and coping strategies in a college sample. *Suicide and Life-Threatening Behavior, 37*, 238-243.
- Aosved, A. C., Long, P. J., & Voller, E. K. (2011). Sexual revictimization and adjustment in college men. *Psychology of Men & Masculinity, 12*, 285.
- Bresin, K., & Schoenleber, M. (2015). Gender differences in the prevalence of nonsuicidal self-injury: A meta-analysis. *Clinical Psychology Review, 38*, 55-64.
- Bryant-Davis, T., Chung, H., & Tillman, S. (2009). From the margins to the center: Ethnic minority women and the mental health effects of sexual assault. *Trauma, Violence, & Abuse, 10*, 330-357.
- Cacioppo, J. T., & Patrick, W., (2008). *Loneliness: Human nature and the need for social connection*. New York: W. W. Norton & Co.
- Campbell, L., Keegan, A., Cybulska, B., & Forster, G. (2007). Prevalence of mental health problems and deliberate self-harm in complaints of sexual violence. *Journal of Forensic and Legal Medicine, 14*, 75-78.
- Carmody, D., Ekhomu, J., & Payne, B. K. (2009). Needs of sexual assault advocates in campus-based sexual assault centers. *College Student Journal, 43*, 507-513.
- Carvalho, C. B., Nunes, C., Castilho, P., da Motta, C., Caldeira, S., & Pinto-Gouveia, J. (2015). Mapping non suicidal self-injury in adolescence: Development and confirmatory factor analysis of the Impulse, Self-harm and Suicide Ideation Questionnaire for Adolescents (ISSIQ-A). *Psychiatry Research, 227*, 238-245.
- Chang, E. C., Kahle, E. R., Yu, E. A., & Hirsch, J. K. (2014). Behavioral inhibition system and behavioral activation system (BIS/BAS) motives and loneliness as predictors of eating

- disturbances in female college students: Interpersonal context matters. *Journal of Social and Clinical Psychology*, 33, 250-269.
- Chang, E. C., Lian, X., Yu, T., Qu, J., Zhang, B., Jia, W., & ... Hirsch, J. K. (2015). Loneliness under assault: Understanding the impact of sexual assault on the relation between loneliness and suicidal risk in college students. *Personality and Individual Differences*, 72, 155-159.
- Cohen, J. (1977). *Statistical power analysis for the behavioral sciences (rev. ed.)*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Cross, S. E., & Madson, L. (1997). Models of the self: Self-construals and gender. *Psychological Bulletin*, 122, 5-37.
- D’Zurilla, T. J. (1986). *Problem-solving therapy: A social competence approach to clinical intervention*. New York: Springer Publication Co.
- Favazza, A. R. (1998). The coming of age of self-mutilation. *Journal of Nervous and Mental Disease*, 186, 259–268.
- Fliege, H., Kocalevent, R.-D., Walter, O. B., Beck, S., Gratz, K. L., Gutierrez, P. M., & Klapp, B. F. (2006). Three assessment tools for deliberate self-harm and suicide behavior: Evaluation and psychopathological correlates. *Journal of Psychosomatic Research*, 61, 113-121.
- Fliege, H., Lee, J.-R., Grimm, A., & Klapp, B. F. (2009). Risk factors and correlates of self-harm behaviors: A systematic review. *Journal of Psychosomatic Research*, 66, 477-493.

- Giletta, M., Scholte, R. H., Engels, R. C., Ciairano, S., & Prinstein, M. J. (2012). Adolescent non-suicidal self-injury: A cross-national study of community samples from Italy, the Netherlands and the United States. *Psychiatry Research, 197*, 66-72.
- Gollust, S., Eisenberg, D., & Golberstein, E. (2008). Prevalence and correlates of self-injury among university students. *Journal of American College Health, 56*, 491-498.
- Gratz, K. L., Conrad, S. D., & Roemer, L. (2002). Risk factors for deliberate self-harm among college students. *American Journal of Orthopsychiatry, 72*, 128-140.
- Gross, A. M., Winslett, A., Roberts, M., & Gohm, C. L. (2006). An examination of sexual violence against college women. *Violence Against Women, 12*, 288-300.
- Guerreiro, D. F., Cruz, D., Frasilho, D., Santos, J. C., Figueira, M. L., & Sampaio, D. (2013). Association between deliberate self-harm and coping in adolescents: A critical review of the last 10 years' literature. *Archives of Suicide Research, 17*, 91-105.
- Gunter, T. D., Chibnall, J. T., Antoniak, S. K., Philibert, R. A., & Hollenbeck, N. (2011). Predictors of suicidal ideation, suicide attempts, and self-harm without lethal intent in a community corrections sample. *Journal of Criminal Justice, 39*, 238-245.
- Gutierrez, P. M., Osman, A., Barrios, F. X., & Kopper, B. A. (2001). Development and initial validation of the Self-Harm Behavior Questionnaire. *Journal of Personality Assessment, 77*, 475-490.
- Hawton, K., Bergen, H., Cooper, J., Turnbull, P., Waters, K., Ness, J., & Kapur, N. (2015). Suicide following self-harm: Findings from the multicentre study of self-harm in England, 2000–2012. *Journal of Affective Disorders, 175*, 147-151.
- Hay, C., & Meldrum, R. (2010). Bullying victimization and adolescent self-harm: Testing hypotheses from general strain theory. *Journal of Youth and Adolescence, 39*, 446-459.

- Heinrich, L. M., & Gullone, E. (2006). The clinical significance of loneliness: A literature review. *Clinical Psychology Review, 26*, 695-718.
- Hirsch, J. K., Chang, E. C., & Jeglic, E. L. (2012). Social problem solving and suicidal behavior: Ethnic differences in the moderating effects of loneliness and life stress. *Archives of Suicide Research, 16*, 303-315.
- Hoban, M. (2007). American College Health Association National College Health Assessment spring 2006 reference group data report (abridged). *Journal of American College Health, 55*, 195-206.
- Krebs, C. P., Lindquist, C. H., Warner, T. D., Fisher, B. S., & Martin, S. L. (2009). College women's experiences with physically forced, alcohol-or other drug-enabled, and drug-facilitated sexual assault before and since entering college. *Journal of American College Health, 57*, 639-649.
- Koss, M. P., Wilgus, J. K., & Williamsen, K. M. (2014). Campus sexual misconduct restorative justice approaches to enhance compliance with Title IX guidance. *Trauma, Violence, & Abuse, 15*, 242-257.
- Lamis, D. A., Ballard, E. D., & Patel, A. B. (2014). Loneliness and suicidal ideation in drug-using college students. *Suicide and Life-Threatening Behavior, 44*, 629-640.
- Lawyer, S., Resnick, H., Bakanic, V., Burkett, T., & Kilpatrick, D. (2010). Forcible, drug-facilitated, and incapacitated rape and sexual assault among undergraduate women. *Journal of American College Health, 58*, 453-460.
- Masi, C. M., Chen, H. Y., Hawkey, L. C., & Cacioppo, J. T. (2011). A meta-analysis of interventions to reduce loneliness. *Personality and Social Psychology Review, 15*, 219-266.

- McAllister, M. (2003). Multiple meanings of self-harm: A critical review. *International Journal of Mental Health Nursing, 12*, 177-185.
- Mikolajczak, M., Petrides, K. V., & Hurry, J. (2009). Adolescents choosing self-harm as an emotion regulation strategy: The protective role of trait emotional intelligence. *British Journal of Clinical Psychology, 48*, 181-193.
- Nezu, A. M., Nezu, C. M., & D’Zurilla, T. J. (2013). *Problem-solving therapy: A treatment manual*. New York: Springer Publishing Co.
- Noll, J. G., Horowitz, L. A., Bonanno, G. A., Trickett, P. K., & Putnam, F. W. (2003). Revictimization and self-harm in females who experienced childhood sexual abuse results from a prospective study. *Journal of Interpersonal Violence, 18*, 1452-1471.
- Osman, A., Bagge, C. L., Gutierrez, P. M., Konick, L. C., Kooper, B. A., & Barrios, F. X. (2001). The Suicidal Behaviors Questionnaire-Revised (SBQ-R): Validation with clinical and nonclinical samples. *Assessment, 5*, 443-454.
- Palmer, R. S., McMahon, T. J., Rounsaville, B. J., & Ball, S. A. (2010). Coercive sexual experiences, protective behavioral strategies, alcohol expectancies and consumption among male and female college students. *Journal of Interpersonal Violence, 25*, 1563-1578.
- Paul, E., Tsypes, A., Eidlitz, L., Ernhout, C., & Whitlock, J. (2015). Frequency and functions of non-suicidal self-injury: Associations with suicidal thoughts and behaviors. *Psychiatry Research, 225*, 276-282.
- Polusny, M. A., & Arbisi, P. A. (2006). Assessment of psychological distress and disability after sexual assault in adults. In G. Young, A. W. Kane, & K. Nicholson (Eds.), *Psychological knowledge in court: PTSD, pain, and TBI* (pp. 97-125). New York, NY: Springer.

- Ponzetti, J. J., & Cate, R. M. (1988). The relationship of personal attributes and friendship variables in predicting loneliness. *Journal of College Student Development, 29*, 292-298.
- Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology, 39*, 472-480.
- Sansone, R. A., Wiederman, M. W., & Sansone, L. A. (1998). The Self-Harm Inventory (SHI): Development of a scale for identifying self-destructive behaviors and borderline personality disorder. *Journal of Clinical Psychology, 54*, 973-983.

Table 1

Correlations Between Measures of Sexual Assault Victimization, Loneliness, Self-Harm Behaviors, and Suicidal Behaviors Among Female College Students

Measures	1	2	3	4
1. Sexual Assault	--			
2. Loneliness	.25***	--		
3. Self-Harm Behaviors	.30***	.38***	--	
4. Suicidal Behaviors	.26***	.49***	.50***	--
<i>M</i>	.13	39.20	3.17	2.18
<i>SD</i>	.34	12.38	3.93	3.14

Note. $N = 224$.

*** $p < .001$.

Table 2

Results of Regression Analysis Showing Amount of Variance in Self-Harm Behaviors Accounted for by Sexual Assault Victimization and Loneliness in Female College Students

Outcome and Predictors	β	R^2	ΔR^2	F
Self-Harm Behaviors	--	.19	--	25.76***
Sexual Assault	.22***			
Loneliness	.33***			

Note. $N = 224$.

*** $p < .001$.

Table 3

Results of Hierarchical Regression Analyses Showing Amount of Variance in Self-Harm Behaviors Accounted for Sexual Assault Victimization and Loneliness, After Controlling for Suicidal Behaviors, in Female College Students

Outcome and Predictors	β	R^2	ΔR^2	F
Self-Harm Behaviors				
Step 1: Suicidal Behaviors	.50***	.25	--	74.89***
Step 2: Risk Factors	--	.30	.05	7.44**
Sexual Assault	.16**			
Loneliness	.15*			

Note. $N = 224$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4

Results of Hierarchical Regression Analyses Showing Amount of Variance in Suicidal Behaviors Accounted for by Sexual Assault Victimization and Loneliness, After Controlling for Self-Harm Behaviors, in Female College Students

Outcome and Predictors	β	R^2	ΔR^2	F
Suicidal Behaviors				
Step 1: Self-Harm Behaviors	.50***	.25	--	74.89***
Step 2: Risk Factors	--	.36	.11	18.60***
Sexual Assault	.06			
Loneliness	.34***			

Note. $N = 224$.

*** $p < .001$.