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The Role of Social Support on Risk Factors and Frequency of Non-Suicidal Self-Injury

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THE ROLE OF SOCIAL SUPPORT ON RISK FACTORS AND FREQUENCY OF NON-SUICIDAL SELF-INJURY

by

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This dissertation meets the standards for appearance, conforms to the style and format requirements of the Graduate School of the University of North Dakota, and is hereby approved.

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ABSTRACT

The primary purpose of the current study was to examine the role of social support as a potential protective factor of non-suicidal self-injury (NSSI). Specifically, the study hypothesized that social support would moderate (decrease) the power of the relationship between NSSI risk factors and NSSI frequency. The four risk factors of interest were borderline personality disorder (BPD) traits, an invalidating family environment, depression, and anxiety. Data was collected via self-report questionnaires from a sample of 233 individuals currently enrolled as undergraduates at the University of North Dakota. Results indicated individuals with a history of one or more acts of NSSI demonstrated significantly lower levels of perceived social support than their peers in the no NSSI control group. Similarly, those with a history of NSSI demonstrated higher scores on each of the four risk factors when compared with the no NSSI control group. Moderational analyses indicated that social support moderated (decreased) the relationship between three of the four proposed risk factors (depression, anxiety, and BPD traits) and NSSI frequency. No moderating effect of social support was found between the invalidating family environment and NSSI frequency. The results of the current study offer initial evidence of social support as a protective factor of NSSI. Additional research offering further clarification of social support's role is needed and may have important implications for the prevention and treatment of NSSI.

CHAPTER I

INTRODUCTION

Introduction to NSSI

Non-suicidal self-injury (NSSI) is a troubling phenomenon that is thought to be growing in prevalence (White-Kress, 2003). NSSI is defined as purposeful injury inflicted on oneself without suicidal intent. Methods of NSSI are numerous and varied, however some of the most common include cutting, severe scratching, and burning of body tissue. Self-hitting and banging to create a bruise are also commonly seen (Walsh, 2006). The behavior has been reported in both men and women, and can occur at any age, though it is commonly seen in adolescence and young adulthood (Whitlock, Eckenrode, & Silverman, 2006; Whitlock, Powers, & Silverman, 2006). NSSI occurs in psychiatric populations as well as non-clinical populations (Walsh, 2006).

Prevalence estimates of NSSI rely heavily upon retrospective self-report data, making accurate assessments challenging to obtain since NSSI is a sensitive behavior that individuals may be hesitant to disclose (Whitlock, Eckenrode, et al., 2006). However, emerging literature does provide useful estimates. Rates among young adolescents tend to range from 7.5% – 28% (Hilt, Nock, Lloyd-Richardson, & Prinstein, 2008; Muehlenkamp, 2005), but of recent interest are rates of NSSI within the college population. A study by Heath, Toste, Nadecheva, and Charlebois (2008) found a prevalence rate of 11.7% at one Canadian university. Whitlock, Eckenrode, et al. (2006) conducted a study of 2875 American college students enrolled in an Ivy League school and found a 17% prevalence rate of one or more NSSI acts. A higher rate of 35% was found within one college population (Gratz, Conrad, & Roemer, 2002). Regardless of

between-study discrepancies, the literature consistently reports NSSI as a relatively high-frequency behavior among college students. For this reason, continued research regarding NSSI precipitants, functions, and potential protective factors is needed.

Much of the research to date has focused on possible risk factors for NSSI (e.g., Gratz et al., 2003). For the purposes of the current study, a risk factor is being defined as a variable that is linked statistically to some negative result or ending (Kraemer et al., 1997). There are many documented risk factors for NSSI including substance abuse, childhood abuse, eating disorders, and intensity of emotional reactivity (e.g. Gratz et al., 2002; Nock et al., 2006; Paul, Schroeter, Dahme, & Nutzinger, 2002). However, two of the most frequently studied risk factors for NSSI are traits of borderline personality disorder (BPD) and Axis I disorders such as depression and anxiety (Gratz et al., 2002; Klonsky, 2007; Linehan, 1993; Nock & Prinstein, 2004).

Interestingly, research regarding factors that may work to prevent or decrease NSSI frequency has been largely overlooked. In his seminal article, Rutter (1987) defined a protective factor as a variable that can moderate the relationship between risk factors and the behavioral variable of interest. This working definition will be used throughout this document. One potentially promising protective factor is social support. Social support has long been considered an important contributor to positive mental health (e.g., Paykel, 1994), however very limited literature has suggested the importance of social support systems in NSSI specifically. The purpose of the current study is to review key factors believed to increase risk for NSSI and empirically examine the role of social support in moderating these factors. A more detailed understanding of social support's potential as a protective factor has important implications for NSSI prevention and treatment efforts.

Risk Factors: BPD and Emotional Dysregulation

An understanding of NSSI risk factors is the first step in examining how social

support may be an important protective factor to consider. Some of the most commonly seen risk factors can be conceptualized within the Biosocial Theory (Linehan, 1993). The theory provides an empirically supported conceptualization of risk factors for the development of Borderline Personality Disorder (BPD), of which NSSI is a diagnostic criterion (APA, 2000). Although NSSI has been linked to a variety of mental disorders in adolescents and adults (Jacobson, Muehlenkamp, Miller, & Turner, 2008; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006), its frequent presence in BPD represents perhaps the most commonly recognized demographic for NSSI (e.g. Kemperman, Russ, & Shearin, 1997). BPD is characterized by long-standing patterns of unstable self-image, affect, and interpersonal relationships. Individuals with BPD often report chronic feelings of emptiness and suicidal ideation as well as NSSI (APA, 2000). Current estimates suggest NSSI occurs in 50% to 91% of those meeting diagnostic criteria for the disorder, and that a diagnosis of BPD significantly increases risk for NSSI (Zanarini, Frankenburg, Ridolfi, & Jager-Hyman, 2006). Additionally, emerging research appears to support emotion dysregulation as a critical risk factor for NSSI (e.g., Gratz and Roemer, 2004), which may aid in understanding the association between BPD and NSSI since both sets of problems are believed to result from emotion regulation difficulties. Because the current study examined emotion dysregulation as well as depression and anxiety as NSSI risk factors, it is useful to note the conceptual differentiation. In Linehan's discussion of BPD traits, she refers to emotion dysregulation as brief, transient mood changes generally lasting a few hours, and no more than a few days (Linehan, 1993). Emotion dysregulation is characterized by lability and rapid mood changes. This is in contrast to the longer standing mood changes and negative affect seen over weeks, months, or years in depression and anxiety (APA, 2000).

The primary assumption from the Biosocial Theory (Linehan, 1993) is that individuals with BPD, and often NSSI, struggle to effectively regulate their emotions for

several reasons. First, they may be biologically predisposed to intensely experiencing emotional stimuli and are often in an emotionally aroused state. Once aroused, these individuals have a slower than average return to baseline level of emotionality. Preliminary research on emotional sensitivity and biological markers of emotion dysregulation in persons diagnosed with BPD offers some support for this (Bohus, Schmahl, & Lieb, 2004; Donegan et al., 2003). Although research in the area is limited, Nock and Mendes (2008) found initial evidence for similar biologically-based emotion regulation difficulties in individuals with NSSI but no BPD diagnosis. In addition to biological vulnerabilities, the Biosocial Theory posits that one of the primary social factors contributing to the development of emotion regulation difficulties is being raised in an invalidating environment.

Invalidating Family Environment

The invalidating family environment is characterized by caregivers (e.g., parents) who routinely criticize or trivialize the emotional and cognitive experiences, or internal experiences of the child (Linehan, 1993). For example a frightened child crying in an invalidating environment may be told to "quit acting like a baby." This statement trivializes the emotional experience of the child, communicating that the perception is inaccurate or unimportant. Over time this pattern teaches the child that his or her internal interpretation of events cannot be trusted, and he or she looks to the environment for clues as to how to respond to a situation. This loss of ability to depend on one's own emotional interpretations of an event increases vulnerability to the emotion dysregulation seen in BPD (Linehan, 1993).

To offer further evidence for the potential salience of emotional and social factors in NSSI, including the invalidating family environment, Nock and Prinstein (2004) offered a behaviorally-based functional model of NSSI. They proposed that NSSI occurs because it is reinforced either within oneself (automatically), or within

the environment (socially). Automatic reinforcement changes an individual's internal experience or feelings in a way that is reinforcing. The reinforcement can be either positive or negative, depending upon whether an internal experience is increased or decreased. A commonly cited type of automatic positive reinforcement within the NSSI literature is an increase in feelings of emotional self-control, while a common type of automatic negative reinforcement is decreased feelings of emotional pain or suffering (Klonsky, 2007; Nock & Prinstein, 2004). In fact, Nock and Prinstein (2004, 2005) found the reduction of negative feelings to be the most commonly cited function of NSSI. Automatic positive reinforcement, or the addition of some desired feeling (e.g., physical pain), was also a commonly cited function. Physical pain can be reinforcing for some individuals who report that the pain of NSSI grounds them or brings them back from episodes of dissociation and numbness (Brown, Comtois, & Linehan, 2002; Penn, Esposito, Schaeffer, Fritz, & Spirito, 2003). The pain can also represent gratification of the perceived need to punish oneself (Klonsky, 2007, 2009).

Socially based reinforcement (e.g., using NSSI to feel a part of a social group) was less common, though still reported at significant levels (Nock & Prinstein, 2004). Like automatic reinforcement, social reinforcement can be either positive or negative. Commonly reported positive social reinforcement functions included self-injuring to gain control of a situation or to alter the behavior of some individual. Negative social reinforcement functions included self-injuring to avoid doing other unpleasant activities such as work or school (Nock & Prinstein, 2004).

Nock and Prinstein's (2004) functional model of NSSI, which includes emotion regulation as a primary function of the behavior, is compatible with the Biosocial Theory's conceptualization of emotion dyregulation and the invalidating family environment as potential precipitants to BPD and/or NSSI. In an effort to identify risk factors and causal links in NSSI, researchers have expanded beyond specific BPD

characteristics as risk factors for NSSI. This has yielded evidence for overlap between NSSI and multiple Axis I disorders. A review of the literature suggests that depression and anxiety are two of the disorders most commonly co-morbid with NSSI.

Risk Factors: Depression and Anxiety

The Biosocial Theory describes emotion dysregulation as relatively brief, acute changes in emotion. However, longer-term mood and anxiety disorders are also associated with BPD and NSSI. Depression is the single most commonly identified co-morbid Axis I diagnosis of individuals with BPD (Paris, 2005). In a study involving 379 individuals meeting diagnostic criteria for BPD, Zanarini et al. (1998) found that 82.8% simultaneously met criteria for major depression and 38.5% met criteria for dysthymia. Research has also demonstrated that individuals with BPD experience increased symptom severity on depression scales compared to those with either no personality disorder or a personality disorder other than BPD (Comtois, Cowley, Dunner, & Roy-Byrne, 1999). A study of 218 individuals in a medical primary care setting found that 36% of those meeting criteria for BPD also met criteria for depression (Gross et al., 2002). Similarly, a study using a community sample of adults found a 41% co-morbidity rate for depression and BPD (Swartz, Blazer, George, & Winfield, 1990).

Anxiety is perhaps the second most commonly co-morbid Axis I disorder. Zanarini et al. (1998) found that 88.4% of individuals meeting criteria for BPD also met criteria for one or more Axis I anxiety disorders. Post-traumatic stress disorder (PTSD) is among the most commonly co-morbid anxiety disorders. Zanarini et al. (1998) found a co-morbidity rate of 56% for PTSD. Simiarly, 48% met criteria for panic disorder and 46% for social phobia.

The overlap between BPD and NSSI has strong empirical support. However, it is worthy of note that, in studies of non-clinical population, depression and anxiety have also been found to be co-morbid with NSSI independent of BPD (e.g. Muehlenkamp &

Gutierrez, 2004, 2007; Ross and Heath, 2002). Diagnoses of mood disorders, most often depression, are also commonly found independent of BPD among inpatient persons who engage in NSSI (Jacobson et al., 2008; Nock et al., 2006).

The literature to date has documented several core risk factors for NSSI. An understanding of NSSI risk factors is crucial to furthering the field's knowledge and treatment of the behavior. However, knowledge of protective factors that may moderate the relationship between risk factors and NSSI frequency are equally important and, to date, largely overlooked in the literature. For example one of the most well documented risk factors, the invalidating family environment, points to the potential importance of social networks in the development of NSSI. Recent research has also shown support for socially motivated functions of self injury, such as participating in NSSI to change others' feelings or to communicate distress to others (Nock, 2008; Heath et al., 2008). Given this emerging research regarding the social aspects of NSSI and the Biosocial Theory's emphasis on social aspects, the protective potential of social support is likely to prove an important area of focus in NSSI research.

Social Support: Potential Protective Factor

Social support exists in many forms, and researchers have suggested its benefits to mental health occur in several ways. One of the most common benefits is that social support provides a buffer against stress by promoting positive coping techniques, such as asking others for help (Kawachi & Berkman, 2001). Individuals with a strong social network have more opportunities to seek assistance. Social support also produces positive feelings about one's self-worth and security, such as group belongingness and friendship (Kawachi & Berkman, 2001). In contrast, individuals who have poor or limited social support networks commonly demonstrate deficits in coping skills when responding to stress (Piccinelli & Wilkinson, 2000). Research has consistently shown deficits in coping skills among those with a history of NSSI (e.g., Evans, Williams, O'Loughlin, &

Howells, 1992; Nock & Mendes, 2008; Speckens and Hawton, 2005), however little is known about how social support may moderate this deficit.

One recent study of 6,020 adolescents found evidence for a lack of social support among those with a history of NSSI (Evans, Hawton, & Rodham, 2005). Specifically, individuals with a history of NSSI were more likely to endorse feeling overwhelmed by stressors and in need of outside sources of help (e.g., friends, trusted adults), but were less likely than the control group to ask for help from any source. The NSSI group also reported feeling as if they had few people to talk to, and they were less likely than their non-NSSI peers to seek support from parents or teachers. When they did seek social support, they were more likely to seek help from friends rather than any other source (Evans et al., 2005).

The study by Evans et al. (2005) suggests that, among adolescent self-injurers, peer networks are crucial sources of social support. Consistent with this, Whitlock, Powers, and colleagues (2006) examined the growing number of NSSI-related peer networks on the internet. The study used observational data from internet message boards to examine the role of "virtual" social support. It was found that adolescents with a history of NSSI used message boards most commonly to exchange support, share personal stories, and voice opinions. Although many individuals find this type of social support in daily life, the authors suggest that the internet provides an anonymous and safe-feeling social support for teens who might otherwise have difficulty developing a support network (Whitlock, Powers, et al., 2006). The study offers important data regarding the importance of social support, however it has limited generalizability as it focused only on the adolescent age group and examined the very specific niche of internet social support. A more broadly focused examination of the role of social support is needed.

Research regarding social support in college students with NSSI is very limited.

A literature review revealed one study conducted by Andover, Pepper, and Gibb (2007). They found that college women with a history of NSSI were less likely than their non-NSSI peers to utilize social support as a coping technique during periods of stress. Further evidence for the importance of the role of social support in NSSI in college students can be seen by examining indirect links between the two concepts. One such indirect link exists in the relationship between risk factors for NSSI and social support.

Specifically, affective disorders such as depression and anxiety have been shown to be connected to levels of social support. In a large scale study involving a non-clinical sample of 1192 individuals Pierce et al. (2000) found a negative correlation between levels of depression and levels of social support. Similarly, Paykel (1994) found that the absence of social support is associated with both initial onset and relapse in depression, suggesting social support can serve as a protective factor against depression. Similar relationships have been found between social support and anxiety (Erickson, Beiser, & Iacono, 1998), such that higher levels of social support appear to be associated with reduced anxiety levels. There is a high level of co-morbidity between depression, anxiety, and NSSI (e.g., Klonsky, Oltmanns, & Turheimer, 2003) and recent functional models have suggested that affect regulation is a significant source of reinforcement for NSSI (Nock & Mendes, 2008; Nock & Prinsetein, 2004). Affect regulation appears to be a key function of NSSI in both those meeting criteria for BPD (e.g., Brown et al., 2002) as well as those who do not (e.g., Laye-Gindhu & Schonert-Reichl, 2005). Social support may mitigate the relationship between depression, anxiety, and NSSI such that higher levels of social support decrease the co-morbid relationship between the two disorders and NSSI.

Family environments that are dysfunctional or invalidating in nature have been correlated with NSSI in recent research, and an invalidating family environment is thought to represent a risk factor for the development of NSSI (Crowell et al., 2008). Family units are one of the most influential types of social support, particularly early in

life, and researchers have demonstrated an increased interest in the potential for parental validation and nurturance as a protective factor against NSSI (Kam-shing, 2005; Gratz et al., 2002). However, not all social support comes from the family environment, and it is possible that social support from sources other than family members (e.g., friends, professionals) may moderate the relationship between invalidating family environments and NSSI. That is, having additional social support outside of the family reduces the connection between invalidating family environments and the incidence of NSSI.

Although research regarding the specific connection between family environment and NSSI is, to date, extremely limited one recent study of adolescents with a history of NSSI demonstrated a negative correlation between level of family cohesiveness and NSSI (Crowell et al., 2008). Research has also demonstrated NSSI is associated with poorer parental attachment and neglect within the family unit (Gratz et al., 2002). These finding are consistent with the Biosocial Theory (Linehan, 1993) which suggests that dysfunctional family relationships including invalidating environments disrupt attachment and play a role in the development of BPD traits, which are commonly found among people reporting NSSI (Zanarini et al., 2006). The Biosocial Theory, combined with the initial research demonstrating that dysfunctional or invalidating family environments increase risk for NSSI (e.g., Crowell et al., 2008), suggests that further research regarding family relationships and attachments are likely to provide insight into the possible mitigating effects of social support and NSSI.

Aspects of Social Support

A few studies have documented a relationship between social support and NSSI (e.g. Evans et al., 2005; Whitlock, Powers et al., 2006). However, there is no known research to date examining how specific aspects of social support may relate to, and protect against, NSSI. Researchers have conceptualized social support in myriad ways, with some suggesting there are several sublevels of social support. For example, Cutrona

and Russell (1987) suggest that attachment represents one sublevel, and may be defined as a feeling of emotional bonding and closeness to others. Attachment is thought to provide a sense of security and connectedness. Although research regarding parental attachment and NSSI is limited, as suggested above, poor attachment within the family unit has been found to correlate with NSSI (Gratz et al., 2002). Poor attachment between child and caregiver can occur for numerous reasons including abuse, neglect, or criticism, and this poor attachment teaches the child that interactions with others (specifically the parent) are not safe, reliable, or rewarding (Yates, Tracy, & Luthar, 2008). Abuse, neglect, and criticism within the parent-child relationship have been demonstrated to occur more often in individuals with NSSI (Gratz, 2002; Low et al., 2000; Yates et al., 2008), suggesting that individuals with a history of NSSI may have lower levels of attachment-type social support.

Social integration is a second subunit of social support (Cutrona & Russell, 1987) and, as its name would suggest, is conceptualized as a feeling of belongingness to a particular group with which one shares common activities, interests and beliefs. Whitlock, Power et al.'s (2006) study examining the role of internet communications in adolescents with a history of NSSI provides an excellent example of the potential importance of social integration in NSSI. The study suggests that NSSI in and of itself may serve as a social niche or group where individuals feel acceptance and belonging. Joiner's (2005) Interpersonal Theory of Suicide also asserts the importance of poor social integration as a risk factor for self-destructive behavior. The theory suggests that failed belongingness or alienation from others is a significant risk factor for suicide, and there is empirical evidence supporting this idea (Joiner & Van Orden, 2008). The concept of failed belongingness has been less clearly delineated within the NSSI literature, but may be important especially given Joiner's (2005) assertion that acts of NSSI may contribute to later suicidal behaviors.

The third dimension or subunit of social support is the opportunity for nurturance, or the opportunity to care for others. The idea of being relied upon creates a sense of usefulness and importance, and is similar to the fourth social support subunit of reassurance of worth. This relates to having personal characteristics and skills recognized and valued by others (Cutrona & Russell, 1987). No research to date has examined the unique contribution of opportunity for nurturance. However, research has suggested higher levels of worthlessness in individuals with a history of NSSI (Ross & Heath, 2002), suggesting that reassurance of worth may be an important aspect of social support. It has also been suggested that group therapy for the treatment of NSSI can be useful because group members rely on one another to provide empowerment and support (Kokaliari, 2005), thus providing an opportunity for persons with NSSI to prove and receive both reassurance and nurturance in a social environment.

The final two social support dimensions suggested by Cutrona and Russell (1987) are reliable alliance and guidance. Reliable alliance is the belief that others can be counted on for direct assistance when needed. Research with adolescents has shown that those with a history of NSSI reported feeling as if they had few people to talk to about their problems, and they were less likely than their non-NSSI peers to seek support from parents or teachers (Evans et al., 2005). This suggests that individuals with a history of NSSI may demonstrate lower levels of the reliable alliance dimension of social support. Lastly, guidance is conceptualized as receiving advice or information from others. Research in this area is limited, though an internet-based study of adults suggests that those with a history of NSSI often ranked satisfaction level for assistance from medical and mental health professionals as low (Warm, Murray, & Fox, 2002).

These six unique sub-factors of social support offer a more detailed understanding of a broad concept. Research to date has provided both direct and indirect evidence for the importance social support in NSSI. However, current research is lacking a detailed

conceptual explanation for how social support affects the complicated behavior of NSSI. Examining the role of social support within the context of clinical risk factors for the development of NSSI, specifically the invalidating environment and BPD traits such as emotion dysregulation, will demonstrate that social support acts specifically as a protective factor against NSSI.

The Current Study

The purpose of the current study is to contribute to the existing knowledge regarding potential risk factors for NSSI as well as expand upon the knowledge of protective factors for NSSI, namely social support. The study of risk factors is crucial as it allows researchers and clinicians to more accurately understand and predict NSSI. It also points toward potential areas for treatment intervention. Although a thorough understanding of what puts an individual at risk for NSSI is important, the area of potential protective factors may be equally important and has been under-studied. The role of social support has long been considered an important protective factor in mental health (e.g., Kawachi & Berkman, 2001); however, research regarding its specific role in NSSI has been extremely limited. If in fact social support does play a protective role in NSSI frequency, it may be very useful clinically because social support is something that an individual can modify via treatment. For example, one might attend a support group to increase social support. Conversely, the risk factors associated with NSSI are not as easily controlled by the individual, for example an individual cannot modify how he or she was treated as a child. In this way, social support may hold promise for clinical interventions. The primary purpose of this study is to clarify the nature of social support's role in the context of NSSI and NSSI risk factors. To do this, data was collected from two groups: those with a history of NSSI and those with no history of NSSI. Group differences in level of perceived social support, depression, anxiety, BPD traits, and invalidating family environment were examined. Moderational analysis of the effect of social support on the

relationship between each NSSI risk factor and NSSI frequency were also completed. Based on a review of the literature, the following hypotheses were made:

Hypotheses

1. Significant group differences will exist between the NSSI and control groups regarding level of perceived social support. Specifically, those with a history of NSSI will report lower levels of social support than those with no history of NSSI.
2. Significant group differences will exist between the NSSI and control groups on each of the identified NSSI risk factors. Those with a history of NSSI will have higher levels of depression, anxiety, BPD traits, and invalidating family environment experiences than peers with no history of NSSI.
3. Total social support will moderate the relationship between each NSSI risk factor (i.e. depression, anxiety, BPD traits, and invalidating early family environments) and the frequency of NSSI. That is, an interaction between social support and each of the risk factors will show a buffering effect that lessens NSSI frequency.
4. In addition to the overall interactions between social support and each of the four NSSI risk factors, it is hypothesized that three specific subscales of social support will each independently moderate the effect of the invalidating family environment on NSSI frequency. The subscales of attachment, social integration, and reliable alliance will each demonstrate a significant interaction with the invalidating family environment. The interaction will be consistent with a buffering or protective effect moderating (decreasing) the relationship between the invalidating family environment and NSSI frequency.

CHAPTER II

METHOD

Participants

Two hundred thirty-three participants (25.4% male, 74.6% female) completed the study. Participants were all over the age of 18 and currently enrolled in an undergraduate psychology course at the University of North Dakota. The mean age of participants was 19.75 years (*SD*=1.44). The majority of participants (88.7%) reported being of Caucasian descent. Additionally, 2.4% identified themselves as Asian, 1.6% Native American, 1.2% other, 0.8% Black, and 0.4% Hispanic.

Due to the low base-rate of NSSI within the larger population data collection procedures for the current study resulted in a larger group of no NSSI (*N*=163) compared to those with a history of NSSI (*N*=70). There were also more females (74.6%) versus males (25.4%) in the total sample. Therefore, control participants were matched to NSSI participants on age and gender to produce two equal cells with 70 participants each (i.e. NSSI and no NSSI). No significant sex differences existed after the matching procedure, $X^2(1) = .00, p = 1.00$. Similarly, no significant age differences existed after the matching procedure, $t(138) = -.55, p > .05$.

Procedure

Participants were recruited through a mass screening process of undergraduate psychology courses implemented at the beginning of the fall and spring semesters. In addition to the mass screening, participants were recruited via flyer announcements posted throughout the psychology department, and sign-up sheets were placed in the participant recruitment area of the psychology building. The majority of the non-NSSI

control group was derived from volunteers on the sign-up sheet. However, due to the low incidence of the target behavior (NSSI), some over-sampling was done in order to obtain a sample of sufficient size. Mass screening data were used to identify students with a history of NSSI who agreed to be contacted for future research. These students were contacted by phone and/or email by researchers and invited to participate. All students received extra credit to compensate them for their time and effort. The amount of extra credit was determined by the individual course instructors.

Participants met in groups of up to six individuals in a research lab housed on campus. They were informed about the nature of the study and those who agreed to participate provided written informed consent prior to completing the study. After completing the consent process, participants were given a packet of questionnaires inquiring about basic demographics, NSSI, depression, anxiety, childhood environment, BPD traits, and social support systems. The questionnaires required approximately 45-60 minutes to complete. NSSI, social support, depression, anxiety, and childhood environment were all measured by one questionnaire per variable of interest. The variable BPD traits was derived from a combination of three measures in an effort to most accurately capture the key characteristics of this multi-faceted diagnosis. Each of the measures is reviewed in detail below.

Participants were asked about past and present NSSI and suicidal ideation. To ensure the safety of study participants, questionnaire responses were reviewed for suicide risk prior to the participant receiving his/her extra credit slip. Two areas of the response packet were closely screened. Students who endorsed item nine on the BDI-II at a level of two or higher (i.e., "I would like to kill myself.") were asked to speak privately about their safety with a trained graduate student in clinical psychology. In addition to item nine on the BDI-II, participant responses to the DSHI were reviewed. Any participant who indicated having participated in NSSI within the past month was also referred to

the graduate student for a safety debriefing. Following a risk evaluation, the graduate student made appropriate referrals to community resources, and contacted the project's faculty advisor as needed if imminent risk was determined. Upon completion of the data collection 18 of 233 participants (7.72%) completed the additional safety debriefing with a graduate student.

Measures

Deliberate Self-Harm Inventory (DSHI; Gratz, 2001). The DSHI (see Appendix A) is a self-report inventory consisting of 16 items that assess multiple aspects of NSSI, including the type of injury (e.g. cutting, burning), frequency of behavior, severity of injuries, and duration of NSSI. Participants responded to each item by indicating whether or not they have engaged in the specified behavior. If the item was endorsed positively participants answered follow-up questions regarding frequency, etc. based on Likert-type scales. Scoring consisted of tallying the number of NSSI behaviors endorsed as well as more detailed information regarding frequency of injury, age of onset, medical assistance used, etc. Scores can range from 0 (no history) to over 100. The DSHI has demonstrated initial strong psychometric properties. In a sample of 150 college undergraduates, it was found to have acceptable reliability both internally ($\alpha = .82$), and in test-retest procedures ($r = .92$). The DSHI was found to accurately identify those with a history of NSSI from those with no history of NSSI, based on follow-up interviews. Construct validity for the DSHI is demonstrated in modest correlations with other self-report and observation measures of NSSI (Gratz, 2001).

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II (see Appendix B) is used to measure clinical symptoms of depression. It consists of 21 questions, and each question is answered with a score of 0, 1, 2, or 3, depending upon the extent to which the individual is experiencing the particular symptom of depression. Total scale scores are calculated by summing all the responses, with scores between 0-19

indicating minimal or mild depression and in the range of 20-63 representing moderate to severe depression.

Reliability and validity of the BDI-II has been extensively examined in both adult outpatient samples and college samples. In a study of 120 college students, the BDI-II was found to have a good level of internal reliability ($\alpha = .93$) as well as acceptable rate of test-retest reliability. Construct validity for the BDI-II has been demonstrated via acceptable correlations with existing measures of depression. (Beck et al., 1996). Further support for the use of the

BDI –II as a reliable and valid measure of depression in college students is demonstrated in a study of 137 students receiving services at a university counseling center (Sprinkle et al., 2002). A strong correlation ($r = .83$) was found to exist between scores on the BDI and scores on the mood disorder portion of the Structured Clinical Interview for DSM-IV (SCID), suggesting that the BDI-II accurately identifies what is generally conceptualized as major depression.

State-Trait Anxiety Inventory, trait portion (STAI; Spielberger, 1983). The STAI (see Appendix C) is a self-report measure of anxiety. It consists of forty questions, with twenty addressing current anxiety level and twenty addressing general anxiety level. For the purposes of the current study, only the portion addressing general anxiety level (i.e., trait anxiety) was administered because the interest is in a general anxiety level over time rather than the level of anxiety the participant is currently experiencing (i.e., state anxiety). The STAI asks individuals to rate the level to which they agree with a given statement on a scale of 1 (Strongly Disagree) to 4 (Strongly Agree). Scores are obtained through summation and range from 20-80 with higher scores indicating higher levels of trait anxiety. The STAI has consistently demonstrated strong reliability ($\alpha = .90$) for the trait portion of the inventory. When compared with other measures of trait anxiety, the STAI shows good construct validity with correlations ranging from $r = .41$-$.85$ (Spielberger, 1983).

Parental Bonding Instrument (PBI; Parker, Tupling, & Brown, 1979). The PBI (see Appendix D) is a 25 item self-report measure of parental attitudes and behaviors. The scale is divided into two subscales, parental care and parental overprotection. The current study will use only the Parental Care scale, as it is more closely related to the concept of the invalidating family environment. Concepts measured by the Parental Care subscale include warmth, indifference, empathy, and rejection. Individuals are asked to rate the extent to which their mother (or maternal role model) is similar to each of the 12 statements of the subscale. Ratings use a four point Likert-type scale with 1 = Very Like and 4 = Very Unalike. Participants repeat the process to rate their father (or paternal role model).

The initial psychometric properties of the PBI were established with a sample of 150 students, nurses, and parents (Parker et al., 1979). Internal consistency for the Parental Care subscale was found to be acceptable ($\alpha = .85$), as was test-retest reliability ($r = .76$). Since the time of the initial development study, multiple studies have replicated strong psychometric properties for the scale (e.g., *Wilhelm, Niven, Parker, & Hadzi-Pavlovic*, 2005; Kitamura & Suzuki, 2008).

McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD; Zanarini et al., 2003). The MSI-BPD (see Appendix E) is a brief, 10 item self-report questionnaire designed to assess symptoms of BPD. For the purposes of the current study, it is being used in combination with two other measures to form a variable described as BPD traits. The individual MSI-BPD items were derived from DSM-IV criteria for BPD, and include symptoms such as chronic feelings of emptiness, interpersonal difficulties, and impulsivity. Individuals respond with a yes or no as to whether they have experienced the symptoms. The measure is scored on a 1-10 scale, with each "yes" answer equaling one point. Zanarini et al. (2003) determined maximum accuracy in diagnosis occurred when the cutoff for a BPD diagnosis was seven. That is, those with a score of six or

below do not meet criteria for diagnosis, while those with a score of seven of above do.

The development of the MSI-BPD utilized a sample of 200 subjects with a history of psychiatric treatment. Zanarini et al. (2003) found that the measure correctly identified 81% of those meeting DSM-IV criteria for BPD (sensitivity), and correctly identified 85% of those not meeting DSM-IV criteria (specificity). Internal consistency was acceptable ($\alpha = .85$), as was test-retest reliability ($r = .74$). Since the time of its development, the MSI-BPD has been used in several studies as a screening instrument for BPD in both adolescents and adults (Klonsky & Olino, 2008; Rothrock et al., 2007).

Distress Tolerance Scale (DTS; Simons & Gaher, 2005). The DTS (see Appendix F) is a 15 item self-report measure designed to assess an individual's ability to tolerate distress. Difficulty tolerating or regulating emotions during distress is a key feature of BPD (APA, 2000; Linehan, 1993), and thus elevations on a scale of distress tolerance may indicate labile affective experiences similar to those with BPD. The scale assess four aspects of affective experiences including tolerance of distress, feelings of being absorbed or overwhelmed by distress, efforts to regulate affect, and subjective appraisal of distress. Individuals rank the ability to which they agree with each scale item on a 1-5 Likert-type scale (1 = Strongly agree, 5 = Strongly disagree). The measure is scored by summing responses, with higher scores indicating greater levels of distress tolerance. The DTS is the second of three measures comprising the BPD traits variable.

Although the scale is relatively new, initial psychometric statistics for the scale are good. In a sample of 823 college students Simons and Gaher (2005) found strong internal consistency ($\alpha = .82$). Moderate correlations between the DTS and similar measures exist such as the Affective Lability Scale (Harvey, Greenberg, & Serper, 1989) and the Negative Mood Regulation Expectancies Questionnaire (Catanzaro & Mearns, 1990).

Difficulties with Emotion Regulation (DERS; Gratz & Roemer, 2004). The DERS (see Appendix G) is a 36 item self-report questionnaire designed to assess emotion dysregulation on several dimensions including lack of awareness and lack of acceptance of emotional responses, as well as difficulties controlling impulses or effectively regulating negative emotions (Gratz & Roemer, 2004). Individuals are asked to rate how often each statement applies to them. This is done using a 1-5 Likert-type scale with 1 = almost never and 5 = almost always. Scores are summed, and higher scores indicate more frequent difficulties in emotion regulation. The DERS is the third of three measures comprising the variable of BPD traits.

Initial psychometric properties of the DERS were obtained using a sample of 479 undergraduate students. The scale demonstrated strong internal reliability with an overall alpha of .93. Test-retest was conducted over a period of 1-2 months and reliability was demonstrated to be good (r =.88). The DERS overall score also correlated significantly with scores on conceptually similar scales, suggesting construct validity is adequate (Gratz & Roemer, 2004).

Social Provisions Scale (SPS; Cutrona & Russell, 1987). The SPS (see Appendix H) is a 24-item self-report questionnaire that assesses an individual's social support system. The scale is comprised of six conceptually distinct subscales originally derived from Weiss (1974): attachment, social integration, opportunity for nurturance, reassurance of worth, reliable alliance, and guidance. Each scale consists of four items, two worded in the positive direction and two in the negative. Individuals are asked to consider their current relationships with others, including friends, family, co-workers, and community members and rate the extent to which each of 24 statements describes the relationships. The statements are rated using a 1-4 Likert-type scale (1 = Strongly disagree 4 = Strongly agree). Items are summed, and a higher total score indicates more social support resources.

Cutrona & Russell's (1987) initial norming sample was comprised of 1792 individuals, 1183 undergraduate students, 303 public school teachers, and 306 hospital nurses. The overall scale has strong internal reliability ($\alpha = .92$), and alpha scores for the six subscales ranged from .65 to .76. Since its development, the SPS has been used as a measure of social support in numerous studies (e.g. Bolger & Eckenrode 1991; Lee & Robbins; 2000), and is commonly used to demonstrate construct validity in the development of new social support measures (e.g., Dolbier & Steinhardt, 2000; Russell, 1996).

CHAPTER III

RESULTS

Description of NSSI:

A total of 70 participants (28.2% of full sample) reported a history of at least one act of NSSI; however, because oversampling was used to obtain a sufficient number of participants with NSSI, this number should not be interpreted as the naturally occurring base rate of NSSI. Among those with a history of NSSI, 44.3% reported 1-3 incidents of NSSI throughout the lifetime. A small portion of participants (4.3%) indicated 4-5 lifetime incidents of NSSI, and the largest group of participants (51.4%) indicated 6 or more acts of NSSI over the lifetime. The majority of participants (79.7%) who had a history of NSSI indicated their last NSSI act was more than 12 months ago. The mean age of onset for NSSI was 13.45 years (*SD*=3.42). Among those with a history of NSSI the most common method used was cutting the skin (42.9%) followed by punching oneself (34.3%) and severe scratching of the skin resulting in a wound (22.9%). Less commonly endorsed behaviors included banging one's head (14.3%), carving words in skin (14.3%), burning skin (8.6%), preventing wounds from healing (7.1%), and breaking bones (1.4%). A category was provided for other types of NSSI not specifically listed in the questionnaire and this category was endorsed by 12.9% of participants in the NSSI group. Behaviors included in this group were eating disordered behaviors (e.g., vomiting, restricting), overdosing on medication, and snapping rubber bands against the skin. The mean number of methods endorsed by the NSSI group was 1.84 (*SD*=1.22).

Correlations among NSSI, social support, and the proposed risk factors (i.e., depression, anxiety, BPD traits, invalidating family environment) are presented in Table 1.

As expected, both social support and NSSI are significantly correlated with each risk factor.

Table 1. Correlations Among Scores of Social Support, NSSI frequency, Depression, Anxiety, BPD traits, and Invalidating Family Environment

Measure	Depression	Anxiety	BPD Traits	IFE	SS	NSSI Freq.
Depression		**.78**	**.79**	**-.44**	**-.64**	**.51**
Anxiety	**.78**		**.81**	**-.44**	**-.71**	**.39**
BPD Traits	**.79**	**.81**		**-.41**	**-.73**	**.40**
IFE	**-.44**	**-.44**	**-.41**		**.30**	**-.36**

Note. BPD Traits = Borderline Personality Disorder Traits; IFE = Invalidating Family Environment; SS = Social Support; NSSI Freq. = Non-Suicidal Self-Injury Frequency; boldface type indicates probability the difference is due to chance.

Evaluation of Hypothesis 1:

It was hypothesized that significant group differences would exist between the NSSI group and control group on the measure of social support. Specifically, it was theorized that the NSSI group would have lower levels of social support when compared with controls. An ANOVA was used to compare group differences. Results indicated a significant difference between the NSSI and control group on the overall measure of social support as well as each of the subscales (i.e., Attachment, Social Integration, Reassurance of Worth, Reliable Alliance, Guidance, and Opportunity for Nurturance; see Table 2). Specifically, those with a history of NSSI scored significantly lower on the overall measure of social support and each of the six subscales. Lower scores on the SPS and its subscales indicate less social support and/or fewer social provisions. Multiple tests of group differences were performed and thus a Bonferroni corrected p value ($p < .007$) was used to determine significance and is represented in Table 2. When this correction is implemented the overall SPS score remains significantly lower in the group with

NSSI history. Two subscales, social integration and guidance, also remain significantly lower in the NSSI group. However, the Bonferroni correction rendered the remaining subscales (i.e., Attachment, Reassurance of Worth, Reliable Alliance, and Opportunity for Nurturance) non-significant. Although type I error inflation is an important issue when performing multiple analyses, recent literature has suggested that the Bonferroni correction tends to over-correct and cause an increase in type II errors. Experts suggest using Bonferroni with caution and examining effect sizes as well as *p* values (Cabin & Mitchell, 2000). Effect sizes for between group social support analyses ranged from small to medium and are included in Table 2.

Table 2. Differences in Social Support between Mean Scores in NSSI Group and Non-NSSI Control Group

Measure	NSSI Group Mean	SD	Control Group Mean	SD	F	Sig a	Sig b	d
SPS Overall	81.17	11.10	87.21	7.48	13.93	**.000**	**.000**	.64
SPS Attachment	13.64	2.58	14.67	1.84	7.26	**.008**	.00	.46
SPS Social Integration	13.51	2.54	14.90	1.46	15.52	**.000**	**.000**	.67
SPS Reassurance of Worth	12.96	2.20	13.74	1.46	4.65	**.033**	.033	.42
SPS Reliable Alliance	14.36	2.13	15.14	1.57	6.15	**.014**	.014	.42
SPS Guidance	14.53	2.05	15.38	1.44	7.97	**.005**	**.005**	.48
SPS Opportunity for Nurturance	12.17	2.32	13.07	1.80	6.51	**.012**	.012	.43

Note. SPS = Social Provisions Scale; boldface type indicates probability the difference is due to chance (Sig a = significant group differences at $p < .05$; Sig b = significant group differences at Bonferroni corrected $p < .007$).

Evaluation of Hypothesis 2:

The current study hypothesized that those with a history of NSSI would report significantly more symptoms than those with no history of NSSI on each of the proposed risk factors: depression, anxiety, BPD traits, and the invalidating family environment. An ANOVA was used to examine group differences in each of the risk factors (see Table 3). When results were examined using a standard $p < .05$ the NSSI group endorsed significantly more symptoms of depression and anxiety. They also indicated significantly more BPD traits (e.g., emotion dysregulation), and a significantly higher number of characteristics associated with an invalidating family environment. A Bonferroni correction was again used to account for the multiple analyses performed. All risk factor measures continued to demonstrate significant group differences with the error correction in place. The effect sizes for between group NSSI risk factors ranged from medium to large (see Table 3).

Table 3. Differences in Mean Scores of NSSI Risk Factors in NSSI Group and Non-NSSI Control Group

	NSSI Group		Control Grou		F	Sig a	Sig b	d
Risk Factor	Mean	SD	Mean	SD				
Depression	11.40	10.12	5.58	6.13	16.38	**.000**	**.000**	.70
Anxiety	40.79	11.76	32.66	8.86	21.34	**.000**	**.000**	.78
BPD Traits	120.03	32.35	99.21	23.53	18.34	**.000**	**.000**	.74
IFE Total	77.46	14.67	86.17	11.05	15.66	**.000**	**.000**	.67

Note. IFE = Invalidating family environment; Sig a = significant group differences at $p < .05$; Sig b = significant group differences at Bonferroni corrected $p < .013$; boldface type indicates probability the difference is due to chance.

Evaluation of Hypothesis 3:

The third hypothesis purported that level of social support (high, one standard deviation above the mean; low, one standard deviation below) would moderate the

relationship between each NSSI risk factor and the frequency of NSSI. The moderation would demonstrate social support as a buffering or protective factor that lessens NSSI frequency despite the presence of a risk factor. Four separate moderated multiple regressions were used to evaluate the hypothesis. To ensure a standard metric for analyses and assist with interpretation, all scale scores used in the moderation analyses were transformed to z-scores. Using the enter method, each equation consisted of the risk factor z-score (e.g., z-score of BDI), the z-score of the social support measure, and the interaction term for these two variables (see Table 4).

Table 4. Risk Factors: Moderational Analyses

Risk Factor	R^2	Enter Method	B	t	Sig.
BPD Traits	.33	BPD traits z score	.55	.88	.38
		Social support z score	.04	.06	.95
		BPD traits x social support z scores	-1.97	-5.50	**.00**
Depression	.36	Depression z score	1.35	2.20	.03
		Social support z score	.16	.30	.77
		Depression x social support z scores	-1.35	-4.40	**.00**
Anxiety	.31	Anxiety z score	1.01	1.70	.09
		Social support z score	.32	.49	.62
		Anxiety x social support z scores	-1.88	-5.21	**.00**
IFE	.14	IFE z score	-1.29	-2.86	**.01**
		Social support z score	-1.17	-2.44	**.02**
		IFE x social support z scores	.17	.34	.74

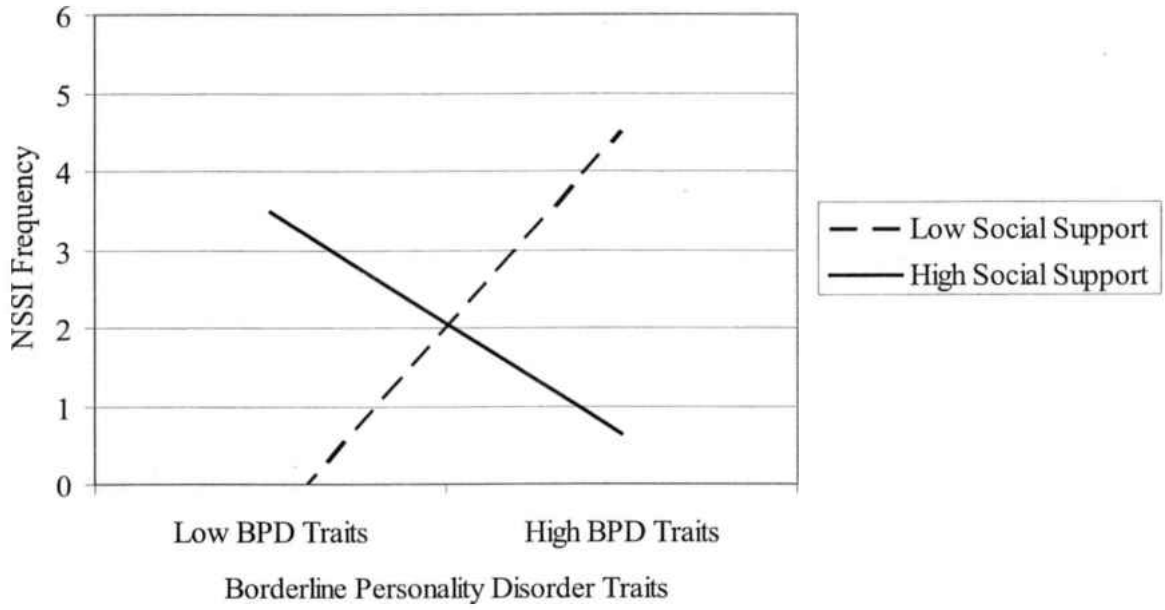
Note. IFE = Invalidating family environment; boldface type indicates probability the difference is due to chance.

BPD Traits:

The overall model for BPD traits (see *Method* for details of this variable's composition) was significant ($F(3,134) = 21.09$, $p<.05$) and accounted for 33% of the variance in NSSI (see Table 4). A significant interaction between BPD traits and social support suggests the relationship between the two variables is affecting change on NSSI

frequency, $t(67) = -5.50$, $p < .05$. Analyses of simple effects were run to better understand the nature of this relationship. The analyses revealed a significant relationship between BPD traits and NSSI frequency for those with low social support, $t(67) = 4.07$, $p<.05$; B = 2.52, $p<.05$. However, there was no significant relationship between BPD traits and NSSI frequency for participants with high levels of social support, $t(67) = -1.76$, $p>.05$.; B = -1.42, $p>.05$ (see Figure 1). That is, individuals with low levels of social support and high levels of BPD traits engaged in more frequent NSSI than individuals with the same risk factor but a high level of social support. When social support was endorsed as high there was no significant relationship between BPD traits and NSSI frequency; social support moderated (decreased) the effect of BPD traits on NSSI frequency.

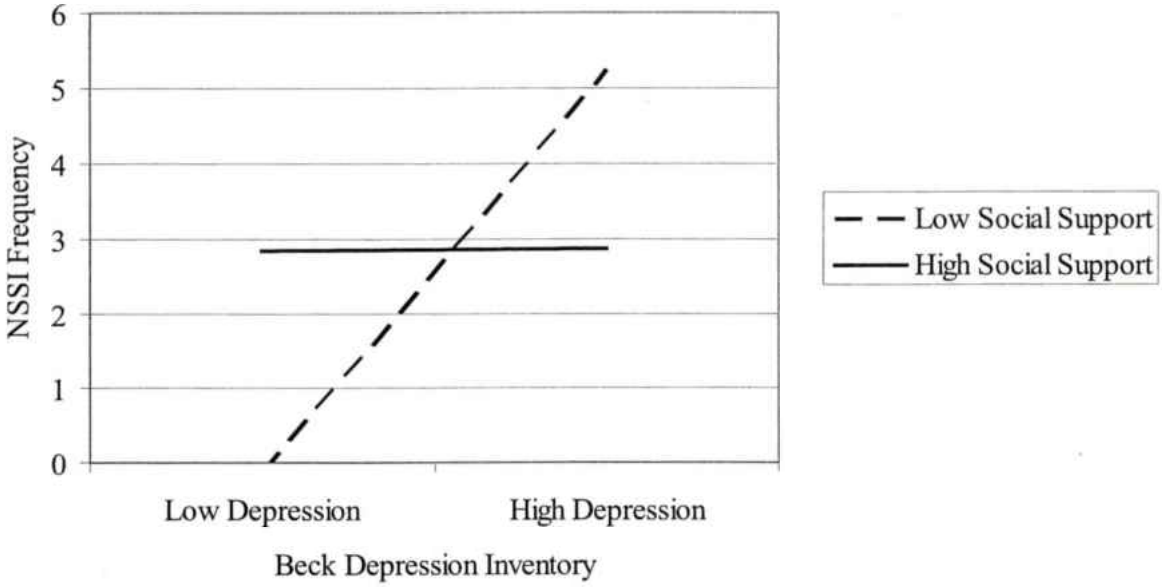
Figure 1. Interaction between BPD traits and Social Provisions Scale in predicting Non-Suicidal Self-Injury frequency. Low = 1 SD below the mean and High = 1 SD above the mean.



Depression:

The overall model for depression (measured by BDI-II) was significant ($F(3,134) = 24.12$, $p<.05$) and explained 36% of the variance in NSSI frequency (see Table 4). As with BPD traits, there was evidence of a significant interaction between depression and social support in predicting frequency of NSSI, $t(67) = -4.40$, $p<.05$. Tests of simple effects were run in order to understand the nature of the interaction. Results of the tests of simple effects revealed that depression was significantly related to NSSI frequency for people with low levels of social support, $t(67) = -4.40$, $p<.05$.; B = 2.69. However, depression and NSSI frequency were not significantly related in participants with high levels of social support, $t(67) = 0.02$, $p>.05$; B = .02, $p<.05$ (see Figure 2). As with BPD traits, individuals with low levels of social support and high levels of depression engaged in more frequent NSSI than individuals with the same risk factor but a high level of social support. No significant relationship between depression and NSSI frequency existed when high social support was present. Social support moderated (decreased) the relationship between depression and NSSI frequency.

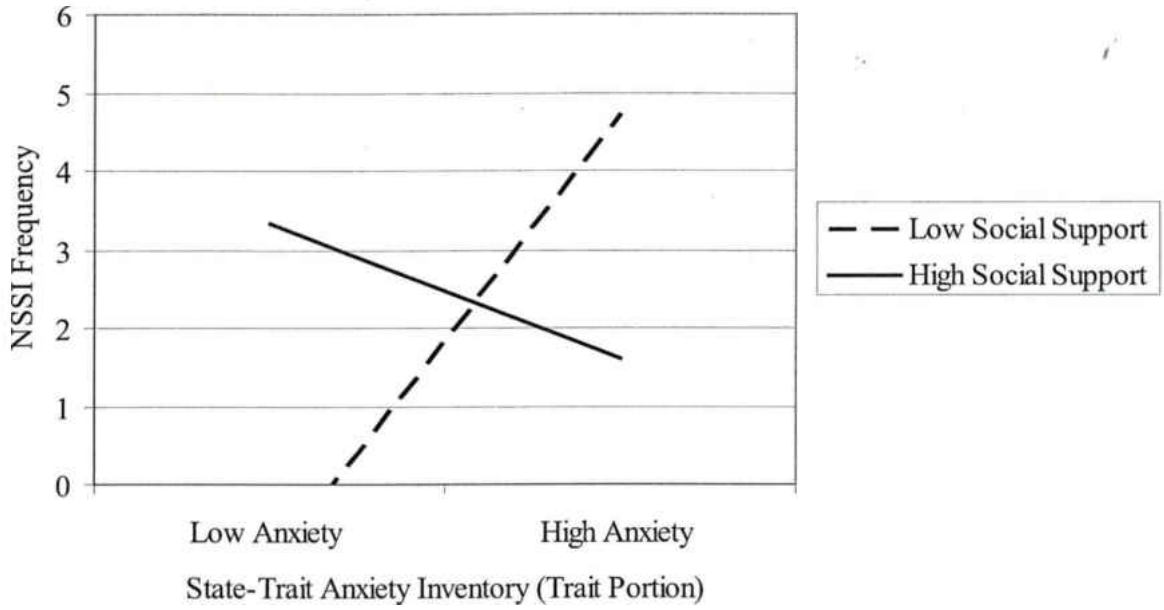
Figure 2. Interaction between Beck Depression Inventory and Social Provisions Scale in predicting Non-Suicidal Self-Injury frequency. Low = 1 SD below the mean and High = 1 SD above the mean.



Anxiety:

Analyses for anxiety (measured by STAI-trait portion) revealed results similar to that of BPD traits and depression. The overall model for anxiety was significant ($F(3,134) = 19.58$, $p<.05$) and accounted for 30% of the variance in NSSI frequency. There was a significant interaction between anxiety and social support in predicting frequency of NSSI, $t(67) = -5.21$, $p<.05$ (see Table 4). This interaction was further examined with tests of simple effects and results demonstrated that anxiety was significantly related to NSSI frequency for individuals with low social support, $t(67) = 4.52$, $p>.05$; $B = 2.89$, $p<.05$, but not for those with high social support, $t(67) = -1.17$, $p>.05$; $B = -0.87$, $p>.05$ (see Figure 3). This is the same relationship pattern that was seen with both BPD traits and depression as risk factors. Those with low levels of social support and high levels of anxiety engaged in more frequent NSSI than individuals with the same risk factor but a high level of social support. When social support was endorsed as high there was no significant relationship between anxiety and NSSI frequency. Social support changed (decreased) the effect of anxiety on NSSI frequency.

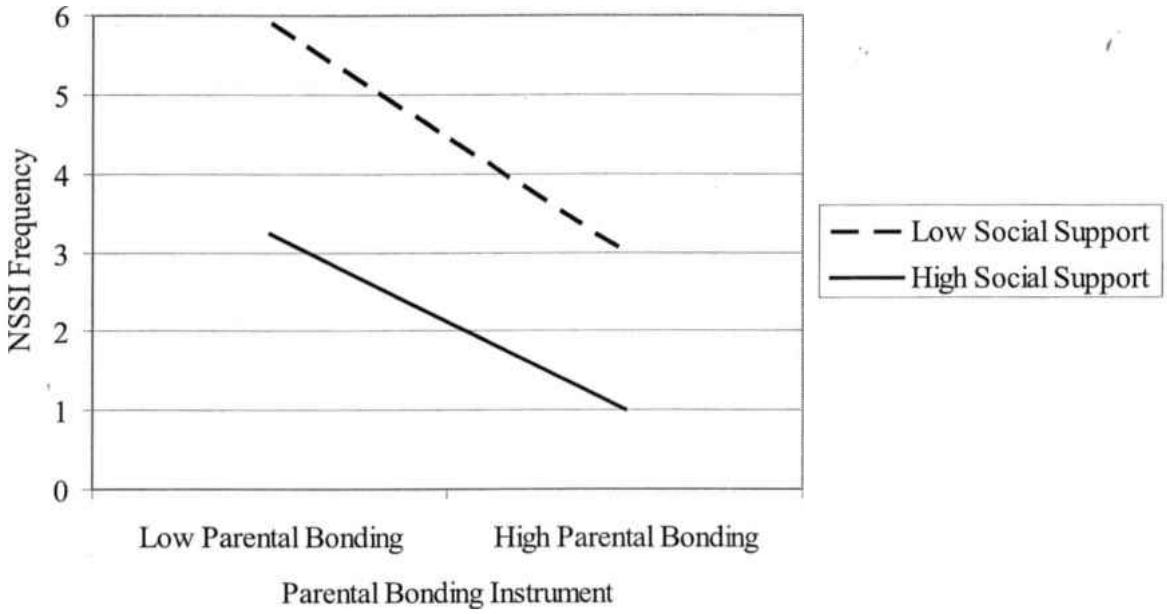
Figure 3. Interaction between State-Trait Anxiety Inventory (Trait Portion) and Social Provisions Scale in predicting Non-Suicidal Self-Injury frequency. Low = 1 SD below the mean and High = 1 SD above the mean.



Invalidating Family Environment:

The overall model for the risk factor of invalidating family environment (measured by the PBI) was significant ($F(3,134) = 7.09$, $p<.05$) and accounted for 14% of the variance in NSSI frequency (see Table 4). However, the interaction term between invalidating family environment and social support was not significant, suggesting that the relationship between this risk factor and social support does not significantly affect the frequency of NSSI, $t(67) = 0.34$ $p>.05$; $B = 0.173$, $p>.05$ (see Figure 4).

Figure 4. Interaction between Parental Bonding Instrument and Social Provisions Scale in predicting Non-Suicidal Self-Injury frequency. Low = 1 SD below the mean and High = 1 SD above the mean.



Results did, however, reveal a main effect of the invalidating family environment, meaning that for every one unit increase in PBI score (with higher scores indicating higher levels of parental bonding; a less invalidating family environment), there was an associated 1.28 unit decrease in NSSI frequency, $t(67) = -2.86$, $p<.05$; $B = -1.28$, $p<.05$. There was also a main effect of social support on NSSI frequency such that for every one unit increase in social support, there was an associated 1.17 unit decrease in NSSI frequency, $t(67) = -2.44$, $p<.05$; $B = -1.17$, $p<.05$. These main effects suggest an inverse relationship between level of parental bonding and NSSI frequency, and an inverse relationship between social support and NSSI frequency. However, there is no evidence that social support moderates the relationship between parental bonding and NSI frequency.

Evaluation of Hypothesis 4:

The fourth hypothesis proposed in the current study was that three specific subscales of the social support measure (reliable alliance, attachment, social introversion) would independently moderate or decrease the effect of the invalidating family environment on NSSI frequency. As noted above, the interaction between total social support (six subscales combined) and the invalidating family environment was not significant, $t(67) = 0.34$ $p>.05$; $B = 0.173$, $p>.05$ (see Figure 4). Consistent with this, there was no significant interaction between the reliable alliance subscale and the invalidating childhood environment, $t(67) = 1.63$ $p>.05$; $B = 0.66$, $p>.05$ (see Figure 5), the attachment subscale and the invalidating family environment, $t(67) = 1.27$ $p>.05$; $B = 0.53$, $p>.05$ (see Figure 6), or the social introversion subscale and the invalidating childhood environment, $t(67) = 0.25$ $p>.05$; $B = 0.13$, $p>.05$ (see Figure 7). That is, none of the three specified subscales of social support significantly moderated the relationship between the invalidating family environment and NSSI frequency.

Figure 5. Interaction between Parental Bonding Instrument and Reliable Alliance subscale of Social Provision Scale in predicting Non-Suicidal Self-Injury frequency

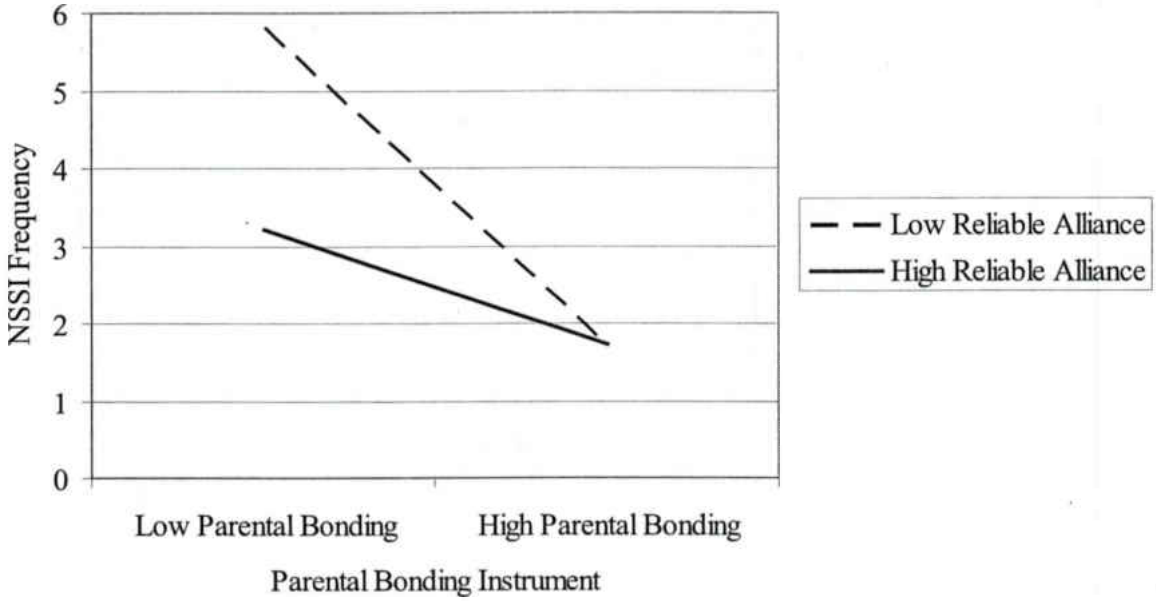


Figure 6. Interaction between Parental Bonding Instrument and Social Attachment subscale of Social Provision Scale in predicting Non-Suicidal Self-Injury frequency.

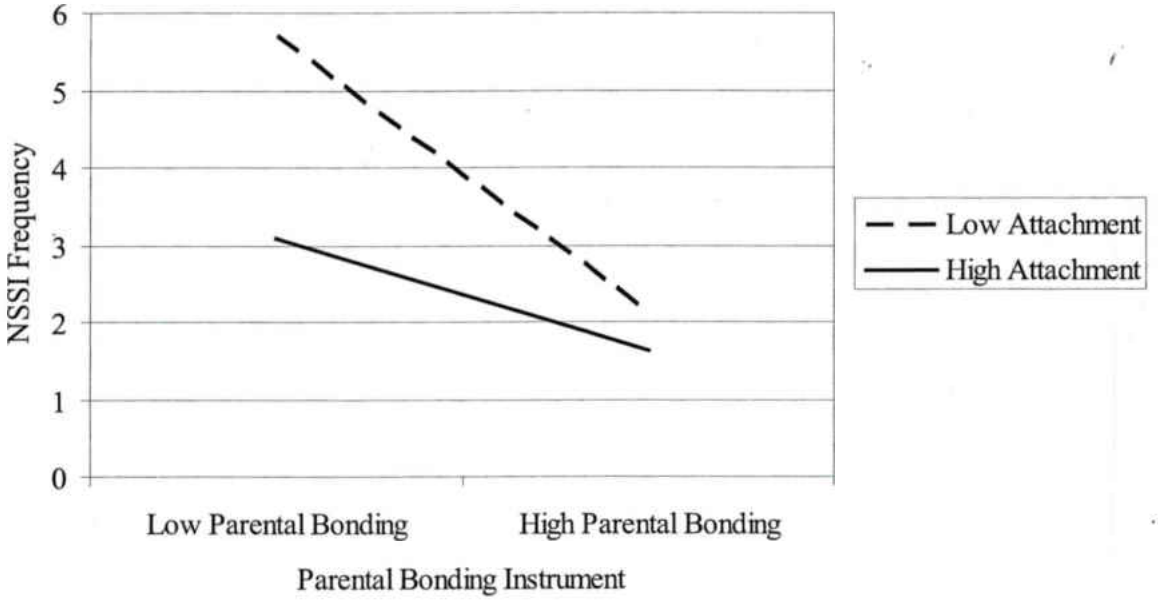
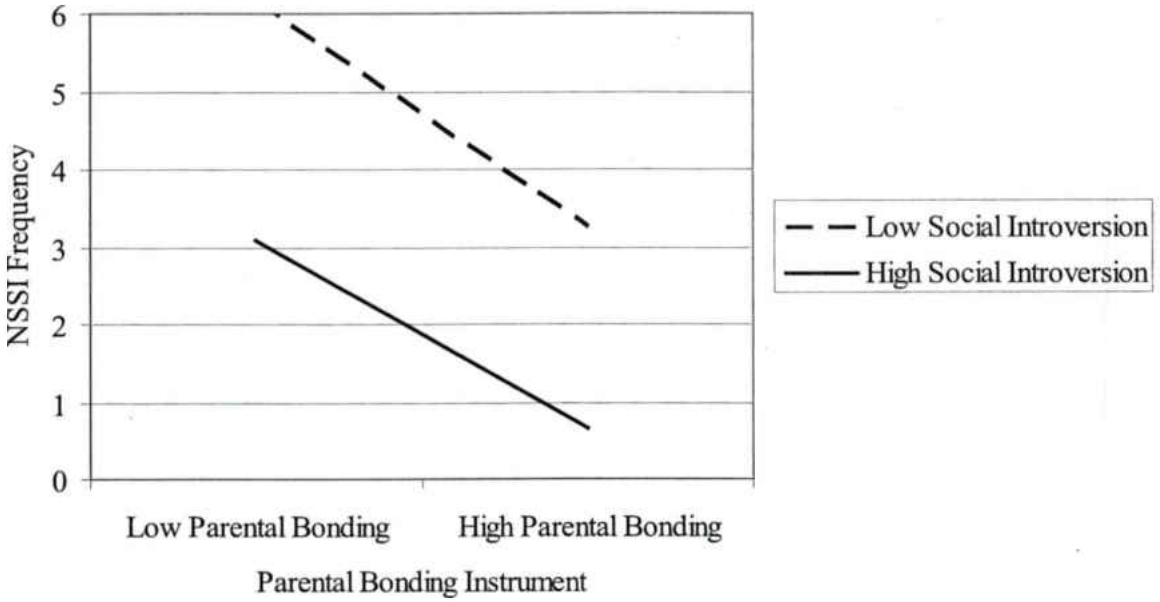


Figure 7. Interaction between Parental Bonding Instrument and Social Introversion subscale of Social Provision Scale in predicting Non-Suicidal Self-Injury frequency.



CHAPTER IV

DISCUSSION

The purpose of the current study was to examine the potential for social support to act as a protective factor in the relationship between NSSI risk factors and NSSI frequency. Social support has been robustly shown to decrease symptoms of many psychological diagnoses including depression, anxiety disorders such as OCD and PTSD, and psychotic disorders such as schizophrenia (e.g., Norman et al, 2005, Steketee, 1993, Vranceanu, Hobfoll, & Johnson, 2007).

The existing literature regarding social support and NSSI has focused primarily on commonly seen skills deficits in developing and accessing social support (e.g., Evans et al., 2005.; Whitlock et al., 2006). The current study expands on this research by examining the possible protective aspects of social support on NSSI frequency. Results partially confirmed this hypothesized effect.

Social support was found to act as a protective factor against three risk factors: BPD traits, depression, and anxiety. When one or more of these factors was present in an individual who also endorsed a low level of social support, he/she demonstrated a higher NSSI frequency than an individual with the same risk factor but a high level of social support. In fact, when social support was endorsed as high, the relationship between the risk factor and NSSI frequency was reduced to being non-significant. The consistent pattern of results across all three established NSSI risk factors provides support for the concept of social support as a protective factor in the relationship between NSSI risk factors and NSSI frequency.

Notably, correlations among depression, anxiety, and BPD traits were high,

suggesting they are measuring one underlying concept (e.g. emotion dysregulation) rather than three distinct risk factors. Social support moderates the relationship between these three risk factors and NSSI, which indicates social support may be moderating the relationship between the underlying concept and NSSI frequency. Invalidating family environment was moderately correlated with social support, NSSI, and each of the remaining three risk factors. Unlike the other three risk factors, there was no evidence of a moderating relationship between invalidating family environment and NSSI frequency. It is possible that the invalidating family environment is less closely related to current emotion dysregulation.

The results suggesting the moderational impact of social support are consistent with previous research demonstrating that social support can decrease stress and mental health problems. High levels of social support result in increased levels of positive emotions, as well as increased opportunities to ask for help during times of stress (Kawachi & Berkman, 2001). The current results are also consistent with findings that, when compared to peers, individuals with a history of NSSI report increased need for outside sources of help but decreased ability to seek that help (Evans et al., 2005). That said, one of the most clinically valuable aspects of the current findings is that level of social support can be changed. An individual may not have control over family environment or biological predispositions to emotion dysregulation, depression, or anxiety. However, both the quality and quantity of social support in a person's life can be targeted as areas of change in clinical treatment. This is a treatment target that has been largely overlooked in the current literature describing ways to treat NSSI, with the exception of Dialectical Behavior Therapy (Linehan, 1993), so the current findings offer an important avenue to explore and consider in NSSI treatment.

Results of the current study show a correlational relationship between social support and NSSI, and no causal statements can be made. However, results do suggest

further research regarding the nature of the relationship may yield useful clinical implications. For example, future research may find treatments targeting the development and maintenance of healthy social relationships are indicated for individuals who engage in NSSI. For example, Dialectical Behavioral Therapy (DBT) was developed and empirically validated to treat individuals at high risk for NSSI and suicidal behavior. The therapy is based in Linehan's (1993) Biosocial Theory which touts the importance of social aspects of human behavior. DBT teaches skills such as asking for help, maintaining self-respect within a relationship, and repairing broken relationships. Although DBT is certainly not the only treatment to focus on social relationships, it does provide insight into ways clinical treatment can encourage increased social support. Furthermore, clients who have undergone DBT report that the interpersonal skills module of the treatment is highly valuable and used frequently (Stepp et al., 2008), indicating that the improvements noted may be partially the result of enhancing social connections and support.

Although clinicians have the skill and ability to assist individuals with NSSI in developing social support, they may not always have the opportunity. Research suggests that individual with NSSI are significantly less likely than their peers to seek assistance from clinicians, teachers, or parents. When they do seek support, they are most likely to turn to peers (Evans et al., 2005). This tendency has important implications regarding the type of social support that those with NSSI are most likely to obtain. Although the current study provides support for the protective aspect of social support on NSSI, little research to date has looked at the qualitative aspects (e.g., content of support) of social support in those with NSSI. One study by Whitlock, Powers, et al. (2006) examined the use of internet message boards as a source of social contact amongst those with a history of NSSI. The authors posited that the internet provides anonymity that is appealing for individuals discussing a topic that is often fraught with shame. However, the authors also found that websites varied greatly in the quality of social support, ranging from

encouragement of NSSI to encouragement of alternative positive coping behaviors. Internet message boards are only one method through which technology is affecting the dissemination of knowledge and social support regarding NSSI. Research regarding the role of technology and NSSI is just beginning, but is an area that has likely implications in the role of social support development and protection against NSSI risk factors.

To date, research has identified multiple risk factors for NSSI, and the current study is among the first to look at factors that can decrease the effects of such risk factors. Results suggest the need for future research examining other potential protective factors. Literature on suicidal behavior has demonstrated multiple protective factors including religious beliefs, internal locus of control, and higher levels of coping skills (Donald, Dower, Correa-Velez, & Jones, 2006; Malone et al., 2000). Exploring the role of these factors in NSSI may prove fruitful. Results of the current study have exciting implications regarding the treatment of individuals currently engaging in NSSI, as well as the ability to prevent NSSI via early development of social support. The identification of additional protective factors that can be nurtured and developed in at-risk individuals will further inform clinical treatment and prevention of NSSI.

Group Differences

Results confirmed hypotheses that individuals with NSSI would report lower levels of social support. This finding is consistent with the handful of other studies suggesting social support is lower among persons who engage in NSSI. (e.g., Andover et al., 2007; Evans et al., 2005). To date, much of the research on social support within NSSI has focused on difficulties in developing and accessing social support rather than the potential benefits that having adequate social support may offer. The current study begins to explore these benefits and suggests that increasing social support has the potential to decrease the influence of NSSI risk factors and, through this, decrease NSSI frequency. In addition to extending the NSSI literature on social support and protective

factors, the current study also sought to further establish the relationship between NSSI and several documented risk factors. Consistent with existing literature (e.g., Jacobson et al., 2008; Zanarini et al., 2006), results showed the incidence of BPD traits, depression, anxiety, and invalidating family environments was higher in those with a history of NSSI compared to those with no NSSI. It is notable that the majority of the existing research regarding NSSI risk factors is correlational in nature; future research is needed in order to draw causal inferences from the relationships.

In addition to evidence provided by research replication, higher incidence of BPD traits, depression, anxiety, and invalidating family environments is also consistent with the Biosocial Theory (Linehan, 1993). The theory integrates biological vulnerabilities and social factors such as invalidating family environments as risk factors for the development of emotion dysresgulation and poor distress tolerance skills (referred to collectively as "BPD traits"" in the current study). Previous research has suggested this poor emotion regulation and distress tolerance is often seen in individuals with NSSI and, in fact, regulating emotion has been suggested to be one of the most common functions of NSSI (Klonsky, 2007; Nock & Prinstein, 2004). Empirical data from the currents study are consistent with this. Individuals with NSSI not only demonstrated lower levels of these regulatory skills, but they also reported a higher incidence of the invalidating family environment that the Biosocial Theory suggests puts an individual at risk to develop these skill deficits.

The invalidating family environment and a child's level of social support are often inextricably linked, given that the family unit is generally the single biggest source of social interaction in a child's life (Christie & Viner, 2005). An invalidating environment is one filled with criticism and angry communication styles that also consistently rejects or punishes a person's unique experience of and reactions to his/her world (Linehan, 1993). While Linehan (1993) was one of the first to acknowledge how an invalidating

environment may increase risk for the development of BPD and repetitive suicidal behavior, Wedig and Nock (2007) provided some of the first empirical evidence that this type of environment is seen more often in those with a history of NSSI when compared to peers with no NSSI. This information has important implications for treatment, as well as extends the psychosocial theory to NSSI specifically. The current findings appear to suggest that positive social support may protect against NSSI; however, developing new social support is only one way to foster this development. Wedig and Nock's (2007) work suggests that treatments aimed at changing the nature of existing social support (i.e., decreasing the level of criticism and anger expressed by parents) may also be an effective way to treat NSSI. Results of the current study are consistent with this idea. Three subscales of the social support measure were hypothesized to be most conceptually similar to the invalidating family environment: attachment, reliable alliance, and social integration. Consistent with the Biosocial Theory (Linehan, 1993), and research regarding parental criticism, results indicated less of these three types of social support among those with a history of NSSI. In addition to group differences, regression analyses revealed main effects of both social support and the invalidating family environment. Increases in the invalidating family environment were associated with increases in NSSI frequency suggesting that it is indeed related to the behavior. This provides early support for clinical interventions aimed at changing the quality of existing social support networks. Such interventions might include family communication skills training or family-based DBT skills training.

Although group differences in the current study demonstrated lower levels of all six subscales of social support, it is important to note that a non-significant interaction was found between the measure of invalidating family environment and the measure of social support. This is unexpected given that the other three risk factors (BPD traits, depression, and anxiety) did reveal moderating interactions. One likely explanation is that

the invalidating family environment represents a less direct NSSI risk factor compared to BPD traits, depression, and anxiety. In fact, the Biosocial Theory (Linehan, 1993) posits that an invalidating family environment contributes to the development of pathology indirectly, by increasing the risk for underdeveloped emotion regulation and distress tolerance skills. Previous research has demonstrated other factors indirectly related to NSSI, with perhaps the most well-understood being sexual abuse. A recent meta-analysis suggested that sexual abuse is not directly linked to NSSI, but rather the two are related because they are both correlated with specific psychiatric risk factors (Klonsky & Moyer, 2008). Although sexual abuse was not among the variables examined in the current study, its relationship with NSSI illustrates the potential for indirect variables of interest such as the invalidating family environment.

Demographic Contributions

In addition to contributing to the literature regarding risk and protective factors in NSSI, the current study also provides useful data regarding the demographic features of NSSI within a college sample. Cutting or scratching the skin has been found to be among the most common methods of self-injury (Walsh, 2006). The current study confirmed this with 42.9% of participants in the NSSI group endorsing having self-injured by cutting their skin. The second most common method was punching oneself (34.3%).

Data from the current sample produced a mean age of 13.45 years for the initial NSSI act. This is consistent with the literature to date which generally reports a mean age of onset in early adolescence (e.g., Hilt et al., 2008; Whitlock et al., 2006). This age of onset represents both a challenge and an opportunity for preventing and treating NSSI by increasing positive social support. Normal adolescent development involves a strong increase in the level of identification with peers (Christie & Viner, 2005). This strong peer influence can be a source of positive social support that encourages healthy coping skills and help-seeking behaviors. However, strong peer identification also means pressure

to fit in with peers and the potential for learning unhealthy coping skills such as NSSI. Preventative psychoeducation groups for youth who present with one or more NSSI risk factors may be one way to promote the development of healthy peer groups and decrease risk of NSSI.

Limitation of the Current Study

Despite being among the first to examine social support as protective against NSSI, the current study has several limitations that should be noted. First, the sample is composed of college students who may have higher levels of functioning compared to same-aged peers not attending college. Further, participants were offered extra credit in their psychology course as compensation for participating in the study, and this procedure likely attracts individuals who are striving to achieve high grades (suggesting higher overall functioning). Research does suggest higher incidence of NSSI in college students compared to the general adult population (e.g., Heath et al., 2008) making college students an important group to study. However, caution must be used when making inferences to other groups (e.g., inpatient populations, adolescents) because college students represent a unique demographic.

The homogeneity of the current sample's ethnic composition also limits the external validity of the results. The vast majority of the sample (88.4%) identified themselves as Caucasian. Although this is representative for the geographic area where data were collected, it presents a limitation when attempting to generalize to other ethnicities or to more diverse geographical areas (University of North Dakota Student Body Profile, 2008). Replication of the current study's findings in areas with more ethnically diverse populations, as well as outside of the college population will contribute to the external validity of the outcomes.

All data collection from the study was in the form of self-report questionnaires, and this represents a third limitation to consider. The questionnaires asked multiple

questions about sensitive topics including NSSI, emotional difficulties, and family relationships. Although individuals were informed of the confidentiality of their responses, it is likely some remained hesitant to answer all questions honestly. There may have been concern about repercussions of reporting NSSI, or response bias to portray oneself in a positive way. These are commonly cited limitations in NSSI research (e.g., Laye-Gindhu & Schonert-Reichl, 2005). Additionally, participants completed multiple questionnaires and fatigue may have played a role in response accuracy; the order in which the questionnaires were presented was randomized to minimize fatigue effects.

Lastly, NSSI is a low base rate behavior and this presents challenges to gathering an adequate sample size. In an effort to increase sample size, individuals with fewer than six lifetime occurrences of NSSI were included in analyses. It is possible that individuals who try NSSI several times are significantly different than individuals who use NSSI many times, and this limits the generalizability of the results to those with chronic self-injury. The data were matched on age and gender to create two equal-sized groups (NSSI and no NSSI) in an effort to minimize issues of sample size and low base rate.

Conclusions

Although the study has limitations that merit consideration, results do suggest some promising new directions for NSSI research. In particular, future research that focuses on identifying protective factors against NSSI will likely contribute valuable information for treatment and prevention efforts. For example, one of the most useful aspects of social support as a protective factor is that it can be changed in both quality and quantity. It lends itself to future experimental research that can more precisely capture the nature of the relationship between social support and NSSI, informing clinical treatment of this complicated behavior.

APPENDICES

Appendix A

Deliberate Self-Harm Inventory

This questionnaire asks about a number of different things that people sometimes do to hurt themselves. Please be sure to read each question carefully and respond honestly. Often, people who do these kinds of things to themselves keep it a secret, for a variety of reasons. However, honest responses to these questions will provide us with greater understanding and knowledge about these behaviors and the best way to help people. Please answer yes to a question only if you did the behavior intentionally, or on purpose, to hurt yourself. Do not respond yes if you did something accidentally (e.g., you tripped and banged your head on accident). Also, please be assured that your responses are completely confidential.

1. Have you ever intentionally (i.e., on purpose) cut your wrist, arms, or other area(s) of your body (without intending to kill yourself)? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time __2 times

__3 times __4 times

__5 times __6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

2. Have you ever intentionally (i.e., on purpose) burned yourself with a cigarette, lighter, or match? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

3. Have you ever intentionally (i.e., on purpose) carved words into your skin? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

4. Have you ever intentionally (i.e., on purpose) carved pictures, designs, or other marks into your skin? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)
__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

5. Have you ever intentionally (i.e., on purpose) severely scratched yourself, to the extent that scarring or bleeding occurred? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this? (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

6. Have you ever intentionally (i.e., on purpose) bit yourself, to the extent that you broke the skin? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

Yes 2. No

7. Have you ever intentionally (i.e., on purpose) rubbed sandpaper on your body? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**_____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

8. Have you ever intentionally (i.e., on purpose) dripped acid onto your skin? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

9. Have you ever intentionally (i.e., on purpose) used bleach, comet, or oven cleaner to scrub your skin? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

10. Have you ever intentionally (i.e., on purpose) stuck sharp objects such as needles, pins, staples, etc. into your skin, **not including** tattoos, ear piercing, needles used for drug use, or body piercing? (circle one)

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

11. Have you ever intentionally (i.e., on purpose) rubbed glass into your skin? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time __2 times
__3 times __4 times
__5 times __6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

12. Have you ever intentionally (i.e., on purpose) broken your own bones? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this? (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

13. Have you ever intentionally (i.e., on purpose) banged your head against something, to the extent that you caused a bruise to appear? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

14. Have you ever intentionally (i.e., on purpose) punched yourself or another object, to the extent that you caused a bruise to appear? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)
__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

15. Have you ever intentionally (i.e., on purpose) prevented wounds from healing? (circle one):

1. Yes 2. No

If yes,
How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

16. Have you ever intentionally (i.e., on purpose) done anything else to hurt yourself that was not asked about in this questionnaire? (circle one):

1. Yes 2. No

If yes,
What did you do? _____

How old were you when you first did this? _____

How many times have you done this? (place a check by **ONE** of the following)

__1 time
__2 times
__3 times
__4 times
__5 times
__6 or more times

When was the last time you did this (place a check by ONE of the following)

__ Within the past 2 weeks
__ 3-4 weeks ago
__ More 1 month but less than 2 months ago
__ 2 months to less than 3 months ago
__ 3 months to less than 4 months ago
__ 4 months to less than 5 months ago
__ 5 months to less than 6 months ago
__ 6 months to less than 9 months ago
__ 9 to 12 months ago
__ More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.** _____

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?

1. Yes 2. No

Appendix B

Instructions: This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the one statement in each group that best describes the way you have been feeling during the past two weeks, including today. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group.

1. Sadness

0 I do not feel sad.
1 I feel sad much of the time.
2 I am sad all the time.
3 I am so sad or unhappy that I can't stand it.

2. Pessimism

0 I am not discouraged about my future.
1 I feel more discouraged about my future than I used to be.
2 I do not expect things to work out for me.
3 I feel my future is hopeless and will only get worse.

3. Past Failure

0 I do not feel like a failure.
1 I have failed more than I should have.
2 As I look back, I see a lot of failures.
3 I feel I am a total failure as a person.

4. Loss of Pleasure

0 I get as much pleasure as I ever did from the things I enjoy.
1 I don't enjoy things as much as I used to.
2 I get very little pleasure from the things I used to enjoy.
3 I can't get any pleasure from the things I used to enjoy.

5. Guilty Feelings

0 I don't feel particularly guilty.
1 I feelguilty over many things I have done or should have done.
2 I feel quite quilty most of the time.
3 I feel guilty all of the time.

6. Punishment Feelings

0 I don't feel I am being punished.
1 I feel I may be punished.
2 I expect to be punished.
3 I feel I am being punished.

7. Self-Dislike

0 I feel the same about myself as ever.
1 I have lost confidence in myself
2 I am disappointed in myself.
3. I dislike myself.

8. Self-Criticalness

0 I don't criticize myself or blame myself more than usual.
1 I am more critical of myself than I used to be.
2 I criticize myself for all my fault.
3 I blame myself for everything bad that happens.

9. Suicidal Thoughts or Wishes

0 I don't have any thoughts of killing myself.
1 I have thoughts of killing myself, but I would not carry them out.
2 I would like to kill myself.
3 I would kill myself if I had the chance.

10. Crying

0 I don't cry anymore than I used to.
1 I cry more than I used to.
2 I cry over every little thing.
3 I feel like crying, but I can't.

11. Agitation

0 I am no more restless or wound up than usual.
1 I feel more restless or wound up than usual.
2 I am so restless or agitated that it's hard to sit still.
3 I am so restless or agitated that I have to keep moving or do something.

12. Loss of Interest

0 I have not lost interest in other people or activities.
1 I am less interested in other people or things than before.
2 I have lost most of my interest in other people or things.
3 It's hard to get interested in anything.

13. Indecisiveness

0 I make decisions about as well as ever.
1 I find it more difficult to make decisions than usual.
2 I have much greater difficulty in making decisions than I used to.
3 I have trouble making any decisions.

14. Worthlessness

0 I do not feel I am worthless.
1 I don't consider myself as worthwhile and useful as I used to.
2 I feel more worthless as compared to other people.
3 I feel utterly worthless.

15. Loss of Energy

0 I have as much energy as ever
1 I have less energy than I used to have.
2 I don't have enough energy to do very much.
3 I don't have enough energy to do anything.

16. Changes in Sleep Pattern

0 I have not experienced any changes in my sleeping pattern.
1a I sleep somewhat more than usual.
1b I sleep somewhat less than usual.
2a I sleep a lot more than usual.
2b I sleep a lot less than usual.
3a I sleep most of the day.
3b I wake up 1-2 hours early and can't get back to sleep.

17. Irritability

0 I am no more irritable than usual.
1 I am more irritable than usual.
2 I am much more irritable than usual.
3 I am irritable all the time.

18. Changes in Appetite

0 I have not experienced any changes in my appetite.
1a My appetite has been somewhat less than usual.
1b My appetite has been somewhat greater than usual.
2a My appetite is much less than usual.
2b My appetite is much greater than usual.
3a I have no appetite at all.
3b I crave food all the time.

19. Concentration Difficulty

0 I can concentrate as well as usual.
1 I can't concentrate as well as usual.
2 It's hard to keep my mind on anything for very long.
3 I find I can't concentrate on anything.

20. Tiredness or Fatigue

0 I am no more tired or fatigued than I used to be.
1 I get more tired or fatigued more easily than usual.
2 I am too tired or fatigued to do a lot of things I used to.
3 I am too tired or fatigued to do most of the things I used to do.

21. Loss of Interest in Sex

0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

Appendix C

STAI: Self-Evaluation Questionnaire

DIRECTIONS: A number of statements which people have used to describe themselves are given below. Read each statement and then circle the appropriate number to indicate how you generally feel. There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe how you generally feel.

1= Almost Never 2= Sometimes 3=Often 4= Almost Always

1. I feel pleasant 1 2 3 4
2. I feel nervous and restless 1 2 3 4
3. I feel satisfied with myself 1 2 3 4
4. I wish I could be as happy as others seem to be 1 2 3 4
5. I feel like a failure 1 2 3 4
6. I feel rested 1 2 3 4
7. I am "calm, cool, and collected" 1 2 3 4
8. I feel that difficulties are piling up so that I cannot overcome them 1 2 3 4
9. I worry too much over something that really doesn't matter 1 2 3 4
10. I am happy 1 2 3 4
11. I have disturbing thoughts 1 2 3 4
12. I lack self-confidence 1 2 3 4
13. I feel secure 1 2 3 4
14. I make decisions easily 1 2 3 4
15. I feel inadequate 1 2 3 4
16. I am content 1 2 3 4
17. Some unimportant thought runs through my mind and bothers me 1 2 3 4
18. I take disappointments so keenly that I can't put them out of my mind 1 2 3 4
19. I am a steady person 1 2 3 4
20. I get in a state of tension or turmoil as I think over my recent concerns and interests 1 2 3 4

Appendix D

Parental Bonding Instrument

Instructions: This questionnaire lists various attitudes and behaviors of parents. Use the scale below to indicate how strongly you feel that a statement is descriptive of your **mother** during your first 16 years.

1 = Very like 2 = Moderately like 3 = Moderately unlike 4 = Very unlike

1. Spoke to me in a warm and friendly voice _____
2. Did not help me as much as I needed _____
3. Seemed emotionally cold to me _____
4. Appeared to understand my problems and worries _____
5. Was affectionate to me _____
6. Enjoyed talking things over with me _____
7. Frequently smiled at me _____
8. Did not seem to understand what I needed or wanted _____
9. Made me feel I wasn't wanted _____
10. Could make me feel better when I was upset _____
11. Did not talk with me very much _____
12. Did not praise me _____

Instructions: This questionnaire lists various attitudes and behaviors of parents. Use the scale below to indicate how strongly you feel that a statement is descriptive of your **father** during your first 16 years.

1 = Very like 2 = Moderately like 3 = Moderately unlike 4 = Very unlike

1. Spoke to me in a warm and friendly voice _____
2. Did not help me as much as I needed _____
3. Seemed emotionally cold to me _____
4. Appeared to understand my problems and worries _____
5. Was affectionate to me _____
6. Enjoyed talking things over with me _____
7. Frequently smiled at me _____
8. Did not seem to understand what I needed or wanted _____
9. Made me feel I wasn't wanted _____
10. Could make me feel better when I was upset _____
11. Did not talk with me very much _____
12. Did not praise me _____

Appendix E

McLean Screening Instrument

Please read the following statements and answer yes or no, as it applies to you.

1. Have any of your closest relationships been troubled by a lot of arguments or repeated break-ups? yes no

2. Have you deliberately hurt yourself physically (e.g. cut yourself punched yourself, burned yourself)? How about made a suicide attempt? yes no

3. Have you had at least two other problems with impulsivity (e.g. eating binges and spending sprees, drinking too much and verbal outbursts? yes no

4. Have you been extremely moody? yes no

5. Have you felt very angry a lot of the time? How about often acted in an angry or sarcastic manner? yes no

6. Have you often been distrustful of other people? yes no

7. Have you frequently felt unreal or as if things around you were unreal? yes no

8. Have you chronically felt empty? yes no

9. Have you often felt that you had no idea of who you are or that you have no identity? yes no

10. Have you made desperate attempts to avoid feeling abandoned or being abandoned (e.g. repeated called someone to reassure yourself that he or she still cared, begged them not to leave you, clung to them physically)? yes no

Appendix F

Distress Tolerance Scale

Think of times that you feel distressed or upset. Select the item from the menu that best describes your beliefs about feeling distressed or upset.

1-Strongly agree
2-Mildly agree
3-Agree and disagree equally
4-Mildly disagree
5-Strongly disagree

____ 1. Feeling distressed or upset is unbearable to me.

____ 2. When I feel distressed or upset, all I can thing about is how bad I feel.

____ 3. I can't handle feeling distressed or upset.

____ 4. My feelings of distress are so intense that they completely take over.

____ 5. There's nothing worse than feeling distressed or upset.

____ 6. I can tolerate being distressed or upset as well as most people.

____ 7. My feelings of distress or being upset are not acceptable.

____ 8. I'll do anything to avoid feeling distressed or upset.

____ 9. Other people seem to be able to tolerate feeling distressed or upset better than I can.

____ 10. Being distressed or upset is always a major ordeal for me.

____ 11. I am ashamed of myself when I feel distressed or upset.

____ 12. My feelings of distress or being upset scare me.

____ 13. I'll do anything to stop feeling distressed or upset.

____ 14. When I feel distressed or upset, I must do something about it immediately.

____ 15. When I feel distressed or upset, I cannot help but concentrate on how bad the stress actually feels.

Appendix G

Difficulties in Emotion Regulation Scale

Please indicate how often the following statements apply to you by writing the appropriate number from the scale on the line beside each item.

1	2	3	4	5
Almost never (0-10%)	Sometimes (11-35%)	About half the time (36-65%)	Most of the time (66-90%)	Almost always (91-100%)

____ 1. I am clear about my feelings.

____ 2. I pay attention to how I feel.

____ 3. I experience my emotions as overwhelming and out of control.

____ 4. I have no idea how I am feeling.

____ 5. I have difficulty making sense out of my feelings.

____ 6. I am attentive to my feelings.

____ 7. I know exactly how I am feeling.

____ 8. I care about what I am feeling.

____ 9. I am confused about how I feel.

____ 10. When I'm upset, I acknowledge my emotions.

____ 11. When I'm upset, I become angry with myself for feeling that way.

____ 12. When I'm upset, I become embarrassed for feeling that way.

____ 13. When I'm upset, I have difficulty getting work done.

____ 14. When I'm upset, I become out of control.

____ 15. When I'm upset, I believe that I will remain that way for a long time.

____ 16. When I'm upset, I believe that I'll end up feeling very depressed.

____ 17. When I'm upset, I believe that my feelings are valid and important.

____ 18. When I'm upset, I have difficulty focusing on other things.

____ 19. When I'm upset, I feel out of control.

____ 20. When I'm upset, I can still get things done.

____ 21. When I'm upset, I feel ashamed with myself for feeling that way.

____ 22. When I'm upset, I know that I can find a way to eventually feel better.

____ 23. When I'm upset, I feel like I am weak.

____ 24. When I'm upset, I feel like I can remain in control of my behaviors.

____ 25. When I'm upset, I feel guilty for feeling that way.

____ 26. When I'm upset, I have difficulty concentrating.

____ 27. When I'm upset, I have difficulty controlling my behaviors.

____ 28. When I'm upset, I believe there is nothing I can do to make myself feel better.

____ 29. When I'm upset, I become irritated with myself for feeling that way.

____ 30. When I'm upset, I start to feel very bad about myself.

____ 31. When I'm upset, I believe that wallowing in it is all I can do.

____ 32. When I'm upset, I lose control over my behaviors.

____ 33. When I'm upset, I have difficulty thinking about anything else.

____ 34. When I'm upset, I take time to figure out when I'm really feeling.

____ 35. When I'm upset, it takes me a long time to feel better.

____ 36. When I'm upset, my emotions feel overwhelming.

Appendix H

Social Provisions Scale

In answering the following questions, think about your current relationships withfriends, family members, co-workers, community members, and so on. Please indicate to what extent each statement describes your current relationships with other people. Use the following scale to indicate your opinion:

1	2	3	4
Strongly Disagree	**Disagree**	**Agree**	**Strongly Agree**

So, for example, if you feel a statement is very true of your current relationships, you would respond with a 4 (strongly agree). If you feel a statement clearly does not describe your relationships, you would respond with a 1 (strongly disagree).

____1. There are people I can depend on to help me if I really need it.
____2. I feel that I do not have close personal relationships with other people.
____3. There is no one I can turn to for guidance in times of stress.
____4. There are people who depend on me for help.
____5. There are people who enjoy the same social activities I do.
____6. Other people do not view me as competent.
____7. I feel personally responsible for the well-being of another person.
____8. I feel part of a group of people who share my attitudes and beliefs.
____9. I do not think other people respect my skills and abilities.
____10. If something went wrong, no one would come to my assistance.
____11. I have close relationships that provide me with a sense of emotional security and well being.
____12. There is someone I could talk to about important decisions in my life.
____13. I have relationships where my competence and skill are recognized.
____14. There is no one who shares my interests and concerns.
____15. There is no one who really relies on me for their well-being.
____16. There is a trustworthy person I could turn to for advice if I were having problems.
____17. I feel a strong emotional bond with at least one other person.
____18. There is no one I can depend on for aid if I really need it.
____19. There is no one I feel comfortable talking about problems with.
____20. There are people who admire my talents and abilities.
____21. I lack a feeling of intimacy with another person.
____22. There is no one who likes to do the things I do.
____23. There are people I can count on in an emergency.
____24. No one needs me to care for them.

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