

Spring 2-11-2022

## Testing Barriers to Non-Suicidal Self-Injury With College Students: Narcissistic Traits as Moderators

Philip Stoner

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TESTING BARRIERS TO NON-SUICIDAL SELF-INJURY WITH COLLEGE  
STUDENTS: NARCISSISTIC TRAITS AS MODERATORS

by

Philip Stoner

A Dissertation  
Submitted to the Graduate School,  
the College of Education and Human Sciences  
and the School of Psychology  
at The University of Southern Mississippi  
in Partial Fulfillment of the Requirements  
for the Degree of Doctor of Philosophy

Approved by:

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May 2022

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## ABSTRACT

Research on non-suicidal self-injury (NSSI) has produced mixed findings, resulting in a lack of clarity regarding these behaviors (Klonsky & Meuhlenkamp, 2007). To address this, Hooley and Franklin (2018) developed the Benefits and Barriers Model (BBM) to provide a comprehensive understanding of NSSI, in which they identified the barriers that commonly prevent people from engaging in these behaviors (e.g., self-esteem, shame, and peer-bonding motivations/social norms). They also identified adverse childhood experiences (ACEs) as a distal predictor of NSSI, which aids people in overcoming the barriers to engaging in these behaviors. Recent NSSI literature has shown that college women in the emerging adult age range (i.e., 18-29) have elevated rates of NSSI (Cipriano et al., 2017), indicating a need for additional research with this population. Given that research has produced mixed findings regarding the relationship between narcissistic personality traits, both vulnerable and grandiose forms, and NSSI (Dawood et al., 2018), additional research to clarify this relationship is likely to be beneficial. The current study administered measures of ACEs, shame, peer-bonding motivation for NSSI, self-esteem, NSSI, and narcissistic traits to a sample of 402 college women between the ages of 18 and 29. ACEs predicted NSSI, and a parallel mediation analysis showed that this relationship was partially mediated by shame, self-esteem, and peer-bonding motivation. Invariance testing showed that the indirect relationship between ACEs and NSSI was moderated by narcissistic subtypes. These findings provided partial support for the BBM among college women, additional evidence of the importance of ACEs in NSSI, and supported the role of narcissism in these complex relationships.

## ACKNOWLEDGMENTS

I would like to begin by thanking my major professor and committee chair, Dr. Eric Dahlen, for his consistent support and guidance throughout my time in graduate school. I would also like to thank my committee members Dr. Melanie Leuty and Dr. Bonnie Nicholson. Their feedback throughout my time in graduate school, and this project in particular, has made me a better writer and critical thinker. I would like to extend a very special thank you to Dr. Richard Mohn for offering his statistical expertise and for his willingness to extend himself to accommodate my schedule. This project would not be possible without his knowledge and guidance.

Additionally, I would like to thank everyone who has offered me unwavering support throughout this period of my life, without which this project would not have been possible. While it would not be possible to name everyone who has helped me along the way, I would like to thank Dr. Dylan Richard, Savannah Merold, Jessica Schultz, Afzal Qureshi, and Colin Damms for everything they have done to support me. Finally, I would like to thank my parents, Elizabeth and Robert Stoner, for their unwavering and constant support. I could not have asked for better parents.

## DEDICATION

I would like to dedicate this project to my parents, Robert and Elizabeth Stoner. Unfortunately, neither of them is alive to share in this accomplishment, but they often expressed how proud they were of me for pursuing my dream of being a psychologist. However, my parents were a rare breed of people who were always proud of their children, regardless of what direction they chose in life. I never felt as if their approval was contingent on accomplishment, which is a beautiful lesson they taught me about life and achievement. I am incredibly fortunate and privileged to be their son. As I write this, I feel as if nothing I say would be sufficient in expressing how appreciative I am to both of my parents, so I will keep it short and end by saying, I love you mom and dad.

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## CHAPTER I - INTRODUCTION

The International Society for the Study of Self-Injury (ISSS) defined non-suicidal self-injury (NSSI) as “the deliberate, self-inflicted destruction of body tissue that is not socially sanctioned and without suicidal intent” (ISSS, 2018, pp.1). NSSI is a serious public health problem shown to be related to increased suicide risk (Grandclerc et al., 2016; Hagan et al., 2019), as a history of NSSI differentiates between those with suicidal ideation and those who attempt suicide through the mechanism of acquired capability (Joiner et al., 2005; Perez et al., 2018; Van Orden et al., 2010). Moreover, NSSI is associated with significant healthcare costs and lost productivity. Approximately 312,000 people were hospitalized due to self-injurious behavior (i.e., attempted suicide and NSSI) in the United States in 2018 alone (Center for Disease Control and Prevention, 2022). This likely fails to capture the full extent of the costs of self-injurious behaviors, as Crosby and colleagues (2011) estimated that only 50% of those who inflict serious self-injury seek medical attention. Gluck (2012) estimated that the annual rate of self-injury in the United States was about two million people, most of whom were women (i.e., up to 65-75%). Moreover, self-injurious behaviors, including suicide attempts and NSSI, resulted in an estimated cost of \$93.5 billion (e.g., medical costs and lost productivity) in the United States in 2013 (Shepard et al., 2016).

Despite the serious nature of NSSI behaviors, the significant financial costs associated with them, and their link to suicide and suicide attempts, there was little research examining NSSI prior to the early-to-mid-2000s (Klonsky et al., 2013). Research in the last decade has established strong relationships between NSSI and dissociation (Swannell et al., 2012; Karpel & Jerram, 2015), eating disorders (Claes &

Muehlenkamp, 2014), psychosis (Martin et al., 2015), peer victimization (Van Geel et al., 2015; Vergara et al., 2019), depression (Klimes-Dougan, 2019; Zielinski et al., 2017), anxiety (Peter et al., 2019), cluster B personality patterns (Somma et al., 2017), poor body image (Black et al., 2019), self-criticism (Burke et al., 2019), poor self-esteem (Cawood & Huprich, 2011), and deficits in emotion regulation (In-Albon et al., 2013). Despite the growing research, there remains a great deal about NSSI that is not understood, leading to the development of conceptual models including the psychological, interpersonal, and biological approaches. One of the most influential models to date is the Four Function Model (FFM; Nock & Prinstein, 2004), which posits that NSSI serves functions for individuals and is reinforced by a variety of negative and positive reinforcement mechanisms. Recognizing that the FFM and other models have not been able to provide a comprehensive understanding of NSSI behaviors (e.g., Nock & Prinstein, 2004; Sher & Stanley, 2009), Hooley and Franklin (2018) developed the Benefits and Barriers model (BBM) to provide a more comprehensive understanding of these dynamic behaviors.

### Benefits and Barriers Model of NSSI

The BBM is built upon two tenets: (1) NSSI is potentially beneficial to most individuals, and (2) most people avoid these behaviors because of intrinsic and extrinsic barriers. The authors stressed that the term “benefits” is referring to the functions NSSI serves for those who engage in it and is not meant to suggest that NSSI is adaptive or beneficial with respect to one’s well-being. They also explained that benefits are most easily understood as retrospective functions of NSSI behavior and that they make poor treatment targets. Instead, they argued that the barriers are the most important

components in terms of understanding the selection of NSSI behaviors and informing treatment of NSSI. The model suggests that each of the barriers must be overcome before a person engages in NSSI. Given that the current study focused on testing select barriers from the BBM, the benefits will not be detailed any further. Furthermore, the barriers will be addressed in relation to emerging adults, as college students in the emerging adult age range (18-29) were the focus of this study.

### *Barriers and Emerging Adults*

The BBM suggests that five barriers prevent most people from engaging in self-injury: lack of awareness of NSSI, positive view of the self, physical pain aversion, aversion to NSSI stimuli, and social norms. Hooley and Franklin (2018) emphasized that the most important barriers to consider for emerging adults are the positive view of self, physical pain aversion, and social norms barriers, as the aversion to NSSI stimuli and lack of awareness barriers tend to be overcome naturally for persons in this age range through exposure to entertainment media (Franklin et al., 2013; Lewis et al., 2019; Radovic & Haskings, 2013; Zhu et al., 2016). That is, media (e.g., movies and music) exposes emerging adults to NSSI stimuli, raising awareness and potentially lowering their aversion to such stimuli.

Positive view of self is considered the most significant barrier for preventing NSSI and is based on evidence of a strong link between NSSI and low self-esteem (e.g., Almeida & Horta; 2018; Sulak, 2018), shame proneness (Scholenleber et al., 2014), and self-criticism (Hooley et al., 2010). This barrier also relates to the benefit of self-punishment because those who have lower self-esteem and higher shame tend to report

self-punishment as a function of engaging in NSSI behaviors (Cawood & Huprich, 2011; Zetterqvist et al., 2018).

Physical pain aversion is an evolutionary trait intended to protect the individual from potentially life-threatening physical damage. People who engage in NSSI must first overcome this natural aversion to pain, and the primary mechanism for doing so involves the belief that they deserve the pain that they are inflicting on themselves (Fox et al., 2015, 2017; Schoenleber et al., 2014). Research has demonstrated that the belief that one deserves physical pain commonly stems from experiences of shame (Crow, 2004; Brown et al., 2009) and that this shame often results in people choosing NSSI to fulfill a self-punishment desire (Bastian et al., 2011; Suneja, 2019; St. Germain & Hooley, 2012). This has been established as the primary mechanism by which people overcome the barrier of physical pain aversion. It has also been demonstrated that individuals high in shame engage in NSSI as a means of making their behavior match their internalized negative core beliefs (Chapman et al., 2006).

The final barrier, social norms, reflects the fact that most cultures greet self-injury with varying degrees of rejection and fear (Meuhlenkamp, 2005). The primary way that most people who engage in NSSI overcome this barrier is through self-injuring in private (Klonsky & Olino, 2008). Additionally, the use of NSSI as a peer-bond strategy is a commonly endorsed reason for engaging in NSSI (Baker & Lewis, 2013; Klonsky & Olino, 2008). Specifically, it has been shown that people engage in NSSI behaviors to bond with sub-groups that view these behaviors positively (Heath et al., 2009).

The BBM also notes distal predictors which aid individuals in overcoming the barriers that prevent most people from engaging in NSSI. One distal predictor highlighted

by the authors as particularly salient is adverse childhood experiences (ACEs). They proposed that greater exposure to ACEs increases one's likelihood of engaging in NSSI through the mechanism of overcoming the barriers. This is based on past research demonstrating positive relationships between NSSI and experiences of childhood trauma (Prinstein, et al., 2009; Yates, 2009), with up to 79% of those who self-injure reporting some form of childhood maltreatment (Yates, 2004). Furthermore, more recent studies using a self-report ACEs measure, have demonstrated that the experience of ACEs was associated with higher rates of NSSI across the lifespan (e.g., Baiden, 2018; Horowitz & Stermac, 2018). These studies highlight the importance of ACEs in advancing the understanding of NSSI behaviors.

#### NSSI Among Emerging Adult Women in College

College students in the emerging adult age-range (i.e., 18-29 years) have been shown to be at high risk of engaging in NSSI compared to other groups (Ewing et al., 2019; Wielgus et al., 2019). Prevalence rates for NSSI in community samples range from approximately 7.5% to 46% in adolescence, 13.9% to 38% for college students, and 4 to 23% in adults (Cerutti et al., 2012; Cipriano et al., 2017; Gratz et al., 2002; Lloyd-Richardson et al., 2007; Meuhlenkamp & Gutierrez, 2004). These rates are even higher for emerging adult women in college (Bresin & Schoenleber, 2015; Eichen et al., 2016; Power et al., 2013), with rates being up to four times higher among women than men (Bakken & Gunter, 2012; Laye-Gindhu & Schonert-Reichl, 2005). It has been shown that 70% of college students who engage in NSSI are women (Wilcox et al., 2012). Thus, emerging adult women in college are a particularly high-risk population for engaging in

NSSI, indicated the need for additional research examining these behaviors in this population.

### Narcissistic Traits and Non-Suicidal Self-Injury

One direction for future research on the BBM suggested by Hooley and Franklin (2018) involves an examination of how narcissistic personality traits might influence the model. The authors proposed that narcissistic traits may be protective in some ways; however, research to date has produced mixed results regarding the relationship between narcissistic traits and NSSI (i.e., Coleman et al., 2017; Stoner, 2018). Some studies have shown strong positive relationships between these variables (i.e., Cawood & Huprich, 2011), though there is not a clear understanding of these relationships, suggesting a need for further study. Some NSSI researchers stress the importance of furthering our understanding of the relationship between NSSI and narcissistic traits in non-clinical samples as a means of preventing suicide (Sher, 2016).

Narcissistic personality traits are commonly defined as having two distinct subtypes: grandiose and vulnerable (Pincus et al., 2009). The grandiose subtype is typified by a need for constant admiration (Gore & Widiger, 2016), a domineering/vindictive interpersonal style (Dickinson & Pincus, 2003), fewer experiences of negative affect (Wolven, 2015), and higher reported self-esteem (Wink, 1991; Ziegler-Hill et al., 2008), although self-esteem tends to manifest in less adaptive ways than are commonly associated with healthy self-esteem (Campbell et al., 2002; Horvath & Morf, 2010). In contrast, the vulnerable subtype of narcissism is associated with deficits in emotion regulation (Gore & Widiger, 2016; Pincus et al., 2009), self-destructive behaviors (Hasking et al., 2010; Ziegler-Hill & Vonk, 2015), fear of rejection



(Besser & Priel., 2010; Smolewska & Dion, 2005), a need for affirmation (Rohmann et al., 2019), lower general self-esteem, and higher levels of contingent self-esteem (Rohmann et al., 2012; Brookes, 2015; Rose, 2002; Ronningstam & Maltzberger, 1998).

Research examining narcissistic traits and NSSI is limited at this point and has produced mixed results. Some studies have shown positive relationships between symptoms of Narcissistic Personality Disorder (NPD; comprised mostly of grandiose traits) and NSSI (Casillas & Clark, 2002; Cawood & Huprich, 2011; Klonsky et al., 2003), while others show that symptoms of NPD may be protective against NSSI (Coleman et al., 2017). Results are similarly mixed in studies that measure vulnerable narcissism, with some finding strong positive relationships between NSSI and vulnerable narcissism (Miller et al., 2010; Stoner, 2018, Selby et al., 2012) and others finding the inverse (Talmon & Ginzburg, 2018; Svindeth et al., 2008). To the author's knowledge, there is only one study that examined the relationship between NSSI and both the vulnerable and grandiose subtypes in the same sample. This study showed a positive relationship between NSSI and vulnerable traits and a negative relationship between NSSI and grandiose traits (Dawood & Pincus, 2018).

#### Present Study

The present study explored the relationships between ACEs, NSSI, the three most important barriers in the BBM (i.e., positive view of self, physical pain, and social norms), and vulnerable and grandiose narcissistic traits in a sample of emerging adult college women. When taken together, this study was designed to answer three research questions: (1) do ACEs predict NSSI among college women; (2) to what degree is the relationship between ACEs and NSSI mediated (parallel mediation) by self-esteem,

experiences of shame, and peer bonding motivation; and (3) do grandiose and vulnerable narcissism moderate these relationships (mediated/indirect)? We predicted that ACEs would be positively correlated with NSSI (H1) and that self-esteem, experiences of shame, and peer bonding would mediate the relationship between ACEs and NSSI (H2a, H2b, H2c). Additionally, we expected that grandiose and vulnerable narcissism would moderate these indirect relationships such that higher scores in grandiose narcissism were expected to decrease the strength of the following indirect relationships: ACEs – NSSI; ACEs – Experiences of Shame – NSSI; and ACEs – Peer Bonding Motivation – NSSI; and strengthen the indirect relationships in the following pathway: ACEs – Self-Esteem – NSSI (H3; Figure 1). It was expected that higher scores in vulnerable narcissism would increase the strength of the following indirect relationships: ACEs – NSSI; ACEs – Experiences of Shame – NSSI; and ACEs – Peer Bonding Motivation – NSSI; and weaken the indirect relationships in the following pathway: ACEs – Self-Esteem – NSSI (H4; Figure 2).

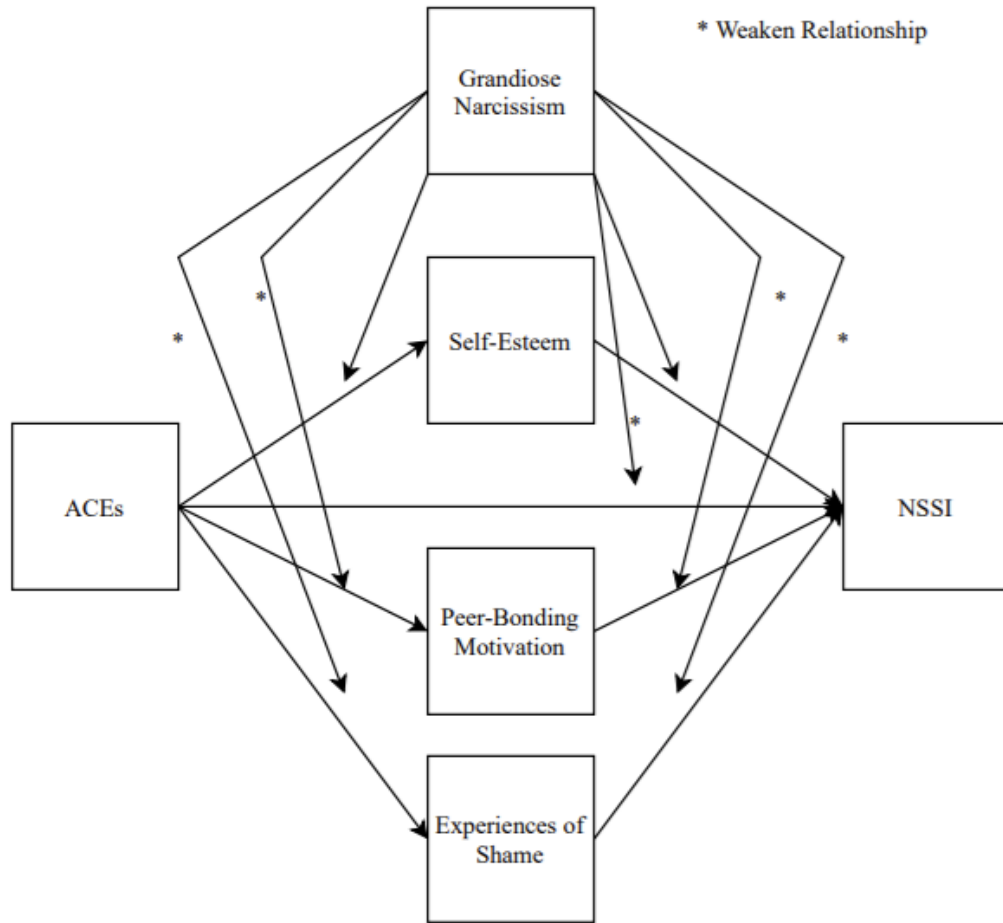
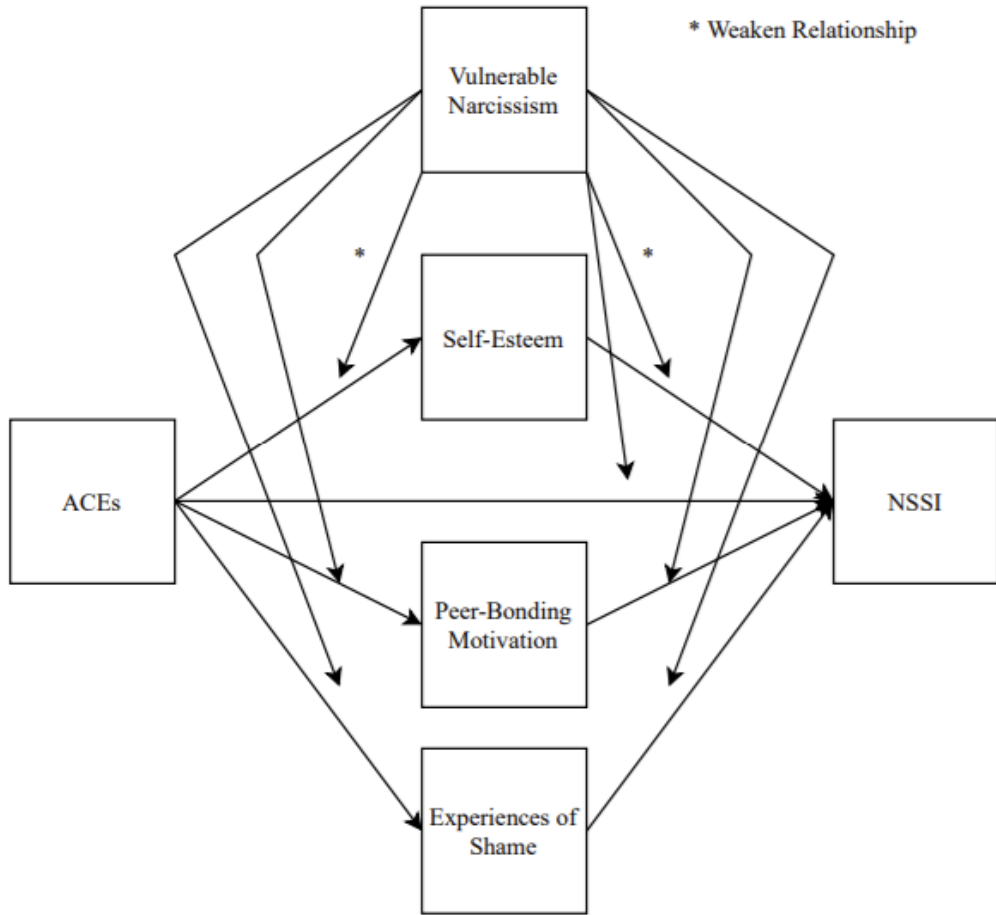


Figure 1. Proposed Moderating Effects of Grandiose Narcissism



*Figure 2. Proposed Moderating Effects of Vulnerable Narcissism*

## CHAPTER II – METHODS

Responses were collected from 534 college women between the ages of 18 and 29 attending The University of Southern Mississippi (USM). Potential participants were recruited through Sona Systems Ltd, the online subject pool used by the School of Psychology. Students who accessed Sona read a brief description of the study and its qualifications (i.e., identify as female, be at least 18 years old). Those who signed up for the study were directed to the consent form (Appendix A) followed by all study questionnaires hosted through Qualtrics.

Following recommendations regarding careless responding in online data collection (e.g., Huang et al., 2012; Meade & Craig, 2012), two forms of quality assurance checks were used. First, participants were asked to answer two direct-response items (e.g., “Answer ‘very true’ to this item”) embedded in two of the longer study measures, and those who failed either item were removed. Second, survey completion time was assessed, and participants who finished the study in less than half the sample’s median completion time were removed for assumed carelessness. These quality assurance procedures led to the removal of 104 participants.

The remaining data were assessed for missing values and significant outliers using Mahalanobis’ distance, leading to the removal of another 28 participants and resulting in a final sample of 402 emerging adult women ( $M$  age = 19.77;  $SD$  = 2.18). The sample was primarily White (64.9%) and Black/African American (27.6%), with a small percentage of Latinx (5.5%), Asian (1.7%), and other (0.3%) participants in the sample. Consistent with the School of Psychology guidelines, participants received 0.5 research credits based on the approximately 30 minutes required to complete the study.

The study procedures described here were approved by the University's Institutional Review Board (see Appendix B).

The following are the measures used to assess study variables. Of note, the Coronavirus Anxiety Scale (CVAS; Lee, 2020) was included to determine the degree of anxiety in the current sample related to the COVID-19 pandemic. Additionally, the Kessler Psychological Distress Scale (KPDS; Kessler et al., 2003) was included to assess the general distress levels in the current sample, as general distress may increase with the pandemic. Scores from these two measures were not used in the primary analyses but to provide descriptive data of the current sample.

#### Instruments

##### *Demographic Questionnaire*

A brief demographic questionnaire was used to collect information about participants' age, gender identity, ethnicity, race, year in college, membership in Greek organizations, and type of residence.

##### *Pathological Narcissism Inventory (PNI)*

The PNI is a 52-item self-report measure designed to assess the different components of pathological narcissism (Pincus et al., 2009). Respondents rate items on a 6-point Likert scale ranging from 0 ("not at all like me") to 5 ("very much like me") so that higher scores indicate greater degrees of pathological narcissism. The PNI includes two higher-order factors: Narcissistic Grandiosity ( $\alpha = .89$ ) and Narcissistic Vulnerability ( $\alpha = .96$ ) supported by a CFA (Wright et al., 2010). The grandiose factor is comprised of three subscales: Exploitative Tendencies ( $\alpha = .93$ ), Self-Sacrificing Self-Enhancement ( $\alpha = .78$ ), and Grandiose Fantasy ( $\alpha = .89$ ). The vulnerable factor is comprised of four

subscales: Contingent Self-Esteem ( $\alpha = .93$ ), Hiding of the Self ( $\alpha = .79$ ), Devaluing ( $\alpha = .86$ ), and Entitlement Rage ( $\alpha = .87$ ; Wright et al., 2010). The PNI has demonstrated good convergent validity with other well-established measures of self-esteem and narcissism (Gratz & Roemer, 2004). Both the grandiose and vulnerable factors were used in this study to differentiate between these forms of narcissism and assess how each of them moderated the expected relationships in the current model (Figures 1 and 2).

#### *Inventory of Statements About Self-Injury (ISAS)*

Two self-report scales from the ISAS (Klonsky & Olino, 2008) were used to assess self-injurious behaviors and peer bonding, respectively: the total score of the 12-item Forms of NSSI scale ( $\alpha = .78$ ) and the 3-item Peer Bonding function scale ( $\alpha = .85$ ). The Forms of NSSI scale assesses different types of self-injurious behavior (e.g., cutting, biting, pulling hair) by asking respondents to estimate the number of times they have engaged in each behavior of their lifetime. The total score, the sum of all the estimates for each unique form of self-injury, was used in the current study. Respondents filled in blanks with estimates of how many times they have engaged in each behavior throughout their life. The Peer Bonding function scale assesses how people overcome the social norms barrier. This scale requires participants to answer each question using a 3-point Likert scale ranging from 0 (“not relevant”) to 2 (“very relevant”). The peer-bonding subscale was only administered to participants who reported NSSI behaviors; those who did not endorse NSSI were assigned a score of 0 on this scale so they could be included in the primary analysis. A college sample was used to norm and validate the ISAS and approximately a fourth of the sample reported self-injurious behavior (Klonsky & Olino, 2008). Forms of NSSI subscale showed good reliability ( $\alpha = .82$ ) when validated with a

sample of 350 college students (Latimer et al., 2013). The ISAS has also been shown to be correlated strongly with scores on other, well established, measures assessing similar self-injurious behaviors (Klonsky & Olino, 2008).

#### *The Experiences of Shame Scale (ESS)*

The ESS is a 25-item self-report measure of shame developed by Andrews and colleagues (2002). Participants were asked to answer questions pertaining to their experience of shame within the last year using a 4-point Likert scale ranging from 1 (“not at all”) to 4 (“very much”). The ESS consists of three separate subscales:

Characterological Shame ( $\alpha = .90$ ), Behavioural Shame ( $\alpha = .87$ ), and Bodily Shame ( $\alpha = .86$ ); however, these subscales are generally collapsed into a total shame score which has showed excellent internal consistency ( $\alpha = .92$ ; Andrews et al., 2002). The ESS also has shown good test-retest reliability ( $r = .90$ ) over an 11-week period (Andrews et al., 2002). Finally, the ESS has shown good convergent validity with other well-established measures of shame (Vizin et al., 2016). For the current study, the total shame score was used.

#### *Rosenberg Self-Esteem Scale (RSES)*

The RSES is a 10-item self-report measure of global self-esteem developed by Rosenberg (1965). Participants use a 4-point Likert scale ranging from 1 (“strongly agree”) to 4 (“strongly disagree”) to answer each item. The RSES produces a total score, with higher scores indicating higher global self-esteem. Given that the RSES is over 50 years old, its psychometric properties have been tested in many studies and have consistently been found to be good to excellent. For instance, a large national study by Sinclair and colleagues (2010) showed that RSES had very good internal consistency ( $\alpha =$



.91) across a plethora of ages and demographic criteria. The RSES has also shown consistent divergent and convergent validity across a number of studies in a variety of populations (Gray-Little.,1997; Kielkiewicz., 2019). The total score of the RSES was used for the current study.

#### *Adverse Childhood Experiences Module*

To assess for ACEs, the ACEs Module published by the CDC (2010) was used. This self-report measure consists of 11 dichotomous questions that assess exposure to 9 domains of negative childhood experiences including emotional abuse, physical abuse, sexual abuse, household-member mental illness, household-member substance use, and witnessing of domestic violence, with higher scores indicating greater exposure to ACEs. This measure can be broken down into three separate subscales: Household Dysfunction, Emotional/Physical Abuse, and Sexual Abuse (Ford et al., 2014); however, it is typically used to produce a total score. Data from a national sample consisting of over 50,000 participants showed good internal consistency ( $\alpha = .80$ ; Ford et al., 2014). For the current study, the total score was used to determine if exposure to adverse childhood experiences is associated with NSSI.

#### *Coronavirus Anxiety Scale*

The CVAS was developed by Lee (2020a) to assess the impact of the COVID-19 pandemic on anxiety levels. It is comprised of 5 items assessing frequency of anxious symptoms related to the COVID-19 pandemic over the previous two weeks. These items are scored on a 5-point Likert scale ranging from 0 (“not at all”) to 4 (“nearly every day over the last 2 weeks”), with higher scores indicating greater degrees of anxiety related to COVID-19. The CVAS uses a cutoff score of 9, with scores equal to or greater than 9

indicating dysfunctional anxiety related to the pandemic. This cutoff score has been shown to be a sensitive metric for differentiating between normative and dysfunctional anxiety (Lee et al., 2020). Results of a replication study showed that the CVAS has very good internal consistency ( $\alpha = 0.92$ ) and has acceptable convergent validity other scales assess COVID-19 stress and general anxiety measures (Lee, 2020b).

#### *Kessler Psychological Distress Scale*

The KPDS was developed by Kessler and colleagues (2003) to measure overall distress in the general population. It is comprised of 10 items assessing the frequency of symptoms of distress over the prior 4 weeks. Items are scored on a 5-point Likert scale ranging from 1 (“none of the time”) to 5 (“all of the time”), with higher scores indicating higher levels of psychological distress over the last 4 weeks. Scores are generally divided into the following ranges for interpretation: 10-19=likely to be well; 20-24=likely to have a mild disorder; 25-29=likely to have a moderate disorder; and 30-50=likely to have a severe disorder (Kessler et al., 2003). The KPDS has been shown to have good internal validity ( $\alpha = 0.88$ ) and good convergent validity with other established scales of psychological distress (Sampasa-Kanyinga et al., 2018).

## CHAPTER III – RESULTS

### Preliminary Analyses

Diagnostic analyses were conducted to test for violations of homoscedasticity, multicollinearity, skewness, and kurtosis. All study variables were normally distributed apart from the peer bonding subscale of the ISAS, which was positively skewed. Following recommendations by Preacher and Hayes (2008), this was corrected for by including 5000 bootstrap samples in the analysis.

### Descriptive Statistics

Means, standard deviations, alphas, and intercorrelations are presented in Table 1. All study measures had respectable to very good reliability, apart from the ISAS ( $\alpha = .68$ ), which had a minimally acceptable reliability coefficient (Cortina, 1993). As expected, NSSI was correlated with all other variables. Most of these correlations were in the positive direction, apart from the anticipated negative correlations between self-esteem and the other study variables. Of note, NSSI was positively correlated to both the vulnerable and grandiose subtypes of narcissism. The positive correlation between the grandiose subtype and NSSI was unexpected, given the prediction that traits of grandiose narcissism may act as a protective factor against NSSI.

As evident in Table 1, all study variables were correlated with each other, apart from ISAS-PB, which was not correlated with experiences of shame or self-esteem. The positive relationship between NSSI (ISAS) and ACEs supports H1, which predicted a positive relationship between these variables.

Table 1

## Intercorrelations, Alphas, Means, and Standard Deviations of Study Variables

Scale	1	2	3	4	5	6	7
1. ISAS	-						
2. ACES	.21***	-					
3. PNI-G	.22***	.19***	-				
4. PNI-V	.22***	.14**	.88***	-			
5. ESS	.29***	.19***	.57***	.62***	-		
6. RSES	-.28***	-.21***	-.41***	-.41***	-.59***	-	
7. ISAS-PB	.17***	.11*	.17***	.16***	.07	-.04	-
<i>M</i>	49.39	2.14	42.98	80.53	60.73	21.56	.51
<i>SD</i>	94.55	2.19	13.66	26.59	17.37	6.11	1.17
$\alpha$	.68	.75	.83	.92	.95	.91	.74

Note: \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

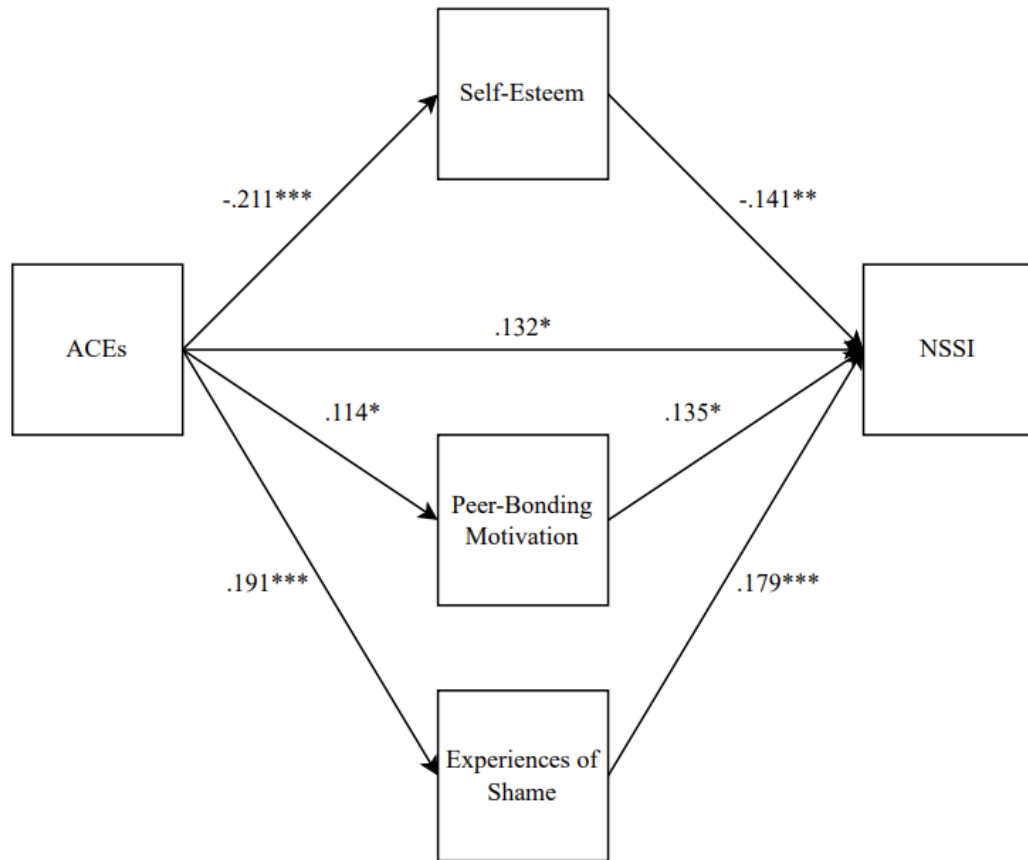
ISAS = Inventory of Statements about Self-Injury Total Score; ACES = Adverse Childhood Experiences Scale Total Score; PNI-G = Pathological Narcissism Inventory Grandiose Subscale; PNI-V = Pathological Narcissism Inventory Vulnerable Subscale; ESS = Experience of Shame Scale Total Score; RSES = Rosenberg Self-Esteem Scale Total Score; ISAS-PB = Inventory of Statements about Self-Injury Peer Bonding Subscale.

Scores on the CVAS and the KPDS were examined to determine if there were notably high levels of COVID-19 related anxiety or general psychological distress in the current sample. Scores on the CVAS ( $M = 1.47$ ;  $SD = 2.81$ ) were in the average range and far below the established cutoff for dysfunctional COVID-19 related anxiety ( $> 9$ ). Similarly, scores on the KPDS ( $M = 23.58$ ;  $SD = 9.26$ ) were in the “likely to have a mild disorder” range. These results suggest that the sample was not impacted by notable levels of COVID-19 related anxiety and that their general psychological distress was slightly elevated. While it is hard to determine the specific reasons for this slight elevation in overall distress, it is fair to assume that the COVID-19 pandemic may have been a

contributing factor. Still, the observed elevations in overall psychological distress were not high enough to be expected to have a significant impact on the current results.

### Primary Analyses

Mplus version 8.6 (Muthén & Muthén, 2012) was used to conduct a parallel mediation model in SEM to test hypotheses H2a, H2b, and H2c. Significance of mediations was determined using bootstrapped confidence intervals (5000 samples). Intervals that did not include zero in the 95% confidence range were considered significant, based on standard practice in statistical analysis (Preacher & Hayes, 2008). Figure 3 shows the significant pathways in the mediation model. There was a significant total effect between ACEs and NSSI ( $\beta = .211, SE = .063, p < .01$ ). After accounting for the three parallel mediators, the direct effect was  $\beta = .132 (SE = .059, p < .05)$  and still significant, indicating partial mediation. Confirming H2a, self-esteem mediated the relationship between ACEs and NSSI ( $\beta = .030, 95\% CI [.008, .062]$ ). Specifically, ACEs negatively predicted self-esteem ( $\beta = -.21, p < .001$ ), which negatively predicted NSSI ( $\beta = -.14, p < .01$ ). Confirming H2b and H2c, experiences of shame ( $\beta = .034, 95\% CI [.012, .067]$ ) and peer-bonding motivation ( $\beta = .02, 95\% CI [.002, .048]$ ) also mediated the relationship between ACEs and NSSI. Specifically, for H2b, ACEs positively predicted experiences of shame ( $\beta = .19, p < .001$ ), and experiences of shame positively predicted NSSI ( $\beta = .18, p < .001$ ). Finally, for H2c, ACEs positively predicted peer-bonding motivation ( $\beta = .11, p < .05$ ), which positively predicted NSSI ( $\beta = .14, p < .05$ ).



*Figure 3. Significant Paths in Mediation Analysis*

To determine potential moderating effects of the subtypes of narcissism, invariance testing was conducted in Mplus. Two separate models were tested, one for vulnerable narcissism and one for grandiose narcissism. The first model divided the sample into low, medium, and high (see Table 2) groups based on the PNI grandiose narcissism subscale. To ensure sufficiently large groups for the statistical analysis, these groups were created based on approximate thirds (i.e., bottom third, middle third, upper third) of the overall sample. Using these groups, a fully constrained model was compared to a freely estimated model. Using the criteria of .01 change in CFI (Chen, 2007), there was a significant difference between the constrained and freely estimated models,

indicating a moderating effect of grandiose narcissism. Each indirect pathway shown in Figure 3 was constrained across each of the grandiose narcissism groups (i.e., low/medium, medium/high, low/high) and compared back to the unconstrained model, to determine what relationships were being moderated, and at which level of narcissism. Only the total indirect relationship between ACEs and NSSI, accounting for all the mediations in the model, demonstrated a significant change in CFI (.04) when constrained at low and high levels of grandiose narcissism. There was no significant difference when constrained at low and medium or medium and high levels. Specifically, when constrained together, the indirect relationship between ACEs and NSSI was significantly different from at low ( $\beta = .174, SE=.068, p < .01$ ) and high ( $\beta = .151, SE=.051, p < .01$ ) levels of grandiose narcissism. As one can see, the indirect relationship between ACEs and NSSI is weaker at higher levels of grandiose narcissism, compared to lower levels. Thus, this result partially supported H3, which posited that higher grandiose narcissism would weaken the indirect relationship between ACEs and NSSI. However, many of the predictions in H3 were not supported due to the lack of a significant change in CFI, when constrained by levels of grandiose narcissism, for the other indirect relationships in the model.

Table 2

## Low, Medium, and High Grandiose Narcissism Groups

Grandiose Narcissism	<i>N</i>	Raw Score Range	<i>Mdn</i>	<i>M</i>
Low	133	1-37	29	27.44
Medium	143	38-50	44	44.03
High	126	51-77	56	57.59

Note: Scores are from Pathological Narcissism Inventory: Grandiose Subscale

The second model was constrained by vulnerable narcissism using the same procedure detailed above. The sample was divided into low, medium, and high groups (see Table 3). Same as above, to ensure sufficiently large groups for the statistical analysis, these groups were created based on approximate thirds (i.e., bottom third, middle third, upper third) of the overall sample. Using these groups, a fully constrained model was compared to a freely estimated model. There was a significant change in CFI (.04) between these models, indicated a moderating effect. Similar to the model constrained by grandiose narcissism, the only relationship that showed a significant change in CFI (.04) was the total indirect relationship between ACEs and NSSI, accounting for the presence of the other mediation pathways. This relationship differed significantly when constrained at low and high levels of vulnerable narcissism, but not at low and medium or medium and high levels. Specifically, when constrained together, the indirect relationship between ACEs and NSSI was significantly different at low ( $\beta = .167$ ,  $SE = .072$ ,  $p < .05$ ) and high ( $\beta = .150$ ,  $SE = .051$ ,  $p < .01$ ) levels of vulnerable narcissism. As one can see, the relationship between ACEs and NSSI was stronger at low levels of vulnerable narcissism, compared to high levels. These results are not consistent with H4,



which posited that higher levels of vulnerable narcissism would increase the strength of the relationship between ACEs and NSSI. Thus, none of the hypothesized influences of H4 were supported, as this was the only indirect relationship that showed a significant change in CFI, when constrained by levels of vulnerable narcissism, and the results are in the opposite direction of what was predicted.

Table 3

Low, Medium, and High Groups Vulnerable Narcissism Groups

Vulnerable Narcissism	<i>N</i>	Raw Score Range	<i>Mdn</i>	<i>M</i>
Low	135	8-71	53	50.36
Medium	131	72-94	81	82.46
High	136	95-144	105	107.94

Note: Scores are from Pathological Narcissism Inventory: Vulnerable Subscale

## CHAPTER IV – DISCUSSION

The current study aimed to add clarity to our understanding of non-suicidal self-injury (NSSI) by testing key features of the Barriers and Benefits (BBM; Hooley & Franklin, 2018) model of NSSI in a sample of emerging adult college women. This was done using a parallel mediation model in SEM which featured self-esteem, peer-bonding motivations for self-injury, and experiences of shame as parallel mediators of the relationship between Adverse Childhood Experiences (ACEs) and NSSI. It was hypothesized that ACEs would positively predict NSSI and that this relationship would be partially mediated by self-esteem, peer-bonding motivations for self-injury, and shame proneness. Additionally, narcissistic traits were included in the study as possible moderators to the above model to aid in clarifying the relationship between narcissistic traits and NSSI.

As expected, ACEs predicted NSSI. This result was consistent with existing literature showing relationships between NSSI and traumatic or adverse childhood experiences (Prinstein et al., 2009; Yates, 2009). This finding also supports Hooley and Franklin's (2018) inclusion of ACEs as a distal predictor in the BBM. Additionally, this finding supports the growing body of literature examining the usefulness of the ACEs questionnaire in predicting psychological distress and maladaptive behaviors, including NSSI, across the lifespan (Victor & Yiu, 2019). Specifically, the results of the current study support the utility of the ACEs questionnaire in predicting NSSI among college women. It may be important to consider the cumulative effect of different adverse and traumatic experiences in childhood, when assessing NSSI, rather than focusing only on the occurrence of specific traumatic events (e.g., sexual assault). This is consistent with

literature that has found a cumulative effect of different forms of trauma on psychological distress and depression (McGuigan & Middlemiss, 2005; Ogle et al., 2014). However, the accumulative effect principle is not generally considered in research examining experiences of trauma and NSSI, as these studies tend to be focused on a particular form of trauma (Holliday et al., 2018; Keng et al., 2019).

When included together in an SEM, the results also supported the hypothesized parallel mediation between ACEs and NSSI through self-esteem, peer-bonding motivation, and experiences of shame. Specifically, higher self-esteem was negatively related to both ACEs and NSSI. This is consistent with existing literature that has demonstrated negative relationships between high self-esteem and NSSI (Cawood & Huprich, 2011) and past traumatic events (Barbum & Perrone-McGovern, 2017). These results also add to the limited studies that have shown negative relationships between high self-esteem and ACE scores (Matsuura, Hashimoto, & Toichi, 2013). Experiences of shame also mediated the relationship between ACEs and NSSI. Specifically, there were positive relationships between higher rates of shame and ACEs and NSSI. These results are also consistent with existing literature that demonstrates positive relationships between shame and NSSI (Mahtani et al., 2019) and the limited studies that show positive relationships between shame and ACEs (Sedighimornani et al., 2020). Finally, peer-bonding motivation for self-injury mediated the relationship between ACEs and NSSI and was positively related to both variables. This is consistent with literature that has examined peer-bonding motivations and NSSI (Glenn & Klonsky, 2011), specifically those that validated its inclusion in the ISAS. To the author's knowledge, this is the first study that examined peer-bonding motivations in relation to ACEs. The significant

mediations above offer support to the BBM, as all the relationships based on the BBM model were significant in the current study. Additionally, these results suggest that cumulative adverse and traumatic experiences during childhood predict NSSI in college women and that lower scores on measures of self-esteem, greater experiences of shame, and desire for peer-bonding influence this relationship. Specifically, these childhood experiences appear to be associated with low self-esteem, greater experiences of shame, and greater desires for peer bonding, which ultimately may lead to NSSI behaviors in emerging adulthood.

Invariance testing was used to determine if narcissistic personality traits influenced the above mediation model. This was done specifically to determine what influence traits of narcissism may have on other variables in the model. It was expected that all relationships in the mediation model would strengthen at higher levels of vulnerable narcissism and would weaken at higher levels of grandiose narcissism, apart from the pathway from ACEs to Self-Esteem to NSSI, where the inverse was expected. Results showed that both grandiose and vulnerable forms of narcissism impacted only the indirect relationship between ACEs and NSSI, when all other pathways were accounted for. Specifically, significant differences were observed when this indirect relationship was constrained at high and low levels. Contrary to expectations, none of the specific mediation pathways between ACEs and NSSI showed significant differences at varying levels of narcissism. These results suggest that only the cumulative effect of the model was significant, suggesting that the observed strength of these relationships was dependent on the presence of the other variables in the model.

Overall, the results of the invariance testing are mixed and largely not consistent with the hypothesized relationships. Contrary to H3 and H4, grandiose and vulnerable narcissism appeared to only influence the overall indirect pathway from ACEs to NSSI, considering all three mediators, rather than all individual indirect pathways in the SEM. However, H3 was partially supported as the indirect relationship between ACEs and NSSI was weaker at higher levels of grandiose narcissism, compared to lower levels. This was consistent with the prediction that higher levels of grandiose narcissism would act as a protective factor against NSSI. In contrast, H4 was not supported, as ACEs to NSSI was the only indirect relationship that showed significant differences between levels of NSSI, and these results are in the opposite direction of what was expected. Specifically, the indirect relationship between ACEs and NSSI, via the three mediators, was stronger at lower levels of vulnerable narcissism, compared to higher, indicating that higher scores in both subtypes of narcissism were somewhat protective in the current study.

Overall, these results are emblematic of the mixed and often confusing results found in existing literature that examines the relationship between NSSI and forms of narcissism (e.g., Klonsky et al., 2003; Talmon & Ginzburg, 2018). The results of this study support previous findings that demonstrate that higher levels of grandiose narcissism may be protective against NSSI behaviors (Coleman et al., 2017); however, other studies have shown positive relationships between aspects of grandiose narcissism and NSSI (Casillas & Clark, 2002; Cawood & Huprich, 2011). In terms of vulnerable narcissism, the results of the current study are contrary to previous studies that found a positive relationship between vulnerable narcissism and NSSI (Stoner, 2018; Miller et al.,

2010) but are consistent with those showing negative or non-significant relationships between NSSI and vulnerable narcissism (Svindeth et al., 2008). It is important to note that the above cited articles are not directly comparable to the current results, as the present study examined the influence of narcissistic traits on an SEM model, rather than individual isolated variables. Thus, the current results illustrate the influence of narcissism on study variables when measured together, rather than any specific variable and its relationship to forms of narcissism. Analyzed this way, the results suggest that college women with higher ACEs scores are at elevated risk for NSSI, partially through the mechanisms of peer-bonding, experiences of shame, and poor self-esteem, and that traits of narcissism may be protective for this population under these conditions.

In the current study, the results were very similar for both grandiose and vulnerable narcissism in terms of their influence on the indirect relationships in the mediation model. These results are unusual, as these forms of narcissism have been shown to have distinct correlates in much of the existing literature (Dickinson & Pincus, 2003; Pincus et al., 2009; Rohmann et al., 2012). One possible explanation for these results is the high correlation between vulnerable and grandiose narcissism in the current study ( $r = .88$ ). The strength of this relationship was much higher than is typically observed, as other studies report intercorrelations between .45 and .66 (Jauk & Kaufman, 2018; Wright et al., 2010). This high correlation is not consistent with existing literature, as the correlation between vulnerable and grandiose narcissism is generally stronger as scores in grandiose narcissism increase (Jauk & Kaufman, 2018). This tendency is inconsistent with the current study, as the mean score for vulnerable narcissism was higher than is typically observed and the mean score for grandiose narcissism was

moderately lower than is typically observed (Maxwell et al., 2011; Somma et al., 2019; You et al., 2013). However, recent research has suggested that vulnerable and grandiose narcissism are not as distinct as once believed (Jauk et al., 2017), which may partially explain the strength of the current relationship between the subtypes. For example, recent studies suggest that both vulnerable and grandiose traits are present in all manifestations of narcissism (Jauk & Kaufman, 2018), and that a natural fluctuation may occur between these traits (Gore & Widiger, 2016). However, this high correlation does not explain the lack of significant differences observed for most of the indirect pathways in the model, when constrained by narcissistic traits.

One possible explanation for these results is the presence of the Rosenberg Self-Esteem Scale (RSES) in the model. Not surprisingly, narcissistic traits are commonly found to be correlated with self-esteem (Rohmann et al., 2019). Many studies have shown positive relationships between grandiose narcissism and self-esteem (Zhang et al., 2017) and negative relationships between vulnerable narcissism and self-esteem (Rohmann et al., 2012). In the current study, there was a strong negative correlation between the Rosenberg Self-Esteem Scale and both forms of narcissism (grandiose and vulnerable;  $r = -.41$ ). The absence of the expected variance in the ACEs-RSES-NSSI pathway, when constrained by levels of narcissism, could be partially explained by the significant correlation between self-esteem (RSES) and the subtypes of narcissism. Similarly, both forms of narcissism showed significant positive correlations with the Experiences of Shame Scale, as seen in Table 1 (vulnerable = .62; grandiose = .57). This is consistent with research that has shown positive correlations between vulnerable narcissism and experiences of shame (Fries, 2015). These significant correlations may partially explain

why forms of narcissism did not significantly influence the ACEs-ESS-NSSI pathway in the SEM analysis. Finally, the lack of expected variance in the ACEs-ISASPb-NSSI pathway, when constrained by levels of narcissism, may be explained by the relatively weak correlations between the peer-bonding variable (ISASPb) and forms of narcissism (Table 1; vulnerable narcissism .016; grandiose narcissism .017). A preliminary analysis showed significantly different model fit when the RSES variable was removed from the model, supporting the correlation between the narcissism variables and RSES as a possible explanation for why the ACEs-RSES-NSSI pathway did not show a significant change in CFI, when constrained across levels and forms of narcissism. Similarly, the model fit changed when ESS was removed, also supporting the correlation between ESS and forms of narcissism as a possible explanation for why a significant change in CFI was not observed in the ACEs-ESS-NSSI pathway, when constrained by levels and forms of narcissism. However, a complete recreation of the analysis without the RSES and ESS variables is beyond the scope of this study. Finally, the model did not show a significantly different fit when ISAS-PB was removed, which is also likely attributable to the weak correlation between the ISAS-PB and the narcissism variables.

Despite the lack of significant variance in each of the indirect pathways addressed above, when constrained by levels of narcissism, it is reasonable to assume that the cumulative sub-significant influences on each of these pathways partially account for the significant variance observed on the indirect pathway between ACEs and NSSI. This type of cumulative influence is relatively common in invariance testing (Byrne, 2009), particularly when applied to SEM (Preacher & Hayes, 2008).



## Clinical Implications

From a clinical perspective, it is imperative that we increase our understanding of NSSI due to its significant relationship to suicide attempts and death by suicide (Brackman et al., 2016). The current study is one of the only studies (to the author's knowledge) to test the BBM and its applicability to college women, which has been shown to be at high-risk population for engaging in NSSI. Results indicate that ACEs are an important predictor of NSSI behaviors among college women. These findings are noteworthy, as ACEs are increasingly used as screeners in a variety of health care settings (Barnett et al., 2021), meaning that many clinicians may already have access to this information. Understanding that higher ACEs scores predict NSSI in college women, may make it easier for clinicians to assess risk and provide appropriate treatment and referrals. Additionally, the current results suggest that the relationship between ACEs and NSSI likely operates through shame, self-esteem, and peer-bonding motivation, meaning that these could serve as potential treatment targets, especially when someone has a history of ACEs. For example, self-esteem appears to be a protective factor in that higher levels of self-esteem may weaken the relationship between ACEs and NSSI. This may mean that counselors working with college women who have a history of ACEs might target self-esteem as an area to improve in treatment. Similarly, shame appears to increase the risk for NSSI among college women with higher ACE scores. Thus, shame may also be an important risk factor and treatment target for this population. Furthermore, these results can be used to determine factors for additional assessment. For instance, if a college woman presents with elevated ACEs scores (from screening), assessing shame and self-esteem may be helpful as part of the treatment planning process

to better assess the risk for NSSI and develop intervention goals to reduce NSSI. Finally, the peer-bonding results suggest that over-normalizing NSSI may influence college women to engage in NSSI. These results are consistent with past research showing significant relationships between perceived social support and NSSI (Turner et al., 2016). Therefore, this study helps identify over-normalization of self-injury as a risk factor for NSSI. These results suggest that it may be important for college counseling centers, and college personnel in general, to engage in campaigns that emphasize that NSSI is not a “cool” means of signaling a need for assistance.

Although the role of narcissistic personality traits in these relationships was less clear and likely has fewer obvious clinical implications, this information may still be used to inform assessment and treatment. For instance, colloquial understandings of narcissism suggest that those with narcissistic traits are not at risk for self-injury. While the current results somewhat support these understandings in that higher scores of both forms of narcissism weakened the relationship between ACEs and NSSI, compared to low scores, they should be interpreted within the larger literature base examining narcissism and NSSI. For instance, the current study is just one of multiple studies that demonstrate a protective influence of higher narcissism scores (Talmon & Ginzburg, 2018), and other studies show contrary results for both subtypes of narcissism (Coleman et al., 2017; Svindeth et al., 2008). Given these mixed results, it is important for mental health providers to avoid assuming that patients presenting with narcissistic traits are not at risk for self-harming behaviors.

## Limitations

There are several limitations to the current study, which should be considered when examining the results. The first is that the data were collected from one mid-size university in the southeastern United States and may not be generalizable to other regions. Specifically, the region of the current sample largely identifies as Judeo-Christian (Gallup, 2018), which has been shown to be protective against suicidal behaviors, including NSSI (Haney, 2020). Additionally, the sample was limited to individuals who identify as female, in the 18-29 age range, and were enrolled in college. These demographic characteristics further limit the generalizability of the study results. Specifically, results from this study may not be applicable to mixed-gender samples, including individuals who identify as male or non-binary. These demographic specifications were chosen as a means of measuring NSSI in a population that has been identified at high risk for these behaviors (Cipriano et al., 2017); however, the results of this study should not be interpreted to mean that NSSI is exclusive to college women, as research has shown significant rates of NSSI in male (Berman et al., 2017) and non-binary populations (Rimes et al., 2019). Furthermore, the current sample was largely White (64.9%), which may also influence the generalizability of the current results to more racially diverse samples, as existing literature has shown significant differences in rates of NSSI by race (Fox et al., 2020).

In addition to the demographic limitations, the reliance on self-report measures should be considered when interpreted the results of this study. There are always limitations associated with the use of self-report measures in research (Stone et al., 1999), and these limitations become more salient depending on the perceived acceptability of the

behavior being measured (Thake, 2013). The self-report measurement of NSSI has been shown to be especially influenced by impression management and other similar limitations (Lungu et al., 2018). Additionally, research has demonstrated that severity of self-injury influences the degree of self-disclosure, such that more severe self-injury is more commonly reported than less severe instances, especially in college students (Armiento et al., 2014). This tendency may contribute to a skewing of self-reported NSSI in college student samples. Relatedly, many of the concepts in the BBM are difficult to measure through self-report (i.e., physical pain aversion), leading to the use of proxy variables, such as shame (St. Germain & Hooley, 2012). These measurement limitations have always plagued the NSSI and suicide research fields and contribute to the mixed results often found in these research domains (Fox et al., 2019; Gutierrez et al., 2021). Therefore, readers should consider these factors when examining any research in these domains, including the current study. A closely related limitation was the absence of any treatment-specific measures (i.e., this was not a clinical sample).

Additional limitations include the study's cross-sectional design, completing data collection during the global COVID-19 pandemic, and the exclusion of certain aspects of the BBM from consideration. While most psychological research is cross-sectional, there are several limitations to these designs, particularly for variables that show a tendency to fluctuate (Wegner, 1999). This is applicable to the current study, especially in terms of the Experiences of Shame variable, as the self-report of shame has been shown to vary over time (Tilghman-Osborn et al., 2008). Other variables in the study may be less impacted by this design, as they measure lifetime occurrences of behaviors and experiences (i.e., ISAS and ACEs). Additionally, while the sample used in the current

study did not evidence significant COVID-19 related anxiety, the overall psychological distress of the sample was slightly elevated. This is congruent with current research, as limited studies have shown significant increases in overall distress and anxiety, particularly among emerging adults, related to the pandemic (Wang et al., 2020). However, due to the limitations in measuring the psychological impact of the COVID-19 pandemic, due to its recency, it is hard to accurately determine the significance of its influence on the psychological distress of the sample in the current study. Finally, the current study was limited as a test of the BBM due to the exclusion of certain aspects of the model. For example, the current study limited itself to the three most prominent barriers to NSSI in the model and excluded all the proposed benefits, due to them making poor treatment and assessment targets. Therefore, the current results should not be interpreted as a complete validation of the model.

#### Future Directions

Many of the recommendations for future work in this area include modifying and expanding the study design. Specifically, using a longitudinal design would allow for a comparison of study variables across time, which would better account for the natural variance of certain experiences (e.g., shame). A longitudinal design would also allow for the comparison of scores on study variables collected during the COVID-19 pandemic to scores collected after the conclusion of the pandemic. It would also be helpful to compare scores on the CVAS and KPDS across time, as the COVID-19 pandemic persisted. Additionally, the use of mixed-methods research would help to address the concerns associated with self-report assessment of NSSI. Mixed methods are generally considered preferable in NSSI research (Dillon et al., 2020) but are often not implemented due to

limited resources (Lund, 2011). Also, the clinical applicability of results could be increased by including treatment specific measures and/or treatment-seeking samples. For instance, a measure assessing specific distress tolerance techniques (i.e., mindfulness) would provide researchers with a cursory examination of how specific clinical interventions may impact these behaviors, informing future treatment research. Finally, the development of specific measures aimed at assessing aspects of the BBM would be helpful in terms of testing all aspects of the model, including the proposed benefits, which were excluded from the current study.

While not within the scope of the current study, future research should examine other gender and age demographics in relation to features of the BBM to determine its generalizability across populations. Additionally, a nationally representative sample would help to address the geographic limitations of sampling participants in only one region. Furthermore, to truly determine the comprehensiveness of the BBM, it is important to test the model in specific sub-populations that would not be captured in nationally representative samples (e.g., justice involved individuals).

Despite the limitations, the current study expanded our understanding of the applicability of the BBM with college women. Additionally, it added to the growing body of literature examining relationships between ACEs and mental health variables, including NSSI. Finally, it contributed to the literature base examining NSSI and narcissistic traits, despite this relationship remaining largely unclear.

APPENDIX A –IRB Approval Letter

INSTITUTIONAL REVIEW BOARD APPROVAL

Office of  
Research Integrity



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**NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION**

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI via the Incident template on Cayuse IRB.
- The period of approval is twelve months. An application for renewal must be submitted for projects exceeding twelve months.
- **FACE-TO-FACE DATA COLLECTION WILL NOT COMMENCE UNTIL USM'S IRB MODIFIES THE DIRECTIVE TO HALT NON-ESSENTIAL (NO DIRECT BENEFIT TO PARTICIPANTS) RESEARCH.**

PROTOCOL NUMBER: IRB-20-278

PROJECT TITLE: Testing Barriers to Non-Suicidal Self-Injury with College Students:

Narcissistic Traits as Moderators

SCHOOL/PROGRAM: School of Psychology, Psychology

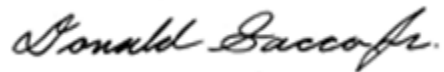
RESEARCHER(S): Philip Stoner, Eric Dahlen

IRB COMMITTEE ACTION: Approved

CATEGORY: Expedited

7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

PERIOD OF APPROVAL: June 2, 2020

A handwritten signature in cursive script that reads "Donald Sacco".

**Donald Sacco, Ph.D.**

**Institutional Review Board Chairperson**



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