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Emotion dysregulation, bullying, and suicide behaviors in adolescents

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Abstract

Background: Among adolescents, rates for suicide attempts and non-suicidal self-injury (NSSI) remain high. Adolescents also often experience bullying, which has been found to associate with increased risk of suicide attempts and NSSI. Emotion regulation difficulties are associated with both bullying victimization and self-harm behaviors in adolescents.

Aims: The current study examined the relationship between emotion dysregulation and suicide attempts and NSSI with bullying as a moderating factor.

Method: High school students (n = 804) completed self-report measures on emotion regulation difficulties, suicide attempts, nonsuicidal self-injury, and past-year bullying experiences.

Results: Moderation analyses found that the relationships between multiple emotion dysregulation dimensions and suicide attempts were significant regardless of bullying experience, but the relationship was stronger when bullying was present. For NSSI, bullying only moderated the relationships between nonacceptance of emotions, limited emotion regulation strategies and NSSI, with stronger associations when bullying was present.

Limitations: Different types of bullying were not assessed, all measures were self-report, and the community sample had relatively low clinical severity.

Conclusion: Results indicate that poor emotion regulation and bullying victimization associate with greater frequencies of suicidal and nonsuicidal behaviors. These findings point to the need for self-harm prevention programs to address both bullying and emotion regulation skills.

Keywords

Emotion dysregulation; NSSI; Suicide; Bullying; Adolescents

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CRediT authorship contribution statement

Anthony Kennedy: Writing – review & editing, Writing – original draft, Conceptualization. **Amy M. Brausch:** Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Funding acquisition, Formal analysis, Data curation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Suicide continues to be a public health concern for adolescents as 13.3 % of girls and 6.6 % of boys in this age group reported a suicide attempt in 2021 (Gaylor et al., 2021). The rate of non-suicidal self-injury in adolescents is also high at 22 % (Xiao et al., 2022). The rates of in-person bullying, while showing a decrease between 2009 and 2021, are also still relatively high at 15 %, and rates of cyberbullying have remained consistent at around 15 % (CDC, 2021). Being bullied is known to associate with mental health issues, but it may also result in difficulties with emotion regulation (Beduna and Perrone, 2019). Bullying victimization has also been linked with increased likelihood of self-harm behaviors, both suicidal and nonsuicidal (Neacsiu et al., 2017). However, research is limited on how specific dimensions of emotion regulation difficulties are associated with bullying victimization and self-harm behaviors in adolescents, a gap the current study aimed to address.

Emotion regulation is the process and strategies individuals use to manage, control, or modulate their emotions (Planalp and Braungart, 2015) and it can either be a conscious or unconscious effort (Gross, 1998). A widely recognized model, the multidimensional model of emotion regulation, conceptualizes six main dimensions of emotion regulation difficulties: nonacceptance of emotional responses, difficulties engaging in goal-directed behaviors, impulse control difficulties, lack of emotional awareness, limited access to emotional regulation strategies, and lack of emotional clarity (Gratz and Roemer, 2004). Difficulties in emotion regulation are associated with suicide ideation as documented in a systematic review of adolescents and adults (Colmenero-Navarrete et al., 2022), but a noted limitation was that women were overrepresented in the included studies. A systematic review of studies examining emotion regulation and suicide ideation and attempts found overall associations between these variables (Turton et al., 2021). However, this study was limited to samples of adults and studies that provided DERS total scores. The authors noted that additional research is needed in adolescents, and that subscales of the DERS should be examined in relation to suicidal behavior. Moreover, lacking knowledge of or access to emotion regulation strategies has been identified as the most prominent emotion regulation deficit associated with suicide ideation in adolescent samples (Brausch et al., 2021; Weinberg and Klonsky, 2009). Poor emotion regulation is also strongly and positively correlated with nonsuicidal self-injury (NSSI) as evidenced in a meta-analysis of clinical and non-clinical adolescents (Wolff et al., 2019), as well as in samples of community high school students (Brausch et al., 2021). The directionality of emotion regulation has also been examined in a sample of adolescents and found that poor emotion regulation predicted future NSSI and that engagement with NSSI predicted poorer emotion regulation (Robinson, et al., 2019). However, in the meta-analysis of NSSI and emotion regulation, only 3 community samples and 2 clinical samples of adolescents were included out of the 41 total studies that used the DERS. Moreover, less than half of those 41 studies reported DERS subscale scores. Therefore, focusing on dimensions of emotion regulation deficits in relation to both NSSI and suicide attempts in a large sample of community adolescents adds valuable information to the extant literature.

Bullying is a proactive form of aggression towards those unable to defend themselves (Olweus, 1994). Exposure to bullying is harmful and can lead to increased risk for suicide ideation (Baldry, 2003; Cleary, 2000; Kim et al., 2009), suicide attempts (Klomek et al., 2007; Koyanagi et al., 2019; Sigurdson et al., 2017), and NSSI (Vergara, et

al., 2018). Having been bullied also associates with difficulties in regulating emotions, even into adulthood, posing potential long-term consequences (Rudolph et al., 2009). A recent systematic review of adolescent victimization and emotion regulation difficulties also summarized that experiences of victimization in adolescence may undermine the processes of emotion regulation and that this can play a role in risk taking behaviors (Herd and Kim, 2021; Holmes et al., 2019). Existing literature has established that emotion dysregulation associates with suicide attempts and NSSI, and that bullying associates with suicide attempts, NSSI, and emotion dysregulation. However, there are a lack of studies that examine these factors concurrently, particularly within samples of high school students, among whom have high rates of bullying victimization. Approximately 1 in 5 high school students reports being bullied at school, and 1 in 6 report some type of cyberbullying (CDC, 2023). Moreover, it is not well understood how the experience of bullying may affect the relationship between specific emotion regulation difficulties and self-harm behaviors. The current study examined bullying as a moderator between emotion regulation dimensions and both suicide attempts and NSSI. Based on previous research, it was hypothesized that lack of access to emotion regulation strategies would associate with both suicide attempts and NSSI and that these relationships would be stronger when bullying was also present. Examinations of other emotion regulation dimensions and their potential interaction with bullying were exploratory.

1. Method

1.1. Participants

Data were collected from 804 high school students at public schools in the south-central region of the United States. The mean age of participants was 15.52 (SD=1.01); almost half (47.9 %) were first-year students. About 53.5 % identified as female, 44.5 % identified as male, 1 % identified as transgender, and 1 % identified as other or unknown. Most participants identified as white (85.4 %), 5.5 % identified as Multi-Ethnic, 4.5 % identified as Black, 2.9 % identified as Asian, 1 % identified as unknown or other, and 0.1 % identified as Native American. The sample was primarily heterosexual (85.7 %), 5.5 % identified as bisexual, 3.4 % identified as unsure, 2.1 % identified as gay/lesbian/ queer, and about 3 % identified as other or unknown.

1.2. Measures

The Suicide and Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock et al., 2007) was used to assess NSSI and suicide attempts. It was administered in self-report form and the current study examined items assessing the lifetime frequency of suicide attempts and NSSI. The SITBI has good reliability and validity for lifetime occurrence of suicide attempts (ICC=0.50, $p<.001$; $\kappa = 0.65$; Nock et al., 2007) and NSSI (ICC=0.71, $p<.001$; $\kappa = 0.74$; Nock et al., 2007).

The Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004) was used to assess emotion regulation. It includes 36 items that measure emotion regulation difficulties across six domains: nonacceptance of emotions, lack of goal-directed behavior, lack of impulse control, lack of emotional awareness, lack of access to strategies, and lack of

emotional clarity. Scores are summed for a total score and higher scores indicate greater difficulty with emotion regulation. The current study used the total score and individual subscales. The DERS has good internal consistency in adolescents (α =0.93; Weinberg and Klonsky, 2009); internal consistency in the current sample for the total score was α =0.95. Internal consistencies for the subscales were all good and ranged from 0.81 to 0.91.

Participants were asked to indicate whether they have experienced bullying in the past year using the following item: “Have you been bullied in the last 12 months?” This was coded as yes (1) or no (0). In the current sample, 133 (16.5 %) of adolescent reported being bullied in the past year.

1.3. Procedure

Adolescents with positive parent consent were recruited to participate in the study. After obtaining adolescent assent, participants completed self-report surveys in small groups within their school building in the library or an empty classroom. Adolescents were spaced out to create as much privacy as possible while completing the research protocol. Adolescent responses were checked for completeness to minimize missing data, and also were screened for critical items regarding suicide risk. Adolescents who endorsed critical items for suicide risk were confidentially referred to a school mental health professional before the research team left the school. Participants were paid $5 upon completion of the research protocol. Procedures were approved by the Institutional Review Board at the university where both authors are affiliated.

2. Results

Prior to running analyses, lifetime frequency variables for suicide attempt and NSSI were checked for normality. Both had many values of zero – 87 % of adolescents reported no NSSI history and 93.8 % reported no suicide attempt history. Both variables had elevated skew (NSSI=8.22, SA=5.53) and kurtosis (NSSI=74.69, SA=33.66). A square root transformation was applied to both variables and skew improved (NSSI=4.54, SA=4.20), while kurtosis remained elevated but represents real-life distribution of scores in a non-clinical sample (NSSI=24.69, SA=17.26). Transformed variables were used in moderation analyses. In terms of bullying, 16.5 % of adolescents reported they had been bullied in the past 12 months.

Mean scores of all variables and zero-order correlations between all variables are reported in Table 1. Moderation analyses were conducted with the PROCESS Macro for SPSS (Hayes, 2022). Percentile bootstrap confidence intervals (95 %) were generated using 5000 bootstrap samples. In each moderation model, one DERS subscale score was entered as the independent variable, bullying status (yes/no) was entered as the moderator, and either NSSI frequency or suicide attempt frequency were entered as the dependent variables.

The first moderation analysis was conducted to examine bullying as a moderator in the relationships between difficulty regulating emotions (DERS subscales) and lifetime NSSI frequency. For the DERS total score, the overall model was significant, $F(3743) = 36.39$, $p < .001$, R^2=0.13. The interaction between emotion regulation and bullying status was

significant, $B = 0.016$, $t = 3.47$, $p < .001$. Tests of simple slopes of the moderator found a significant relationship between difficulty regulating emotion and NSSI when bullying was present ($b = 0.028$, $p < .001$), and when bullying was absent ($b = 0.012$, $p < .001$; see Fig. 1). The relationship between emotion regulation and lifetime NSSI was stronger when bullying was present.

Moderation models with individual subscales from the DERS as independent variables found that bullying was a significant moderator for nonacceptance of emotions and lack of access to strategies. No significant moderation was found for lack of goals, impulse control, lack of emotional awareness, or lack of emotional clarity (see Table 2). The overall model with nonacceptance was significant, $F(3760) = 29.94$, $p < .001$, R^2=0.11. The interaction between nonacceptance and bullying status was significant, $B = 0.062$, $t = 3.78$, $p < .001$. Tests of simple slopes of the moderator found a significant relationship between nonacceptance and NSSI when bullying was present ($b = 0.103$, $p < .001$), and when bullying was absent ($b = 0.041$, $p < .001$); a stronger relationship was found when bullying was present with a similar pattern as seen in Fig. 1.

The overall model with lack of access to strategies was significant, $F(3756) = 41.16$, $p < .001$, R^2=0.14. The interaction between strategies and bullying status was significant, $B = 0.051$, $t = 3.40$, $p < .001$. Tests of simple slopes of the moderator found a significant relationship between nonacceptance and NSSI when bullying was present ($b = 0.096$, $p < .001$), and when bullying was absent ($b = 0.045$, $p < .001$); a stronger relationship was found when bullying was present with a similar pattern as seen in Fig. 1.

A second set of moderation analyses were conducted to examine bullying as a moderator in the relationship between difficulty regulating emotion and lifetime suicide attempts. For the DERS total score, the overall model was significant, $F(3775) = 39.78$, $p < .001$, R^2=0.133. The interaction between emotion regulation and bullying status was significant, $B = 0.007$, $t = 5.46$, $p < .001$. Tests of simple slopes of the moderator found a significant relationship between difficulty regulating emotion and suicide attempts when bullying was absent ($b = 0.002$, $p < .001$), and a stronger significant relationship when bullying was present ($b = 0.087$; $p < .001$; see Fig. 2). Moderation analyses were also run with each subscale from the DERS as the independent variable. Bullying was a significant moderator in the relationship between all DERS subscales and lifetime suicide attempts, with the overall pattern of a stronger relationship between emotion regulation difficulty and suicide attempts when bullying was present (Table 2).

3. Discussion

The goal of the current study was to examine the moderating effect of bullying victimization on the relationships between difficulties in emotion regulation and both suicidal and nonsuicidal self-harm behaviors. More than 16 % of our sample of high school students reported being bullied within the past 12 months; 6.2 % reported at least one lifetime suicide attempt, and 13 % reported lifetime NSSI. Results confirmed hypotheses that emotion regulation difficulties were more strongly related to suicide attempts and NSSI for adolescents who reported bullying victimization. Specifically, bullying moderated

the relationship between overall emotion regulation difficulties and suicide attempts, and between all dimensions of emotion regulation difficulties and suicide attempts; the relationship between emotion regulation and suicide attempts in all models was stronger when bullying was present than when it was absent. For NSSI, bullying was only a significant moderator for two emotion regulation dimensions, nonacceptance of emotions and lack of access to strategies. The relationship between these dimensions and NSSI was stronger when bullying was present, just as was seen for suicide attempts.

The nonacceptance of emotion dimension assesses the extent to which an individual does not accept emotions or the reactions to their own distress, while the lack of strategies dimension assesses knowledge of strategies to utilize when distressed and the extent to which one believes that they are able to regulate their emotions once upset (Gratz and Roemer, 2004). It could be that bullying impacts these two subscales more than the others due to the nature of bullying and how it is often repetitive and difficulty to obtain support for. One study on bullying and adult responses to bullying found that there is not a clear path to help those that are bullied, as what helps in some situations does not always help in other similar situations (Bjereld et al., 2021). It is possible that repeated attempts to get help for bullying with no benefit could lead to believing that there is not much that can be done to help oneself once the event has happened. While greater emotion regulation difficulties and bullying victimization were each associated with greater lifetime frequencies for suicide attempts and NSSI, the cumulative effect of worse emotion regulation and bullying appear to magnify suicidal and non-suicidal self-harm behavior in adolescents.

These findings align with previous research where emotion regulation is significantly associated with suicide behaviors in adolescents (Brausch et al., 2021) and where bullying is significantly associated with suicide attempts (Klomek et al., 2007; Koyanagi et al., 2019; Sigurdson et al., 2017) and NSSI (Vergara, et al., 2018). These results point to the need for adolescent prevention and early intervention approaches for suicide and self-harm to focus on both social-emotional skills like emotion regulation, as well as education and efforts to create school cultures where empathy for others is encouraged and bullying is not tolerated. Future research could investigate how different types of bullying, such as physical vs. relational, may affect the relationships between emotion regulation and self-harm. Future research may also aim to focus on cyberbullying or bullying that occurs in online spaces and how these affect adolescents given the wide usage of texting and social media in this age group.

Limitations of this study include the use of a non-clinical sample in which prevalence of suicide attempts and NSSI was relatively low. However, the data provide real-life representation of these issues in public high schools in the south-central region of the United States. Another limitation was the narrow assessment of bullying, not having data on experiences with different types of bullying, and not specifically defining bullying in the assessment item. Some research has indicated that adolescents who bully others, or who experience bullying as both a victim and perpetrator (bully-victim) are also at increased risk for suicide (Ahmad et al., 2023; Huang et al., 2022). Within our sample, only 4 % of adolescents reported bullying other students and 3 % were bully-victims; while our sample lacked power to examine bullies or bully-victims, future studies could extend

this research. Data in the current sample were cross-sectional, which limits the ability to understand temporal and directional relationships between bullying, emotion regulation, and self-harm behaviors. Lastly, the study was lacking in diversity and while representative of the geographic region, the homogenous sample limits the generalizability of the study. Overall, the present study highlights how poor emotion regulation and bullying victimization associate with greater frequency of suicidal and non-suicidal behaviors in adolescents.

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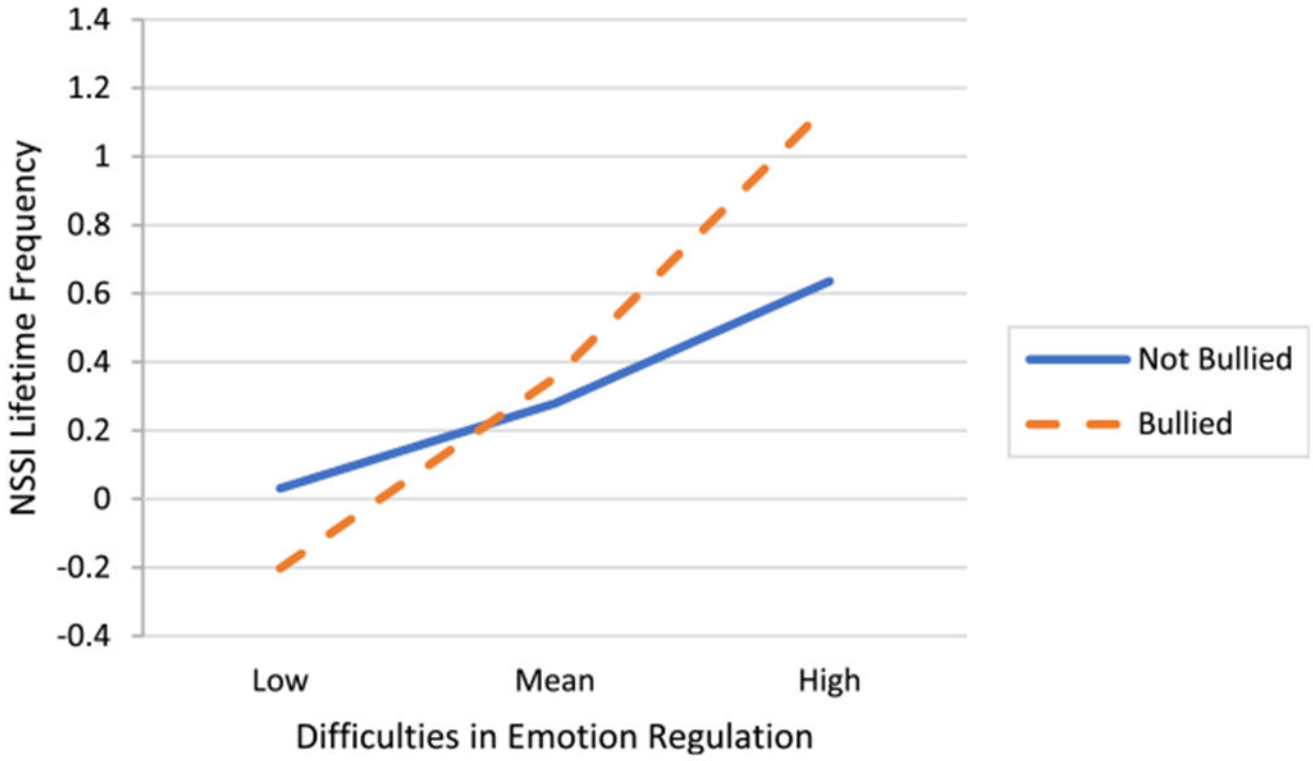

Fig. 1.
Bullying as a moderator in the relationship between total emotion regulation difficulties and lifetime NSSI frequency (transformed).

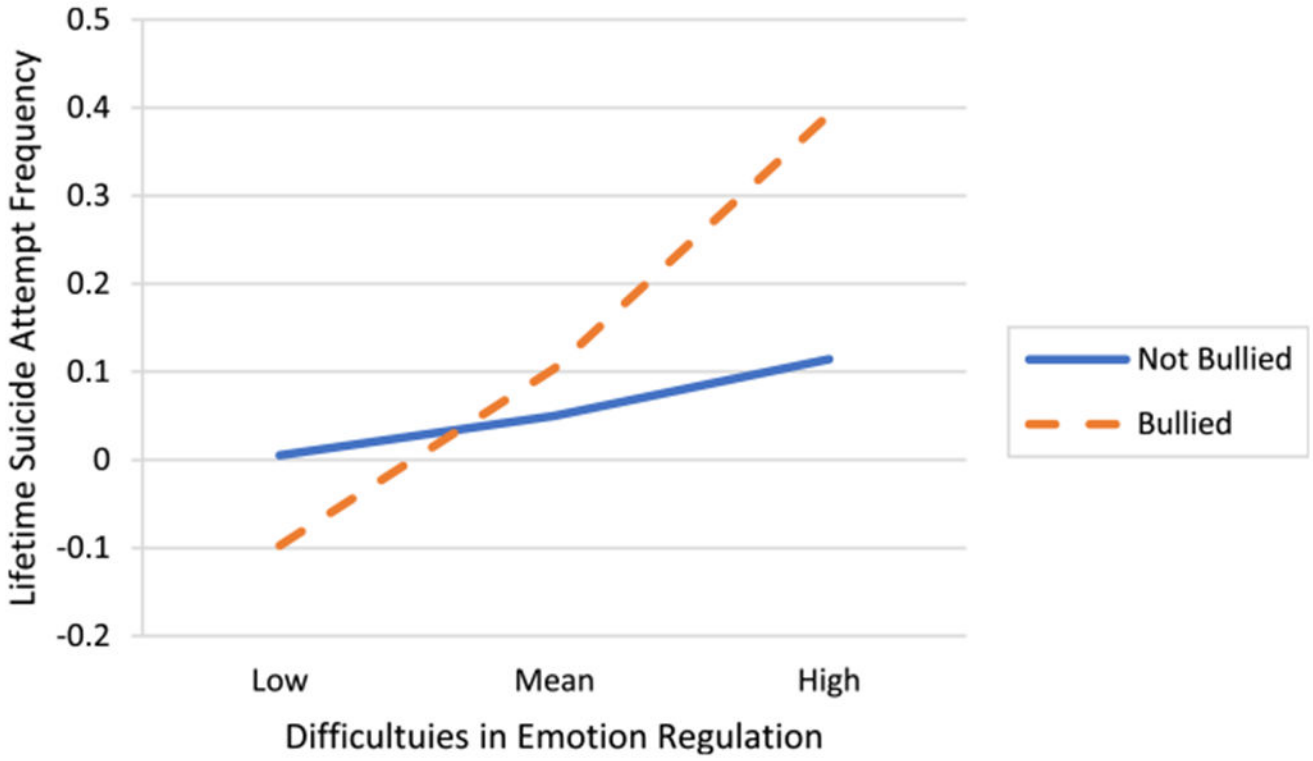

Fig. 2.

Bullying as a moderator in the relationship between total emotion regulation difficulties and lifetime suicide attempt frequency (transformed).

Table 1

Means, standard deviations, and zero-order correlations for all study variables.

Variable	%/M (SD)	1	2	3	4	5	6	7	8	9	10
1. Bullying (1=yes, 0=no)	16.5 %	–									
2. Emotion Regulation Difficulties (DERS Total)	84.01 (27.35)	.124**	–								
3. DERS-Nonacceptance	12.54 (6.47)	.047	.806**	–							
4. DERS-Lack of Goals	13.49 (5.65)	.088*	.780**	.588**	–						
5. DERS-Impulse Control	11.46 (5.14)	.153**	.778*	.561**	.571**	–					
6. DERS-Awareness	18.06 (5.64)	.051	.534**	.214**	.196**	.286**	–				
7. DERS-Strategies	16.67 (7.88)	.096**	.915**	.741**	.706**	.677**	.344**	–			
8. DERS-Clarity	11.96 (4.59)	.151**	.796**	.549**	.525**	.531**	.492**	.668**	–		
9. NSSI Frequency	0.40 (1.28)	−0.023	.325**	.285**	.266**	.250**	.133**	.347**	.244**	–	
10. Suicide Attempt Frequency	0.09 (0.37)	.059	.272**	.235**	.202**	.197**	.109**	.309**	.228**	.470**	–

*$p<.05$,

**$p<.01$.

Note. DERS = Difficulties in Emotion Regulation Scale. NSSI Frequency and Suicide Attempt Frequency transformed values were used.

Table 2

Results of analyses testing bullying as a moderator between emotion regulation difficulties, lifetime NSSI frequency, and lifetime suicide attempts.

NSSI Models	R^2	F	B	t	Bootstrap CI
IV: DERS Total	.128	36.39**			
DERS Total			.012	6.40**	.007, 0.017
Bullying			−1.18	−2.61**	−2.37, −0.047
DERS Total x Bullying			.016	3.47**	.002, 0.03
Bullying simple slope			.028	6.63**	.019, 0.036
No Bullying simple slope			.012	6.40**	.008, 0.015
IV: NonAcceptance	.106	29.94**			
NonAcceptance			.041	5.21**	.02, 0.06
Bullying			−0.543	−1.80	−1.26, 0.13
NonAccept x Bullying			.062	3.378**	.01, 0.12
Bullying simple slope			.103	6.20**	.071, 0.136
No Bullying simple slope			.041	5.21**	.026, 0.056
IV: Lack of Goals	.089	24.87**			
Goals			.050	5.64**	.031, 0.072
Bullying			−0.117	−0.331	−0.916, 0.706
Goals x Bullying			.036	1.68	−0.021, 0.097
IV: Impulse Control	.077	21.01**			
Impulse			.051	4.94**	.026, 0.079
Bullying			.085	.267	−0.571, 0.699
Impulse x Bullying			.024	1.12	−0.026, 0.083
IV: Lack of Awareness	.046	12.06**			
Awareness			.024	2.69**	.006, 0.042
Bullying			.074	.166	−1.08, 1.16
Awareness x Bullying			.026	1.15	−0.04, 0.095
IV: Lack of Strategies	.140	41.16**			
Strategies			.045	6.97**	.029, 0.062
Bullying			−0.693	−2.17*	−1.48, 0.056
Strategies x Bullying			.051	3.40*	.005, 0.098
Bullying simple slope			.096	7.12**	.069, 0.122
No Bullying simple slope			.045	6.97**	.032, 0.058
IV: Lack of Clarity	.078	25.52**			
Clarity			.054	4.93**	.029, 0.08
Bullying			−0.310	−0.757	−1.39, 0.795

NSSI Models	R^2	F	B	t	Bootstrap CI
Clarity x Bullying			.054	1.90	−0.027, 0.136
Suicide Attempt Models	**R^2**	**F**	**B**	**t**	
IV: DERS Total	.133	39.78**			
DERS Total			.002	3.83**	.001, 0.003
Bullying			−0.489	−3.93**	−0.857, −0.142
DERS Total x Bullying			.007	5.46**	.003, 0.011
Bullying simple slope			.087	7.70**	.006, 0.011
No Bullying simple slope			.002	3.83**	.001, 0.003
IV: NonAcceptance	.102	30.06**			
NonAcceptance			.007	3.37**	.003, 0.013
Bullying			−0.129	−1.53	−0.376, 0.139
NonAccept x Bullying			.020	3.95**	.001, 0.038
Bullying simple slope			.028	5.98**	.019, 0.037
No Bullying simple slope			.007	3.37**	.003, 0.012
IV: Lack of Goals	.085	24.59**			
Goals			.008	3.14**	.003, 0.013
Bullying			−0.080	−0.81	−0.339, 0.178
Goals x Bullying			.018	2.91**	−0.0004, 0.037
Bullying simple slope			.025	4.65**	.015, 0.036
No Bullying simple slope			.008	3.14**	.003, 0.013
IV: Impulse Control	.082	23.64**			
Impulse			.007	2.38*	.002, 0.013
Bullying			−0.07	−0.784	−0.299, 0.152
Impulse x Bullying			.019	3.11**	.002, 0.039
Bullying simple slope			.026	4.82**	.015, 0.036
No Bullying simple slope			.007	2.38*	.001, 0.013
IV: Lack of Awareness	.075	21.15**			
Awareness			.003	1.07	−0.001, 0.006
Bullying			−0.194	−1.58	−0.600, 0.213
Awareness x Bullying			.022	3.49**	.0001, 0.045
Bullying simple slope			.025	4.25**	.013, 0.036
No Bullying simple slope			.003	1.07	−0.002, 0.007
IV: Lack of Strategies	.140	42.81**			
Strategies			.009	5.10**	.005, 0.013
Bullying			−0.244	−2.74**	−0.498, 0.002
Strategies x Bullying			.019	4.76**	.006, 0.034

NSSI Models	R^2	F	B	t	Bootstrap CI
Bullying simple slope			.029	7.77**	.021, 0.036
No Bullying simple slope			.009	5.10**	.006, 0.013
IV: Lack of Clarity	.106	31.41**			
Clarity			.01	3.41**	.005, 0.016
Bullying			−0.296	−2.59**	−0.601, 0.007
Clarity x Bullying			.035	4.41**	.011, 0.059
Bullying simple slope			.045	6.16**	.031, 0.060
No Bullying simple slope			.010	3.41**	.004, 0.016

*p<.05,

**p<.01.