



Received: 13 June 2018  
Accepted: 03 September 2018  
First Published: 07 September 2018

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## APPLIED PSYCHOLOGY | RESEARCH ARTICLE

# The role of coping self-efficacy in emotion regulation and frequency of NSSI in young adult college students

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**Abstract:** Among young adults, nonsuicidal self-injury (NSSI) is a common emotion regulation (ER), or coping, strategy. Most studies have sought to clarify the role of self-injury as a coping strategy, and while this research is central to the understanding of those who self-injure, factors that influence coping behaviors may affect treatment and prevention efforts. This study examined the mediational effect of coping self-efficacy (CSE) on the relationship between emotion dysregulation and frequency of NSSI. The sample included 187 self-injuring university students between the ages of 18–26, and was predominately female (76.5%) and Caucasian (67.4%). Participants completed the Difficulties with Emotion Regulation Scale, the Coping Self-Efficacy Scale, and the Non-Suicidal Self-Injury Assessment Tool. Results indicated that CSE did not act as a mediator between difficulty with ER and frequency of NSSI. However, greater difficulty with ER predicted increased frequency in NSSI. These results highlight the importance of ER skills in the prevention and cessation of NSSI. It is imperative that mental health practitioners working with

### ABOUT THE AUTHORS

Melanie F. Midkiff, MS, is currently a PhD student and member of the Trauma and Anxiety Disorders Clinic (TADC) at Central Michigan University. The present manuscript is adapted from her master's thesis conducted at Northwestern State University of Louisiana. The findings support conclusions drawn from prior research, and clarify the mechanisms by which emotion regulation affects engagement in self-injury.

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### PUBLIC INTEREST STATEMENT

The rate of non-suicidal self-injury (NSSI) is highest among university students. Even though NSSI is distinct from suicide, it is a risk factor for suicidal behavior. The steady increase in suicide rates lends greater importance to understanding NSSI and its contributing factors. This study explored the relationships between emotion regulation and coping self-efficacy (CSE) with frequency of NSSI, specifically in the at-risk university population. The study was especially interested in determining if CSE explained the relationship between frequency of NSSI and emotion regulation (ER). It was found that CSE did not explain the relationship between difficulty with ER and frequency of NSSI, but greater difficulty in regulating emotions predicted frequency of NSSI. These findings offer direction to therapeutic interventions and outreach programs, potentially improving ER and ultimately reducing NSSI.

young adults focus on actual skill building rather than increasing CSE, as increased ER skills are likely to both increase CSE and reduce NSSI.

**Subjects:** Cognition & Emotion; Self-Harm in Adults; Counseling

**Keywords:** Nonsuicidal self-injury; coping self-efficacy; emotion regulation; counseling; college students; self-harm

Mental health practitioners across disciplines have expressed concern over self-injury for decades (Angelotta, 2015). The term self-injurious behavior is expansive, including injury caused by stereotypical behaviors of autism spectrum disorder (ASD), mutilation resulting from psychotic episodes, attempted suicide, and deliberate self-harm without suicidal intent (Angelotta, 2015). The term nonsuicidal self-injury (NSSI) is commonly used to encompass voluntary self-harm not performed as part of ASD or psychosis. Due to its prevalence across countries (e.g., Kharsati & Bhola, 2015; Plener, Libal, Keller, Fegert, & Muehlenkamp, 2009) and the limited research to date on its prevention and treatment, increasing research has begun to focus on NSSI in recent years. NSSI is most often defined as the deliberate harming of one's own bodily tissue, which is not socially or culturally sanctioned and is without suicidal intent (Klonsky, Victor, & Saffer, 2014; Nock & Favazza, 2009). Once thought of as either synonymous with suicidal ideation or solely a symptom of borderline personality disorder (BPD), NSSI has been consistently demonstrated to be a distinguishable phenomenon noted in populations exhibiting no form of personality disorder (Angelotta, 2015; Muehlenkamp, Claes, Havertape, & Plener, 2012).

Subtle variations in the definition of NSSI have been used, leading to a disagreement in what behaviors qualify (Muehlenkamp et al., 2012). These differences, combined with variations in methodology, have resulted in a considerably wide range of prevalence estimates. For young adults, who consistently have the highest rates of NSSI, lifetime prevalence ranges from 12 to 38% (Armiento, Hamza, & Willoughby, 2014; Gratz, 2001; Heath, Toste, Nedecheva, & Charlebois, 2008). However, Swannell, Martin, Page, Hasking, and St. John (2014) illustrated that methodological disparities account for at least 5% of the variability in estimates. After adjusting for these differences, prevalence estimates for young adults were estimated at 13.4%; disproportionately high when compared to any other age group or the national average, which rests at approximately 5.9% of the U.S. population (Klonsky, 2011).

NSSI, though distinct from suicide, has been identified as a risk factor for suicidal behavior (Hamza, Stewart, & Willoughby, 2012; Hamza & Willoughby, 2016). What distinguishes NSSI from suicidal ideation and behavior is its role in the lives of those who engage in it. As a means of elucidating this role, functional models attempt to illustrate the purpose of NSSI. Traditionally, conceptualizations aimed at identifying the function of NSSI have fallen into two distinct groups: intrapersonal and interpersonal. Intrapersonal models focus on NSSI as an operator in regulating internal states, such as physical tension, rumination, and emotions. Conversely, interpersonal models emphasize the use of NSSI as a social influence, in that it may work to increase attention from friends and family or provide an opportunity to decrease harassment by peers. Current models incorporate both intrapersonal and interpersonal functions as research findings have substantiated claims for the use of both of these elements, depending on the individual (e.g., Bentley, Nock, & Barlow, 2014; Nock, 2009). Considerable support has been found for a four-factor model, illustrating that NSSI serves as either positive or negative reinforcement as well as either an automatic (intrapersonal) or social (interpersonal) purpose (Bentley et al., 2014; Nock & Prinstein, 2004). This model identifies four potential functions of NSSI. The first function, *automatic positive reinforcement*, is an increase or generation of desired affective/cognitive states (e.g., positive affect, or to feel any emotion while experiencing anhedonia). The second function, *automatic negative reinforcement*, is a decrease or elimination of aversive affective/cognitive states (e.g., to relieve feelings of anger, sadness, or

other intense negative emotions). The third function, *social positive reinforcement*, is an increase or generation of desired social events (e.g., to gain attention from others, often as a cry for help). Finally, the fourth function, *social negative reinforcement*, is a decrease or elimination of aversive social events (e.g., to distance themselves from others and to detract others from spending time with them).

### 1. Emotion regulation

Generally speaking, emotion regulation (ER) is the way in which individuals manage and respond to emotions, the way emotions are shaped, and when and how emotions are experienced (Gross, 1998). Gratz and Roemer (2004) identified a working definition of ER as follows:

the (a) awareness and understanding of emotions, (b) acceptance of emotions, (c) ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, and (d) ability to use situationally appropriate ER strategies flexibly to modulate emotional responses as desired in order to meet individual goals and situational demands. (p. 42)

Gratz and Roemer (2004) also identified six facets of emotion dysregulation: nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to ER strategies, and lack of emotional clarity. These facets indicate that dysregulation occurs partially because of deficits in the strategies used to regulate emotions (Bridges, Denham, & Ganiban, 2004; Gratz, 2007). In such instances, the use of unhealthy coping strategies (e.g., alcohol/drugs, escaping difficult situations, physical/verbal aggression) regulates emotions superficially without true resolution or alteration of the emotions, while at the same time negatively impacting an individual's life (Bridges et al., 2004). Oftentimes the ease of using unhealthy strategies, or the frequency of intense negative emotions, can lead to a vicious cycle wherein individuals predominately use unhealthy strategies to cope. Due to its success in the short-term regulation of emotions, NSSI is one such maladaptive strategy that some individuals repeatedly return to in order to cope.

**ER and NSSI.** Research using the four-factor model has consistently shown that those who self-injure frequently endorse the ER function of NSSI, predominately as automatic negative reinforcement (e.g., Bentley et al., 2014; Glenn & Klonsky, 2011; Klonsky, 2009; Zerkowitz, Cole, Han, & Tomarken, 2016). The consensus among researchers is that NSSI primarily serves as an emotionally regulative strategy and is thus a form of ER (e.g., Bentley et al., 2014; Klonsky, 2007, 2009). The relationship between difficulties in ER and NSSI has been consistently demonstrated in both retrospective and ecological momentary assessment studies (i.e., repeated subjective measurement of specific events in their natural environment in real time; Andover & Morris, 2014; Heath et al., 2008; Klonsky, 2011; Nock, Prinstein, & Sterba, 2009). Furthermore, when compared to non-self-injuring groups, researchers (Bresin, 2014; Davis et al., 2014; Gratz & Roemer, 2008) have found marked differences in the ER of those who engage in NSSI. Even within a self-injuring group separated based on presence or absence of engagement in self-injury during the course of the study, those who self-injured experienced greater levels of negative affect both before and after a self-injury event, as compared to those who did not self-injure over the course of the study (Armey, Crowther, & Miller, 2011).

NSSI is a coping strategy that functions as an emotion regulator; however, other factors affect the maintenance and onset of NSSI, one of which is coping strategies in general. This is evidenced in one study in which the specific facets of ER, "lack of emotional clarity" and "limited access to effective ER strategies," were better predictors of NSSI status over and above overall ER (Gratz & Roemer, 2008). Moreover, in both adolescent and college populations, those who engage in NSSI have been found to employ more maladaptive coping behaviors, such as emotional suppression, self-distraction, denial, and substance use, compared to those who do not self-injure (e.g., Andrews, Martin, Hasking, & Page, 2013; Hasking, Momeni, Swannell, & Chia, 2008; Nock &

Mendes, 2008). Evidence also suggests that those who self-injure attempt to employ a greater number of both maladaptive and adaptive strategies, albeit unsuccessfully, relative to non-self-injuring individuals (e.g., Andrews et al., 2013; Wester & Trepal, 2010). Overall, these findings implicate a more pervasive issue underlying the use of NSSI as a coping strategy. The high number of strategies, both adaptive and maladaptive, unsuccessfully used in this population suggests no lack of effort to regulate emotions. Rather, it indicates that the onset and maintenance of NSSI represents an attempt to compensate for an overarching problem that affects the use of coping strategies as a whole.

## 2. Coping self-efficacy

Crucial to implementing adaptive coping strategies is the belief that one is capable of coping. This concept, also known as *self-efficacy*, refers to individuals' belief in their ability to carry out a behavior necessary for reaching a goal (Bandura, 1977). Across a range of populations and in a variety of contexts, self-efficacy beliefs play a significant role in motivation and performance, independently influencing performance attainment (Bandura & Locke, 2003). One domain-specific measure of self-efficacy, coping self-efficacy (CSE), concerns individuals' "perceived self-efficacy for coping with challenges or threats" (Chesney, Neilands, Chambers, Taylor, & Folkman, 2006, p. 2). It refers specifically to individuals' beliefs in their ability to cope with emotions and stressful events. Three broad factors comprise CSE, including confidence in the ability to: use problem focused coping (e.g., "...find solutions to your most difficult problems"), get support from friends and family (e.g., "...get friends to help you with the things you need"), and stop unpleasant emotions or thoughts (e.g., "...stop yourself from being upset by unpleasant thoughts"; Chesney et al., 2006). It is a distinct component of coping separate from the ER skills that are actually performed, as it is based upon the idea that individuals need to believe they are capable of engaging in various adaptive regulatory actions in order to effectively do so (Chesney, Chambers, Taylor, Johnson, & Folkman, 2003).

In a study of English-speaking college students in South Africa, CSE mediated the relationship between distress and well-being (Wissing et al., 2011). CSE also mediated the relationship between childhood abuse and ADHD symptoms in young adults with high levels of ADHD symptoms (Singer, Humphreys, & Lee, 2016). In a sample of adolescents, CSE attenuated psychological maladjustment in those that had endured peer victimization (Singh & Bussey, 2011). Among individuals affected by natural disaster, CSE acted as a mediator between acute stress response and both PTSD symptoms and global distress (Benight & Harper, 2002). Given self-efficacy's role in performance attainment and the fact that the employment of coping strategies is a performance, it is logical to posit that a meaningful relationship exists between CSE and ER. One study examined this potential link, finding a strong relation between ER and CSE (Luberto, Cotton, McLeish, Mingione, & O'Bryan, 2014). This study also found that the relationship between use of mindfulness skills and ER was partially explained by individuals' CSE beliefs.

Few studies have investigated the association between self-efficacy and NSSI. One study found that among a group of adolescents, those who self-injure reported lower self-efficacy for carrying out healthy coping mechanisms (Nock & Mendes, 2008). Among college students, academic self-efficacy mediated the relationship between emotional abuse from parents and frequency of NSSI, while social self-efficacy mediated the relationship between peer victimization and frequency of NSSI (Buser, Peterson, & Kearney, 2015). In a longitudinal analysis of adolescent self-injurers, Tatnell, Kelada, Hasking, and Martin (2014) discovered that low general self-efficacy was predictive of NSSI onset and partially mediated the relationship between attachment anxiety (i.e., perception of current relationship with parents) and NSSI.

In terms of CSE and NSSI, far less research is available. One recent study explored the potential role that CSE, grouped with other self-regulation abilities (i.e., ER, optimistic explanatory style, and coping strategies), plays in moderating the relationship between recent stress and frequency of NSSI (Weismore, 2011). Self-regulation abilities, which included CSE, did not affect the strength of

the relationship between stress and frequency of NSSI. In other words, the strength of the association between stress and frequency of NSSI was not dependent on individuals' degree of self-regulation ability. Another study examined CSE in terms of mediation, demonstrating that CSE fully explained the relationship between mindfulness skills and the presence of NSSI (Heath, Joly, & Carsley, 2016). In essence, mindfulness skills as a protective factor against NSSI occurred only as a function of the increase in CSE that follows an increase in mindfulness skills. This reflects the importance of CSE as the mechanism by which individuals become less inclined to self-injure. Individuals stopped engaging in NSSI not due to an increase in mindfulness skills, but as the result of an increase in perceived ability to cope with emotions and challenges. Such findings encourage additional research of the relationship between ER, CSE, and NSSI.

### 3. The current study

NSSI's status as a separate clinical syndrome has become well established over the past two decades. Although a growing body of knowledge concerning correlates and functions of NSSI exists, there remains much research to be done, as this is still a relatively new area of exploration. New insights stand to be gained from continued investigation, which will likely inform and improve current treatment and prevention efforts. While most age groups include some number of self-injuring individuals, prevalence rates in young adults far outweigh those of any other age group, creating a more pressing need for research endeavors focused on young adults.

Colleges and universities offer a concentrated sample of this at-risk age group. Moreover, college students are challenged by academic, financial, social, personal, and developmental stressors that are unique to the setting and/or developmental period. Examples include increased academic demands or self-imposed pressures, developing one's identity, adjusting to increased and novel responsibilities (e.g., assuming financial responsibility) and for many, coping with the stress of moving out of their family home for the first time and being on their own. As a result, college populations could differ from the general population on important factors, such as stress and poor sleep, both of which are risk factors for engagement in NSSI (Lundh, Bjärehed, & Wångby-Lundh, 2013; Tang et al., 2016). Furthermore, the Center for Collegiate Mental Health (2018) annual report indicates that the past seven years have seen steady increases in lifetime prevalence rates of serious suicidal ideation and NSSI in university settings. Young adults within these settings are potentially at even greater risk for engagement in self-injury than others; therefore, it is critical to gain a better understanding of risk and maintaining factors of NSSI in this specific population.

Current evidence suggests that self-injuring individuals attempt to employ a number of other coping strategies, both adaptive and maladaptive, but experience difficulty successfully implementing these strategies (Andrews, et al., 2013; Hasking et al., 2008; Nock & Mendes, 2008). Such findings suggest that the use of NSSI as an ER strategy may arise from a broader issue affecting coping behaviors in general. Therefore, investigation of factors that influence coping behaviors is crucial in the search for enhanced treatment options and informed prevention efforts. One such factor, CSE, assesses individuals' beliefs in their ability to cope with stressful situations. Preliminary evidence suggests that it may hold some important influence over ER and the presence of NSSI, but the nature of the relationship between CSE and both ER and NSSI remains unclear. Thus, the current study aims to explore CSE's association with both ER and frequency of NSSI, as well as CSE as a mediator of NSSI frequency and ER in a university population.

CSE is considered an important factor in adaptive coping (Chesney et al., 2003, 2006); therefore, it was expected that (1) CSE would negatively correlate with frequency of NSSI and with difficulty with ER. Individuals' beliefs in their ability to regulate emotions are partly contingent on their actual ability to do so, thus it was expected that (2) Difficulty with ER would predict CSE. Given the literature as it relates to the association between ER difficulties and engagement in self-injury (Gratz & Roemer, 2008; Klonsky, 2007, 2011), it was hypothesized that (3) Difficulty with ER would positively correlate with frequency of NSSI; and (4) Difficulty with ER would predict frequency of NSSI. Research indicates that ER skills alone cannot account for engagement in self-injury, as individuals who self-injure often employ adaptive

strategies in addition to NSSI (Hasking et al., 2008; Wester & Trepal, 2010). Preliminary findings of the association between ER and CSE, a factor partly responsible for the successful implementation of adaptive coping strategies, suggests that together they influence engagement in NSSI (Luberto et al., 2014). Therefore, it was hypothesized that 5) Difficulty with ER and CSE would predict frequency of NSSI. In much the same way that CSE fully explained the relationship between mindfulness and NSSI, CSE may also be the underlying mechanism that explains the association between ER and frequency of NSSI. As such, it was hypothesized that (6) CSE would partially mediate the relationship between difficulty with ER and frequency of NSSI.

## 4. Method

### 4.1. Participants and procedure

Students were recruited from a moderately sized rural southern public university. They were recruited campus-wide via email, a student messenger system, flyers, and by word-of-mouth. Each participant had the option of either entering into a raffle to win one of three possible \$50 rewards or receiving course credit in instructor-approved courses in exchange for their participation, the amount of which was determined by each participant's instructor. Participants were treated in accord with the Department of Psychology's Research Policy, and Ethical Principles of Psychologists and Code of Conduct (American Psychological Association, 2002). All students had access to the survey link; however, only those between the ages of 18–26 who had engaged in at least one instance of NSSI were included in analyses. Exclusion criteria included reporting of any self-injurious behavior attempted to commit suicide.

This sample was comprised of 958 participants, 243 (25.3%) of whom endorsed some form of NSSI. After excluding all individuals outside of the age range and/or who met the other exclusion criterion, the sample included 194 (20.3% of the total participants) young adults, and deletion of incomplete surveys (those missing greater than 5% of data) resulted in a final sample of 187. One hundred and forty-three of these individuals identified as female (76.5%), and 38 identified as male (20.3%), indicating a large gender difference in participation. The mean age was 20.21 (SD = 1.99). The sample included 126 Caucasians (67.4%), 43 African-Americans (23.0%), seven Hispanic Americans/Latinos (3.7%), five Native Americans (2.7%), three Asian American/Pacific Islanders (1.6%), and three identified as other (1.6%).

### 4.2. Measures

A demographic questionnaire was created by the researcher for the purpose of this study. This information included questions regarding age, ethnicity, sex, major and classification in college, and distance learning status.

#### 4.2.1. Brief non-suicidal self-injury-assessment tool

Lifetime frequency of self-injury was assessed using the Brief Non-Suicidal Self-Injury-Assessment Tool (BNSSI-AT; Whitlock, Exner-Cortens, & Purington, 2014). Scales within the measure include forms of self-injury used, functions, recency and frequency, age of onset and cessation, wound locations (e.g., wrists, thighs, stomach), and initial motivations (e.g., "I was upset and decided to try it"). The variable of interest was lifetime frequency of self-injury; however, all scales were included in the survey so that individuals reporting engagement in self-injury primarily to practice or commit suicide could be removed. Together the scale consisted of 12 items, requiring a mix of item types, including: (a) selection of one answer choice, (b) checking all that apply, and (c) typing in the answer. The item addressing lifetime frequency of self-injury originally included the following options: only once, 2–3 times, 4–5 times, 6–10 times, 11–20 times, 21–50 times, and more than 50 times. This item was modified to suit this study: 0 (*never*), 1 (*only once*), 2 (*2 times*), 3 (*3 times*), 4 (*4 times*), 5.5 (*5–6 times*), 7.5 (*7–8 times*), 9.5 (*9–10 times*), 13 (*11–15 times*), 18 (*16–20 times*), 25.5 (*21–30 times*), 35.5 (*31–40 times*), 45.5 (*41–50 times*), and 55.5 (*more than 50 times*). Using the same range of options as the question concerning lifetime frequency, two questions were added: (1) How many times per week, on average, do you engage in self-injury? and (2) In the last 12 months, approximately how many times have you

intentionally hurt yourself? This measure has been used in both university and adolescent populations, demonstrating good test-retest reliability, ranging from .70 to .90 across all subscales (Kress, Newgent, Whitlock, & Mease, 2015; Whitlock et al., 2014).

#### 4.2.2. Coping self-efficacy scale

Self-efficacy for coping with threats and challenges was assessed using the Coping Self-Efficacy Scale (CSES; Chesney et al., 2006). The measure consists of 26 items rated on a 10-point Likert scale ranging from 0(*cannot do at all*), 5(*moderately certain can do*), to 10(*certain can do*). Items tap into three subscales: stopping unpleasant emotions and thoughts, using problem-focused coping, and getting support from family and friends, with higher scores indicating greater CSE. Scores can range from 0 to 260. This scale's total score has exhibited both high internal consistency ( $\alpha = .95$ ), and good construct validity, as evidenced by its relation with measures of psychological distress, well-being, and social support (Chesney et al., 2006). For the current study, internal consistency was found to be  $\alpha = .96$ .

#### 4.2.3. Difficulties with emotion regulation scale

ER was measured using the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), previously used in both university and adolescent populations. This 36-item self-report questionnaire assesses six dimensions of ER: nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control, lack of emotional awareness, limited access to ER strategies, and lack of emotional clarity. Items are on a 5-point Likert scale with 1 (*almost never*) being the lowest and 5 (*almost always*) being the highest; thus it is possible to obtain scores ranging from 36 to 180. Higher scores suggest greater difficulty with ER. It has exhibited strong construct validity as evidenced by its relation to the Negative Mood Regulation Scale, a commonly used measure of ER, as well as measures of avoidance and emotional expressivity (Gratz & Roemer, 2004). It has also demonstrated high internal consistency ( $\alpha = .84$ – $.89$ ) across all subscales (Gratz & Roemer, 2004) in a sample of college students. In the current study, internal consistency ( $\alpha = .93$ ) was comparable to the original study.

### 5. Results

To examine possible differences across groups, gender and ethnicity were first examined. Participants did not significantly differ in the outcome variable lifetime frequency of NSSI as a function of gender ( $t(173) = 1.859, p = .065$ ) or ethnicity ( $F(5, 175) = 1.129, p = .347$ ). Descriptive statistics were computed to characterize the sample. The average score for CSE ( $M = 140.25, SD = 48.26$ ) suggested that participants were moderately confident in their ability to cope with threats and challenges. The mean difficulty with ER score ( $M = 94.22, SD = 22.44$ ) indicated that participants perceive themselves as having moderate difficulty regulating emotions. Participants reported an average of 12.96 ( $SD = 16.28$ ) self-injurious incidents in a lifetime; however, the distribution was highly positively skewed ( $skew = 1.78$ ), with a mode of 5.5. Individuals endorsing more than 50 self-injuring incidents artificially raised the average, making it appear that the entire sample self-injured at a greater frequency. To correct for skewness, values for frequency of NSSI were log-transformed and skewness was checked again and found to be within normal limits ( $skew = .29$ ). All analyses using this transformed variable were run twice: once using the untransformed variable and again with the transformed version. Results remained unchanged when using the transformed variable.

Pearson product-moment correlations were obtained in order to examine the associations between CSE, difficulty with ER, and frequency of NSSI. It was found that CSE was significantly negatively correlated with both difficulty with ER ( $r = -.710, p < .001$ ) and with frequency of NSSI ( $r = -.289, p < .001$ ). That is, lower CSE was associated with more frequent NSSI and greater difficulty regulating emotions. Results also indicated a significant positive relation between ER difficulties and frequency of NSSI ( $r = .367, p < .001$ ). Thus, greater difficulty regulating emotions related to more frequent self-injury.

It was posited that difficulty with ER would predict frequency of NSSI as well as CSE, and that difficulty with ER and CSE together would predict frequency of NSSI. In order to test these hypotheses, two linear regressions and one multiple regression were conducted. Results demonstrated that difficulty with ER accounted for 13.5% ( $R^2 = .135$ ,  $F(1, 179) = 27.90$ ,  $p < .001$ ) of the variation in frequency of NSSI. Difficulty with ER also had a positive regression weight, indicating that individuals with greater difficulty regulating emotions are expected to engage in NSSI at a higher frequency (Table 1). Difficulty with ER also accounted for 50.4% ( $R^2 = .504$ ,  $F(1, 185) = 188.14$ ,  $p < .001$ ) of the variation in CSE, with a negative regression weight; this suggests that as individuals have greater difficulty regulating their emotions they are expected to have lower CSE. The multiple regression found that difficulty regulating emotions and CSE significantly predicted 11.7% ( $R^2 = .117$ ,  $F(2, 178) = 14.06$ ,  $p < .001$ ) of the variance in frequency of NSSI. Although the overall model was significant, CSE did not independently contribute to the regression (Table 1), indicating that difficulty with ER alone explained a portion of the variance in frequency of NSSI.

Finally, it was postulated that CSE would account for a portion of the relation between difficulty with ER and frequency of NSSI. This was tested using PROCESS (Hayes, 2012), a bootstrapping procedure, in order to examine the significance of the indirect effect of CSE. Results showed that the bootstrapped unstandardized indirect effect was .0009. The 95% confidence interval, ranging from  $-.0021$  to  $.0040$ , included the value of zero. Thus, the indirect effect was non-significant: CSE did not mediate the relation between difficulty with ER and frequency of self-injury (see Figure 1).

## 6. Discussion

The current study examined the associations between CSE, difficulty with ER, and frequency of NSSI as well as CSE as a mediator of difficulty with ER and frequency of NSSI. The findings support and build upon the conclusions of prior research. 20.3% of the entire sample, including non-self-injurers, was made up of young adults who reported engaging in at least one nonsuicidal self-injurious behavior. This is substantially greater than the national average for young adults, which rests at 13.4% (Klonsky, 2011). In describing the current sample's engagement in self-injury, it is notable that while individuals spanned a wide range of NSSI frequency, the majority of individuals self-injured approximately 5.5 times in their lifetime. The modal number of NSSI incidents in this non-clinical population is comparable to other studies using university populations, which report a range of 2 to 5 lifetime incidents (e.g., Plener et al., 2009; Whitlock et al., 2011). Furthermore, within a sample as young as 18–26, lifetime NSSI may very well increase as many of these individuals are likely to continue engaging in this behavior. The fact that some individuals in this sample have self-injured on more than 50 occasions in their lifetime should not undermine the clinical relevance of those who self-injured less frequently, as self-injurious behavior at any rate of

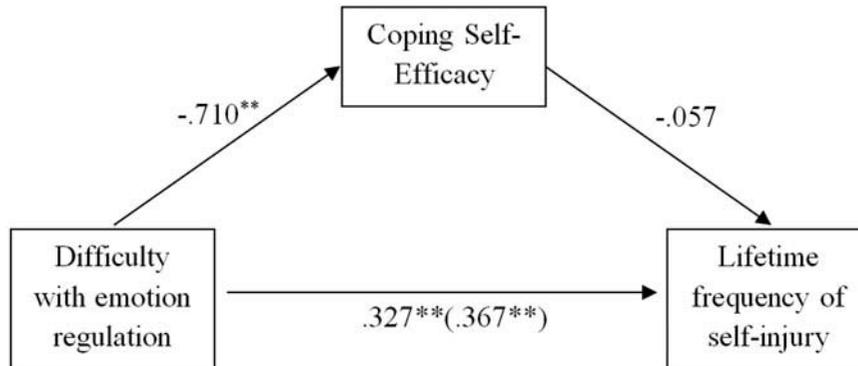
**Table 1. Progressive regressions leading to mediational analysis**

	$R^2$	$B$	SE B	$\beta$
Model 1: Frequency of self-injury	.135*			
DERS		.246*	.051	.367
Model 2: CSE	.504*			
DERS		-1.527*	.111	-.710
Model 3: Frequency of self-injury	.117*			
CSE		-.012	.034	-.057
DERS		.227*	.072	.327

Note. DERS, difficulties with emotion regulation; CSE, coping self-efficacy  
 Significance one-tailed, \* $p < .001$ .

**Figure 1. Standardized regression coefficients for the relationship between difficulty with emotion regulation and lifetime frequency of self-injury as mediated by coping self-efficacy. The regression coefficient within the parentheses is the value before the mediator has been entered.**

\*\*  $p < .001$



occurrence is still associated with potential health risks and increased risk of suicide (Hamza et al., 2012; Hamza & Willoughby, 2016).

Given the increased likelihood of non-disclosure in this population, prevalence estimates identified in this study may be conservative. Nonetheless, the high incidence rate within this sample, especially in comparison to the national prevalence rate (13.4%), sheds light on just how pervasive this behavior is among university students and calls for increased awareness by both faculty and fellow students, as well as university counseling centers. It is critical that universities enhance their efforts to identify, reach, and provide services to those who self-injure.

The present study substantiated a number of findings in prior research. The results supported the first hypothesis that CSE would negatively correlate with frequency of NSSI and with difficulty with ER. Those who reported greater CSE beliefs also reported fewer difficulties with regulating emotion and fewer NSSI incidents (Heath et al., 2016; Luberto et al., 2014). Relatedly, the second hypothesis postulated that difficulty with ER would predict CSE. This hypothesis was supported, thus building upon prior evidence of a strong association between ER and CSE (Luberto et al., 2014). This indicates that the level of difficulty individuals have regulating their emotions is a good predictor of the confidence they will have in their ability to cope with challenges and threats. Furthermore, the third hypothesis, stating that difficulty with ER would positively correlate with frequency of NSSI, was also supported. Individuals who reported more difficulty regulating emotions also tended to report higher frequency of NSSI (Davis et al., 2014). Research has consistently found that those who self-injure have greater difficulty regulating their emotions as compared to those who do not self-injure, and that difficulties with ER predict the incidence (i.e., presence/absence) of NSSI (Bresin, 2014; Gratz & Roemer, 2008; Nock & Mendes, 2008; Zerkowitz et al., 2016).

One of the goals of this study was to explore this relationship from a different perspective and determine if difficulties with ER predict frequency, rather than incidence, of NSSI. As such, the fourth hypothesis also posited that the greater the individuals' difficulty in regulating their emotions, the more frequently they tend to engage in NSSI. The current findings supported this hypothesis, thereby lending credibility to the idea that the number of times individuals self-injure is affected in part by where they fall on the spectrum of ER ability. More importantly, it implies that it may be possible for small but measurable differences in one's level of difficulty regulating emotions to influence the number of times one engages in NSSI. The potential impact of this notion cannot be understated as treatment focused on ER skills could have profound effects on the future of individuals' self-injuring habits, thereby reducing the risk of suicide and potentially life-threatening consequences.

The fifth hypothesis predicting NSSI frequency using both difficulty with ER and CSE, was partially supported. Only difficulty with ER was found to predict frequency of NSSI. While CSE and difficulty with ER were not so highly related as to suggest they measured the same exact construct, both variables were strongly related, indicating there is likely overlap in the concepts they measure. This may partially explain why CSE did not independently contribute to the prediction of frequency of NSSI, particularly given the variance already accounted for by difficulty with ER. Yet again, this finding reinforces the significance of the relationship between ER and NSSI, demonstrating that young adults' ability to regulate their emotions, outside of their confidence in doing so, directly influences the frequency with which they self-injure.

The final hypothesis, examining CSE as a mediator between difficulty with ER and frequency of NSSI, was not supported. In other words, CSE did not explain the association between lifetime frequency of NSSI and difficulty with ER. Research involving CSE and ER, and CSE and NSSI is scarce; however, evidence is available to support CSE as a mediator between 1) mindfulness skills and ER (Luberto et al., 2014) and 2) mindfulness skills and the presence of NSSI (Heath et al., 2016). It seems that mindfulness skills only operate to increase ER skills and decrease NSSI through an increase in CSE. One explanation for the discrepancy between the results of this study and CSE's mediating role in other studies could again lie in the strong association between ER and CSE. If these two variables are in some way measuring the same construct, then CSE cannot be a unique process underlying the relation between ER and any other construct. Therefore, it would be unlikely that CSE would be able to explain the relationship between ER and NSSI. However, the strong association between ER and CSE is clinically significant. Individuals who perceived themselves as having difficulty with regulating emotions accordingly tended to endorse feeling unable to effectively cope with challenges, suggesting self-awareness of their issues. If this degree of insight is generalizable to other non-clinical self-injuring populations, it suggests that little of the often limited and brief time most clinicians have with clients needs to be spent assisting this population in becoming aware of their deficits in ER.

Moreover, mindfulness and ER share commonalities that may explain how underlying mechanisms like CSE partly account for their connection. Operationally defined, mindfulness includes self-regulation of attention and orientation to experience (Bishop et al., 2004). It involves being aware of and attending to one's current experience (i.e., thoughts, feelings, and sensations) while also being open to and accepting of, those thoughts and feelings. This definition bears resemblance to some components of ER, specifically, acceptance of emotional responses, emotional clarity, and emotional awareness. As such, increasing mindfulness may increase individuals' sense of competency in recognizing, comprehending, and accepting their emotions. Along with mindfulness skills, this newfound sense of competency, or CSE, then becomes part of the process by which individuals improve their ER. In other words, CSE is an integral part of improving ER. This information provides insight into the potential reason CSE would mediate one, and not another, relationship involving ER. As previously mentioned, CSE is highly related to ER, and acts as a mediator when examining the influence of other constructs on ER ability. It is possible that the effects of CSE are already accounted for when ER predicts NSSI. Thus, CSE can account for ER ability to some degree; however, when examining ER and CSE together as predictors of NSSI, CSE no longer has any influence over ER.

Taken together, these findings provide valuable insight to mental health practitioners across a variety of settings, regarding areas of focus in interventions for young adults. Historically, BPD has been associated with ER and NSSI. However, recent findings have determined that many individuals who have difficulty with ER and engage in NSSI do not meet criteria for BPD (e.g., Bracken-Minor & McDevitt-Murphy, 2014; Turner et al., 2015). Although this study did not find that CSE explained the relationship between ER and NSSI, it is clear that in terms of treatment, interventions geared towards reducing self-injury should target ER. In light of prior findings, it appears that individuals do not engage in NSSI simply because they do not feel capable of coping with emotions and challenges, or deliberately choose self-injury instead of adaptive coping strategies. Rather,

individuals lack the necessary ER skills to effectively implement coping strategies, irrespective of the adaptiveness of the strategy, and turn to the short-term relief provided by NSSI. In order to facilitate client progress, it is important to have a framework from which to form a conceptualization and identify the most effective treatment plan. Motivational Interviewing, a commonly used method of increasing readiness to change and therefore self-efficacy, is often incorporated into treatments to reduce NSSI; however, the information gleaned from this study demonstrates that motivational interviewing alone is unlikely to be sufficient to produce a change in self-injuring behavior. To increase the likelihood of cessation, therapeutic approaches should focus on actually improving ER skills, which will provide clients with the tools necessary to not only effectively manage their emotions using adaptive strategies but also support their self-efficacy in coping with emotions.

One evidence-based option is Dialectical Behavior Therapy (DBT), originally developed to treat BPD, as it specifically addresses this issue with an ER skills component that may improve ER regardless of BPD diagnostic status. In turn, as difficulties with ER decrease, engagement in NSSI should decrease. CSE would increase naturally as a by-product of strengthened ability to control impulses, a greater number of alternative and adaptive ER strategies, and heightened emotional awareness and clarity. University counseling centers, as well as private practitioners, could incorporate DBT's ER techniques and skill building into individual or group counseling sessions. To reach a greater number of students, counseling centers could hold workshops, like those often required during freshman orientation, that teach ER skills and how to implement them effectively.

Some factors limit the generalizability of the present study's findings. First, it is likely that there is a group of self-injurers who did not wish to disclose their engagement in NSSI. Those who have disclosed their self-injury to someone in their life tend to differ from those who never have on potentially important factors, such as self-esteem, social support, severity of NSSI, physical pain experienced during NSSI, and functionality of their engagement in NSSI (Armiento et al., 2014). Furthermore, only those who reported self-injurious behavior were included in the study, and study participation included receiving either course credit or the chance to win a cash reward. It is possible that results from a self-disclosing, externally motivated group may not be generalizable to groups of help-seeking self-injurers or those who might disclose for other reasons. Finally, generalizability may also be affected by the size and location of the university at which this study took place: a rural moderately sized public institution of approximately 9,000 students. These characteristics differ markedly between many universities across the United States, potentially affecting students in a meaningful way.

## 7. Future research

Research concerning NSSI is still in its infancy, especially within at-risk populations such as non-clinical university students. Before inferences can be made regarding CSE's role in the association between ER and NSSI, more research should be conducted across populations, both clinical and non-clinical. Future studies might also examine the potential impact on NSSI of other factors known to be related to CSE among university students, particularly locus of control (Au, 2015; Murat & Ahmet 2010; Sagone & De Caroli, 2014). This study also focused on lifetime NSSI, and self-efficacy's variable nature suggests that it can shift over time depending upon life experiences. Future research might consider narrowing the focus of self-injury to a more recent timeframe in order to capture differences between those who have and have not self-injured within a specified timeframe. Additionally, comparisons between self-injuring students seeking treatment at a university-counseling center and those not seeking treatment would further characterize this young adult population and potentially identify factors that influence treatment-seeking behavior. Lastly, the efficacy of a treatment adapting DBT to self-injuring university students without BPD should be explored to better inform mental health providers in college/university settings of the most effective intervention for students engaging in this behavior.

### Funding

The authors received no direct funding for this research.

### Competing interests

The authors declare no competing interests.

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### Citation information

Cite this article as: The role of coping self-efficacy in emotion regulation and frequency of NSSI in young adult college students, Melanie F. Midkiff, Cynthia R. Lindsey & Elizabeth A. Meadows, *Cogent Psychology* (2018), 5: 1520437.

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