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Identifying And Understanding Nonsuicidal Self-Injury Among College Students

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IDENTIFYING AND UNDERSTANDING NONSUICIDAL SELF-INJURY AMONG COLLEGE STUDENTS

by

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DEDICATION

I would like to dedicate this project to those students suffering from NSSI.

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CHAPTER 1

INTRODUCTION

The study was designed to survey nonsuicidal self-injury (NSSI) behavior in college students at an urban university and to examine hypothesized relations between NSSI and poor quality relationships with parents and peers as well as deficient coping and help-seeking behavior. It is the hope that the application of attachment theory will contribute to a better understanding than currently exists of college students who engage in NSSI. It is further hoped that this understanding will lead to better ways to identify students who engage in NSSI, greater abilities to empathize with them, and more effective treatments to meet their needs.

Defining NSSI in college samples

NSSI is defined as the direct, deliberate damage of one's body tissue without suicidal intent in mind (Nock & Favazza, 2009). NSSI does not pertain to socially or culturally sanctioned behaviors such as tattooing or ear piercing. NSSI also excludes injury stemming from psychotic episodes, or repetitive behavior associated with developmental delays. Examples of NSSI behavior include cutting, scratching, self-hitting, and burning oneself; these NSSI behaviors have been found as the most common examples of NSSI in college students (Kuentzel, Arble, Boutros, Chugani, & Barnett, 2012). Although NSSI is distinct from suicide attempts, some studies indicate that 50-75% of those individuals with a history of NSSI also have made a suicide attempt (Nock & Favazza, 2009).

Base rates of NSSI in college students have ranged from roughly 12.8% to 38% (Croyle & Waltz, 2007; Gratz, Conrad, & Roemer, 2002; Kuentzel et al., 2012) highlighting the need to better understand this behavior among college students. In comparison, a base rate around 4% is found in the general population (Briere & Gil, 1998). Kuentzel et al. (2012) found that 12.8% of

their college sample engaged in NSSI at least once in their lifetime. Croyle & Waltz (2007) found that 20% of their college sample reported moderate NSSI in the past 3 years, while 35% of their college sample reported moderate NSSI (e.g. self-cutting, burning, hitting) in their lifetime. Of this 35%, 42% reported engaging in NSSI one to two times and 45% expressed negative emotions in regard to their self-harm histories. In a study by Gratz et al. (2002), 38% of their college sample reported engaging in NSSI in their lifetime. They indicated that the most common NSSI behaviors reported were needle sticking (16%), cutting (15%), and scratching (14%). Among the studies above, the same definition of NSSI appeared to be used, specifically, intentional harm to the body causing tissue damage, without suicidal intent. What is less clear is what levels of NSSI severity were included, and overall if different interpretations of the NSSI definition were used across studies. If different exclusion criteria were present across studies this could account for the differences in rates of lifetime NSSI in college samples in the literature.

NSSI has also been found to be associated with other symptomology in college samples. For example, Cheng, Mallinckrodt, Soet, and Sevig's results (2010) indicate that NSSI may be more common in college students that present with a combination of depression, anxiety, anger, and trauma-related symptoms. Croyle and Waltz (2007) found in their undergraduate sample that the 35% of college students that engaged in NSSI also had more somatic symptoms, impulsivity, characteristics of OCD, disordered eating patterns, shame, and emotional abuse histories than their non-NSSI or subclinical NSSI counterparts. They also engaged in subclinical NSSI behavior that resulted in less bodily injury such as nail-biting, scratching, and skin and wound picking.

There are mixed findings regarding whether college women engage in NSSI more frequently than men. For example, Cheng et al. (2010) reported that women were more likely to engage in NSSI than men regardless of whether it was a one-time incident or at least four or five incidences. Kuentzel and colleagues (2012) also found that college women were more likely to engage in NSSI than college men. On the other hand, Gratz et al. (2002) did not find significant NSSI differences based on gender. However, they did identify different risk factors for NSSI based on gender. Specifically, for women the strongest predictor of NSSI was dissociation, after which insecure paternal attachment, childhood sexual abuse, maternal emotional neglect, and lack of paternal emotional neglect (likely emotional overinvolvement) in order from strongest to weakest were predictors of NSSI. For men, the strongest predictor for NSSI was child separation (in most cases usually physical separation from fathers), followed by dissociation. Authors also felt that physical abuse, although not a significant predictor of NSSI for men and accounting for 4% of the unique variance in self-harm among men, warranted further investigation because the number of men (n = 44) in their sample was small. They also noted that sexual abuse as a predictor of NSSI among men warranted further investigation.

Regarding NSSI differences based on ethnicity, Kuentzel et al. (2012) found that among a large sample (n = 5,691) of diverse college students, those that identified themselves as multiracial exhibited the largest rate of NSSI (20.8%). Native-American, Caucasian, and Hispanic groups were also elevated (29.2%, 17%, and 17%, respectively). No NSSI differences in their college sample based on SES were found.

Interpersonal models of NSSI

Prinstein, Guerry, Browne, and Rancourt (2009) reviewed interpersonal models of NSSI and identified four areas of research: One area of study concerned distal interpersonal risk

factors for NSSI. A second area discussed immediate interpersonal stressors preceding NSSI. A third area identified interpersonal processes or social deficiencies that may explain NSSI behavior. Lastly, they described interpersonal and intrapersonal functional models of NSSI behavior. They also discussed NSSI social contagion behavior. Using the manner in which Prinstein et al. (2009) organized interpersonal models of NSSI, these areas will be discussed further below.

Distal interpersonal risk factors for NSSI

Distal interpersonal risk factors refer to interpersonal risk factors from childhood. Prior interpersonal hardships in students endorsing NSSI behavior have been documented by many researchers. For example, as noted previously the results of Gratz et al. (2002) suggest that in order of strongest to weakest predictors in women, insecure paternal attachment, childhood sexual abuse, maternal emotional neglect, and paternal emotional overinvolvement predict NSSI. Childhood separation was a strong predictor for later NSSI in men. In addition, Gratz (2006) reported that childhood maltreatment played a role in distinguishing college women who engaged in NSSI versus college women who did not. Gratz & Chapman (2007) found that in college men, childhood physical abuse played a role in distinguishing college men who engaged in NSSI versus college men that did not engage in NSSI. Weierich & Nock (2008) identified childhood sexual abuse as a risk factor for NSSI behavior and found that having PTSD symptoms such as re-experiencing and avoidance symptoms mediated this relationship. Walsh (2006) also suggested assessing childhood deprivation, physical and sexual abuse as part of assessing the risk of self-injury. Prinstein et al. (2009) asked an important question whether distal interpersonal difficulties act as a risk factor for NSSI or pathology in general. They

identified that longitudinal studies looking at the association between distal interpersonal factors and later NSSI were needed.

Various theories could account for these distal interpersonal risk factors for NSSI. For example, attachment theorists suggest that maladaptive childhood experiences leave the individuals that have endured them with diminished emotion regulation abilities and lack of social competence. In other words, these individuals have more difficulty in handling emotional states, leaving NSSI an option to resolve them. Research supports that NSSI functions to regulate emotions followed by influencing social interactions. (Attachment theory will be discussed later at more length.) To summarize the studies above, distal interpersonal experiences such as childhood abuse, separation, neglect, overinvolvement, and insecure attachments have been associated as risk factors for NSSI later in life; attachment theory may help to explain these associations; however more longitudinal data are needed.

Immediate interpersonal stressors preceding NSSI

More immediate interpersonal stressors have also been associated with increased risk of NSSI behavior. For example, Hilt, Cha, and Nolen-Hoeksema (2008) found that adolescents, who engaged in NSSI, experienced more self-reported peer victimization and poor perceptions of communication with peers. The authors reported that adolescents seemed to be engaging in NSSI for positive and negative social reinforcement. A study by Heath, Ross, Toste, Charlebois, and Nedecheva (2009) similarly found that college students that engaged in NSSI were more likely to report less social support from friends. Interestingly, Adrian, Zeman, Erdley, Lisa, and Sim (2011) found that female adolescent inpatients who reported family and peer difficulties (e.g. family conflict and peer victimization) also experienced increased NSSI, but this relationship was most strongly mediated by emotional regulation. The direct effect of peer and

family relationships on NSSI was only marginally significant. Another interpersonal stressor found to predict NSSI, in a study by Nock, Prinstein, and Sterba (2010), was being alone. They also found that NSSI increased when adolescents felt rejected or angry at someone. Similarly, Yates, Tracy, and Luthar (2008) found in one of their samples, reported parental criticism was associated with increased NSSI behavior among adolescents. Nock and Prinstein (2005) have also found that social perfectionism is associated with increased NSSI.

Whitlock, Powers, and Eckenrode (2006) studied adolescents and college aged individuals posting messages regarding NSSI on the internet. They found that the second most common topic to post about was events triggering an NSSI episode. They found that having a conflict with someone important accounted for triggering 34.8% of the episodes they sampled. To conclude, immediate social stressors have been identified that are associated with NSSI behavior such as conflicts with others and difficulty communicating with peers, parental criticism, being alone, social perfectionism, rejection and less social support, and peer victimization. It is unclear however if all of these relationships are direct ones or are mediated by other factors such as distress and emotional regulation.

Interpersonal processes and social deficiencies that may explain NSSI behavior

Different theories have been proposed to explain the interpersonal processes involved in NSSI. Social-cognitive theory describes variation in encoding and interpreting social cues. Furthermore, contextual factors or prior experiences may affect encoding resulting in sensitivity to certain stimuli due to beliefs and schemas. Interpretive biases may distort the perception of encoded social cues. Encoding and interpretation is followed by a behavioral response and the cycle of social information processing begins again. One model that falls under the umbrella of social-cognitive theory is the vulnerability stress model studied by Guerry and Prinstein (2007)

discussed in Prinstein et al. 2009. They studied adolescents' interpretations of interpersonal experiences and found a relationship between a general tendency of negative, global, internal, and stable causal attributions about interpersonal stressful experiences, and increases in NSSI across time, accounting for adolescent depression symptoms, suggesting that the role of cognitive interpretations of stressful experiences was not mediated by depression. Other researchers have studied behavioral responses to social stimuli. For example, Nock and Mendes (2008) studied social problem solving in adolescents with and without NSSI. They found that self-injurers did not differ in the quality or quantity of social solutions they generated, however they selected more negative solutions when asked which solution they would most likely perform out of the solutions they generated to each social dilemma. They also rated their self-efficacy in these situations as lower than non-self-injurers.

Prinstein et al. (2009) discussed how many theories regarding NSSI posit that self-injurers may become hyperaroused in stressful social situations and that this state of arousal compromises their social problem-solving skills. Similar to these theories, Adrian et al. (2011) found that emotional dysregulation mediated the influence of social problems on NSSI behavior in adolescents. Furthermore, Hilt et al. (2008) discussed how a moderator of peer victimization and increased NSSI behavior is self-reported perception of the quality of communication with peers. It is likely that emotional arousal could be decreasing social communication and be negatively affecting their perceptions of peers making it more likely for them to engage in NSSI to cope if they are experiencing social stressors such as victimization. Gratz (2006) also found in her study of college women that the women who engaged in NSSI were more likely to report emotional inexpressivity. This emotional inexpressivity could represent the poor communication that could occur as a result of emotional dysregulation and social stressors.

Heath et al. (2009) touches on yet other social-learning processes in which those who engage in NSSI may display. They may be engaging in social priming and or bonding in which they model the behavior of others. In their study they found that 43.6% of those college students that reported NSSI behavior said they learned about it from others either in their lives or through the media, while 39% reported that they did not know how they learned about the behavior, and 17.4% reported that they did not learn about it through others (e.g. "just felt like doing it"). They also found that 74% of those who reported NSSI behavior also knew a friend who had engaged in the behavior. To summarize, interpersonal processes and social deficiencies have been identified that are associated with NSSI. It appears that those who engage in NSSI are more likely to interpret a negative, global, internal and stable cause of interpersonal stressful experiences and select more negative solutions to social dilemmas. They are more likely to perceive their communication with others as poor. Emotional arousal has also been found among those that engage in NSSI and it is possible that this arousal disrupts cognition and social behavior. It is also possible that those who engage in NSSI are modeling the behavior of others.

Interpersonal and intrapersonal functional models of NSSI behavior

McLane's theory (1996) as described by Gratz (2006) explains self-harm behavior as a way to communicate when individuals cannot otherwise express their feelings. Similarly, Gratz (2006) discussed the function of NSSI behavior to entail expressing feelings. In her study as mentioned previously, it was found that emotional inexpressivity was associated with more frequent self-harm. Yates et al. (2008) reported that their results also supported the emotional expression function of NSSI. They found support for parental criticism leading to NSSI via parental alienation.

In a study of college students by Heath et al. (2009), emotional as well as social motivations were reported for NSSI behavior. Ninety-one percent of students who had or were engaging in NSSI reported emotional motivators, while 65.2% reported social motivators. Hilt et al. (2008) also studied the functions of NSSI among adolescents. They studied specifically NSSI serving to self-regulate individuals or serving them in interpersonal ways. They found that depression symptoms were associated with engaging in NSSI for emotional regulation and that rumination moderated the relationship between regulating emotions to feel something (automatic positive reinforcement) and engaging in NSSI. This association did not exist for automatic negative reinforcement (to stop bad feelings). Furthermore, they also found that self-reported peer victimization was associated with engaging in NSSI for social positive reinforcement (i.e. positive attention) and social negative reinforcement (i.e. avoiding people). They found that self-reported perceived quality of communication with peers (e.g. my friends care about my point of view) moderated this relationship. In other words, if adolescent girls experienced teasing and had poor perceived quality peer communication then they were more likely to engage in NSSI for positive attention as well as to avoid being with people. Nock et al. (2010) studied the self-injurious behavior of 30 adolescents and young adults. Participants reported that they engaged in NSSI most commonly for intrapersonal negative reinforcement (64.7%; e.g. escape from aversive emotions and thoughts), followed by intrapersonal positive reinforcement (24.5%), purposes of interpersonal negative reinforcement (14.7%), and less commonly for interpersonal positive reinforcement (3.9%).

Klonsky and Olino (2008) were able to identify distinct groups of college students who engaged in NSSI based on the function of NSSI, method of NSSI, and descriptive factors. They found that a four group model fit their data best. The first group of individuals accounting for

about 60% of the participants called the “experimental NSSI” group, endorsed low levels of NSSI behavior and low levels of autonomic (e.g. emotion regulation and self-punishment) and socially reinforcing functions (e.g. peer bonding and interpersonal influence). The second group named the “mild NSSI” group accounted for 17% of participants. This group reported more NSSI behavior than the first group; however, they had relatively low clinical symptoms and also endorsed low levels of autonomic and socially reinforcing functions. The third group, the “multiple functions/anxious” group (11% of the sample) engaged in numerous NSSI behavior, endorsed the most anxiety, and reported both social and autonomic functions. Lastly a fourth group (10%), the “automatic functions/suicidal group” that predominantly engaged in cutting behavior while alone, endorsed autonomic reinforcing functions and were most likely to have attempted suicide. The above studies provide support for Prinstein's functional model of NSSI. He proposed that individuals engage in NSSI for automatic and/or social contingencies that are maintained through actual or perceived positive and or negative reinforcement.

NSSI and social contagion

Walsh and Rosen (1985, 1989) as written in Walsh (2006) defined self-injury contagion in two ways, one, as self-injury occurring within 24 hours in two or more people within the same group and secondly, when self-injury occurs within the same group in significant bursts or clusters. Walsh (2006) wrote on how much of the data on social contagion is from individuals residing in institutional and treatment facilities versus universities and the community at large however, more recently the latter populations are being studied. He explained that the setting may also be associated with the function of the behavior since anecdotal data from universities and public schools are indicating a stronger social function of NSSI than had been found in treatment facilities in earlier studies. Proximity to others as well as self-report biases (e.g. not

wanting to seem manipulative or like a “copycat”) may also influence the functions reported. Walsh explained why individuals may partake in NSSI with others. He indicated that social contagion allows the participants to communicate for different reasons, i.e. for acknowledgment of their distress, to punish others, to coerce or make another withdraw, to compete with others for caregiver attention, to express distress without aversive consequences (inpatient setting). Nonsuicidal self-injurers may also be reinforced to engage in NSSI due to direct modeling influences, for example, if competition ensues among them, or if nonsuicidal self-injurers disinhibit each other (e.g. seeing scars on someone's arm and thinking if they could do it so can I). They may also feel reinforced to engage in NSSI together due to group cohesion effects (e.g. we have a special bond because we self-injure together). The internet is also changing how contagion may occur as contagion episodes occur through electronic communication. Often the same mechanisms are related to electronic contagion; however NSSI disclosed electronically may or may not be true; dishonesty is more difficult in face-to-face groups.

Whitlock et al. (2006) studied message boards on the internet dedicated to self-harm topics. They found that 6.2% of the content pertained to sharing self-injury techniques. They also found that 18.7% of individuals discussing help-seeking, discouraged seeking therapy (44% reported positive comments about therapy). In a second part of the study, Whitlock and colleagues studied the relationship between message board discussions of self-injury practices and help-seeking behavior. They found that negative exchanges related to discouraging disclosure of the behavior were associated with sharing techniques as well as with seeking advice about stopping. Whitlock et al. (2006) discussed how self-injurious behavior had addictive qualities, explaining that adolescents' drive to belong and interact with others similar to themselves may feed a tendency toward self-destructive behavior in some cases. Similarly, they

explained how NSSI could be socially contagious over the internet as it has been found to be in other settings like institutional settings. Another study by Whitlock, Lader, Conterio (2007), looking at NSSI behavior reported via the internet, found that 37% of individuals found that the message boards dedicated to NSSI behavior topics had a positive effect on their NSSI; however 7% reported that the discussions lead to increases in their self-injury. Whitlock et al. (2007) indicated that these internet communities could lead to "narrative reinforcement" or in other words, sharing life stories could subconsciously justify or normalize NSSI. They also indicated that graphic images and poetry of NSSI could trigger more NSSI behavior. They explained that although many individuals who self-injure desire lasting interpersonal relationships, they may also need help working through past trauma and other interpersonal difficulties that are not being addressed over the internet. In addition, unfortunately, moderators are often not on NSSI website message boards to monitor and address activity. In another study, Whitlock, Muehlenkamp, and Eckenrode (2010) studied college students and found that the participants that reported also having friends who self-injured were more likely to report currently self-injuring, unintended NSSI severity, suicidality, disordered eating, and receiving medication for a DSM-IV condition.

Prinstein et al. (2009) reported results of their work in 2007 on NSSI social contagion outside of an inpatient setting indicating that adolescent NSSI behavior (in a community sample) was influenced by their peers. They found that best friends' own reports of their NSSI was prospectively related to increases in the levels of target adolescents' own NSSI over two years. They offered various perspectives to explain the results such as adolescents emulating the behavior of others they admire to maintain their self-image or social status and gaining social rewards. Heath et al. (2009)'s findings also support the idea that young adults engage in NSSI

with others. They found that 17.4% of participants reported engaging in NSSI in front of friends and 58.8% reported that a friend had first engaged in NSSI before they had. Similarly, Nock et al. (2010) found that adolescents and young adults who reported that others were encouraging them to engage in NSSI, though only reported in a few cases, was related to an increase in NSSI although not significant. In summary, the studies above describe reasons for and reinforcers of NSSI contagion behavior. It appears that nonsuicidal self-injurers want their distress to be acknowledged and may be reinforced by each other, for example, through competition, modeling effects, or group cohesion. It is also possible now for nonsuicidal self-injurers to engage in NSSI together via electronic means. Overall, evidence suggests that peer NSSI is an important risk factor to consider when studying and treating NSSI.

Overall Summary of NSSI Interpersonal Model Findings

Childhood interpersonal risk factors, immediate interpersonal stressors, interpersonal processes and social deficiencies, interpersonal and intrapersonal functional models, and NSSI social contagion have been reviewed above. Evidence suggests that insecure attachment, difficulty in parental and peers relationships, interpretive biases, and emotional dysregulation are associated with NSSI. Fortunately, attachment theory provides a framework in which this picture of interpersonal and intrapersonal issues can be better understood.

Attachment Theory

Bowlby (1969, 1973) hypothesized that individual differences in attachment resulted from expectations and experiences of caregiver proximity and availability. He believed that infants developed expectations about their caregivers based on their responsive/unresponsive care from attachment figures. Infants come to expect what they had before. Bowlby also thought that attachment relationships were internalized and because of this, attachment

experiences and expectations served as foundations for expectations about the self and later relationships in life. He believed that in secure relationships, infants learn to see the world as responsive and good, and themselves as deserving good treatment. Infants in insecure relationships, in which they are responded to in a harsh or inconsistent manner or not at all, would grow to see themselves as not deserving of better treatment and the world as less predictable and insensitive to their needs. Furthermore, he thought that adapting ones behavior to meet stages of development depended on current experiences as well as prior history. He believed that prior adaption constrained subsequent development. He thought that changing maladaptive patterns was possible, but difficult because individuals interpret, select, and influence others and circumstances around them to confirm their existing beliefs. It was also assumed that the shorter an individual was on a maladaptive pathway the more readily change may be accomplished and the more sustained the forces of change were, the more permanent the change would be.

Like Bowlby, Mary Ainsworth also thought that sensitive and responsive caregiving was crucial to attachment security (Ainsworth, Blehar, Waters, & Wall, 1978). Mary Ainsworth identified individual differences in attachment relationships and a way to assess them creating the Strange Situation. The situation presents infants with increasing strange and stressful elements, specifically an unfamiliar laboratory environment, an interaction with an unfamiliar adult, and two short separations from the infant's mother, which elicit attachment behavior and caregiver availability expectations from the infant. Infant attachment styles are classified as secure or insecure based on their responses to their attachment figure during reunion. Infants categorized as secure are able to use caregivers as a secure base for exploring the novel setting (e.g. play with toys). When their caretakers return, these infants seek proximity and are

comforted by the proximity, contact, or positive distal interactions with their caretakers and resume with playing. Infants categorized as insecure fall into three categories: avoidant, resistant, or, disorganized; the disorganized category was later introduced by Main and Solomon (1990).

Insecure infants show a different pattern of behavior in contrast to secure infants in the Strange Situation. Insecure-avoidant infants are unlikely to be upset when their caregiver leaves. When reunited, these infants do not approach their caregivers, instead they ignore them. Insecure-resistant infants have difficulty using their caregivers as secure bases for exploration of the environment. They seek proximity to their caregivers before the separation occurs. When separated from their caregivers these infants are often quite distressed. Upon reuniting with their caregivers, they seek contact, but are not easily calmed by the contact. They often seek contact and resist it once it is achieved. Infants classified as insecure-disorganized are unable to maintain one attachment strategy in the Strange Situation and hence their behavior can appear disorganized or disoriented. Vaughn, Bost, & van Ijzendoorn's (2008) review of attachment and temperament brought them to the conclusion that it is possible that temperamental differences may also bias an insecure infant in the direction of avoidance or resistance as a strategy for proximity maintenance to a caregiver, but the caregiving environment is what accounts for the variance between secure and insecure status and between organized and disorganized.

Longitudinal studies that have looked at the continuity of attachment from infancy to young adulthood have often used the Adult Attachment Interview (George, Kaplan, & Main, 1984) to measure attachment status from adolescence to adulthood. The Adult Attachment Interview (AAI), as described by Mikulincer & Shaver (2007), measures the participants' mental representations or states of mind in regard to attachment to their parents during childhood.

Participants answer questions in an open-ended format. Based on their responses they are classified as autonomous (secure), dismissing, preoccupied or unresolved/disorganized. A person classified as secure describes their parents as responsive and available in childhood. They verbalize memories in a coherent and clear manner. Participants classified as dismissing or avoidant down play the importance of their caregiving relationships and tend to recall fewer details as they recall these interactions. Participants classified as preoccupied (or anxious-ambivalent/resistant) tend to still be responding to childhood experiences and their parents with anxiety or anger, and seem to more easily remember negative memories. They also present as less coherent as they answer questions. Participants classified as unresolved or disorganized show signs of disorientation or disorganization while discussing unresolved loss or abuse (Lyons-Ruth & Jacobvitz, 2008).

Longitudinal studies have found evidence of attachment in infancy and childhood linked to attachment style in adolescence and young adulthood when caregiving was stable (Main, Hesse, & Kaplan, 2005; Sroufe, Egeland, Carlson, & Collins, 2005; Waters, Merrick, Treboux, Crowell, & Albersheim, 2000). For example, Waters et al. (2000) compared 50 individuals' classifications in the Strange Situation with mothers when they were 12 months to their classifications on the AAI as young adults and found that 72% of participants' secure versus insecure classifications predicted AAI secure or insecure classifications 19-21 years later; a disorganized category was not used. Similarly it was found by Main and her colleagues (Main et al., 2005) that 42 participants' secure or insecure classification from the Strange Situation with mothers from 12-18 months in comparison to their secure or insecure classifications on the AAI were significantly matched when assessed about 18 years later. Sroufe and fellow researchers (Sroufe et al., 2005) have studied infants of 12 and 18 months of age in the Strange

Situation and have reassessed them at age 26 using the AAI, and have found a significant secure-insecure match at 18 months and 26 years of age (disorganized behavior was identified). Nonsignificant relationships between the Strange Situation and AAI classifications have also been found, for example by Sagi-Schartz and Aviezer (2005) in a 3-way analysis with no disorganized behavior identified and by Weinfeld, Sroufe, and Egeland (2000) in a high risk sample.

Distributions of attachment styles in young adults have been found to resemble distributions in studies of infants and children. Studies using self-report measures of attachment have found that about 55-65% of the samples were secure, 22-30% insecure-avoidant, and 15-20% insecure-resistant (e.g. Davila, Burge, & Hammen, 1997; Kirkpatrick & Davis, 1994). In studies using the Adult Attachment Interview distributions have been similar. When the category unresolved/disorganized was used in distributions generated from Adult Attachment Interview (AAI) results, about 56% of samples were found to be secure, about 26% avoidant, about 9% resistant/preoccupied, and about 10% unresolved/disorganized (Roisman, Fraley, & Belsky, 2007). It is possible for a person to have different types of attachment with different caregivers, but there is more evidence for concordance especially among parents (Fox, Kimmerly, & Schaffer, 1991; van Ijzendoorn & De Wolff, 1997). More research is needed to better understand what underlies this concordance.

Other factors such as the psychological health of the caretaker, their social support and economic resources, and the quality of their relationship with their spouses also impact their attachments to their children. For example, it has been found that when parents have better psychological health they provide better care to their children (Belsky, 1984; Gelfand & Teti, 1990) and their children are more likely to be securely attached

(Benn, 1986; NICHD Early Child Care Network, 1997). Mothers who are clinically depressed are more likely to have insecurely attached infants than non-depressed mothers (Atkinson, Paglia, Coolbear, Niccols, Parker, Guger, 2000). Mothers displaying signs of unresolved loss or trauma or unbalanced relationship patterns on the AAI have also been associated with infant insecurity especially insecure-disorganized attachment (Lyons-Ruth & Jacobvitz, 2008). On the other hand, spouses in happy and supportive relationships display more sensitive parental skills with their infants and toddlers (Krishnakumar & Buehler, 2000) and are more likely to have securely attached infants (Howes & Markman, 1989; Teti, Gelfand, Messinger, & Isabella, 1995). The external support caregivers have or perceive, along with greater economic resources, also have been linked with supportive care and attachment security (Feiring, Fox, Jaskir, & Lewis, 1987; Jacobson & Frye, 1991). It is important to note that even though Bowlby (1973) described clear distinctions between secure and insecure attachment, he described attachment on a continuum whereby secure and insecure were the ends of the continuum.

Attachment theory suggests that the influence of the attachment relationship affects certain domains of adjustment such as dependency versus self-reliance and efficacy, anxiety, anger, empathy, and interpersonal competence (Bowlby, 1969, 1973, 1988; Cassidy & Berlin, 1994, Lyons-Ruth, Alpern, & Repacholi, 1993; Renken, Egeland, Marvinney, Mangelsdorf, & Sroufe, 1989). Children with secure attachment histories seem to think that they can overall get their needs met, and with effort achieve their goals, while children with insecure histories appear to think their efforts are ineffective and thus rely on others who may or may not meet their needs. Anxiety is often related to a history of inconsistent care and inconsistent availability as well as secure-resistant attachment since erratic responsiveness by a caregiver is anxiety-provoking and gives rise to chronic vigilance (Bowlby, 1973; Cassidy & Berlin, 1994; Fagot, 1997; Jacobson &

Wille, 1986; Kestenbaum, Farber, & Sroufe, 1989; Sroufe, Bennett, Englund, Urban, & Shulman, 1993; Weinfeld, Ogawa, & Sroufe, 1997). Infants who are chronically rejected and avoidant as well as disorganized infants who are exposed to frightening caregivers are most likely to show angry and aggressive responses often reflecting alienation from others later in life (Bowlby 1973, 1980; Lyons-Ruth et al., 1993; Renken et al., 1989). Renken and colleagues found that avoidant attachment was associated with later aggression more so in boys. On the other hand, infants with secure attachment histories show less anxiety, avoidance, and aggression later in life. They also appear to have more empathy as well than children with avoidant attachment histories, while children with resistant attachment histories are more likely to feel distressed by others' distress (Kestenbaum et al., 1989). In addition, **c**hildren and teens with secure attachment histories have been reported being able to interact more successfully with their peers (Fagot, 1997; Jacobson & Wille, 1986; Sroufe et al., 1993; Weinfeld et al., 1997)**.** Attachment security/insecurity and how it relates to domains of interpersonal, emotional, and cognitive functioning will be described in more depth below followed by how attachment security/insecurity is related to psychopathology including NSSI.

Relationships with attachment figures from infancy to young adulthood

Bowlby (1987) as mentioned in Ainsworth, (1990) suggested that the goal of the attachment system changes with age. In infancy and early childhood, the goal is proximity to the caregiver, while in middle childhood it is the availability of the caregiver. Bowlby described how in comparison to an infant, a child is often more content with more distance and longer separations from an attachment figure as long as they are available if needed. Bowlby (1973) also described how a child around the age of three begins to form a corrected partnership with caretakers in which a child becomes better at communicating with and understanding attachment

figures' behaviors and takes them into consideration when interacting with them and making plans; other authors suggest that this shift in attachment may occur later (e.g. Waters, Kondo-lkemura, Posada, & Richters, 1991). Children in middle childhood begin to develop attachment representations or working models of how they relate to their attachment figures (Bowlby, 1969). By adolescence and young adulthood, an individual develops representations of attachment figures as well as a generalized model of attachment relationships or what has been called an attachment state of mind (Main, Kaplan, & Cassidy, 1985). Mikulincer and Shaver (2007) also call mental representations of attachment figures in adulthood "symbolic proximity" in which mental representations of attachment figures can become symbolic sources of protection. They describe how mental representations of the self come to incorporate traits of attachment figures (e.g. self-soothing in similar ways attachment figures had been) and can become additional means for regulating distress. They indicated, however, that even secure adults at times of extreme distress seek immediate actual proximity to an attachment figure when these strategies are insufficient.

Attachment security/insecurity and contact comfort

As written by Harlow (1958), Bowlby believed that infants had a need for intimate physical contact, which was initially associated with their caregiver. Similarly, Harlow (1958) found evidence for the need of contact comfort in macaque monkeys. He noticed that laboratory-raised infant monkeys showed an affinity to cloth pads on the floor of their cages and that they became upset when these cloth pads were removed to be cleaned. He also found that macaque monkeys had a higher rate of survival during their first five days of life if given a mesh cone vs. nothing, and had the best rates of survival when given a cloth covered cone vs. mesh cone. Next, Harlow studied neonatal and infant macaque monkeys' affection responses to wire

and cloth mother surrogates, both surrogates radiated heat. For four monkeys, the wire mesh surrogate provided milk and for four other monkeys the cloth surrogate provided milk; monkeys had access to both types of surrogates. It was found that regardless of which type of surrogate provided milk, the monkeys spent more time on the cloth surrogate, supporting the importance of contact comfort. In addition, when monkeys were presented with a fear-inducing stimulus (e.g. a moving toy bear), the monkeys went to the cloth surrogate most often versus the mesh surrogate, regardless of nursing condition, in response to the fear-inducing stimulus. He also found that when four monkeys were placed in an open-field test (a novel six feet by six feet environment), they were distressed in the environment without a cloth surrogate, but when the cloth surrogate was present they clung to her and appeared to find relief. In additional sessions, the monkeys were able to use the cloth surrogate as a secure base to explore the new environment. The same result was found regardless of whether the monkey was raised by a cloth surrogate or mesh surrogate. These different studies provided evidence that contact comfort was important for the monkeys' emotional security and exploratory behavior. It is also possible that contact comfort is important for human attachment security.

Attachment security/insecurity and social competence

Many studies have found that attachment security predicts social competence. For example, insecurely attached preschoolers are less likely to display sympathy to distressed peers and be more socially withdrawn (Waters, Wippman, & Sroufe, 1979); they are less liked by their schoolmates (LaFreniere & Sroufe, 1985). Additionally, they are less likely to interact with friendly adults (Lutkenhaus, Grossman, & Grossman, 1985). Insecurely attached children appear to be using working models to prepare them for negative interactions with others. Zeifman and Hazan (2008) have highlighted many similarities between attachment in childhood to caregivers

and in adulthood to close peers and romantic partners. For example, reactions to separations are often similar as well as behavior related to seeking contact and affection. They believe the evolutionary function in adulthood is for pair bonding to enhance the reproductive fitness of both partners involved, while in infancy attachment helps infant survival.

The Minnesota Study of Risk and Adaptation from Birth to Adulthood found that children classified as securely attached to their mothers at 12 and 18 months old were more likely to befriend other children with secure attachment histories at age 10. Additionally, infant-mother attachment predicted peer competence 15 years later as measured by small group summer camp interactions as well as parent and teacher rated peer competence at age 16 (Sroufe, Egeland, & Carlson, 1999). In a longitudinal study of German families, infant-mother attachment also predicted interviewer ratings of 10 year-olds' social competence in establishing close friendships (Freitag, Belsky, Grossman, Grossman, & Scheuerer-Englisch, 1996). Three longitudinal studies support evidence that secure infant attachment is associated with children having more friends in middle school (Elicker et al., 1992; Grossman & Grossman, 1991; Lewis & Feiring, 1989). Two studies, one longitudinal and one cross-sectional, examined multiple child-caregiver attachments and found that multiple secure attachments were related to better social competence in these children (Sagi-Schwartz & Aviezer, 2005; Verschueren & Marcoen, 1999).

There is also evidence that supports Bowlby's claim that early attachment exerts stronger influence on relationships characterized by affectional bonds (parents/close friendships) than relationships without affectional bonds. Schneider, Atkinson, & Tardif (2001) conducted a meta-analysis of 63 studies of children's peer relationships and child-parent attachment and found a small to moderate effect size of child-parent attachment security on children's peer

relationships; however when they looked at children's close friendships in contrast to peer relationships the effect size was significantly stronger. Sibling relationships have also been studied and it has been found that infant-mother attachment security has been associated with more positive treatment of one another (Booth, Rubin, & Rose-Krasnor, 1998; Teti & Ablard, 1989). Similarly, Volling and Belsky (1992) found that infant-mother attachment security was related to less sibling conflict observed five years later in the home environment.

Studies looking at types of insecure attachment history and social competence have found individual differences among insecurely attached groups. For example, peer studies have found that children with avoidant and ambivalent attachment are more likely to be followers than leaders, and ambivalent children seem more tentative and anxiously seeking positive peer interaction, while avoidant children appear more aggressive, hostile, and to repudiate positive peer interaction. These profiles are consistent with what Main (1990) describes as a maximizing strategy that is used in insecure-ambivalent children and a minimizing strategy used in insecure-avoidant children. In other words, insecure-ambivalent children seemed to be trying to elicit more attention and care, while insecure-avoidant children are doing the opposite and using a strategy of independence. Unfortunately, ambivalent children can be perceived by peers as needy and this can further increase neglect or rejection from peers, while avoidant children's behavior can repel and alienate their peers. It has also been found that children with insecure attachments, especially avoidant, had trouble identifying the names of friends even though they reported having many friends, while children with secure attachment could identify a number of friends when asked (Grossman & Grossman, 1991).

Many family factors have been found to be important to the relationship between attachment and social competence. For example, attachment and social competence were found

to be moderated by family income, maternal education and depression, and parenting stress when children were three years of age (Belsky & Fearon, 2002). They found that for all attachment groups, as family risk factors increased, social competence decreased. They also indicated that insecure-avoidant children were especially vulnerable to family risk factors; social competence decreased dramatically in response to midlevel family risk. Similarly, overall secure attachment has been found to serve as a protective factor in regard to effects on social competence. For securely attached children ages four and a half to six, parenting quality until age four and half did not mediate the relationship between attachment and social competence, while in insecurely attached children, behavior was more malleable and open to change given parenting quality. When parenting quality increased, behavioral problems decreased, while when parenting quality decreased teacher-rated externalizing problems increased (NICHD Early Child Care Network, 2006).

It appears that overall, the relationship between longer term outcomes of social competence and early attachment are less direct and operate through other relationships and representations. For example, Carlson, Sroufe, and Egeland (2004) found no direct association between early experience and social functioning at age 19, however early experience significantly predicted early childhood representations, which then predicted later self and relational representations and later social behavior. Also, early experiences predicted early childhood behavior that then predicted later social behavior and later self and relational representations. Sroufe et al. (1999) found that factoring in measures of early friendship quality or peer competence often improved the prediction to later friendship quality or peer competence over attachment quality alone. Sroufe and colleagues also noted that by age 5 much of the variance in later adolescent social competence can be accounted for and that intermediate

measures of friendship or peer competence seem less likely to incrementally add to the prediction of social competence by earlier measures.

In summary, there is substantial evidence to suggest that attachment security enhances social competence. It appears that in childhood, individuals learn what to expect from others and how they can best meet their needs and act socially. When children continue to use maximizing or minimizing strategies, they are less able to be flexible and competent with peers. Longitudinal evidence suggests that the relationship between longer term outcomes of social competence and attachment security/insecurity is less direct and operates through other relationships and representations. There is evidence to suggest that attachment security impacts close peer relationships more strongly than peers in general. Family risk factors must also be taken into account when studying the relationship between attachment and social competence. Additionally, more research is needed on the attachment relationship of mother versus father and how each of these attachment relationships effect children's friendships and peer competence as well as later outcomes. It is also not clear how these two relationships may differ by the sex of the child.

Attachment and emotion regulation, help-seeking, and communication

There is evidence supporting the importance of the attachment relationship in learning how to regulate one's emotions. It seems infants look to their caregivers for help in managing stressful emotions, which helps them develop self-regulation strategies. According to researchers (Cassidy, 1994; Sroufe Egeland, Carlson & Collins, 2005a), securely attached infants are flexible in self-regulation strategies when faced with negative emotion and their mothers are accepting of an array of emotional expressions; however this is not true of infants in insecurely attached relationships. Infants in insecure-avoidant relationships are more likely to manage

emotion poorly and minimize direct distress expressions because their caregivers reject these expressions. Expressions of distress are likely maximized in infants in insecure-resistant relationships due to their caregivers responding inconsistently, however more consistently when emotions are intensified. Lastly in disorganized attachment dyads, it is predicted that the poorest management of emotion occurs because there is an absence of predictable emotional and attachment strategies used.

Research has supported that overall children with a history of secure attachment with their mothers are more effective at regulating their emotions than children with insecure attachment with their caregivers. Evidence suggests that the caregiving environment, supporting the creation of the attachment relationship, serves to regulate infant reactivity. For example, mothers who responded sensitively to their six month old infants had infants with typical cortisol reactivity in response to a challenge while infants of mothers that were less sensitive had a blunted cortisol reactivity response (Blair, Granger, Willoughby, Kivlighan, & Family Life Project, 2006). Dawson and colleagues also found withdrawal motivation (reduced right and left frontal EEG activity) in infants with insecure attachment to mothers, secure infants with depressed mothers, and especially in insecurely attached infants with depressed mothers (Dawson et al., 2001).

Also, in young adults and adults**,** evidence suggests attachment style moderates help-seeking behavior as an emotion regulation strategy. Specifically, help-seeking behavior is found more in secure individuals versus insecure individuals whether it is from informal sources (e.g. parents and peers) or formal sources like teachers and counselors (Larose & Bernier, 2001). It has also been found that securely attached undergraduates will seek proximity to symbolic attachment figures such as God when subliminally exposed to separation primes (e.g. “Mother is

gone) in contrast to neutral primes, while insecure individuals are less likely to seek proximity to God using a proximity to God measure (Birgegard & Granqvist, 2004). Similarly, McGowan (2002) found that while waiting to begin a stressful task, it was helpful for securely attached individuals to think about a significant other versus an acquaintance, which lowered their distress, while insecurely attached individuals experienced more distress thinking about a significant other versus an acquaintance.

In addition, Mikulincer and Florian (1997) found that securely attached individuals appear to benefit from supportive interactions when in stress, both instrumentally and emotionally supportive interactions, while insecurely attached individuals did not benefit. These researchers had insecure and secure individuals anticipate handling a snake and found that secure individuals benefited from talking about their emotions regarding the situation as well as talking about tips on how to handle the snake, while these conversations did not help the affective states of insecure individuals. In addition, insecure-avoidant individuals found the emotionally supportive conversations detrimental to their affective states, while insecure-anxious individuals found instrumentally supportive conversations detrimental to their affective states. In two other observational studies, help-seeking behavior of individuals classified as avoidant and anxious in attachment style were studied. In one study, a dating couple were about to separate in an airport (Fraley & Shaver, 1998) and in another study, a dating couple were talking about serious personal problems (Collins & Feeney, 2000). In both studies attachment anxiety was associated with indirect methods of help seeking (e.g. nonverbal signaling like crying and sulking) and did not affect direct requests for partner support and proximity, while attachment-related avoidance was related to less seeking of support and proximity.

Gender differences have also been reported regarding attachment style and help-seeking behavior. For example, Simpson and colleagues studied dating couples and told one of the couple members that in five minutes they would undergo a painful laboratory procedure. They found that avoidant woman did not seek support from their partners when their anxiety was high and tried to distract themselves with magazines. For men, there was no association between help-seeking and attachment style. The researchers accredited this to social norms that can inhibit men from seeking help from women or that the men perceived the experimental task as nonthreatening (Simpson, Rholes, & Nelligan, 1992; Simpson, Rholes, Orina, & Grich, 2002).

Mikulincer and Shaver's review (2007) of the studies above and others on attachment style and help-seeking behavior prompted them to conclude that attachment security fosters help-seeking in more constructive ways whereas attachment insecurity inhibits or interferes with help-seeking. They agreed that avoidant individuals react to threats with preconscious activation of the attachment system and use deactivating strategies to inhibit behavioral expressions of need. They expressed that anxious individuals also show preconscious activation of attachment related thoughts, but this activation of worries regarding rejection and abandonment disorganize their efforts to seek support, and their doubts of others' supportiveness can interfere with direct requests for help, leading these individuals to express need indirectly.

Research has also shown that successful help-seeking can lead to less dependency and autonomy over time. For example, in young adults, a romantic partner's acceptance of proximity seeking and dependence in times of need is associated with less dependence and more self-sufficiency in their partner (B. C. Feeney, 2007). Also, attachment researchers have found with adolescents and parents that when parents are responsive in times of need this helps with adolescent autonomy (Woodhouse, Dykas, & Cassidy, 2009). Because securely attached

individuals rely on more constructive emotion regulation strategies, they can also more effectively deal with the problems of others (Shaver & Mikulincer, 2002a). In line with this finding, securely attached individuals have also been found to be more empathic toward others (Lopez, 2001). Research reveals that there is also an association between secure attachment and constructive, problem-focused coping skills (Mikulincer & Florian, 1998). Individuals classifying themselves as securely attached use compromise and openly discuss problems when dealing with interpersonal conflicts in their close relationships (e.g. Carnelley & Pietromonaco, & Jaffe, 1994; Simpson, Rholes, & Phillips, 1996).

Being better able to regulate their emotional states, secure individuals are also able to express and communicate feelings more freely and accurately to others (Cassidy, 1994). For securely attached individuals, attachment figures have been available and responsive and expressions of negative emotion have often lead to distress relieving responses from caregivers. Evidence has shown that securely attached adults often score higher on measures of emotional expressiveness and self-disclosure (Bradford, Feeney, & Campbell, 2002) and without becoming overwhelmed by negativity (Mikulincer & Orbach, 1995).

Bowlby (1973, 1988) theorized two ways in which internal working models of attachment relations may be communicated or miscommunicated to the child from the caregiver, one way through the quality of interactions and another through open discussion of emotion and relationships. He described how a child with resistant (anxious) attachment may not only be uncertain about parental support, but also experience distorted parental pressures whereby they adopt the caregiver's false models, for example to act as a caregiver to the parent. In contrast, a child with secure attachment experiences unfailing parental support and consistent yet timely encouragement towards increasing autonomy. These individuals are able to learn more valid

working models of themselves and others that are also open to be revised and questioned. In relation, Newcombe and Reese (2004) found that mothers that were classified as having a secure relationship with their infants versus insecure used more evaluative language with their children and their children also used more evaluative language than their insecure peers. Cassidy and Berlin (1999) found evidence that parents of secure children may directly facilitate their children's positive relationships with others by providing the children with more social experiences, which may in turn increase opportunity for practicing social skills and making friends. They also direct and advise children in ways that help them develop and maintain positive relationships and serve as role models of sensitive and supportive behavior toward others. A mother's discussion of emotions with her children helps in their social competence and relationships with others.

On the other hand, anxiety and avoidance has been associated with lower communication competence meaning less assertiveness, less interpersonal sensitivity, and less self-disclosure in relationships (Anders & Tucker, 2000). Secure individuals are more likely to use problem solving and compromise when trying to resolve a conflict, while insecure-anxious individuals oblige more than insecure-avoidant individuals (Pistole, 1989). Avoidant individuals probably have trouble with problem-solving because this requires them to be more open-minded, deal with frustration, and uncertainty, and not block memories or thoughts related to attachment (Mikulincer, 1997). Secure individuals are also more likely to openly express their feelings both positive and negative (J.A. Feeney, 1995, 1999), and have more flexibility in self-disclosure depending on the person and situation. Secure and insecure-anxious individuals overall self-disclose more than insecure-avoidant individuals (Keelan, Dion, & Dion, 1998; Mikulincer & Nachshon, 1991). It has also been reported by Roisman and colleagues (2004) that secure

individuals express and report emotion consistent with their childhood experiences, while anxious individuals can show reliable discrepancies and avoidant individuals show emotional suppression. Avoidant individuals try to block emotional states related to threatening thoughts because the thoughts can activate unwanted attachment-related memories, behaviors, and needs. Furthermore, avoidant individuals often view negative emotions as a sign of weakness that does not fit with their desire to be self-reliant (Main 1990; Mikulincer & Shaver, 2003; Shaver & Mikulincer, 2002a, 2002b). In addition, insecure-anxious individuals seem to have difficulty differentiating and identifying specific feelings (e.g. Kim, 2005).

Attachment and cognition

Often related to emotion regulation, cognitions are also affected by attachment security/insecurity. According to attachment theory, interactions with available, responsive, and sensitive attachment figures help to create positive beliefs about others and the self. This relational process starts with the appraisal of responsiveness and sensitivity of the attachment figure and forming positive beliefs and expectations about their good intentions and qualities. When an individual receives regular sensitivity and responsiveness from an attachment figure, they become confident that their trust will not be betrayed and that their expressions and needs will be heard and met without negativity or abuse. As a result of attachment security, as adults, individuals are more likely to have positive expectations about their partners' behavior (Baldwin, Keelan, Fehr, Enns, Koh-Rangarajoo, 1996). As a result of attachment security, individuals learn to view themselves as competent and able to mobilize social support in times of need. This leads to confidence and feeling able to overcome challenges and deal with distress. More secure individuals tend to perceive themselves as lovable and valuable since they were loved and valued by attachment figures.

Avoidant individuals on the other hand, have had frustrating interactions with unavailable, unresponsive or disapproving attachment figures. They have learned that displaying distress leads to rejection or punishment. As a result they are likely to doubt the general goodness of the world and the intentions of others (Cassidy, 1994). Anxious individuals have received unreliable care or attachment figures have been unavailable and they have endured negative interactions with their caregivers. They hold negative beliefs about themselves and the world and can overgeneralize and apply cognitive biases to new situations that continue to hyperactivate the attachment system. They may view themselves as helpless and incompetent to control painful thoughts and feelings.

In relation, secure individuals in contrast to insecure-anxious individuals report higher self-esteem (Bartholomew & Horowitz, 1991; Mickelson, Kessler, & Shaver, 1997). Because securely attached individuals feel good about themselves, there is less a need for them to defensively inflate their self-esteem as avoidant individuals are more likely to do. In addition, Mikulincer studied securely attached adults and found that they were able to easily call to mind both positive and negative aspects of themselves and integrate them into their self-structure, while insecure-avoidant adults showed poor access to negative self-attributes and did not integrate negative aspects of themselves very well into their self-structure. In contrast, insecure-anxious individuals have ready access to negative emotions and thoughts and have impaired control of the spreading of activation from one negative memory to another (Mikulincer & Orbach, 1995).

In another study, insecure-avoidant individuals made more implicit and explicit positive self-appraisals following threatening situations in comparison to neutral situations. In contrast secure individuals did not differ in self-appraisals across threatening and neutral situations

(Mikulincer, 1998). Bowlby (1980) had the idea that avoidant individuals could not segregate thoughts outside of conscious awareness indefinitely and that stress and trauma can reactivate thoughts and feelings that had been sealed off. Mikulincer, Dolev, & Shaver (2004) found that avoidant individuals were able to suppress thoughts related to a break-up and increase access to positive self-traits, however their thoughts changed when their cognitive load increased (had to remember a seven-digit number). Under the high cognitive load condition, avoidant individuals had ready access to negative self-traits and thoughts of separation. Under threatening situations, secure individuals had heightened access to security-based self-representations that had a soothing effect. In other words, they are able to mobilize caring qualities within themselves as well as representations of being valued and loved especially in times of distress unlike their insecurely attached peers (Mukulincer and Shaver, 2004).

In line with the above findings, Bowlby wrote in 1980 that individuals select environments that support their beliefs about themselves and others. He indicated that individuals have information processing biases that lead them to interpret social events in ways supporting their existing models, and those individuals' working models affect their behavior in ways that perpetuates their models. He did note, however, that when the social environment disconfirms their expectations, changes to their model can occur (for better or for worse depending on the experience).

Attachment and psychopathology

Bowlby (1973, 1980) thought that children become more susceptible to psychopathology when they either have negative representations of themselves and others or used strategies for processing thoughts and feelings about attachment that did not allow them to realistically appraise situations. Attachment researchers have found associations between secure attachment

to parents or romantic partners and lower levels of negative affect and less severe psychiatric symptoms (Mikulincer & Shaver, 2007). In contrast, the secondary attachment strategies most often used by individuals with insecure attachment appear to act as risk factors that contribute to emotional problems and poor adjustment (Bowlby, 1988; Mikulincer & Shaver, 2003). There are hyperactivating and deactivating strategies. Hyperactivating strategies often employed by insecure-anxious individuals involve thoughts and behaviors that intensify distress and impair an individual's ability to think clearly and regulate their emotions, which can result in psychopathology. Interpersonally, intensifying emotions can make relationships with others overbearing and chaotic. Deactivating strategies, often employed by insecure-avoidant individuals, entail blocking access to emotions and suppressing the conscious experience and display of distress. Under these circumstances, distress can manifest into somatic complaints, sleep disturbances, and other health issues. Interpersonally, distance and negativity in close relationships can result in unresolved hostility, loneliness, and estrangement from others.

Researchers working on the Minnesota Parent-Child Project (e.g. Sroufe et al., 2005) as well as researchers doing follow-up assessments (e.g. Carlson, 1998; Erickson, Sroufe, & Egeland, 1985; Sroufe, 1990; Urban, Carlson, Egeland, & Sroufe, 1991) have found that children with early insecurity in high social-risk environments are significantly more likely to have more symptoms of aggression, depression, and poor relations with peers than children with early security. Other researchers (Easterbrooks, Davidson, & Chazan, 1993) have also found that children classified as insecure at age seven had significantly more externalizing and internalizing problems even after family risk factors were accounted for. Shaw and colleagues (Shaw & Vondra, 1995; Shaw, Keenan, Vondra, Delliquadri, & Giovanelli, 1997) found that insecure infant attachment at 12 months was uniquely associated with parent-rated behavioral problems

on the CBCL at age five; an ambivalent (anxious) classification was predictive of internalizing problems, while disorganization was predictive of externalizing problems.

A number of studies have found an inverse relationship between attachment anxiety and well-being, as well as a positive relationship with self-reports of anxiety, global distress, depression, eating disorders, substance abuse, and personality disorders such as borderline personality disorder (Mikulincer & Shaver, 2007). Sroufe (1983) also proposed that insecure-ambivalent (anxious) children can also develop externalizing problems as a result of being overstimulated, impulsive, restless, or due to low frustration tolerance.

Associations between anxious attachment and psychiatric symptoms have been found across the lifespan and in different samples including the community, inpatients, and outpatients. Among preschoolers, it was found that children with anxious mothers and insecure attachment were more likely to have internalizing problems and symptoms of anxiety. Behavioral inhibition was associated with somatic complaints (Manassis, Bradley, Goldberg, Hood, & Swinson, 1995). Similarly, Shamir-Essakow and colleagues (2005) looked at the relationships between insecure attachment (in Strange Situation), behavioral inhibition (maternal self-report), and anxiety disorders in an at-risk, preschool-age sample. Both insecure attachment and behavioral inhibition were unique and significant predictors of anxiety after maternal anxiety was controlled for. The children with the highest anxiety levels were behaviorally inhibited, insecurely attached (overall classified as avoidant or disorganized), and had mothers with anxiety.

Follow-up reports from the Minnesota project have examined infant attachment and later clinically significant anxiety symptoms in childhood and adolescence. Warren and colleagues studied 172 adolescents who has been observed in the Strange Situation as infants and found that insecure-resistant (anxious) attachment predicted a diagnosis of an anxiety disorder in

adolescence over reports of maternal anxiety and child temperament (Warren, Huston, Egeland, Sroufe, 1997). Twenty-eight percent of ambivalent (insecure-anxious) infants developed anxiety disorders in comparison to 16% of avoidant and 11% of secure infants. Looking at overall rate of any disorder (not just anxiety disorders), the avoidant group was most likely to have a disorder; secure and ambivalent (anxious) groups were not significantly different from one another. In another follow-up study, Bosquet and Egeland (2006) found that infant attachment predicted negative peer relationship representations in preadolescence, which predicted later anxiety symptoms in adolescence. They also found that attachment history was moderately correlated with an anxiety rating at age 16.

Regarding attachment avoidance, significant associations have been found between avoidance and types of depression, somatic complaints, substance abuse, conduct disorder, and schizoid and avoidant personality disorder. For example, Burgess and colleagues (2003) studied insecure-avoidant infants who were also low in inhibition and found that at 3 years of age these children scored higher than all other attachment-inhibition groups on externalizing behavior (especially aggression) on the CBCL. According to Bowlby (1973), an insecure-avoidant child learns to express anger in response to a caregiver's unresponsive and intrusive behavior and acts out as a way to reduce proximity to the caregiver. They redirect their anger toward the environment and this can result in aggressive and hostile behavior. Aguilar, Sroufe, Egeland, and Carlson (2000) also found that adolescents with early-onset in contrast to late-onset antisocial behavior and non-disordered youth were more likely to be rated as avoidantly attached as infants. There have been no consistent associations in community samples between avoidant attachment and global distress; however under highly demanding situations, avoidance has been

associated with higher levels of reported distress presumably because this deactivating strategy does not suffice (e.g. Berant et al., 2001).

Main and Hesse (1990) proposed that a disorganized infant is frightened by their caretaker who themselves is probably traumatized, and as a result the child is unable to organize a strategy to deal with fear and inconsistent behavior from the caretaker. Egeland and Carlson (2004) describe the child being in an "unresolvable paradox" because the caretaker is the source of fear and safety. They noted that the child is unable to regulate his or her own arousal or recruit support from the caretaker, and may mentally isolate or not process traumatic stimuli, and may dissociate. It is also important to consider that disorganized infants are often at-risk prenatally as well as postnatally.

The relationship of infant attachment and trauma to symptoms of dissociation in 17 and 19-year-olds was studied by Ogawa, Sroufe, Weinfeld, Carlson, and Egeland (1997) and Carlson (1998), follow-up studies of the Minnesota project. These researchers found that avoidant and disorganized classifications in infancy predicted clinical symptoms of dissociation in adolescence and years later in young adulthood. These authors reported that their results supported the link between early disorganization and trauma to dissociative disorders later in life. In other longitudinal investigations, disorganized infant attachment has been associated with hostility towards peers and adults in preschool (Lyons-Ruth, Zoll, Connell, & Grunebaum, 1989; Lyons-Ruth, Easterbrooks, Davidson, Cibelli, & Bronfman, 1995 as cited by DeKlyen & Greenberg, 2008; Lyons-Ruth, Easterbrooks, & Cibelli, 1997). It was found that 71% of hostile preschoolers were classified as disorganized at 18 months, while 12% were classified as secure. In addition, mothers with psychosocial issues that also had children with disorganized attachment in infancy had a 55% rate of hostile behavior in kindergarten versus a 5% rate in low-

income children without either risk factor. The combination of insecure attachment and low infant intelligence was also predictive of teacher-rated externalizing problems at age 7 (Lyons-Ruth et al., 1995 as cited by DeKlyen & Greenberg, 2008). They found that 50% of the disorganized, low infant intelligence group showed externalizing problems in contrast to 5% with neither risk factor in their sample. Other studies have also found that disorganized attachment was associated with externalizing behavior, such as higher levels of anger in infancy and aggressiveness in preschool and early school-age (van IJzendoorn, Schuengel, Bakermans-Kranenburg, 1999), while other researchers have found an increased risk for internalizing problems during childhood and adolescence (Carlson, 1998).

In regard to specific forms of psychopathology, Duggal, Carlson, Sroufe, & Egeland (2001) have found that insecure attachment including both resistant/anxious and avoidant, predicts depression. In addition, it has been found that the death of a parent in childhood increases the child's risk of depression (e.g. Harris, Brown, & Bifulco, 1990). These findings are in line with Bowlby's theory (1980) of the development of depression. He indicated that when a child loses a parent and feels despair, a lack of control, a sense of hopelessness, sees themselves as a failure, or is told by a parent they are a failure or unlovable, these circumstances increase the risk of later depression.

Complex findings have been found regarding depression and attachment states of mind using the AAI. Many factors are important to consider including disorders co-morbid with depression and types of depression. Some studies find more of a relationship between unipolar depression and preoccupied/anxious states of mind, while others find an association between depression and dismissing/avoidant states of mind (e.g. Fonagy et al., 1996; Patrick, Hobson, Castle, Howard, & Maughan, 1994). One study by Rosenstein & Horowitz (1996) found an

association between affective disorders (i.e. major depression disorder, dysthymia, and schizoaffective disorder) excluding externalizing disorders was associated with preoccupied states of mind. Fonagy and colleagues (1996) found that participants with bipolar disorders were more likely to have dismissing state of minds in comparison to participants with other mood disorders.

Regarding anxiety disorders, the Minnesota Study of Risk and Adaption from Birth to Adulthood (Bosquet & Egeland, 2006; Warren, Hutson, Egeland, & Sroufe, 1997) found that infants with resistant/anxious attachment were significantly more likely to be diagnosed with anxiety disorders at age 17. Even when temperament was controlled for, resistant attachment predicted later anxiety disorders (Warren et al., 1997). Bowlby (1973) proposed that most forms of anxiety disorders were best accounted for by the anxiety caused by the lack of availability of a caregiver and family environments that were associated with rejection and or over protection of the child. In relation, Brown and Harris (1993) studied patients with panic disorder and found that these patients more frequently experienced an extreme lack of caregiving and early loss of a caregiver than those participants without a psychiatric diagnosis. Similarly, Fonagy and colleagues (1996) found that the majority of participants with anxiety disorders were classified as preoccupied on the AAI and what differentiated this clinical group from others was that they also were more likely to be classified as unresolved and report more loss or trauma. Cassidy (1995) found that participants reported more role reversal and rejection from their parents if they were diagnosed with generalized anxiety disorder than if they did not report generalized anxiety symptoms.

Reviewing the literature on dissociative symptoms, results from the Minnesota longitudinal study indicated that infant disorganization was associated with higher teacher

ratings of dissociative symptoms in elementary school, high school, and adulthood (Carlson, 1998). Infant disorganization also predicted more self-reported dissociative symptoms at age 19 (Carlson, 1998) and into adulthood (Sroufe et al., 2005a). In another longitudinal study conducted by Dutra and Lyons-Ruth (2005) as cited by Dozier, Stovall-McClough, and Albus (2008), it was found that the strongest predictors of dissociative symptoms in adolescence were disorganization in infancy, disrupted affective communication with the mother, and maternal neglect.

Borderline personality disorder entailing emotional dysregulation and difficulty with impulse control, empathy, and self-awareness has been found to be associated with higher rates of prolonged separations from caregivers in childhood (Zanarini, Gunderson, Marino, Schwartz, & Frankenburg, 1989) and emotional neglect (Patrick et al., 1994; Zanarini et al., 1989). One longitudinal study by Lyons-Ruth and colleagues (2005) found that early attachment status did not predict later borderline disorder, rather early maltreatment and disrupted communication between the parent and infant was associated with a greater likelihood of developing borderline symptoms. Fonagy and colleagues (1996) looking at borderline personality disorder and states of mind on the AAI found that 75% of those individuals with borderline personality disorder were classified as preoccupied using the three-way classification system; using a four-way classification system 89% of individuals with borderline personality disorder were classified as unresolved.

Later transactional processes, in addition to early attachment insecurity, have also been found to increase the risk of maladaptive symptoms. For example, Erickson, Sroufe, and Egeland (1985), found that secure infants with later behavioral problems had less supportive mothers at 24 and 42 months of age, and at 42 months mothers that were less effective teachers

in comparison to mothers of the secure group without later behavioral problems. The mothers of the children with behavioral problems also reported more disorganized and confused mood states than the mothers of the secure children without later behavioral problems. Among the insecurely attached group, insecure infants who did not develop later behavioral problems had mothers at 42 months who were more supportive, warm, involved, and set more appropriate limits than the mothers with insecurely attached infants who later developed behavioral problems. In conclusion, it is important to keep in mind that insecure attachment alone is not a measure of psychopathology, but that insecure attachment along with other risk factors may increase the risk of psychopathology.

Attachment and NSSI behavior

As discussed previously, the attachment relationship appears to be important in regard to the development of emotion regulation and beliefs about the self and others (e.g. Bowlby, 1973, 1980; Sroufe et al., 2005a). Attachment insecurity has also been associated with emotional dysregulation, less social competence, and less effective help-seeking behavior (e.g. Mikulincer & Shaver, 2007; Sroufe et al., 1999; Sroufe et al., 2005a). In addition, individuals that engage in NSSI have been found to be experiencing high levels of emotional dysregulation and difficulty communicating with others (e.g. Adrian et al., 2011; Hilt et al., 2008). Noticing some of the similarities between individuals with insecure attachment and individuals engaging in NSSI, some researchers have begun studying the role insecure attachment may play in NSSI behavior. For example, Yates (2003) expressed that attachment theory yields distinct hypotheses in regard to NSSI. One, insecure attachment may leave a child vulnerable to NSSI in later development due to the child adopting negative expectations of the self and others, hence isolating the child from social supports, particularly after traumatic or stressful events occur. Second, disorganized

attachment could be one mechanism by which trauma experienced in the caregiving relationship manifests into adaptational vulnerabilities, such as dissociation, that contribute to later NSSI.

In a study by Yates, Carlson, and Egeland (2008), child-maltreatment and NSSI in a community sample (ongoing participants of the Minnesota Longitudinal Study of Parents and Children at age 26) were researched. The authors conceptualized NSSI as a "compensatory regulatory strategy in posttraumatic adaptation." They tested how child-maltreatment may cause defensive strategies such as somatization and dissociation to solidify into pathology that leaves the individual vulnerable to body-based ways of regulating themselves such as NSSI. The researchers found that child sexual abuse predicted recurrent injury (i.e., three or more events) subserving more intrapersonal functions (e.g. to alleviate emotional pain) whereas child physical abuse appeared more salient for intermittent injury (i.e., one to two events) subserving primarily interpersonal functions (e.g. to make someone angry). Moreover, these relations appeared largely independent of risk factors that have been associated with child maltreatment and/or NSSI, including child cognitive ability, socioeconomic status, maternal life stress, familial disruption, and childhood exposure to partner violence. Dissociation and somatization were related to NSSI and, to a lesser degree, child maltreatment. However, only dissociation emerged as a significant mediator of the observed relation between child sexual abuse and recurrent NSSI.

In a another study by Kimball and Diddams (2007) of attachment and NSSI among a sample of undergraduate college students, it was found that an insecure attachment style can act as a risk factor for NSSI and that affect regulation strategies (i.e. oral passivity/somatic strategies like binging on food and sexual and aggressive fantasies and behaviors such as engaging in reckless behavior) can mediate the relationship between insecure attachment style and NSSI. Similarly, Hallab and Covic (2010) found that undergraduates that self-injured were more likely

to have lower scores on the perceived quality of relationships with their mothers and fathers in areas of trust, communication, and alienation than undergraduate non-self-injurers. The students' self-reported levels of stress appeared to mediate the relationship between parental relationships and NSSI.

Marchetto (2006) studied patients presenting to the accident and emergency department in a hospital in the United Kingdom and recruited two groups, one, patients that had experienced trauma and engaged in nonsuicidal cutting and second, those who engaged in nonsuicidal cutting, but had no history of trauma (i.e. loss, separation, neglect, physical abuse, and/or sexual abuse). For the second group, matched control groups were created. It was found that the majority of the sample had experienced trauma. The non-trauma sub-sample was given the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979) and it was found that it did not distinguish between the patients in this sample with borderline personality disorder that engaged in nonsuicidal cutting versus did not. Scores on the measure did distinguish between patients without borderline personality disorder that engaged in nonsuicidal cutting versus patients without borderline personality disorder that did not cut. The patients without borderline personality disorder that engaged in cutting themselves had lower scores on maternal care and higher scores for both parents regarding overprotection in comparison to the non-borderline group that did not engage in cutting themselves. In relation, a study by Olfson, Marcus, and Bridge (2012), which examined Medicaid patients engaging in NSSI coming into the emergency department, found that the majority of patients were discharged to the community without follow-up mental health care (especially African Americans and Hispanics) and about half of patients did not receive mental health assessments while in the hospital.

Rossow and Wichstrom (2010) surveyed adolescent students ages 14 to 19 in Norway for deliberate self-harm behaviors with and without suicidal intent. They found that male students, students with poorer parental attachment using the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979), and students with no history of a suicide attempt reported less help-seeking behavior. Female students, students reporting a suicide attempt, and students with higher parental attachment scores were more likely to report receiving help from multiple sources, formal and informal. In general, adolescents receiving help from their parents and friends were more likely to seek help from professional sources.

Stepp and colleagues (2008) studied the relationships between adult attachment styles, interpersonal problems, and categories of suicide-related behavior (self-harm, suicide attempts, combination of both, and no suicide-related behavior) in a combined sample of students, outpatients, inpatients, and medical patients. They found that anxious attachment predicted increased membership in the self-harm, suicide attempt, and combined groups vs. the no suicide-related behavior group. Attachment avoidance decreased the risk of being in the combined self-harm and suicide attempt group. Interpersonal problems was found to be a mediator between attachment and suicide-related behaviors, specifically higher anxious attachment predicted interpersonal sensitivity (feeling easily hurt or rejected) interpersonal aggression, and lack of sociability, which was associated with suicide-related behavior. Avoidant attachment and lack of interpersonal sensitivity was associated with membership in the combined self-harm and suicide attempt group. Regarding self-harm, individuals with anxious attachment and high interpersonal sensitivity were more likely to engage in self-harm and combined self-harm and suicide attempts; those with anxious attachment and low interpersonal aggression (not asserting their needs) were also more likely to be in the self-harm and combined self-harm and suicide attempt

groups. Attachment anxiety and lack of sociability predicted membership in the suicide attempt only group.

Wright, Briggs, and Behringer (2005) studied a small sample of adolescents attending outpatient psychotherapy. Adolescents were placed in one of three groups, the high suicidal risk group (combined all self-harm), low suicidal risk group, and control group. Members of the high suicide risk group were more likely to be classified as preoccupied using the Adolescent Separation Anxiety Interview, while members of the low suicide risk group were classified across all attachment classifications of secure, preoccupied, and dismissing. Control group participants were more likely to be classified as securely attached. Participants in the high suicidal risk group were found to have the lowest scores on emotional openness, optimism, and coherence and solution scores from the interview. In other words, they gave the least emotionally open, most pessimistic, most incoherent, and most self-destructive solutions to separation anxieties. In addition, the researchers found through qualitative analysis, that adolescents' descriptions of their bodies were also related to attachment style. For example, attachment anxiety was associated with a lack of control over the body or being preoccupied with appearance.

Gratz and colleagues (2002) studied risk factors for NSSI including insecure attachment in undergraduates and found different risk factors for men and women. For women, paternal insecure attachment and emotional neglect by both parents were risk factors, however for fathers, lack of emotional neglect or likely overinvolvement predicted NSSI. For men, childhood separation, in most cases separation from fathers predicted NSSI. These researchers suggested that childhood loss and physical neglect needed further study as risk factors for NSSI for men. Similarly, Gratz and Chapman (2007) studied NSSI in undergraduate men and found that

childhood physical abuse and emotion dysregulation distinguished men with frequent self-harm from men without a history of self-harm. Among men with a history of self-harm, emotion dysregulation was associated with more frequent self-harm. However, contrary to predictions, higher affect intensity/ reactivity was associated with less frequent self-harm (controlling for emotional dysregulation, emotional inexpressivity, and child maltreatment). The authors suggested that this finding may mean that men who have acceptance of their emotions may be less likely to self-harm themselves. Overall, their findings suggested that child maltreatment may be critical to the development of NSSI, however once NSSI begins emotional dysregulation may be more important in maintaining the behavior in men. In addition, acceptance of emotions may serve as a protective factor against NSSI in men. Gratz (2006) also studied risk factors for NSSI in female undergraduates and found that childhood maltreatment, emotional inexpressivity, low positive affect intensity/reactivity, and the combination of all three factors distinguished women who self-harmed from those without a history of self-harm. These same risk factors and the combination of them also predicted increased frequency of self-harm among the women in the sample endorsing NSSI or self-harm. The previous three studies highlight the differences in risk factors for NSSI between men and women.

In a study by Yates, Tracy, and Luthar (2008) specifically parental criticism was hypothesized to undermine privileged adolescents' representations of others, thereby prompting them to turn toward the self and the body (through NSSI), rather than to others, in times of challenge or distress. Alternatively, these authors also studied whether parental criticism would prompt adolescents to turn on others by measuring delinquent behavior (i.e. rule-breaking behavior). In general, it was supported that self-reported parental criticism via negative relationship representations (i.e. self-reported parental alienation) predicted NSSI behavior in

both a cross-section and longitudinal sample. It was also found that self-reported parental criticism via negative relationship representations (i.e. self-reported parental alienation) predicted rule-breaking behavior.

Wedig and Nock (2007) also looked at aspects of the parent-adolescent relationship and NSSI. They specifically examined parental expressed emotion (EE) toward the adolescent and adolescent self-injurious thoughts and behaviors (SITB). They found that EE was associated with each type of SITB assessed: suicide ideation, suicide plans, suicide attempts, and NSSI. Interestingly, analyses revealed that one specific component of EE (i.e., parental criticism) was strongly associated with SITB, whereas the other component (i.e. emotional overinvolvement) was not and that the relationship between EE and SITB was not explained by the presence of mental disorders. Finally, a moderation model was supported in which the relationship between parental criticism and SITB was especially strong among adolescents with a self-critical cognitive style.

Taking together the literature reviewed on attachment and NSSI, there is evidence that insecure attachment and forms of maltreatment distinguish individuals who self-harm from those who do not. In addition, different factors have been found to mediate this relationship such as emotional dysregulation, dissociation, stress, interpersonal sensitivity, a lack of interpersonal aggression, and perceived parental alienation. A self-critical negative style of thinking has also been found to moderate this relationship. In some cases, different risk factors for NSSI have been found for men and women.

Hypotheses

1. It was hypothesized that students engaging in NSSI behavior in comparison to students that do not would report less benevolence, warmth, and constructive

involvement on a parental narrative. It was predicted that they would also report that their primary parental figure was more judgmental and have an overall less positive ideal of their parent. The length of narratives was also studied to see if there was a relationship between length and the other narrative characteristics for each group of participants.

2. It was expected that students in the NSSI group would have higher scores on self-reported parental lack of care and overprotectiveness variables than students in the comparison group.
3. Regarding peers, it was expected that students in the NSSI group would have lower self-reported scores on peer relationship quality (lower scores representing less trust, poorer communication, more alienation) than the comparison group.
4. Students in the NSSI group were also expected to score higher on attachment avoidance and attachment anxiety than the comparison group.
5. The NSSI group was expected to endorse more emotional dysregulation, more ambivalence expressing emotion, more emotional reactivity, more trauma, more dissociation, less investment in their body (e.g. investment of appearance and comfort with physical contact), less communication competence, more social desirability, experience less positive affect, experience more negative affect, and specifically experience more shame and guilt than the comparison group.
6. It was expected that the NSSI and comparison group would not differ in age, gender, ethnicity, or mental health history.
7. It was expected that the above social and emotional variables would significantly predict membership into the NSSI versus comparison group, especially well

studied variables in the NSSI literature such as emotional dysregulation, parental care, shame, trauma, and dissociation. It was also expected that anxiety and avoidance attachment style scores would significantly predict group membership since it was expected that students in the comparison group would endorse less anxiety and avoidance in close relationships indicative of a more secure attachment style.

A qualitative analysis of the NSSI group was also conducted looking at help-seeking behavior with mental health professionals, social contagion behavior in person and over the internet, and NSSI characteristics. It was expected that there would be low percentages of help-seeking behavior and high percentages of social contagion behavior (in person plus over the internet). NSSI characteristics (i.e. frequency, age of onset, type of NSSI, function of NSSI, body location, tools used, NSSI cognition, and involvement with alcohol, suicidal ideation, and suicide attempts) were collected.

CHAPTER 2

METHODS

Participants

Pre-screen questions were piloted with 1,534 participants. Prescreen questions were revised to get more detailed information about the nature and frequency of NSSI. Two thousand, four hundred and forty-eight participants were pre-screened for NSSI through nine pre-screen questions (see Appendix) administered through the Wayne State University Psychology Department SONA system as part of a larger mass screening across winter, summer and fall semesters. Two hundred and thirty participants endorsed engaging in at least one incident of NSSI and met criteria. Gratz's (2001) explanation and examples of NSSI were used as way to identify NSSI. Two hundred and thirty-two participants declined to answer and twenty participants endorsed engaging in NSSI, but did not meet criteria or declined to answer what they did that they classified as NSSI. Two participants did not give responses that made sense or clearly answered the pre-screen questions about engaging in NSSI. One hundred and fifty-one participants meeting pre-screen criteria for NSSI were notified through an email they provided through the SONA system about the study opportunity. Thirty were not invited as the end goal of 50 NSSI participants had already been recruited and there would not be time to recruit any additional participants and comparison group participants in the remaining study semester. Other potential NSSI participants were not invited because they were not at least 18 or were not taking a course allowing extra credit. A few potential NSSI participants endorsed not being interested in research opportunities related to NSSI on the pre-screen and were not sent a study email during the first few weeks of recruiting. However after this point, it was realized that participants answering the prescreen question about interest were not aware of the online nature

of the study and were sent an email like other potential NSSI participants containing this information so they could have the opportunity to participate which result in many of these students being interested. Out of the 151 participants sent an email about the study, 69 replied with interest and were given a password to sign up for the study and 56 participants consented and completed the study.

Regarding comparison participants, 1,964 participants across the three semesters denied ever engaging in NSSI and were potential comparison group participants. Participants in the comparison group were chosen as NSSI participants completed the survey per semester so it was likely that the two groups would not significantly differ in age, gender, race/ethnicity, or history of mental health treatment based on screening responses of the mass screening. One hundred and eighty-one of these participants were invited by email. Many comparison participants were not invited, especially the first semester, as NSSI participants needed to be invited first. After each semester ended, the majority of participants were not eligible the following semester (no longer eligible to earn extra credit). Also many comparison participants did not compare to the recruited NSSI participants at a given time (e.g. had no history of mental health treatment). Of the 181 participants, 84 responded with interest and were given a password to sign-up for the online study via the online Wayne State University Psychology Subject Pool SONA system. Fifty-two comparison participants consented and completed the study.

When study participants signed up in SONA, they then had access to a study link to Qualtrics that gave them information about the survey and consenting and could leave an email in which the online survey could be sent to them. Once participants consented to the study and confirmed an email address, the online survey in Qualtrics was sent to them. One-hundred and eight Wayne State University undergraduates (56 NSSI and 52 comparison group participants)

completed the online survey through the Psychology Department online SONA system and Qualtrics.

Two participants in the NSSI group were not included in analyses after completing the Qualtrics survey. Survey information revealed that their behavior no longer met criteria for NSSI (e.g. accidentally cutting oneself while preparing food). Four other participants in the NSSI group denied NSSI on the survey after initially screening positive for NSSI on the pre-screen. They were not included in final analyses as they reported no additional information about NSSI due to denying it and as a result it was less clear whether these students actually engaged in NSSI. Two participants in the comparison group were not included in analyses due to reporting NSSI. After excluding these students, 50 students were included in the final NSSI group and 50 students were included in the final comparison group as sought after before recruitment began.

In the NSSI group, 86% of the participants reported their gender to be female and 14% male and in the comparison group 84% as female and 16% male; no significant relationship between group and gender was found $\chi^2(1, N = 100) = .08$, $p = .779$. Regarding age, no significant difference was found between the NSSI and comparison group $t(98) = -.591$, $p = .556$. The mean age and standard deviations between the NSSI group (M = 21.26, SD = 4.12) and comparison group (M = 21.76, SD = 4.34) were very similar. Age ranged between 18- 41 in the NSSI group and 18-40 in the comparison group. In the NSSI group 64% reported their race/ethnicity as White/European American, 12% as Asian, 10% as Black/African American, 6% as Multiracial, 4% as Hispanic, 2% as Native American, and 2% as Arab/Middle-Eastern. Similarly in the comparison group, 70% reported their race/ethnicity as White/European American, 10% as Black/African American, 8% as Asian, 6% as Hispanic, 4% as Multiracial and

2% as Arab/Middle-Eastern. Since six or less participants reported race/ethnicity in the following categories per group, Asian Multiracial, Hispanic, Native American, and Arab/Middle Eastern, these participants were collapsed/combined together into a third category so a chi-square test could be performed regarding group and ethnicity. No significant relationship resulted between group and race/ethnicity (White/European American, Black/African American, Combined), $\chi^2(2, N = 100) = .53$, $p = .769$. Regarding reported mental health treatment, 72% of participants in the NSSI group reported that they had engaged in mental health treatment before, while 28% denied any treatment. In the comparison group, 70% reported having engaged in treatment, while 30% denied any treatment. No significant relationship was found between group status and mental health treatment, $\chi^2(1, N = 100) = .05$, $p = .826$. Group membership was not found to have a significant relationship with gender, age, race/ethnicity, or mental health treatment using chi-square tests. Undergraduate participants received course credit for their participation. The pre-screening and online survey received approval from the Institutional Review Board at Wayne State University.

Measures

NSSI Survey

The NSSI survey was created by the author to examine a range of NSSI related behavior not possible by any existing measure. The NSSI survey consists of questions pertaining to characteristics of NSSI behavior (i.e. methods, frequency, triggers), NSSI cognitions, help-seeking behavior with mental help professionals as well as friends (includes internet), and social contagion behavior. Responses to the survey were open-ended. A very similar binge eating survey was created for the comparison group so both the NSSI groups and comparison groups answered similar numbers and types of questions (see Appendix).

Inventory of Statements about Self-Injury- Section 2 (Klonsky & Glenn, 2009)

The Inventory of Statements about Self-Injury (ISAS) section 2 assesses functions of NSSI. This section contains 39 items that are answered on a scale from 0-2 (not relevant to very relevant). Participants can also add their own functions in an open-ended manner at the end of the measure. Coefficient alphas for the intrapersonal and interpersonal subscales have been found to be .80 and .88, respectively. The author adapted this measure so it could also be administered to the comparison group so both groups answered similar numbers and types of questions.

Parental Figure Narrative

A narrative exercise similar to the one used by Blatt, Wein, Chevron, and Quinlan (1979) was used in this study to measure parental characteristics. Respondents read, "For five minutes, please describe your mother OR whoever is your primary parental figure. Please also include this person's relation to you (e.g. father) in your description." The parental narrative characteristics rated were malevolence-benevolence, cold-warmth, constructive involvement, judgmentalness, and negative-positive ideal of the parent. If characteristics were present they were scored on a scale from 1 to 7 based on an unpublished research manual by Blatt, Chevron, Quinlan, Schaffer, and Wein (1988). The length of the narratives was also rated on a 7 point scale. If a characteristic was not present it was scored a 9. According the manual, when two judges scored the narratives on the above characteristics the correlations between their scores ranged from .77-.92.

Parental narratives were scored based on the unpublished research manual by Blatt, Chevron, Quinlan, Schaffer, and Wein (1988). Four raters became familiar with the scoring system and practiced using a number of examples provided in the manual (specifically 27 from a

college population) along with a sub-sample of 10 narratives from the study. Raters were blind to what group each narrative belonged to. Inter-rater reliability was calculated using intraclass correlations using a two-way random model with absolute agreement and single measures ICC(2,1). Scores of 9 in which a characteristic was deemed not present were given a median score of 4. As described below, feedback was given and reliability was monitored throughout the process. It was established that the narrative characteristics, malevolent-benevolent, cold-warm, constructive-involvement, judgmental, negative-positive ideal, and length could be scored reliably by all raters achieving inter-rater reliability of .7 or above by the end of the practice period lasting roughly two months based on the last set of 11 narratives scored. The lower bound of confidence intervals were also at least .5 or above. Other narrative variables did not reach inter-rater reliability of at least .7 and were not examined further in this study. These correlations remained at or above a .7 (*ps* < .05) on the last set of practice narratives scored whether characteristics deemed not present in a narrative were not included in the reliability analysis or whether these cases were assigned a median score of a 4.

After the practice period, feedback was sought periodically from raters during the scoring process, for example, if a rater's score was very discrepant from other raters in order to verify that typing errors had not been made or to verify that conceptual errors were not taking place. In these cases feedback was given. Upon completion of narrative scoring, it was found that inter-reliability diminished overall across variables due to one rater and the scores given by this rater were dropped from further study analyses. On one narrative characteristic, judgmental, reliability substantially increased and improved when a second rater's scores were removed from analysis to (ICC 2,1) = .79. Without the removal of both raters reliability was not at least .7. As a result, on this variable, two rater’s scores were removed from further analyses. After removal of

raters as mentioned above, and "9" scores replaced with scores of "4," final inter-rater reliability for each variable were as follows: malevolent-benevolent (ICC 2, 1) = .91, cold-warm (ICC 2, 1) = .83, constructive involvement (ICC 2, 1) = .88, judgmental (ICC 2, 1) = .82, negative-positive ideal (ICC 2, 1) = .90, length (ICC 2, 1) = .98. Inter-rater reliability between groups was similar across variables in general, however on the variables cold-warm (NSSI= .79, comparison = .86) and judgmental (NSSI= .85, comparison = .78) there was more of a difference, but all variables in both groups attaining good reliability. When scores of 9 were completely removed from the reliability analysis, inter-rater reliability did not change from the results above for malevolent-benevolent and length. On the variables cold-warm, constructive-involvement, judgmental, and negative-positive ideal, inter-rater reliability was very similar and showed the same pattern of results as mentioned above.

The scores by each rater were than average to come to a final score and rounded up to the closest score on the scale used from 1-7. In the case that one rater gave a "9" (not present/relevant) rating and the other two raters gave a rating from 1-7, the "9" was thrown out and the two scores averaged. On the judgmental variable in which two raters scores were used, in a few cases one rater gave a "9" and the other rater did not. As a result, raters came to a verbal agreement about a rating or whether a characteristic was present or not. When two or all raters gave a score of 9, the variable was deemed not present or not relevant on that narrative. Final scores of 9 were then replaced with a median score of 4. This mid-point score procedure was used in the study by Blatt et al. (1979).

Parental Bonding Instrument (Parker, Tupling, & Brown, 1979)

The Parental Bonding Instrument is self-report measure assessing two parental bonding dimensions being overprotection/autonomy and rejection/care. The directions ask the participant

to remember their mother and father separately during their first 16 years and rate them on 25 items regarding dimensions of parental care and overprotection. In this study, participants answered the 25 items once in regard to whoever is their primary parental figure. A 4-point Likert scale is used (0 to 3) in which a maximum score of 36 represented parental coldness and rejection, while a minimum score of 0 noted parental affection and support. A maximum score of 39 on the overprotection scale indicated parental control and intrusiveness, while a score of 0 indicated encouragement of independence and autonomy. It is important to note that the care and overprotection dimensions were found to be correlated with one another by the authors. More specifically, overprotection was linked to lack of care. It was also found that mothers were experienced as more caring and somewhat more overprotective than fathers; however the results of the measure were independent of the sex of the respondent. Regarding reliability, the parental bonding instrument has been shown to have a test-retest reliability of .76 on the care scale and .63 on the overprotection scale. For the care scale, a split-half reliability of .88 was found along with a split-half reliability of .74 for the overprotection scale. For a measure of concurrent validity an interview measuring care and overprotectiveness given by two raters was correlated with the scales of the parental bonding instrument and for the care scale, it was correlated .77 with the care interview score by both raters, while the overprotection scale was correlated about .5 by both raters with the overprotection interview score.

Inventory of Parent and Peer Attachment-Peer Form (Armsden & Greenberg, 1987)

The Inventory of Parent and Peer Attachment is a self-report measure that examines separately the perceived quality of relationships adolescents and young adults have with their parents (28 items) and closest friends (25 items). In this study the peer items were given. Three relationship dimensions for parents and peers are examined by the inventory including trust,

communication, and alienation; however these subscales are intercorrelated and it is advised they are summed together. Respondents answer each item according to a 5-point Likert scale ranging from "Almost Never or Never True" to "Almost Always or Always True." A higher score represents a more positive quality to the peer relationship (e.g. more trust, better communication and less alienation). Using summary scores for perceptions of peers, authors found test-retest reliabilities of .86 for peer scores. Regarding convergent validity, the peer summary scores have been found to be significantly correlated with the Tennessee Self-Concept Scale and help-seeking behavior from mothers, fathers, and family as well as from peers. Peer summary scores have been found to be higher among females than males.

Experiences in Close Relationships (Brennan, Clark, & Shaver, 1998)

The Experiences in Close Relationships self-report measure contains 36 items that survey the anxiety (18 items) and avoidance (18 items) dimensions of adult romantic attachment style. Respondents answer each item according to a 7-point Likert scale ranging from "Disagree Strongly" to Agree Strongly." An average score is obtained on each scale. The two dimensions have been found to not be correlated with one another. A higher score on each subscale represents more avoidance and more anxiety respectively. Additionally, four types of attachment styles can be generated from the combinations of anxiety and avoidance scores; however the classification equation has been reported to be misleading (Mikulincer & Shaver, 2007). The Experiences in Close Relationships self-report measure has demonstrated high reliability.

Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004)

The 36 items on the Difficulties in Emotion Regulation Scale (DERS) measure areas of emotional dysregulation, specifically, a lack of awareness, a lack of understanding of emotions, a lack of acceptance of emotions, less ability to engage in goal-directed behavior, lack of refrain

from impulsive behavior when experiencing negative emotions, and a lack of access to emotion regulation strategies perceived as effective. Participants are asked to indicate on a 5-point Likert scale how often items apply to themselves with responses ranging from 1 to 5, where 1 is almost never (0–10%), 2 is sometimes (11– 35%), 3 is about half the time (36–65%), 4 is most of the time (66–90%), and 5 is almost always (91–100%). Items were scored so that higher scores represented more difficulty with emotion regulation. The internal consistency of the DERS items was found to be .93; the sub-scales also had adequate internal consistency > .80. The DERS had good test-retest reliability over a period ranging from four to eight weeks of .88; the test-retest reliability of the subscales was overall adequate. The DERS was negatively correlated with The Generalized Expectancy for Negative Mood Regulation Scale as expected demonstrating construct validity.

Ambivalence Over Emotional Expressiveness Questionnaire (King & Emmons, 1990)

The Ambivalence Over Emotional Expressiveness Questionnaire (AEQ) consists of 28 items measuring ambivalence over expressing emotion in relation to inhibition and rumination (e.g. wanting to express but not being able to, expressing, but not wanting to, expressing and later regretting it). Participants are asked to answer each item with a view of its overall meaning. Thus, if a statement consisted of two thoughts, participants were encouraged to give the item a high rating only if both thoughts applied to them. Participants respond to each item on a 5-point Likert scale, with a 1 indicating never feeling what the statement suggests and 5 indicating that the respondent frequently feels the way a statement suggests. A higher score represented more ambivalence expressing emotion. The alpha reliability coefficient for the scale was found to be .89. The test-retest reliability was .78 over a six week interval. The AEQ was also positively correlated with the Raulin Intense Ambivalence Scale (Raulin, 1984) demonstrating convergent

validity. The AEQ was negatively correlated with the Emotional Expressiveness Questionnaire indicating that individuals that are ambivalent about expressing emotion are often inexpressive. It has been found that women score higher on the AEQ than men.

The Emotion Reactivity Scale (Nock, Wedig, Holmberg, & Hooley, 2008)

The Emotion Reactivity Scale (ERS) is a 21-item self-report measure of the experience of emotional reactivity including sensitivity, intensity, and persistence of one's experience of their emotions. Each item is rated on a zero to four scale, with a 0 representing "not at all like me" and a 4 "completely like me." A higher score indicates more emotional reactivity. High correlations among the sub-scales support using the ERS as a unidimensional measure of emotion reactivity. The ERS was found to have good internal consistency with a Cronbach's alpha of .94. Convergent and divergent validity was found as the ERS was positively correlated with Carver & White's (1994) Behavioral Inhibition sub-scale (reactivity to aversive events), but negatively correlated with the Behavioral Activation sub-scales (responsiveness to reward, drive, fun-seeking). Those with a history of self-injurious thoughts and behaviors also reported more emotional reactivity.

Early trauma self-report-short form (Bremner, Bolus, & Mayer, 2007)

The Early Trauma Self-Report-Short Form (ETISR-SF) is a 27-item questionnaire assessing general, physical, emotional, and sexual trauma. Participants answer yes or no to each item and are given one point for every yes response. A total from 0-27 can be obtained. All areas of trauma were shown to have high internal consistency values above .7. The measure was found to be able to discriminate between patients with known associations with trauma from control participants.

Dissociative Experiences Scale II (Bernstein & Putnam, 1986, 1993)

The Dissociative Experiences Scale II (DES-II) is a 28-item self-report questionnaire. Participants are asked to indicate how often they have experienced each item from 0 to 100%. An average score is obtained from the total items. Test-retest reliability among undergraduates and normal adults has been found to be .84 over a four to eight week period. Among undergraduates the scales' split-half reliability has been found to be .95. The measure has been found to be able to discriminate between individuals with and without diagnoses of dissociative disorders as a screening instrument, but not a diagnostic tool.

The Body Investment Scale (Orbach & Mikulincer, 1998)

The Body Investment Scale (BIS) is 24-item self-report questionnaire measuring factors related to body image feelings and attitudes, comfort in touch, body care, and body protection. Items are presented on a one to five scale as follows: Do not agree at all (1); Do not agree (2); Undecided (3); Agree (4); Strongly agree (5). A high score indicates more positive feelings about body image, touch, body care and protection. Scales were not highly correlated with one another. Cronbach's alpha coefficients for each sub-scale were .75, .85, .86, and .92 for body feelings and attitudes, comfort in touch, body care, and body protection, respectively. Adolescent boys (13-19) were found to have higher scores than adolescent girls (13-19) on the body feelings and attitudes sub-scale. It was found that adolescent suicidal and nonsuicidal patients scored lower in touch comfort than control adolescent participants; there was no difference between control participants and nonsuicidal patients on the other subscales; however suicidal patients scored lower than the nonsuicidal patients and control participants on all factors (besides touch comfort). Adolescents engaging in NSSI were excluded in their study. BIS factors were also found to be associated with the factors of the Parental Bonding Instrument and

the Rosenberg Self-Esteem Scale when studied in suicidal participants. Low scores on BIS factors were predicted by low scores on self-esteem and early maternal care. For this study, two items were removed that directly addressed nonsuicidal self-injury. These items were removed because the treatment and comparison groups would already differ regarding this issue and it was desired to see how groups would differ on the other items related to body investment.

Communicative Competence Scale (Wiemann, 1977)

The Communicative Competence Scale self report (CCS) is a 36-item measure using a 5-point Likert scale ranging from strongly agree (5) to strongly disagree (1) used to assess communicative competence such as empathy, affiliation, social relaxation, and behavioral flexibility. A higher score indicates more communicative competence. It has been found to have a Cronbach's alpha coefficient of .90 (Cupach and Spitzberg, 1983). Cupach and Spitzberg (1983) found that the CCS was strongly correlated with two other dispositions: communication adaptability and trait self-rated competence.

The Balanced Inventory of Desirable Responding 6th edition (BIDR-6, Paulhus, 1991)

The Balanced Inventory of Desirable Responding 6th edition was given to participants in order to survey socially desirable responding, specifically two factors self-deceptive enhancement (extreme confidence/lack of insight) and impression management (more subject to situation) on scale ranging from not true (1) to very true (7). Higher scores represent more social desirable responding. The internal consistency for the BIDR-6 taken from various samples has ranged from alpha values of .83-.85 and when only the 20 self-deceptive enhancement questions are taken into account, the alpha values range from .70-.82; the 20 impression management alpha values .80-.86. A recent sample of test-retest reliability for the BIDR-6 had correlation coefficients of .69 and .65 for the self-deceptive enhancement and impression

management scales, respectively. Regarding concurrent validity for the BIDR-6, it has been shown that the measure correlates .71 with the Marlowe-Crowne scale for desirable responding. Regarding the self-deceptive enhancement subscale it has been shown to reflect a form of confidence not based on accurate knowledge while the impression management subscale has been shown to change if given in private versus public conditions.

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, Tellegen, 1988)

The PANAS is a brief self-report measure examining two factors, 10 words pertaining to positive affect and 10 words pertaining to negative affect. The participants rated to what extent each word described how they felt in the past few weeks on a 5-point Likert scale ranging from very slightly or not at all (1) to extremely (5). The internal consistency reliability for the Positive Affect scale ranges from .86-.90 depending on the time frame given. The internal consistency reliability for the Negative Affect scale ranges from .84-.87. The correlation between the Positive and Negative Affect scales is low. Test-retest reliabilities for the Positive and Negative Affect scales tend to increase as the time frame given in the directions increases. The PANAS shows factorial validity as well as external validity for the Positive and Negative Affect scales.

Personal Feelings Questionnaire 2(Harder & Zalma, 1990)

The Personal Feelings Questionnaire 2 (PFQ2) is a brief 16-item self-report measure of proneness to shame (10 items) and guilt (6 items). Participants are asked to rate each feeling presented to them on a 4-point Likert scale in terms of how frequently they experience the feeling from never (0) to continuously or almost continuously(4). Cronbach's alpha for the shame and guilt scales were .78 and .72, respectively. Test-retest reliability for the shame items was .91 after two weeks and .85 for the guilt items after two weeks. The shame items were correlated positively as expected for example with measures of self-derogation, public self-

consciousness, social anxiety, and depression, and negatively with social desirability. The guilt items showed a positive relationship between self-derogation, depression, and private self-consciousness.

Procedure

Study participants were given a password to sign-up for the study through the Wayne State University Psychology Department SONA system, which gave them access to a study link in Qualtrics. In Qualtrics, students read information about the survey, consent information, and were asked to leave an email address in which the online survey could be sent to them. Once participants consented to the study and confirmed an email address, the online survey in Qualtrics was sent to them. Upon beginning the survey, participants were informed to allow themselves up to two hours to complete the study. The order in which study measures were presented to participants was randomized and different for every participant taking the survey.

Data analysis

Correlations were obtained among variables to better examine whether questionnaires were measuring similar or different constructs. T-tests were also conducted to test all hypotheses comparing students who engaged in NSSI and those who did not. A power analysis was conducted with the statistical program G power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) and it was found that a moderate effect size of .5 could be found with .70 power with a total sample size of 100 for a t-test. Variables were selected to be entered as predictor variables for a step-wise discriminant function analysis if they were not highly correlated with each other and appeared to differ among NSSI and comparison groups.

The NSSI Survey and ISAS- Section 2 (functions of NSSI) was reviewed to report on percentages of NSSI characteristics among participants (i.e. frequency, age of onset, type of

NSSI, function of NSSI, body location, tools used, NSSI cognition, involvement with alcohol, suicidal ideation, suicide attempts, help-seeking, and social contagion behavior).

CHAPTER 3

RESULTS

Data screening

Prior to analysis, all data were screened for errors and missing values, fit of appropriate distributions, and the assumptions of multivariate analyses as outlined by Tabachnick and Fidell (2007). Variables were examined within the NSSI and comparison groups given that the proposed analyses would be performed on grouped data. An initial screen of the variables' descriptive statistics revealed plausible means and standard deviations for each of the variables.

Missing data was present on a number of measures for both groups. Regarding the NSSI group, the majority of missing data on measures was below 5% of cases. On five measures data missing exceeded 5%. Specifically, three cases or 6% of cases were missing an item on the Self-Deceptive Enhancement subscale of the BIDR and six or 12% of cases were missing an item on the Impression Management subscale of the BIDR. On the Communicative Competence Scale, five cases or 10% of cases were missing an item used to calculate a total score. On the Dissociative Experiences Scale II, six cases or 12% of cases were missing an item value used to calculate the total score. Three cases or 6% of cases were missing an item used to calculate the Experiences in Close Relationships Anxiety score. Lastly, 10 narratives or 20% of NSSI narratives were missing a Judgmental score because it was irrelevant/not present as scored by multiple raters.

Regarding missing data in the comparison group, about half of the measures were missing items on more than 5% of cases. Specifically, three cases or 6% of cases were missing an item on the Self-Deceptive Enhancement and Impression Management sub-scales of the BIDR. On the Communicative Competence Scale, three cases or 6% of cases were missing an

item used to calculate a total score. On the DERS Difficulty with Impulse Control sub-scale, four cases or 8% of cases were missing on item used to calculate the sub-scale score. Three cases or 6% of cases were missing an item to calculate the total IPPA peer score. On the parental narratives, three cases of 6% of cases were missing Cold-Warm and Constructive Involvement scores because they were deemed not present in these narratives. Judgmental scores were not rated on 14 narratives or 28% of the comparison group narratives because this characteristic was deemed irrelevant/not present by multiple raters. Lastly, on the PFQ-2 Guilt sub-scale, four cases or 8% of cases were missing on item used to calculate the sub-scale score.

To account for missed/unanswered questions on scales and subscales, the average score used by the individual on the scale or subscale was used to estimate the closest Likert scale value for the missing item and used to calculate a total score on the measure. On narratives in which characteristics were not present the group mean was used to estimate the closest score from the narrative scale of 1-7 since variables only contained one score. Of note after screening all data, when t-tests were conducted per group on scores containing missing data and without missing data (using individual mean scores or group means to estimate values), results did not differ; estimations for missing data did not appear suspect of producing spurious results.

Variables were then screened for univariate outliers and any case that had a z-score of more than 3.29 or less than -3.29 was removed. One case in the comparison group on the BIS Body Care sub-scale had a *z*-score value of -3.39. This value was retained as it did not appear be an error. The value was winsorized and was no longer an outlier after this procedure. Next the assumptions of normality, linearity, and homoscedasticity were reviewed for each group. After reviewing skewness and kurtosis values significant skewness was found at an alpha level of .001 on a few variables. In determining the type of transformation to be used to normalize a variable,

a square root transformation to address moderate skewness was tried before transformations for substantial or severe skewness were tried and the solution that best corrected for normality was selected. In terms of specific variables, the ETISR-SF Sexual Abuse sub-scale was positively skewed across both groups (NSSI group $z = 4.75$, comparison group $z = 5.21$) and was corrected for positive skewness using an inverse transformation. The DERS Difficulty with Impulse Control sub-scale score and the Dissociative Experiences Scale II total score were positively skewed in the comparison group (DERS-Impulse $z = 3.46$, DES $z = 4.17$). A square root transformation was used across groups on these variables for interpretation purposes; normality was found on variables in both groups after transformations. Lastly, the cold-warm parental narrative characteristic was negatively skewed ($z = -3.32$) in the comparison group. The Cold-Warm variable was reflected and then a log transformation was used across groups for interpretation purposes; normality was found after transformations.

Homogeneity of variance was also evaluated. Levene's test of homogeneity of variance was performed for predictor variables and none of the tests were significant besides on the PFQ-2 Guilt sub-scale at an alpha level of .035, however when the ratio of largest cell variance to smallest was reviewed for the variable the variance between groups was not great with a ratio of 1.15. Sample sizes between groups on all variables were relatively equal and a ratio as great as 10 is said to be acceptable by Tabachnick and Fidell (2007); however, ratio values did not approach this higher end of variability on any variable. In addition, for the NSSI and comparison groups no multivariate outliers were found across predictor variables (Mahalanobis distance $p < .001$ criterion).

Variables were examined for multicollinearity and singularity. Bivariate correlations above .7 were addressed. Tabachnick and Fidell (2007) discourage including two variables with

a bivariate correlation above .7 in the same analysis. Across both groups parental figure narrative variables were highly correlated ranging from r = .80 to .96. As a result a benevolence factor was created summing the Malevolent-Benevolent and Negative-Positive Ideal scores. T-tests indicated that there were no significant group differences on the other narrative variables so they were not included for further analysis. Of note Blatt et al. (l988) also combined these scores along with others into a benevolence factor after conducting a factor analysis. Upon creation of the benevolence factor it was found to be correlated with the Parental Bonding Instrument Care sub-scale (r = .72) in the comparison group. The Parental Bonding Instrument sub-scales and total scale did not significantly differ between the NSSI and comparison groups so the Parental Bonding Instrument was not included as a predictor for discriminant function analysis.

The DERS sub-scale Limited Access to Emotion Regulation Strategies was also highly correlated to other DERS sub-scales across groups as high as r = .85 as well as three other measures as high as r = .79 and appeared redundant and was not included in further analyses. The PFQ-2 Guilt and Shame sub-scales were also highly correlated with each other in the NSSI group (r = .70) and in the comparison group (r = .68). The PFQ-2 Guilt sub-scale was also correlated highly with the PANAS Negative Affect sub-scale (r = .74) in the NSSI group. When the PFQ-2 sub-scales were combined the total score did not differ between the NSSI and comparison group nor did the sub-scales and as a result the PFQ-2 was not included as a predictor for discriminant function analysis. The PANAS Negative Affect sub-scale was highly correlated with the Emotion Reactivity Scale (r = .70) in the NSSI group. Since the PANAS Negative Affect sub-scale was highly correlated with the Emotion Reactivity Scale and did not differ on a t-test between groups it was not included as a predictor for further analysis. Lastly,

the Ambivalence Over Emotional Expressiveness Questionnaire and the Experiences in Close Relationships anxiety subscale were correlated (r = .74) in the comparison group. Scores on the Ambivalence Over Emotional Expressiveness Questionnaire did not differ significantly between groups and this variable was not retained as a predictor for further analysis. After multicollinearity and singularity were addressed, the remaining variables that significantly differed between groups ($p \leq .05$) were retained as predictors for a discriminant function analysis. These predictors were the BIDR-6 Self-Deceptive Enhancement and Impression Management scales, BIS Body Image, Feelings, and Attitudes, Comfort with Touch, and Body Protection scales, DERS Nonacceptance of Emotional Responses, Difficulties in Engaging in Goal-Directed Behavior, Impulse Control Difficulties, Lack of Emotional Awareness, and Lack of Emotional Clarity scales, Experiences in Close Relationships Anxiety scale, Emotion Reactivity Scale, ETISR-SF Emotional Abuse scale, IPPA Peer scale, PANAS Positive Affect Scale, and the parental figure benevolence narrative factor. The DERS Limited Strategies scale was also significantly different between groups, but was found to be highly correlated with other variables as described above. Predictors that did not significantly differ between groups at $p \leq .05$ were the Ambivalence Over Emotional Expressiveness Questionnaire, Communicative Competence Scale, BIS Body Care Scale, Dissociative Experiences Scale II, Experiences in Close Relationships Avoidance Scale, ETISR-SF General Trauma, Physical Abuse, and Sexual abuse scales, PANAS Negative Affect Scale, Parental Bonding Instrument Uncaring and Overprotectiveness scales, PFQ-2 Guilt and Shame scales, and the cold-warm, constructive involvement, judgmental, and length variables of the parental narrative. Of note, when all comparisons were corrected with the Bonferroni adjustment only the BIDR Self-Deceptive

Enhancement scale was still significant different between the NSSI and comparison groups ($p \leq$ .001, see Table 1).

Discriminant Function Analysis

A discriminant function analysis using a Wilks' lambda stepwise method was performed using the following variables to predict group membership in the NSSI group: BIDR-6 Self-Deceptive Enhancement and Impression Management scales, BIS Body Image, Feelings, and Attitudes, Comfort with Touch, and Body Protection scales, DERS Nonacceptance of Emotional Responses, Difficulties in Engaging in Goal-Directed Behavior, Impulse Control Difficulties, Lack of Emotional Awareness, and Lack of Emotional Clarity scales, Experiences in Close Relationships Anxiety scale, Emotion Reactivity Scale, ETISR-SF Emotional Abuse scale, IPPA Peer scale, PANAS Positive Affect Scale, and the parental figure benevolence narrative factor. Fifty NSSI and 50 comparison cases across predictors were entered into the analysis. An entry F value of 2.07 (probability .15) and a removal value of 1 were used. A more liberal probability to enter criteria than .05 was used to ensure entry of important variables. It has been suggested by Costanza and Afifi (1979) that a probability to enter criteria in the range of .15 to .20 be used. Box's M indicated that the assumption of equality of covariance matrices was not violated. A significant discriminant function resulted ($\Lambda = .726$, $\chi^2(5) = 30.52$, $p = .000$) with 27.4% of the variance explained. Five predictors were found to minimize overall Wilks' Lambda and explain additional unique variance with each step. These predictors included BIDR-6 Self-Deceptive Enhancement, BIS Comfort with Touch, BIS Body Protection, ETISR-SF Emotional Abuse, and PANAS Positive Affect scales. Table 2 also indicates that intercorrelations were relatively low among these variables supporting their use as predictors. The standardized canonical discriminant function coefficients indicated that the variable BIS Comfort with Touch

contributed the most unique contribution to the discriminant function in comparison to the other predictors (see Table 3). According to the structure matrix, the predictors in order of most highly correlated with the discriminant function were the BIDR-6 Self-Deceptive Enhancement scale, BIS Body Protection, PANAS Positive Affect, BIS Comfort with Touch, and lastly ETISR-SF Emotional Abuse, all predictors deemed important with loadings in the structure matrix greater than .3 (see Table 4). Examining group means on these predictors, the mean self-deceptive enhancement score was lower in the NSSI group (M = 3.90, SD = 3.15) than in the comparison group (M = 6.16, SD = 3.39). The NSSI group (M = 3.47, SD = .74) in contrast to the comparison group (M = 3.87, SD = .68) reported less body protection on the BIS. Participants in the NSSI group reported less positive affect (M = 30.54, SD = 7.48) than the comparison group (M = 34.72 SD = 8.46), more comfort with touch (NSSI M = 3.65, SD = .82; Comp. M = 3.27, SD = .73), and more emotional abuse (M = 2.76, SD = 1.80) than the comparison group (M = 1.98, SD = 1.99).

Seventy-four percent of cases were correctly classified using the discriminant function described above including 76% of the NSSI group and 72% of the comparison group. Cross-validation in which each case was classified by the function derived from all cases other than that case resulted in 72% of cases being classified correctly, specifically 76% of the NSSI group and 68% of the comparison group. This was better than chance alone or a 50% chance of a case being classified in the correct group.

NSSI Survey

Responses from 50 NSSI participants on the NSSI Survey were also reviewed. Regarding frequency of NSSI behavior, it was found that 24% of participants in the NSSI group reported engaging in NSSI three to five times (Mdn = 5), followed by 20% giving less specific

descriptions, but descriptions that implied numerous episodes of NSSI behavior (e.g. “countless,” “a lot,” “several, “all the time”). Twelve percent of participants reported engaging in NSSI one to two times, seven to 10 times, and 11-20 times (two participants reported “10+”), respectively. Eight percent of participants reported engaging in NSSI behavior more than 100 times to “around 200.” Two percent of NSSI participants reported engaging in NSSI 21-50 times and 51-100 times. Lastly, 4% reported more ambiguous responses (i.e. “I don't know” or “not at all in recent memory.” Thirty-eight percent of NSSI participants reported engaging in NSSI in the last 6 months ranging in frequency from “every day” to one time, while 52% reported engaging in NSSI in roughly the last year. Seventy percent of NSSI participants reported that they did not require any medical attention due to NSSI. Sixteen percent of participants responded to the question indicating they received pharmacological and/or psychotherapy treatment. Two participants reported needing bandaging or stitches. Another two participants reported engaging in their own self-care (e.g. band-aids). One participant reported that they needed medical attention 2-3 times for burns, but did not seek treatment; similarly a different participant reported hiding injuries. One participant did not answer the question.

The reported median and average age of onset of NSSI was 13 with a range from ages 6-20 (*SD* = 2.75). One participant reported “12 or 13” and second participant “I don't know.” The reported median and average age in which NSSI was reported to have ceased was age 18, with a range reported of 12-36 years-old (*SD* = 4.08). In terms of whether NSSI was done alone in secret or with others in secret, 74% of NSSI participants reported engaging in NSSI alone in secret exclusively. Only two participants denied ever engaging in NSSI alone in secret. When asked what the benefits were in engaging in NSSI alone, 56% of NSSI participants reported the benefit being secrecy or related reasons such as not being controlled/influenced by others,

judged, worried about, scaring/harming others, or embarrassing themselves. Twenty percent of participants reported emotional benefits such as being able to obtain relief, release emotion, or feel emotion. Two participants reported cognitive benefits e.g. being able to think or realize that the behavior was not a good idea. One participant reported that the benefit was being able to punish themselves. Another participant reported that the benefit was being able to distract themselves. Six percent of participants reported that there was no benefit, while 10% of participants did not answer the question.

Only four participants reported engaging in NSSI with others in secret some percentage of the time. Two participants reported engaging in NSSI in person with someone else. One participant engaged in NSSI in person with others reported doing so four times and that it was an adrenaline rush (appeared to be cutting behavior). They reported that they started at the age of 13 and stopped at age 15. They reported that they felt close to whomever they self-injured with and the benefit was the mutual expression of feelings. Another participant reported engaging in NSSI in front of others seven times due to being angry and/or intoxicated. They reported that they engaged in NSSI (appeared to be punching things, hitting head on things, biting self) beginning in elementary school through high school. All NSSI participants denied engaging in NSSI with someone else via the internet.

Seventy-six percent of participants denied going to NSSI internet sites. Out of the 22% that reported going to NSSI internet sites, 36% reported going to a combination of sites (e.g. educational, blogs, YouTube) and 27% to blogs exclusively. The following were also reported, going exclusively to educational sites, google, help line, and one participant answered that they went on the internet regarding "how to do it without killing self." Twelve percent of participants reported that they knew other college students that went to NSSI internet sites, in one case a

participant reported knowing high school students, but not other college students. Twenty-two percent of participants reported that they had communicated over the internet with someone about NSSI; 78% denied doing so. For those that reported communicating with others over the internet, 45% reported receiving emotional support (e.g. you're not alone, it will get better). The majority of these participants reported that the support they received helped to validate their feelings, not feel alone, and one participant reported that it helped them educate others without advocating for NSSI. One person reported that the support was generic and had no effect on them. The majority of these participants reported that it helped them engage in NSSI less or at least reflect on more productive ways to cope. One participant reported that it made them feel OK about NSSI. Thirty-six percent reported they were being discouraged from engaging in NSSI, these participants reported feeling ashamed, embarrassed, betrayed, and not worth understanding. One participant reported that it was not very helpful but that sometimes it was nice to know that someone cared. Half of these participants reported that they stopped, while the other participant reported that their behavior increased or did not stop. One participant reported that they were discussing NSSI techniques and tips. This participant reported that discussing tips helped them be more hygienic and as a result they carried around a first aid kit and continued engaging in NSSI. One participant reported that they communicated about NSSI via instant message and email, but did not discuss the nature of the communication. They did note that as a result of the communication they felt ashamed and more alone.

Thirty-six percent of participants reported that it was the norm for their peers to engage in NSSI or they knew someone else or others that engaged in NSSI, while 62% reported that it was not the norm for their peers to engage in NSSI. One participant did not answer the question. About 12% of participants appeared to deny engaging in NSSI in secret whether alone or with

others reporting NSSI such as hitting, scratching, puncturing self (i.e. with thumbtack) tending to report less NSSI overall and tending not to be intoxicated.

Regarding the type of NSSI reported, it was found that 50% of participants reported engaging in more than one type of NSSI (e.g. cutting, scratching, and burning), while 32% of participants reported engaging in cutting behavior exclusively. Additionally, 10% of participants reported engaging in hitting or slapping themselves only. Lastly, 6% and 2% of the participants reported only scratching or puncturing behavior, respectively. In regards to the location of bodily injury, 64% of participants reported injuring themselves on more than one area of the body (e.g. arms and legs). Twenty percent of participants reported NSSI to their arms only, followed by 6% reporting NSSI to their wrists specifically. Four percent of participants reported NSSI to their face only. Two percent of participants noted engaging in NSSI to their back, inner thigh, or head exclusively.

Sixty-four percent of participants reported using a combination of tools to engage in NSSI (e.g. knives, paper clips, finger nails, and teeth). Twelve percent of participants reported using a razor/razor blade exclusively, while 8% reported using a knife only. Six percent of participants reported using their fist or hand only. Two percent of NSSI participants reported only the use of one of the following: a belt, fingernails, scissors, or thumbtack.

Regarding the use of alcohol or other substances, 68% denied the use of alcohol while engaging in NSSI while intoxicated or under the influence of a substance. Ten percent of NSSI participants reported being under the influence of a substance less than 9% of the time, while 8% of participants reported engaging in NSSI while under the influence of a substance 10-25% and 30-50% of the time respectively. Two percent of participants reported one of the following: that

they were under the influence 80% of the time, “almost all the time,” or “4x out of countless” times while engaging in NSSI.

Eight-four percent of NSSI participants reported that they had certain thoughts before engaging in NSSI. Of the participants reporting thoughts before engaging in NSSI, 23.8% of these participants, when asked to describe what these thoughts were, reported feelings instead of clear thoughts. Negative thoughts about the self were reported by 21.4% of participants (e.g. I am ugly). Another 21.4% of participants reported a combination of negative thoughts and feelings. Thoughts related to controlling or distracting themselves from pain through NSSI were reported by 14.3% of participants. Thoughts related to wanting something from others (e.g. attention or support) were reported by 4.8% of participants. One person reported negative thoughts about life. Experimenting thoughts were reported by one participant (i.e. “I wonder what it feels like”). The remaining participants answering the question answered in one of the following ways: left the question blank, indicated that they would rather not answer, reported having an urge versus a thought, or reported the result of the NSSI (i.e. “just it helped me not worry”) versus a clear thought. Eighty-six percent of participants reported having thoughts of NSSI and being able to refrain from acting on them.

Twenty-six percent of NSSI participants reported that certain images affected their NSSI behavior, while 74% denied images influencing their NSSI behavior. Of the participants being influenced by images, 69% of participants reported negative effects from images of cutting or scars or feeling inferior after viewing beautiful images of women. Twenty-three percent of participant reported being discouraged by images, for example being discouraged by images of scars/scar tissue or by seeing the faces of friends and family. One participant reported that seeing scar tissue motivated them to cut less deeply. One participant was vague in their response

reporting that “Images of motivation or happiness” influenced how they thought. Twenty-eight percent of NSSI participants reported that they read something that affected their NSSI behavior, while 72% denied reading anything that influenced their NSSI. Of those participants reporting that they were influenced by something they read, 50% reported that they read comments or information that had a positive effect on their NSSI behavior (e.g. learned better ways to cope, cut down NSSI), while 43% reported that opinions, notes, and or stories negatively influenced their NSSI behavior (e.g. triggered NSSI, felt weak, undesirable). One participant reported they read about why people engage in NSSI and reported that it made them think about why they may engage in NSSI.

Regarding percentage of NSSI participants reporting suicidal ideation (SI), 74% denied SI, while 22% reported SI to some degree (e.g. “not very often”, “sometimes”). On participant reported “not really” while another did not answer the question. Seventy percent of participants reported that they had not attempted to kill themselves before, while 26% reported that they had. One participant reported engaging in dangerous activities and having passive SI, while another participant did not answer the question.

Regarding reported mental health treatment, 72% of NSSI participants reported that they had engaged in mental health treatment before, while 28% denied any treatment. Out of the NSSI participants reporting a history of mental health treatment, about 75% of participants reported that a mental health provider asked them if they had ever engaged in NSSI. Nineteen percent reported that a provided never asked. One participant did not answer while another participant reported to not remember. Of the participants that were asked if they engaged in NSSI, 85% reported that they disclosed engaging in NSSI, while 15% reported they did not. Of the participants that disclosed they most often reported that they disclosed because they wanted

help and felt comfortable. The majority of the participants (57%) that disclosed their NSSI found it helpful, while 26% did not, 7% found it somewhat helpful, and one participant did not know if it was helpful. Lastly, one participator did not answer whether it was helpful or not. Of the 19 participants that did not disclose their NSSI, the majority of participants (47%) reported that they did not want to be judged, punished, or embarrassed. Twenty-one percent did not answer. Eleven percent of participants reported that not being asked was the reason as to why they did not disclose. Eleven percent reported they "had those tendencies under control" or "didn't need to." One participant reported that they were "not sure" and another "I didn't feel like telling."

NSSI participants that denied any mental health treatment history reported other coping strategies, the most common being distracting themselves, talking to someone, writing, and reading. Forty-seven percent of these participants found these strategies effective, while 24% found alternative strategies to be effective sometimes, and 12% did not find their strategies effective. Three participants did not answer the question. Forty-one percent of participants reported that they would consider attending therapy to cope with emotions and stress, 24% reported they would not, 12% reported maybe, and four participants did not answer the question.

Inventory of Statements about Self-Injury

The function of NSSI, as reported on the ISAS, was reviewed for the 50 NSSI participants. Intrapersonal and interpersonal functions of NSSI were studied. Intrapersonal functions measured included affect regulation, anti-dissociation, anti-suicide, marking distress, and self-punishment. Interpersonal functions studied were autonomy, interpersonal boundaries, interpersonal influence, peer-bonding, revenge, self-care, sensation-seeking, and toughness. It was found that among intrapersonal functions with scores that could range from 0 to 6, the mean

score was highest on affect regulation (*M* = 3.98, *SD* = 2.00), followed by self-punishment (*M* = 3.50, *SD* = 2.16). There were two participants that did not answer one of the self-punishment items so on this intrapersonal variable only, mean scores were based on 48 participants not all 50. The other intrapersonal functions being anti-dissociation (*M* = 2.38, *SD* = 2.00), marking distress (*M* = 2.34, *SD* = 2.00), and anti-suicide (*M* = 2.18, *SD* = 2.27) were endorsed to a similar degree.

Among interpersonal functions, it was found that mean scores were highest on self-care e.g. “When I self-harm I am creating a physical injury easier to care for than my emotional distress” (*M* = 1.56, *SD* = 1.60) and toughness e.g. “When I self-harm I am seeing if I can stand the pain” (*M* = 1.51, *SD* = 1.29). Scores on self-care and toughness were based on 48 and 49 participants respectively. In order of highest to lowest, scores on the remaining interpersonal functions were as follows, interpersonal boundaries (*M* = 1.04, *SD* = 1.47), interpersonal influence (*M* = 1.02, *SD* = 1.44), sensation-seeking (*M* = 1.02, *SD* = 1.30), revenge (*M* = .96, *SD* = 1.56), autonomy (*M* = .90, *SD* = 1.58), and peer-bonding (*M* = .55, *SD* = 1.26). On the functions peer-bonding and autonomy mean scores were based on 49 participants. Overall, intrapersonal functions (*M* = 14.56, *SD* = 7.87) were reported more so than interpersonal functions (*M* = 7.71, *SD* = 6.37). A total score of 30 was possible as a result of summing intrapersonal functions and a total interpersonal score of 48 was possible.

CHAPTER 4

DISCUSSION

In this study approximately 9.4% of students pre-screened reported engaging in NSSI in their lifetime, which is less than 12.8% to 38% reported in other studies with undergraduate students (Croyle & Waltz, 2007; Gratz, Conrad, & Roemer, 2002; Kuentzel et al., 2012). Of note, percentages on the lower end seem to be associated with larger samples and samples in which there is less potential for selection bias (i.e. pre-screen NSSI items being part of a broader screening survey with no advance notice that NSSI items were embedded).

Similar to others studies (e.g. Heath et al., 2009; Nock et al., 2010), emotional as well as social motivations were reported for NSSI behavior with intrapersonal functions for NSSI being reported at higher rates than interpersonal factor functions among NSSI participants on the ISAS. Participants most often endorsed intrapersonal functions specific to affect regulation and self-punishment. In addition, the two most commonly endorsed interpersonal functions self-care and toughness appeared intrapersonal in nature. For example a self-care item answered by participants on the ISAS was “When I self-harm I am creating a physical injury easier to care for than my emotional distress” and a toughness item was “When I self-harm I am seeing if I can stand the pain.” Participants also reported other more salient interpersonal functions such as interpersonal influence and boundaries, but less frequently.

Intrapersonal predictions

It was hypothesized that the NSSI group would endorse significantly more emotional dysregulation, ambivalence expressing emotion, emotional reactivity, dissociation, and negative affect including guilt and shame than the comparison group. It was also posited that participants engaging in NSSI would report less investment in their body (i.e. feelings, care, and protection)

and positive affect than the comparison group. Results were consistent with predictions regarding emotional dysregulation, emotional reactivity, positive affect, and body investment (i.e. body feelings and body protection). Body protection and positive affect significantly predicted group membership. There was a tendency for NSSI participants to report more ambivalence expressing emotion, dissociation, guilt, and shame; however no significant mean differences were found regarding these variables or general negative affect or body care.

Interpersonal-related predictions

As hypothesized students engaging in NSSI behavior reported their parents to be less benevolent and had a less positive ideal of their parents which was combined into an overall benevolence factor. This however was not a significant predictor in discriminating between students that did or did not engage in NSSI. Students in the NSSI group reported less parental warmth and constructive involvement from their parents, however these parental narrative characteristics did not significantly differ between groups. Parental lack of care and overprotectiveness scores as reported on the Parental Bonding Instrument were higher as predicted in the NSSI group in contrast to the comparison group, however, these scores were not significantly different from average scores in the comparison group. Regarding peers, it was expected that students in the NSSI group would have lower self-reported scores on peer relationship quality than the comparison group and this was found, however peer relationship quality was not a significant predictor in determining group membership. As expected students in the NSSI group scored higher on attachment anxiety than the comparison group, however there were no significant group differences in attachment avoidance. Attachment anxiety did not predict group membership.

In regard to self-reported trauma as predicted, the NSSI group reported more emotional abuse than comparison participants; emotional abuse predicted group membership. There were no group differences in general trauma, physical, or sexual abuse. It was hypothesized that NSSI participants would report less comfort with touch than comparison group participants, however the opposite was found. Comfort with touch also predicted group membership. It was predicted that students in the NSSI group would report more social desirability. No significant group differences were found regarding impression management, however participants in the NSSI group reported less self-deception. Self-deception significantly predicted group membership. There was a tendency for participants in the NSSI group to self-report less communication competence; however communication competence did not significantly differ between groups.

Unlike what was hypothesized, a rather high percentage of NSSI participants reported in engaging in help-seeking behavior (72%), specifically a history of mental health treatment. Additionally a very small percentage of NSSI participants reported social contagion behavior in which they engaged in NSSI some of the time with others in secret (8%). None of the NSSI participants reported engaging in NSSI with another person over the internet.

In summary, regarding interpersonal-related findings, there were group differences in parental benevolence, peer relationship quality, attachment anxiety, emotional abuse, comfort with touch, and social desirability (self-deception). Students in the NSSI group in contrast to the comparison group described less parental benevolence through a parental narrative, reported poorer quality peer relationships, more attachment anxiety, more emotional abuse, more comfort with touch, and less social desirability (self-deception). Self-deception, comfort with touch, and emotional abuse predicted group membership. The majority of NSSI participants reporting help-seeking behavior and few participants reported engaging in NSSI socially.

Explanations of important findings

In contrast to predictions, study findings revealed that participants that reported NSSI did not endorse higher levels of social desirability than comparison participants and reported less self-deception in particular than comparison participants. Similarly, NSSI participants did not report significantly more shame than comparison participants. Given the majority of NSSI participants in this study reported engaging in NSSI alone for purposes of secrecy, fear of judgment, and being controlled, it is highly likely that participants perceive NSSI as unacceptable to the larger population, but this did not generalize to less endorsement of other unacceptable behaviors and any kind of impression management may be more specific to NSSI behavior. In terms of self-deception, NSSI participants did not exhibited extreme confidence/lack of insight in regard to not engaging in less acceptable behavior, and even though NSSI participants' self-deception scores were significantly less than comparison group participants' scores, neither groups average scores were approaching extreme responding in self-deception or in impression management. No group differences in shame and a lack of bias for social responding in the NSSI group may also be related to the majority of NSSI participants' willingness and engagement in mental health treatment as well as many participants' willingness to report their NSSI behavior to a mental health provider. There also is a growing awareness of NSSI as a public mental health concern which could be helping those suffering from NSSI to feel less alone and marginalized, leading to more frankness and openness to information, options, and help.

NSSI participants also reported less body protection which was a significant predictor of NSSI. Body protection was also significantly associated with lack of emotional clarity in NSSI participants. A lack of emotional understanding and self-soothing ability could help to explain

why students engaging in NSSI individuals have less body protection and use self-harm to address their intrapersonal needs. Similarly in a study by Muehlenkamp, Bagge, Tull, and Gratz (2013), they found evidence that low body regard interacted with emotion dysregulation to facilitate the onset and repetition of NSSI in college students. They also noted that repeated NSSI could contribute and reinforce less body regard. They theorized that these students engaged in NSSI to regulate emotions due to their pain tolerance and indifference to protecting their bodies. Furthermore, in a study by Turner, Chapman, & Layden (2012), it was found that those engaging in NSSI who reported a lack of emotional clarity were more likely to be trying to generate a desired emotion.

Interestingly, results indicated that NSSI participants did not report more negative affect than comparison group participants as predicted. It is possible since NSSI participants reported more emotional dysregulation for example, difficulty understanding their emotions, they may have had difficulty identifying whether they experienced certain feelings without being provided a context and negative affect may have been sampled in too abstract a way. For example, if participants had been asked, how often have you felt unhappy with yourself or how often have you felt anger building inside of you, they may have endorsed more negative affect than comparison group participants. NSSI participants also reported less positive affect a mid-level of positive affect than the comparison group reporting mid-range/moderate to quite a bit of positive emotions (e.g. feeling excited strong, interested, alert). NSSI participants also reported feeling numb at times or feeling nothing, which may also lead to more mid-range levels of emotions. Also, participants were asked how often they felt different emotions over the past few weeks. It may have also been difficult for participants to reflect on their emotions over time making it difficult to fully grasp the relationship between affect and NSSI as assessed in this study. One

study in which in vivo assessment of affect was implemented, researchers found evidence that students engaging in NSSI reported negative affect prior to an episode that peaked during the episode, and faded gradually in the hours following the episode (Armey, Crowther, & Miller, 2011). In another study, in which assessments were collected each day, Bresin (2014) found that college students engaging in NSSI compared to students not reporting NSSI reported more negative affect and less positive affect than the non-NSSI group. Evidence was found to suggest that negative affect in NSSI students was not persistent, but fluctuated around a high mean level. However, positive affect in the NSSI group seemed to persist at a relatively low level. They suggested that experiencing positive affect appeared to be short-lived and NSSI participants appeared to return to a low positive affect state the following day. It was also found that NSSI participants also differentiated less between types of negative affect and not experience different types of negative affect as discrete affect states.

It is interesting that NSSI participants reported more comfort with touch than comparison participants. The NSSI group seemed to report being comfortable with physical contact with others but it is not clear the type of touch (e.g. positive or negative) they are currently experiencing. In one study by Pearce, Martin, & Wood (1995), it was found that adolescents that engaged in deliberate self-harm behaviors perceived themselves as having experienced more negative touch and less positive touch. Further study in this area is warranted. In this study no group differences were found in terms of childhood physical or sexual abuse. Comfort with touch was not significantly associated with attachment-related anxiety in the context of romantic relationships or parental variables.

It was found that NSSI participants reported significantly more of an anxious attachment style in romantic relationships (e.g. reporting more fears of abandonment, being alone, needing

reassurance, getting angry or upset if a partner was not showing interest, and feeling bad when they feel their partner is disapproving of them), however this variable did not merge as a strong predictor of group membership in the discriminant function analysis. It was found, however, that NSSI participants also reported more difficulty with emotional clarity and other forms of emotional dysregulation which were associated with anxiety in romantic relationships. An anxious style in romantic relationships was also associated with parental overprotectiveness. It has also been found that insecure-anxious individuals seem to have difficulty differentiating and identifying specific feelings (e.g. Kim, 2005).

Mikulincer and Shaver's review (2007) described how anxious individuals show preconscious activation of attachment related thoughts of abandonment and rejection and this appears to disorganize their efforts to seek support and their doubts can lead to express needs indirectly. Studies have found however that attachment anxiety can be associated with indirect methods of help seeking (e.g. nonverbal signaling like crying and sulking), as well as direct requests for partner support and proximity (Collins & Feeney, 2000; Fraley & Shaver, 1998). The results of this study in which the majority of NSSI participants have directly sought mental health treatment for emotional needs seems to support some direct request for help even though on average many of the NSSI participants reported more attachment-related anxiety than comparison participants. A limitation is that attachment-related anxiety was only measured in the context of romantic relationships and not specifically regarding parental relationships. NSSI participants did however describe their parents as less benevolent and less ideal on the parental narrative so further exploration in this area may be warranted.

Specifically in regard to emotional abuse, findings support evidence in other studies with college students reporting a relationship between NSSI and emotional abuse (Cheng et al., 2010;

Croyle, 2007). Emotional abuse also predicted group membership while attachment-related anxiety did not. It is possible that attachment-related anxiety may not have been as strong of a factor if some of the students may not have experienced romantic relationships and it is possible that limiting attachment-related anxiety to romantic relationships in this way may have diminished its relationship to NSSI. Overall results indicate that emotional abuse appears to be more an important factor than an anxious attachment style in romantic relationships or relationships with parental figures (i.e. parental benevolence). Students may also experience emotional abuse outside close relationships or in a close relationship and not form an insecure attachment. Emotional abuse however was associated with parental lack of care and overprotectiveness.

Disorganized attachment has been described as one mechanism by which trauma experienced with caregivers could manifest into strategies used to cope such as dissociation contributing to NSSI; however in this study dissociation was not a significant factor. It has been found that dissociation has been a strong predictor for NSSI behavior in undergraduates (Gratz, 2002), but other factors may make this relationship more likely like the presence of sexual abuse or parental separation which were not reported highly in this sample of NSSI participants as in the above study. Similarly, in another study by Yates et al. (2008) dissociation emerged as a significant mediator in regard to specifically childhood sexual abuse and recurrent NSSI.

More attachment-related avoidance (in the context of romantic relationships) was also not found in the NSSI group in contrast to the comparison group as predicted. This could be because secure and insecure-anxious individuals have been found to overall self-disclose more than insecure-avoidant individuals (Keelan et al., 1998; Mikulincer & Nachshon, 1991) and avoidant individuals may not have been as likely to self-disclose NSSI if they engaged in the behavior

from the onset and hence may have been less likely to be included in the study. It is also possible that the absence of attachment avoidance may also help to explain the lack of difference in dissociation between groups. For example, Ogawa et al. (1997) and Carlson (1998) found that avoidant as well as disorganized attachment classifications in infancy predicted clinical symptoms of dissociation in adolescence and years later in young adulthood. Unfortunately, no measure was used to examine a disorganized style in close relationships whether parental or romantic relationships.

Limitations

In regard to generalizability, in this study students were recruited from a single Midwestern university in the U.S. and findings as such may not generalize to other geographic locations. Recruited students were also exclusively in psychology courses, however not all students were psychology majors. Data was obtained through online survey. Only students willing to have a survey sent to an email address participated. One disadvantage to the online survey was if a student had a question they could not easily ask for clarification in contrast to having access to lab personnel in person. Participants were allowed to not answer questions and questions could not be reviewed for completeness and accuracy by the researcher before participants finished. Participants were reminded however on the survey to review their responses. When looking at univariate results with and without missing data the results did not change, leading to more confidence that the handling of missing data did not change the group differences found.

There is also some evidence in the literature that adequate reliable and valid data can be obtained from online surveys and self-reports given to college students about sensitive topics, for example, marijuana use and drinking behavior (Kypos, Gallagher, Cashell-Smith, 2004; Ramo,

Hall, & Prochaska, 2011; Ramo, Liu, & Prochaska, 2012). The online survey was longer than the studies just cited, and it is possible participants could have become fatigued or become less motivated, however many participants did not require the amount of time suggested. It has also been found in the literature that online surveys can be especially beneficial in researching sensitive issues due to more anonymity (Ahern, 2005). In this study, NSSI students were not found to be high in impression management or self-deception.

Regarding results, when univariate analyses were conducted to find group differences, only self-deception was still significant after accounting for multiple comparisons and the probability of making a Type 1 error may be increased in regard to the other findings.

Conclusions and future directions

In summary, intrapersonal and interpersonal factors emerged which distinguished students engaging in NSSI from students that denied engaging in NSSI. Specifically, NSSI participants reported more emotional abuse, more comfort with touch, less social desirability, less positive affect, and less body protection which predicted group membership. Emotional abuse was a stronger predictor in contrast to parental/close relationship variables, however exploring close relationships further in participants engaging in NSSI may be interesting as a group differences were found. Comfort with touch requires further study to better understand its relationship to NSSI. Consistent with other research NSSI participants reported less positive affect. Lack of body protection was an important predictor and was associated with lack of emotional clarity. Many NSSI participants were found to be reaching out for help and were not scoring high in terms of social desirability. Given these findings, future studies could examine how well these predictors classify other samples of college students engaging in NSSI.

The significant predictors from this study also provide information as to what may be helpful to address in treatment with individuals struggling with NSSI. It is encouraging that many of the NSSI participants in this study were willing and had engaged in mental health treatment. It is promising that factors such as less body protection/self-care, difficulty understanding emotions, and less positive feelings could be address through dialectical behavior therapy (DBT) and that this treatment has been found to be promising with adolescents presenting with NSSI. For example, Fischer and Peterson (2014) looked at how six months of outpatient DBT treatment could address adolescents presenting with NSSI, suicidality, and symptoms of bulimia. Many of the participants also had other mood conditions and abuse histories. When treatment ended, participants had significantly less self-harm. Six months post-treatment, the majority of participants had stopped engaging in NSSI. This study was based on a small sample and no control group. Further evidence is warranted in this area.

Table 1

T-tests Results and Descriptive Statistics for Intrapersonal and Interpersonal Variables by Group

	Group				95% CI for Mean	
	NSSI[a]		Comparison[a]		Differences	
	M	*SD*	*M*	*SD*		*t* (98)
AEQ (Ambiv. Expressing Emotion)	91.90	22.06	84.62	26.22	[−2.34, 16.90]	1.50
BIDR-6 Self-Deceptive Enhancement	3.90	3.15	6.16	3.39	[−3.56, −0.96]	−3.45**
BIDR-6 Impression Management	4.18	3.40	6.00	3.46	[−3.18, −0.46]	−2.65*
BIS Body Image/ Feelings	2.63	1.11	3.21	0.90	[−0.99, −0.19]	−2.92*
BIS Comfort with Touch	3.65	0.82	3.27	0.73	[0.07, 0.69]	2.42*
BIS Body Protection	3.47	0.74	3.87	0.68	[−0.68, −0.11]	−2.78*
BIS Body Care	3.91	0.59	3.94	0.63	[−0.27, 0.21]	−.246
CCS (Communication Competence)	135.84	13.42	140.38	17.63	[−10.76, 1.68]	−1.45
DERS Nonacc. of Emotional Resp.	17.04	7.07	13.94	6.96	[0.32, 5.88]	2.21*
DERS Diff. w/ Goal-Directed Beh.	16.80	5.55	14.50	5.64	[0.08, 4.52]	2.06*
DERS Diff. Impulse C. (Sqrt Transf.)	3.72	0.79	3.38	0.74	[0.05, 0.65]	2.30*
DERS Limited Strategies	22.44	8.42	17.98	7.69	[1.26, 7.66]	2.77*
DERS Lack of Emotional Awareness	15.62	4.41	13.58	4.32	[0.31, 3.77]	2.34*
DERS Lack of Emotional Clarity	12.70	3.70	10.58	3.78	[0.64, 3.60]	2.83*
DES II (Dissociative Ex. Sqrt Transf.)	3.97	1.25	3.80	1.44	[−0.36, 0.71]	0.65
ECR (Anxiety in Romantic Rel.)	4.54	1.12	3.82	1.30	[−0.59, 0.53]	2.98*
ECR (Avoidance in Romantic Rel.)	3.14	1.37	3.17	1.46	[0.24, 1.20]	−0.12
ERS (Emotional Reactivity)	44.92	22.26	34.18	18.25	[2.66, 18.82]	2.64*
ETISR-SF Emotional Abuse	2.76	1.80	1.98	1.99	[0.03, 1.53]	2.05*
ETISR-SF General Trauma	2.74	1.77	3.12	1.89	[−1.11, 0.35]	−1.04
ETISR-SF Physical Abuse	2.08	1.64	1.62	1.58	[−0.18, 1.10]	1.43
ETISR-SF Sex. Abuse (Inv. Transf.)	0.68	0.34	0.74	0.33	[−0.19, 0.07]	−0.91
IPPA Peer Relationship Quality	87.62	16.66	95.80	18.34	[−15.13, − 1.23]	−2.34*
PANAS Positive Affect	30.54	7.48	34.72	8.46	[−7.35, −1.01]	−2.62*
PANAS Negative Affect	25.82	7.59	25.32	8.40	[−2.68, 3.68]	0.32
PBI Uncaring (Parental Figure)	12.84	8.69	10.98	10.30	[−1.92, 5.64]	0.98
PBI Overprotective	20.04	9.06	16.70	8.62	[−0.17, 6.85]	1.89
PFN Benevolence Factor (Narrative)	8.18	3.24	9.60	3.65	[−2.79, −0.05]	−2.06*
PFN Cold-Warm (Refl. Log Transf.)	0.51	0.20	0.44	0.22	[−0.01, 0.15]	1.68
PFN Constructive Involvement	4.00	1.74	4.44	1.82	[−1.15, 0.27]	−1.24
PFN Judgmental	4.02	1.49	3.64	1.54	[−0.22, 0.98]	1.26
PFN Length	2.62	1.22	2.54	1.20	[−0.40, 0.56]	0.33
PFQ-2 Guilt	10.20	4.54	8.86	3.79	[−0.32, 4.81]	1.60
PFQ-2 Shame	18.70	5.83	16.42	6.86	[−0.25, 3.00]	1.79

Note. CI = confidence interval.
[a] $n = 50$.
* $p < .05$. ** $p \leq .001$.

Table 2

Pooled Within-Group Correlation Matrix for Interpersonal and Intrapersonal Predictors

Measure	1	2	3	4
1. BIDR-6 Self-Deceptive Enhancement				
2. BIS Comfort with Touch	0.07			
3. BIS Body Protection	0.07	0.08		
4. ETISR-SF Emotional Abuse	-0.11	-0.28	-0.02	
5. PANAS Positive Affect	0.32	0.27	0.02	-0.27

Table 3

Standardized Canonical Discriminant Function Coefficients for Interpersonal and Intrapersonal Predictors

	Function
	1
BIDR-6 Self-Deceptive Enhancement	.43
BIS Comfort with Touch	−.67
BIS Body Protection	.46
ETISR-SF Emotional Abuse	−.36
PANAS Positive Affect	.37

Table 4

Structure Matrix for Interpersonal and Intrapersonal Predictors

	Function
	1
BIDR-6 Self-Deceptive Enhancement	.57
BIS Body Protection	.46
PANAS Positive Affect	.43
BIS Comfort with Touch	−.40
ETISR-SF Emotional Abuse	−.34

APPENDIX

NSSI PRE-SCREENING

1. Have you ever sought treatment from a mental health professional such as a social worker, psychologist, or psychiatrist for any problems you had or have?

2. If yes to 1, please describe the nature of the problem, how long you received treatment, and the date of last treatment or whether it is ongoing.

_____
_____
_____

3. Have you ever self-inflicted pain or injured yourself intentionally (some examples: cut, burn, scratch, hit yourself) without intending to kill yourself?

4. If yes to 3, please describe what you do or have done to injure yourself.

_____
_____
_____

5. How many times have you intentionally injured yourself without intending to kill yourself?

6. When was the last time?

_____

7. If you have *never* engaged in intentionally injuring yourself without intent to kill yourself, have you ever thought about it? If yes, what made you decide to not act on your thought(s)?

_____
_____
_____

8. Do you know people who self-injure without intent to kill themselves? If yes, did you hear about it directly from them or from someone else?

_____

9. Would you be interested in participating in research projects on the subject of self-harm behaviors? Y/N

If you ever engage in any self-harm behaviors, we strongly urge you to educate yourself about this subject and seek assistance for it. One place to start is on the internet at http://www.helpguide.org/mental/self_injury.htm. If you need medical attention, immediately call 911 or go to the nearest hospital Emergency Department.

(Online NSSI Survey Questions)

Your Age:

1. How many times in your life have you self-inflicted pain or injured yourself intentionally (for example cut, burn, scratch, or hit yourself) without suicidal intent in mind?
    a. How many times in the last 6 months?
    b. How many times in the last month?
    c. How many times in the last week?
    d. How old were you the first time?
    e. How old were you the last time?
    f. Please describe all the ways you self-inflicted pain or injured yourself intentionally without trying to kill yourself?
    g. Where on your body have you injured yourself?
    h. How many injury sites on your body have you had at one time?
        i. When was this?
    i. Please describe any medical attention you required due to nonsuicidal self-injury.
    j. How many injury sites do you have now?
        i. Where at?
    k. What have you used to injure yourself?
    l. Are there certain thoughts you had before you engage in self-inflicting pain or injuring yourself intentionally without intending to kill yourself? Y/N
        i. What were those thoughts?
    m. What percentage of the time have you engaged in this behavior while intoxicated or while using any substances?
    n. What percentage of the time have you engaged in non-suicidal self-injury while alone in secret?
    o. Percentage of time with others in secret?
2. Have you ever *not* engaged in self-inflicting pain or injuring yourself intentionally with no suicidal intent in mind, but had thoughts about it? Y/N
    a. How many times in the last 6 months?
    b. How many times in the last month?
    c. How many times in the last week?
3. Have you ever had thoughts about killing yourself? Y/N
    a. Do you currently?
4. Have you attempted to kill yourself?

(*Therapy section*)

1. Have you ever seen a mental health professional? Y/N
   If you have ever seen a mental health professional, please answer the questions on this page.
    a. What type of mental health professional(s) (e.g. psychologist, social worker, nurse, psychiatrist, counselor)?
    b. Please describe the nature of the problem(s), how long you received treatment, and when your last visit was.
    c. Was it helpful?

d. Has a mental health professional asked you if you ever engaged in nonsuicidal self-injury or in other words self-inflicting pain or injuring yourself intentionally without suicidal intent?
e. Did you disclose that you engaged in nonsuicidal self-injury to a mental health professional? Y/N
f. If yes, what helped you disclose?
g. Was disclosing useful, why or why not?
h. If you did not disclose, what are your reasons for not doing so?

If you have *never* been seen by a mental health professional, please answer the questions on this page.

2. If you have never been seen by a mental health professional, what are other ways in which you cope with stress in your life?
    a. Are your strategies effective?
    b. If you thought going to therapy could help you learn new ways of coping with emotions and stress in your life, would you be more apt to go? Why or why not?

(Social behavior section)

1. Have you ever gone to nonsuicidal self-injury internet sites?
    a. What type(s) of sites (e.g. educational/research website, blog, YouTube, message boards)?
2. Have you known other college students that have gone to non-suicidal self-injury internet sites?
    a. What type(s) of sites
3. Have you ever communicated with people over the internet about nonsuicidal self-injury?
    a. If so, can you provide examples of the most common types of comments/information someone gave you over the internet?
        i. How did these comments affect your behavior and/or thinking
        ii. How did these comments affect your nonsuicidal self-injury behavior?
            1. Have images online affected your nonsuicidal self-injury behavior? Y/N
                a. If yes, how so?
                b. What kind(s) of images did you see that affected your non-suicidal self-injury?
            2. Has anything you read online affected your nonsuicidal self-injury behavior? Y/N
                a. If yes, how so?
                b. What did you read that affected your non-suicidal self-injury behavior?
4. Have you engaged in nonsuicidal self-injury with anyone via the internet?
    a. How many times?
    b. If yes, how did this begin initially?
    c. When was the first time?

   d. When was the last time?
   e. If yes, were they people you felt close to?
   f. If yes, did you use the same methods (e.g. same way of injuring, tools, and/or area of the body) as each other?
   g. If yes, what percentage of the time were you under the influence of any substances?
   h. Were the methods you used ever different than the methods used when NOT online with someone?
      i. If yes, how so?
   i. What were the benefits of engaging in this behavior over the internet?
5. Have you engaged in nonsuicidal self-injury with anyone in person?
   a. How many times?
   b. If yes, how did this begin initially?
   c. When was the first time?
   d. When was the last time?
   e. If yes, were they people you felt close to?
   f. If yes, did you use the same methods (e.g. same way of injuring, tools, and/or area of the body) as each other?
   g. If yes, what percentage of the time were you under the influence of any substances?
   h. Were the methods you used ever different than the methods used when NOT in person with someone?
      i. If yes, how so?
   i. What were the benefits of engaging in this behavior in person with someone?
6. Has it ever been the norm for your peers to engage in nonsuicidal self-injury?
7. Do you engaged in or have you ever engaged in nonsuicidal self-injury alone?
   a. How many times?
   b. If yes, how did this begin initially?
   c. When was the first time?
   d. When was the last time?
   e. What methods (e.g. type of injury, tools, and area of the body) did you use?
   f. If yes, what percentage of the time were you under the influence of any substances?
   g. What were the benefits of engaging in this behavior alone?

If you ever engage in any self-harm behaviors, we strongly urge you to educate yourself about this subject and seek assistance for it. One place to start is on the internet at http://www.helpguide.org/mental/self_injury.htm. If you need medical attention, immediately call 911 or go to the nearest hospital Emergency Department.

(Online binge eating survey)

Your Age:

1. How many times in your life have you engaged in binge eating behavior (for example consumed 1000 calories at a time like eating a pint of ice cream in one sitting)?
    a. How many times in the last 6 months?
    b. How many times in the last month?
    c. How many times in the last week?
    d. How old were you the first time?
    e. How old were you the last time?
    f. Please describe all of the foods you have binged on.
    g. Where have you engaged in binge eating behavior?
    h. How many different kinds of foods have you binged on at one time?
        i. When was this?
    i. Please describe any medical attention you required due to binge eating.
    j. How many different kinds of foods do you binge on now?
        i. Where at?
    k. Are there certain thoughts you had before you engaged in binge eating? Y/N
        i. What were those thoughts?
    l. What percentage of the time have you engaged in this behavior while intoxicated or while using any substances?
    m. What percentage of the time have you engaged in binge eating while alone in secret?
    n. Percentage of the time with others in secret?
2. Have you ever *not* engaged in binge eating, but had thoughts about it? Y/N
    a. How many times in the last 6 months?
    b. How many times in the last month?
    c. How many times in the last week?
3. Have you ever had thoughts about killing yourself? Y/N
    a. Do you currently?
4. Have you attempted to kill yourself?

(*Therapy section*)

1. Have you ever been seen by a mental health professional?

   If you have ever seen a mental health professional, please answer the questions on this page.
    a. What type of mental health professional(s) (e.g. psychologist, social worker, nurse, psychiatrist, counselor)?
    b. Please describe the nature of the problem(s), how long you received treatment, and when your last visit was?
    c. Was it helpful?

d. Has a mental health professional asked you if you engaged in binge eating behavior?
e. Did you disclose that you engaged in binge eating to a mental health professional? Y/N
f. If yes, what helped you disclose?
g. Was disclosing useful, why or why not?
h. If you did not disclose, what are your reasons for not doing so?

If you have *never* been seen by a mental health professional, please answer the questions on this page.

2. If you have never been seen by a mental health professional, what are other ways in which you cope with stress in your life?
    a. Are your strategies effective?
    b. If you thought going to therapy could help you learn new ways of coping with emotions and stress in your life, would you be more apt to go? Why or why not?

(*Social behavior section*)

1. Have you ever gone to binge eating internet sites?
    a. What type(s) of sites (e.g. educational/research website, blog, YouTube, message boards)?
2. Have you known other college students that have gone to binge eating internet sites?
    a. What type(s) of sites?
3. Have you ever communicated with people over the internet about binge eating?
    a. If so, can you provide examples of the most common types of comments/information someone gave you over the internet?
        i. How did these comments affect your behavior and/or thinking?
        ii. How did these comments affect your binge eating behavior?
            1. Have images online of certain foods (e.g. ads for fast food, images of sweets) affected your binge eating behavior? Y/N
                a. If yes, how so?
                b. What kind(s) of images did you see that affected your binge eating?
            2. Has anything you read online affected your binge eating behavior? Y/N
                a. If yes, how so?
                b. What did you read that affected your binge eating behavior?
4. Have you engaged in binge eating with anyone via the internet?
    a. How many times?
    b. If yes, how did this begin initially?
    c. When was the first time?
    d. When was the last time?
    e. If yes, were they people you felt close to?

   f. If yes, did you eat the same foods as each other?
   g. If yes, what percentage of the time were you under the influence of any substances?
   h. Were the types of food you binged on ever different than the type(s) of food you binged on when NOT online with someone?
      i. If yes, how so?
   i. What were the benefits of engaging in this behavior over the internet?
5. Have you engaged in binge eating behavior with anyone in person?
   a. How many times?
   b. If yes, how did this begin initially?
   c. When was the first time?
   d. When was the last time?
   e. If yes, were they people you felt close to?
   f. If yes, did you eat the same foods as each other?
   g. If yes, what percentage of the time were you under the influence of any substances?
   h. Were the types of food you binged on ever different than the type(s) of food you binged on when NOT in person with someone?
      i. If yes, how so?
   i. What were the benefits of engaging in this behavior in person with someone?
6. Has it ever been the norm for your peers to engage in binge eating?
7. Do you engage or have you ever engaged in binge eating alone?
   a. How many times?
   b. If yes, how did this begin initially?
   c. When was the first time?
   d. When was the last time?
   e. What type(s) of food did you binge on?
   f. If yes, what percentage of the time were you under the influence of any substances?
   g. What were the benefits of engaging in this behavior alone?

If you ever engage in any binge eating behaviors, we strongly urge you to educate yourself about this subject and seek assistance for it if necessary. One place to start is on the internet at http://www.helpguide.org/mental/binge_eating_disorder.htm. If you need medical attention, immediately call 911 or go to the nearest hospital Emergency Department.

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ABSTRACT

IDENTIFYING AND UNDERSTANDING NON-SUICIDAL SELF INJURY AMONG COLLEGE STUDENTS

by

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Advisor: Dr. Douglas Barnett

Major: Psychology (Clinical)

Degree: Doctor of Philosophy

Nonsuicidal self-injury (NSSI) behavior in college students at an urban university was studied. Relations between NSSI and poor quality relationships with their parents and peers, as well as deficient coping and help-seeking behavior were examined from an attachment perspective. Undergraduates were recruited via an online psychology subject pool and completed an online survey. T-tests were conducted to identify what variables differed between students who engaged in NSSI in contrast to students that did not. In addition, a discriminant function analysis was conducted. It was found that intrapersonal and interpersonal variables predicted group membership (i.e. social desirability, body protection, positive affect, comfort with touch, and emotional abuse). Findings are discussed and may help to better identify college students engaging in NSSI and help to inform treatment.

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