

THE RELATIONSHIP BETWEEN NONSUICIDAL SELF-INJURY (NSSI) AND  
PSYCHOSOCIAL FUNCTIONING IN COLLEGE STUDENTS

By

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To my grandparents, who I know would be so proud

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Abstract of Dissertation Presented to the Graduate School  
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Over the past few decades, the psychological needs of college students have become increasingly complex. College counseling centers have seen an increase in the severity of mental health needs in students being seen for counseling (Gallagher, 2009), and the number of students using nonsuicidal self-injury (NSSI) as a coping mechanism appears to be increasing as well (Gallagher, 2009). While NSSI scholarship has grown significantly over the past decade, significant gaps in the literature still exist. Conflicting definitions and prevalence rates have made it difficult for researchers to accurately identify and understand individuals engaging in NSSI. The Diagnostic and Statistical Manual for Mental Disorders, Fifth Edition (DSM-V) proposed the addition of NSSI as a separate diagnostic category in order to help accurately diagnose and treat individuals engaging in this behavior. Although NSSI was ultimately not included in the upcoming edition of the DSM, this study used the proposed diagnostic criteria to identify self-injurers. Specifically, this study examined the psychosocial

functioning of individuals who currently engage in NSSI, those who engaged in NSSI in the past, and those who have never engaged in NSSI. Seven hundred thirty three college students completed an online survey examining eight variables of psychosocial functioning and NSSI behaviors. Multinomial logistic regression found that high levels of anxiety and hostility were the best predictors of current NSSI behaviors. Hostility was also predictive of past NSSI behaviors. Additionally, one-way Analyses of Variances (ANOVAs) were used to determine if there were significant differences between current, past, and non-NSSI groups and psychosocial functioning in the areas of depression, eating concerns, social anxiety, generalized anxiety, hostility, academic distress, family distress, and substance abuse. Significant differences were found between groups on all variables except substance abuse. These findings align with prior studies indicating that individuals who engage in NSSI have worse psychological outcomes than those who do not engage in NSSI (Cheng, Mallinckrodt, Soet, & Sevig 2010).

## CHAPTER 1 REVIEW OF THE LITERATURE

Throughout the last decade, the number of demands on college students has seen a dramatic increase. Incidents such as the April 16, 2007 tragedy at Virginia Polytechnic Institute and State University, the January 8, 2011 shooting of U.S Representative Gabrielle Giffords, and the July 20, 2012 shooting in a Colorado movie theater have increased public awareness of the mental health concerns facing the nation's college-aged population. Increasingly, college mental health centers have found that the "level of severity of these concerns is much greater than the traditional presenting problems of adjustment and individuation that were seen for college students in counseling center research from the 1950's and 1960s through the early 1980s" (Pledge et al., 1998, p. 387).

The increasing mental health demands of the college student population have coincided with a significant population increase in community college and university students. According to the U.S Department of Education, between 1997 and 2007, the number of individuals enrolled in college has increased from 14.5 million to 18.2 million (a 26% increase) (National Center for Education Statistics, U.S. Department of Education, Institute of Education Sciences). Increased mental health demands combined with an increase in college student population have created significant strains on university counseling and mental health centers. Specifically, 93.4% of college counseling center directors report that they have seen a recent trend towards increasing numbers of students presenting for services with severe psychological problems (Gallagher, 2009).

Amidst these increasingly complex psychological needs, there is growing concern that more college-aged individuals are turning to self-injurious behaviors as a coping mechanism. Over the past five years, 55.7% of counseling center directors have identified increases in students presenting for self-injury concerns. On large college campuses, this number increases to 75% of counseling center directors (Gallagher, 2009).

Self-injury has become a well-known phenomenon, both among clinical and school personnel, as well as the general population and popular culture. However, as Armando Favazza's introduction in *The Bright Red Scream*, eloquently describes, "Self-mutilation has been trivialized (wrist-cutting), misidentified (suicide attempt), regarded merely as a symptom (borderline personality disorder), and misreported by the media and the public" (Strong, 1998, p. xii) These discrepancies in identifying and understanding nonsuicidal self-injury (NSSI) have made it difficult for researchers and clinicians to properly recognize, assess, and treat individuals engaging in NSSI.

Significant incongruities have also been found within NSSI scholarship. The definition of NSSI varies considerably among researchers, causing largely different results in studies. Some research includes relatively minor behaviors such as interfering with wound healing or scratching one's skin into the spectrum of NSSI, while others only take into account more severe types of self-injury, such as burning or carving skin (Klonsky, 2007). Incidence and prevalence rates of NSSI, along with the functions of NSSI have also been debated among researchers, creating a large amount of inconsistent data within the field.

As an introduction to this study, a comprehensive review of the literature on NSSI is provided. This review will begin with a synopsis of the current status of college students' mental health. Following this section, the definition and the prevalence rates of NSSI will be discussed. Specifically, research will focus on the adolescent and young adult populations, as they are found to be the most likely individuals to self-injure. Following this section, the etiology of self-injury will be presented, particularly examining the role biology, personality, childhood maltreatment, and co-occurring disorders play in the development and maintenance of NSSI. The next section will examine the current functional models of self-injury, as well as empirically supported treatment options for individuals engaging in self-injury. Finally, a critical review of the literature and the current gaps and limitations in scholarship will be presented. This section will include an argument for considering NSSI as a diagnosis in the May 2013 release of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V).

Following a review of the literature, a brief description of the current study and methodology will be described. Within the methodology, study participants will be discussed, and the four measures that were used in this study will be described in detail. Additionally, an overview of the procedure for data collection will be provided, as well as the data analysis methods that were utilized. The goal of this study was to determine whether a significant difference in psychosocial functioning exists between individuals who do not engage in NSSI, those who engaged in NSSI in the past, and those who presently engage in NSSI.

Specifically, areas of depression, anxiety, academic distress, eating concerns, family distress, hostility and substance abuse will be examined in conjunction with self-injurious behaviors.

### **College Students and Mental Health**

The college age population has recently become a critical component to understanding mental health issues and promoting successful mental health policies. Because most mental illnesses emerge by ages of 15-24, effective interventions with college students may help reduce the chronic prevalence of severe mental health issues (Eisenberg, Golberstein, & Gollust, 2007). College has also proven to be an especially risky environment for psychological and behavioral problems, especially when combined with access to alcohol and other substances (Weitzman, 2004).

In a nationally representative survey of 27,000 college students (ages 18-24), 4.8% of students were found to have poor mental health and/or depression within the past 30 days (Weitzman, 2004). The study also found that women, racial or ethnic minorities, and students whose parents did not attend college were more likely to be affected by mental health issues (Weitzman, 2004). A longitudinal study of psychological distress in college students revealed that stress levels generally peaked during freshman year and began a steady decline throughout the remaining years of college, with the exception of a small group of students who continued to experience significant psychological difficulties (Kitzrow, 2003).

Interestingly, college student data has also indicated that undergraduate students are more likely to seek services the longer they remained in school.

This may be related to increased access or knowledge regarding services at college campuses. For example, in an average year, the Kansas State University counseling center had the following breakdown of clients: 16.1% of clients were freshmen, 18.3% were sophomores, 22.7% were juniors, 26.8% were seniors, and 15.4% were graduate students (Benton et al., 2003). Of students surveyed in this study, 75.4% of students were under the age of 25, which falls in the typical age range for college undergraduates (Benton et al., 2003).

Additionally, a 2001 national poll of college freshman found that 28% felt 'frequently overwhelmed', and 8% reported feeling depressed (Kitzrow, 2003). The importance of college student mental health is emphasized by findings indicating that mental health issues interfere with college attendance, performance, retention and graduation rates (Blanco et al., 2008; Kitzrow, 2003). Between 2001-2006, universities reported between a 40-55% increase in students seeking services through university counseling centers (Soet & Sevig, 2006). Counseling directors also reported that in the 2002-2003, 40.7% of college age clients presented with severe psychological problems (Kisch, Leino, & Silverman, 2005).

Further, recent findings in the literature suggest that the mental health needs of college-aged students have been increasing over the past two decades (Yorgason, Linville, & Zitzman, 2008). Specifically, it has been found that college students are presenting with increasingly severe mental health needs compared with the relatively benign concerns of students presenting to counseling centers during the 1950's-1980's (Kitzrow, 2003). According to the most recent results of

the National Survey of Counseling Center Directors, 56% of college counseling centers noted an increase in self-injury cases within a one-year period (Gallagher, 2009). It is important to note that while many surveys of college counseling centers have noted a perceived increase the mental health needs of college students, these studies generally relied on retrospective, reflective surveys by individuals working in these centers (Benton et al., 2003). Research attempting to examine this issue using data such as client-perceived scores of distress at intake, have found no significant differences across 6-8 years (Cornish, Kominars, Riva, McIntosh, & Henderson, 2000). Benton et al., (2003), however, conducted a study using more objective data in college counseling centers, and found that in recent years, students being served in counseling centers have more complex problems than in the past. Additionally, they found that the number of students seen each year with depression doubled over the examined time period of 13 years, the number of suicidal students tripled, and the number of students seen after a sexual assault quadrupled (Benton et al., 2003).

The effectiveness of new psychiatric medications is one possible reason for the increase in students with complex psychological needs. These medications have allowed students with significant psychological disorders to attend college, whereas in the past it may have been difficult for them to do so (Kitzrow, 2003). It is also important to note that although there is increased concern about mental health on college campuses, the improved health promotion and mental health services on campuses have helped improve some

aspects of the health for students. For example, between 1990 and 2004, the suicide rate for students at 309 colleges and universities was approximately 6.5 per 100,000. In a matched sample of the general U.S. population not attending college (by gender and age), the suicide rate was approximately 12.6 per 100,000; or roughly double that on college campuses (Kraft, 2009).

The increased demand in counseling services does not necessarily correlate with an increase in knowledgeable professionals at the university level. For example, one study found that 63% of campus counseling centers reported that an increased demand in services without a corresponding increase in resources is a major challenge and concern (Kitzrow, 2003). Of the campus counseling centers, only 21% reported an increase in professional staff during the prior year (Kitzrow, 2003). One longitudinal study found that mental health issues found in the college-age population were largely persistent problems that remained throughout adulthood (Zivin, Eisenberg, Gollust, & Golberstein 2009).

### **Definition of Non-Suicidal Self-injury**

Non-suicidal self-injury (NSSI) is defined as purposeful and direct injury to one's own body without the direct intent to die (Nock & Favazza, 2009). Other terms for this behavior have included self-harm, parasuicide, deliberate self-harm (DSH), self-injurious behaviors (SIB), and self-mutilation (SM) (Borrill, Fox, Flynn, & Roger, 2009). In 1979, it was reported that there were as many as 33 terms for this behavior (MacAniff Zilla & Kiselica, 2001). The range of terms and definitions for the behavior has often caused confusion in the research literature, primarily around the ideas of suicidal intent and how direct the injury to the self is. For example, the category of DSH often includes risk-taking behaviors such as

jumping from heights or drug overdoses (Heath, Baxter, Toste, & McLouth, 2010) that are not usually included in other definitions of self-injury. Currently, NSSI is the most widely recognized term for these behaviors in the literature and will be used throughout this paper.

In response to the lack of consensus regarding the definition of NSSI, a group of leading researchers and clinicians established the International Network for the Study of Self-Injury (ISSS) in 2006. One year later, the ISSS developed a definition of NSSI to help clarify the term and its associated behaviors (Heath, Toste, Nedecheva, & Charlebois, 2008). As such, NSSI is defined as:

The deliberate, self-inflicted destruction of body tissue resulting in immediate damage, without suicidal intent and for purposes not socially sanctioned. As such, this behavior is distinguished from: suicidal behaviors involving an intent to die, drug overdoses, and other forms of self-injurious behaviors, including culturally-sanctioned behaviors performed for display or aesthetic purposes; repetitive, stereotypical forms found among individuals with developmental disorders and cognitive disabilities, and severe forms (e.g. self-immolation and auto-castration) found among individuals with psychosis. (ISSS, 2007).

Historically, self-injury has been classified into four broad categories. This taxonomy was developed by Armando Favazza, one of the earliest self-injury researchers, and separates self-injury by method, frequency and intensity (Yates, 2004). *Sterotypic SIB* includes individuals with severe and pervasive developmental disorders (DD) such as mental retardation (MR; currently known

as Intellectual Disability [InD]), Lesch-Nyhan Syndrome, and Rhetts's Syndrome. This type of self-injury often has a repetitive, rhythmic quality, is generally performed without regard for social context, and without significant affect (Yates, 2004). The most common type of stereotypic SIB is head banging (Favazza, 1996). *Major SIB* usually occurs suddenly and often involves a great deal of tissue damage and bleeding (Favazza, 1996). Generally, Major SIB occurs within the presence of a psychotic episode and often includes self-enucleation and autocastration (Yates, 2004). *Compulsive SIB* is often associated with disorders such as trichotillomania and includes repetitive behaviors such as hair pulling and nail biting that occur many times each day. It is usually classified as an impulse control disorder (Yates, 2004). Finally, *Impulsive SIB* can be categorized as episodic or repetitive. Individuals engaging in Impulsive SIB may injure themselves intermittently, and the behavior often functions to regulate emotion or decrease tension (Yates, 2004). Impulsive SIB may begin to take on repetitive qualities over time, and may take on addictive qualities as more time is devoted to self-injury (Yates, 2004).

The definition of NSSI rules out two of the four categories that Favazza posited; Sterotypic SIB related to Developmental Disabilities or Intellectual Disabilities and Major SIB related to psychosis. Therefore, these will not be the focus of this study. Favazza's other two categories, Compulsive SIB and Impulsive SIB are distinguished by either impulse control or emotional regulation functions, respectively. Compulsive SIB is noted to be associated with DSM-IV (American Psychiatric Association [APA], 2000) mental health disorders such as

Trichotillomania. The repetitive nature of these specified behaviors as well as the daily frequency are consistent with Obsessive-Compulsive Disorder (OCD). Although both Trichotillomania and OCD can be exacerbated by stress, precipitating emotional regulation stressors are not diagnostic criteria. For example, Trichotillomania often manifests during periods of relaxing or distracting activities and is often preceded by an itchy scalp feeling. In fact, gratification, pleasure, or relief from hair pulling activities is a required criterion. Although preceding tension is also a required symptom, it can be related to resisting the hair-pulling urge and is not necessary general tension related to stress (APA, 2000, p. 674-675). For OCD, the precipitating features are recurrent obsessions or compulsions. The obsessions criteria requires persistent thoughts, impulses or images that are not worries about real-life problems and for adults, the person recognizes these thoughts as “a product of his or her own mind” (APA, 2000, p. 462) and unreasonable or excessive. Most obsessions are related to contamination, doubt, aggressive impulse, or sexual imagery. Compulsions are behaviors that directly reduce the tension related to the unrealistic thought, impulse or image (e.g., hand-washing).

In contrast to Compulsive SIB components, an intermittent and episodic frequency as well as a general emotional regulation function are the core aspects of Impulsive SIB in Favazza’s model. These characteristics are the most consistent with literature on NSSI. Therefore, for the purposes of this study, NSSI will only describe impulsive self-injury. Further, the terms NSSI or self-injury will only be used to describe directly injurious behaviors lacking clear suicidal intent.

That is, inclusion of individuals engaging in self-injurious behavior while denying the desire to end their life, and often citing other reasons for self-injuring, such as tension relief, coping skills, or to distract oneself (Brown, Comtois, & Linehan, 2002).

### **Suicide and NSSI**

Although self-injury has been reported as a significant risk factor for suicidal behavior and gestures (Brausch & Gutierrez, 2010), research has determined that NSSI is a behavior distinct from the suicidal continuum (Stanley et al., 2009). Generally, NSSI is understood as separate from suicidality in terms of motivation and medical severity. Specifically, those engaging in NSSI often utilize the behavior as a way to prolong their life, rather than end it. That is, a large number of individuals engaging in NSSI use it as a functional coping mechanism to improve their mood and decrease feelings of helplessness (Klonsky, 2007). Additionally, NSSI usually involves less tissue damage and attention from medical professionals (Glenn & Klonsky, 2009).

NSSI and suicide are also distinct in several other ways. A suicide attempt more often elicits an active response from the individual's environment, such as encouraging therapy or hospitalization, subsequently decreasing the number of attempts. However, when NSSI is discovered, family and other individuals may react with disgust, anger or denial, which does little to decrease the number of subsequent self-injurious episodes (MacAniff Zila & Kiselica, 2001). Further, suicidal individuals who are removed from stressful environments often improve, while NSSI individuals tend to continue self-injurious patterns of behavior, even when removed from stressful situations (MacAniff Zila & Kiselica, 2001).

While, it is important to note that although the behaviors themselves are separate, NSSI is a known risk factor for suicidal thoughts and attempts (Glenn & Klonsky, 2009). Approximately 50-70% of adolescents engaging in NSSI also have a history of suicide attempts (Dougherty et al., 2009), and between 34-45% of high school and college aged self-injurers report suicidal ideation (Whitlock & Knox, 2007). Although suicide attempts and NSSI are distinct behaviors, one theory posits that self-injurious behavior may serve as a precursor to suicide attempts. Specifically, individuals engaging in NSSI may become more confident and less concerned by the pain and associated feelings of NSSI. Consequently, it may allow an individual to habituate to the idea of suicide and give them the confidence to make a suicide attempt (Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). It has also been found that suicide attempts are more likely among adolescents who repetitively self-injured over long periods of time, used different methods of self-injury, and reported feeling no pain while engaging in NSSI (Plener, Libal, Keller, Fegert, & Muehlenkamp, 2009).

### **Prevalence**

Current prevalence rates of NSSI behavior appear to be increasing, specifically among the nonclinical adolescent and young adult populations (Brausch & Gutierrez, 2010). Lifetime prevalence rates of NSSI in the general population are estimated to be between 10-15%, with 5-10% of individuals engaging in repeated episodes (Yates, 2004). Self-injurious behaviors also have long been associated with intellectual disabilities or organic neurological disorders (Favazza, 1996).

## **Prevalence among adolescents**

Historically, self-injury has been viewed as a behavior that occurs primarily within the inpatient psychiatric population, with research suggesting that upwards of 80% of adolescent inpatient samples engage in NSSI behaviors (Glenn & Klonsky, 2009). However, recent research indicates that NSSI behaviors are becoming an alarming trend among nonclinical, community samples of adolescents. These samples have estimated that as many as 13% of adolescents have engaged in NSSI behaviors (Ross & Heath, 2002). According to Ross & Heath, (2002), most adolescents engage in NSSI in the absence of serious pathology or mental illness . The average age of onset for self-injury occurs between 11-15 years old (Heath, Toste, & Beettam, 2007), with some studies suggesting that individuals as young as 10 engage in NSSI. In the middle school population, self-injury rates appear to be slightly lower, with approximately 7.5% of young adolescents engaging in self-injury (Hilt, Nock, Lloyd-Richardson, & Prinstein, 2008).

Most adolescents in the community population engage in what is referred to as “common self-injury” (Whitlock, 2010). Common self-injury is generally characterized as a compulsive behavior that is ritualistic and often occurs without premeditation. It is also usually episodic and repetitive, in that, it occurs periodically, and the individual often does not identify as a self-injurer (Whitlock, 2010). This population may create injuries that are mild, moderate, or severe (Whitlock, 2010). While NSSI often co-occurs with psychiatric disorders, common NSSI is more likely to occur in the absence of a comorbid psychiatric diagnosis (Whitlock, 2010).

## **Prevalence among young adults**

Currently, young adults (ages 18-25) appear to have the highest risk for engaging in NSSI (Rodham & Hawton, 2009; White, Trepal-Wollenzier, & Nolan, 2002). Literature suggests that NSSI prevalence rates range from approximately 14-38% of college-age students), with a 12-month prevalence rate of 7.3% (Gollust, Eisenberg, & Golberstein, 2008; Laye-Gindhu & Schonert-Reichl, 2005).

The large discrepancies in college-age prevalence rates present a methodological concern for researchers and practitioners seeking more precise rates of NSSI within this population. Close examination of the literature shows significant differences in methodology, sampling, and survey techniques, which may lead to skewed estimations of individuals engaging in NSSI. For example, in a 2007 study conducted by Lloyd-Richardson, Perrine, Dierker, and Kelley, initial findings indicated 46% of a community sample of adolescents had engaged in NSSI. However, after closer review of the data, they determined that only 60% of these could be considered “moderate/severe” self-injury, which was characterized by cutting/carving, burning, self-tattooing, scraping and “erasing” (rubbing an eraser over the skin until burning or bleeding results) (Lloyd-Richardson et al., 2007). The rest of the NSSI sample had endorsed “minor” self-injury, which included less clinically significant behaviors such as, hitting self, pulling hair, biting self, picking at a wound, or picking at the skin to draw blood (Lloyd-Richardson et al., 2007). While this study differentiated between “minor” and “moderate/severe” self-injurious behaviors, many studies do not distinguish these behaviors, and individuals who have engaged in a “minor” behavior may fall into the same classification as someone engaging in severe NSSI. In

addition, studies often do not distinguish the frequency of behaviors. Therefore, a person engaging in an incident once may be categorized with individuals who chronically engage in the behavior.

Discrepancies in the literature also may be due to differences in measurement sensitivity (Heath et al., 2008). While some studies ask participants to identify specific NSSI behaviors, others ask participants broader questions, such as “Have you ever hurt yourself on purpose?” (Heath et al., 2008). Still other studies provide students with an extensive list of self-injurious behaviors and ask them to endorse any in which they have engaged. This method also tends to produce higher prevalence rates, as checklists may include behaviors not always associated with self-injury (e.g. scraping skin or interfering with wound healing) (Heath et al., 2008). Studies using measures with broad definitions of NSSI are likely to yield higher prevalence rates among college students. For example, Gratz (2006) utilized a broad measure and reported a 37% prevalence rate for college students, while Heath et al., (2008) found a rate of only 11.68% of college students with a more specific measure.

### **Gender Differences**

Currently, there is little consensus regarding possible gender differences in NSSI behaviors, although preliminary studies suggest that the frequency and severity of self-injury may be mediating factors by gender. While it is commonly believed that females engage in self-injurious behaviors more frequently than males, research has remained inconclusive (Laye-Gindhu & Schonert-Reichl, 2005). Several studies investigating prevalence rates of NSSI in community samples have found no significant difference in gender (Hilt, Nock, Lloyd-

Richardson, & Prinstein, 2008; Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007) while others have found that females are more likely to engage in NSSI behaviors (Hawton, Rodham, Evans, & Weatherall, 2002; Rodham & Hawton, 2009). Whitlock, Eckenrode, & Silverman (2006) conducted a study in a sample of college students (excluding students participating in counseling) and found that among isolated self-injurious episodes; there was no significant gender difference. However, the reported rate for repeated NSSI episodes was approximately 1.5 times higher for college women than for men.

When examining possible gender differences in NSSI behaviors, it is important to note that significant differences in gender are found more often when examining clinical rather than community samples (Heath et al., 2008). This may be because females are more likely to seek help or because overdose or inappropriate ingestion of medication is often included in the clinical definition of NSSI (Heath et al., 2008). These behaviors are more typically found in the female population and therefore, may contribute to some of the gender differences found in the research. Females also tend to be overrepresented in the general clinical population, making gender differences more likely (Whitlock, Eckenrode, & Silverman, 2006).

Some research suggests that homosexual and bisexual individuals, or those questioning their sexuality are more likely to engage in NSSI than their heterosexual counterparts (Lofthouse & Yager-Schweller, 2009; Whitlock, Eckenrode, & Silverman, 2006). Rates of self-injury continue to be disproportionate among the Lesbian, Gay, Bisexual, Transgender, & Questioning

(LGBTQ) individuals, specifically among younger members of the population (Alexander & Clare, 2004). Alexander and Clare (2004) argue that the reason for increased rates of NSSI among this population is associated with the continued social pressure and marginalization of the LGBT population. One British newspaper conducted interviews of homosexuals engaging in self-injury and found many common themes among them, including feelings of having no one to turn to for advice, the tendency to self-blame for not being “normal”, shame about their sexual identity, family hostility, discrimination and homelessness (Alexander & Clare, 2004).

### **Racial, Ethnic, and Socioeconomic Differences**

There is currently a dearth of information regarding possible racial or socioeconomic status (SES) differences among individuals engaging in NSSI. Several studies suggest that the incidence of self-injury is higher among Caucasian adolescents, (Ross & Heath, 2002) but few systematic research studies have been conducted to determine if there is any significant difference in NSSI behaviors among other ethnic groups or SES levels. Some researchers have hypothesized that NSSI may be overrepresented in the middle to upper class Caucasian culture (Yates, 2004), however, a recent study by Hilt, Cha, and Nolen-Hoeksema (2008) found no significant differences within ethnic groups in a sample of 94 adolescent girls.

### **Common Methods**

Although various methods of self-injuring have been identified, cutting is the most common method, occurring in 70-97% of those who self-injure (Klonsky, 2007), followed by banging or hitting (21%-44%) and burning (15-35%) (Rodham

& Hawton, 2009). Other behaviors classified as NSSI include carving of the skin, pulling skin or hair, and bruising or breaking bones (Whitlock, Eckenrode, & Silverman, 2006). More mild forms of self-injury may include scratching the skin or preventing wounds from healing (Kanan, Finger, & Plog, 2008).

The location of the body where self-injury occurs is also an important component of understanding NSSI. The majority of self-injury occurs on the abdomen or extremities (Walsh, 2007). Individuals engaging in self-injury on the face, eyes, neck, jugular region, breast, or genitals, may exhibit more severe psychological problems than those who self-injure in other areas and are more often found in the clinical population rather than among community samples (Whitlock, 2010). Often, these individuals are experiencing psychotic decompensation or trauma-related behavior and should be referred immediately for emergency services (Walsh, 2007).

The direct harmful consequences associated with NSSI also distinguishes it from other risk-taking behaviors such as smoking and using drugs, which generally have unintended negative consequences. Culturally sanctioned body modification such as tattoos and body piercing are also considered outside the realm of NSSI behaviors (Nock, 2009). While definitions of self-harm often include forms of indirect self-injury such as ingesting an illicit or recreational drug, jumping from a height, or ingesting a non-digestible substance, these acts generally do not fall within the American and Canadian definitions of NSSI (Heath, Schaub, Holly, & Nixon, 2009).

## **Form of Self-Injury**

Currently, there is scant literature investigating how often individuals self-injure and under what circumstances. This represents a significant gap in linking scholarship to intervention, as practitioners have little information about the circumstances surrounding specific incidents of NSSI. A study conducted by Nock, Prinstein, and Sterba, (2009) used a community sample of 30 adolescents engaging in NSSI to investigate the environmental context and circumstances surrounding instances of NSSI thoughts and behaviors. This study was conducted using an ecological momentary assessment (EMA) method, wherein adolescents are able to use a computer to record their self-injurious thoughts and behaviors in real-time, outside the laboratory or clinic (Nock, Prinstein, & Sterba, 2009). The EMA method is an important data collection innovation as it allows participants to record their thoughts and behaviors without relying on retrospective recording, reducing errors caused by memory.

Individuals participating in the study experienced an average of five NSSI thoughts per week. These thoughts were reported to be of moderate intensity and lasted between 1-30 minutes. Approximately 86% of these individuals acted on at least one of these thoughts, with an average of 1.6 NSSI episodes per week. Additionally, 33.3% of participants experienced at least one suicidal thought during the study period, and averaged 1.1 suicidal thoughts per week. A qualitative study conducted with 154 self-injuring individuals found that 51.6% of participants self-injured at least once a week, and 24.5% self-injured at least once a day (Polk & Liss, 2009). Other research suggests that an individual engaging in repetitive NSSI will engage in self-injurious behavior an average of

50 times, although some individuals report 400 or more independent episodes of self-injury (Muehlenkamp, 2005).

Nock, Prinstein, and Sterba (2009) also found that adolescents were most often alone when they began experiencing self-injurious thoughts, although they still experienced a significant number of thoughts when they were with peers and friends. Self-injurious thoughts were experienced least often in the presence of family or strangers. Adolescents who self-injured only while alone were also found to have a higher association with suicidal thoughts and behaviors (Glenn & Klonsky, 2009).

Additionally, although earlier research has found that self-injurious thoughts often occur in conjunction with alcohol or substance use, Nock, Prinstein and Sterba (2009) found that the majority of NSSI related thoughts occurred while adolescents were sober. These studies have significant implications for improving interventions by providing an environmental context to NSSI thoughts and behaviors. Interventions that take environmental context of NSSI into account can include coping skills specific to the time and place associated with NSSI. For example, knowing that most incidents occur when a student is alone would imply the importance of ready access to support networks as an intervention component (e.g., hotline or family member to call). However, because these studies still rely on self-report measures, it is difficult to assess the accuracy of the results. The EMA method improves on self-report measures because it does not rely on a participant's memory, but it may still be difficult to ascertain the validity of these studies.

## **Etiology**

The etiology of NSSI is complex, and can best be understood through analysis of both biological vulnerabilities and environmental risk factors (Crowell, Beauchaine, McCauley, Smith, Vasilev, & Stevens, 2008). The subsequent section explains some of the many factors associated with NSSI, including biology, personality traits, childhood trauma, and common co-morbid disorders.

### **Biological Factors**

The role of biology in NSSI is complex, and cannot fully explain the etiology of this complicated behavior. However, the serotonergic and opioid systems have been consistently implicated in NSSI, both within the developmentally disordered and psychiatric populations (Yates, 2004). Decreased levels of serotonin production have been associated with increased aggression, impulsivity, suicidality and NSSI (Yates, 2004). These findings have been replicated among both humans and rhesus monkeys, and contribute strong support to the contribution of a dysregulated serotonergic system in NSSI behaviors (Sher & Stanley, 2009). Selective Serotonin Reuptake Inhibitors (SSRIs), a class of medications used to maintain the availability of serotonin in the brain, has been associated with reducing the incidence of NSSI behaviors (Schroeder et al., 2001).

Endogenous opioids are also implicated in the development and maintenance of NSSI behaviors (Yates, 2003). Research has determined that individuals experience increased rates of opioids when they self-injure (Chapman, Gratz, & Brown, 2006). Notably, most individuals engaging in NSSI report that they feel little or no pain prior to or during self-injurious episodes. This

stress-induced analgesia may be related to the dissociation that individuals often report before they self-injure (Bohus, Limberger, Ebner, Glocker, Schwarz, Wernz, & Lieb, 2000). As a result of the role endogenous opioids play in NSSI, pharmacological treatments such as naltrexone have been found to reduce self-injurious behavior in many individuals (Bohus et al., 2000).

### **Personality Traits**

Due to the complex nature of self-injury, it is not possible to conclusively determine why all individuals engage in NSSI. However, several theoretical frameworks have been developed to propose reasons why some individuals engage in this behavior (Klonsky, 2007). In addition, other researchers have attempted to isolate specific personality constructs that are more highly correlated with NSSI (Andover et al., 2005; Dougherty et al., 2009; Janis & Nock, 2009). Impulsivity and perfectionism, two personality traits often associated with NSSI, are discussed below.

Research has implicated impulsive behaviors or difficulty with impulse control as a feature of NSSI (Janis & Nock, 2009). Impulsivity can be defined as the tendency to act quickly and without regard for consequences. Impulsive individuals often have difficulty inhibiting their responses (Herpertz, Sass, & Favazza, 1997), and impulsivity has also been linked to emotional dysregulation (Herpertz, Sass, & Favazza, 1997). A 2009 study by Stanford and Jones, attempting to determine whether self-injurers could be considered a psychologically homogeneous group found that impulsivity played a role in approximately one third of adolescents engaging in NSSI. Based on their answers to a self-report questionnaire, the individuals in the study were

organized into normal, pathological, and impulsive subtypes. More specifically, this study found that the correlation between impulsivity and NSSI was higher for males (34 out of 76) than females (33 out of 142) (Stanford & Jones, 2009). Individuals engaging in NSSI with higher levels of impulsivity have also been found to have increased risk for subsequent suicidal ideation or attempts (Dougherty et al., 2009).

While some individuals report impulsively engaging in self-injury, other individuals report a more compulsive component to the behavior. Studies have examined how much time is usually spent thinking about engaging in NSSI before engaging in the act with inconsistent results (Janis & Nock, 2009). It has been noted that some individuals ritualize the behavior and spend long periods of time planning or thinking about NSSI before actually completing it (Connors, 1996).

Another construct that has been studied in concert with NSSI is that of perfectionism. Perfectionism is defined in the literature as attempting to attain unrealistically high expectations in several areas of functioning (Hoff & Muehlenkamp, 2009). Perfectionism has been linked to cognitive distortions that may lead to even more serious forms of maladaptive coping or problem solving abilities. Maladaptive perfectionism also has been shown to correlate strongly with several other forms of pathology, including suicidal ideation (Hoff & Muehlenkamp, 2009) and Obsessive Compulsive Personality Disorder (APA, 2000, p. 729). Several studies have suggested perfectionism as a possible clinical correlate to NSSI (Cross, 1993; Strong, 1998; White, Trepal-Wollenzier, &

Nolan, 2002); however, only limited empirical evidence has been found to support this notion.

Hoff & Muehlenkamp's study (2009) of 56 college students engaging in NSSI indicated that individuals did not score significantly higher on all subscales of perfectionism, although they did differ significantly on three perfectionism subscales; concern over mistakes, parental criticism and organization. This study suggests that while overall perfectionism may not strongly influence NSSI, it is possible that specific aspects may indicate vulnerability to self-injury (Hoff & Muehlenkamp, 2009).

### **Childhood Trauma and Maltreatment**

Historically, self-injury has been associated with psychoanalytic models that were often based on childhood abuse and trauma, and more specifically, sexual abuse. For example, in her book, *The Bright Red Scream*, Marilee Strong's discussion of sexual abuse and its association with NSSI notes:

The only recourse [to sexual abuse] is psychic defenses-denial, self-blame, dissociation, repression-to blunt the overwhelming horror of the experience and feel some sense of control. This can lead to a fragmenting of the psyche into an outer 'imposter' self, a sometimes quite successful front presented to the public and a secretive, shame-filled inner self compulsively re-enacting the trauma in a futile attempt to master it (1998, p. 67).

Early studies demonstrated significant, positive associations between childhood sexual abuse and subsequent self-injury, (Muehlenkamp, Kerr, Bradley, & Larsen, 2010), but this research was often based on case studies and ethnographic accounts of adolescent and young adult women engaging in self-injurious behavior. Many early self-injury researchers suggested that NSSI may

be described as an individual's reenactment of sexual abuse perpetrated on them (Klonsky & Glenn, 2009). NSSI has also been described as a "manifestation of sexual abuse" (Cavanaugh, 2002). Connors (1996) described the functions of NSSI following abuse as fourfold. Self-injury is used to 1) reenact the original trauma, 2) organize the self and regain and maintain homeostasis, 3) manage dissociative symptoms and 4) express feelings and needs. While some researchers suggest a link between sexual abuse and NSSI, it is difficult to fully validate this relationship, as the majority of research has been conducted using very small sample sizes or qualitative samples (Cavanaugh, 2002; Klonsky & Moyer, 2008). Systematic, quantitative research has yielded less consistent results (Klonsky & Glenn, 2009). For example, a meta-analysis including 43 studies examining the association between childhood sexual abuse and NSSI found a relatively small relationship between the two (Klonsky & Moyer, 2008). Specifically, these aggregated studies found that childhood sexual abuse accounts for no more than 5 % of the variance in the development of NSSI (Klonsky & Moyer, 2008).

Several studies suggest that family difficulties or childhood maltreatment may play a role in subsequent NSSI behaviors (Prinstein, Guerry, Browne, & Rancourt, 2009). A well-established theory put forth by Marsha Linehan suggests that early invalidating environments are directly associated with poor emotional regulation and interpersonal skills. She proposes that these early invalidating environments put individuals at higher risk for developing NSSI as a maladaptive coping strategy later in life (1993). Research has consistently validated Linehan's

theory and demonstrated that environments with problematic attachments or abusive environments put children at higher risk for NSSI (Klonsky & Glenn, 2009). It has also been shown that those individuals engaging in NSSI reported a lower quality of relationship with their parents than individuals not engaging in NSSI (Hilt et al., 2008).

Although it has been noted that many individuals engaging in NSSI have a history of childhood maltreatment, it is unclear whether the association is a specific risk factor for NSSI or a predictor of psychopathology in general (Prinstein et al., 2009). Some studies suggest that individuals who engage in self-injury experienced more emotional or physical neglect as children (Klonsky & Glenn, 2009), while others note that childhood sexual abuse and physical neglect appear to be the most strongly correlated with NSSI, with physical abuse and emotional neglect less predictive of NSSI behaviors (Glassman, Weierich, Hooley, Deliberto & Nock, 2007). Yates, Carlson, & Egeland, (2008) found that physical abuse better predicted intermittent NSSI, while sexual abuse was a better predictor of recurrent NSSI, suggesting complex relationships between early abuse and subsequent NSSI.

Still other researchers have argued that there are much stronger associations between NSSI and physical abuse and neglect than sexual abuse (Muehlenkamp, Kerr, Bradley, & Larson, 2010). Specifically, physical abuse is found to correlate more strongly with repetitive NSSI than those engaging in episodic NSSI (Muehlenkamp et al., 2010). Although correlational data cannot be considered causal, Muehlenkamp's hypothesis regarding these findings suggests

that suffering from physical abuse may desensitize a person to physical pain, making it more likely that the individual will engage in NSSI as a coping mechanism rather than a less painful method such as substance abuse (Muelenkamp et al., 2010).

Current research suggests that the relationship between abuse and NSSI may be more thoroughly understood through the use of mediational models (Muehlenkamp et al., 2010). That is, other clinically relevant variables may help at least partially explain the relationship between NSSI and childhood abuse. For example, one study found Post-Traumatic Stress Disorder (PTSD) was a mediating variable for the abuse/NSSI relationship, while research conducted by Glassman et al., (2007) indicated self-criticism to be a primary mediating variable in the relationship (Muehlenkamp et al., 2010). Additionally, a study conducted by Cheng, Mallinckrodt, Soet and Sevig (2010) found that experiencing a traumatic event was a significant predictor for NSSI only among women, whereas witnessing trauma predicted self-injury for both men and women. Overall, data from current research suggests a complex and possibly mediated association between NSSI and abuse that have a strong component of emotional regulation difficulties (Muehlenkamp et al., 2010). For example, Muehlenkamp et al., (2010) noted that individuals engaging in NSSI, as well as those experiencing significant childhood abuse reported significant difficulties regulating their emotions. Additionally, Paivio and McCulloch (2004) suggested that alexithymia (the inability to accurately identify and express emotions appropriately) mediated the relationship between abuse and SIB. Specifically, abuse is related to self-injury,

especially when the individual experiences difficulty expressing negative affect or emotion (Polk & Liss, 2007). Although there is disagreement regarding the correlation between NSSI and early childhood abuse, most studies agree that self-injurers are more likely to report early negative family environments (Klonsky & Glenn, 2009).

### **Co-morbid Disorders**

While NSSI is not listed as a separate diagnostic category, the behavior is often associated with a variety of DSM-IV Axis I and Axis II disorders, (APA, 2000) including eating disorders, posttraumatic stress disorder (PTSD), anxiety, depression, borderline personality disorder (BPD) and obsessive-compulsive disorder (OCD) (Ballard, Bosk, & Pao, 2010; Kress & Hoffman, 2008). In fact, many adolescents engaging in NSSI also experience symptoms consistent with internalizing, externalizing, and substance use disorders on Axis I and borderline, avoidant, and paranoid personality disorders on Axis II (Nock, Teper, & Hollander, 2007).

Borderline Personality Disorder (BPD) is most commonly associated with self-injury, and is usually associated with the clinical population. In fact, the only time self-injury is mentioned in the DSM-IV-TR is as a symptom of BPD. This is problematic, because BPD is generally seen as an inappropriate diagnosis for children under the age of 18 because of their developing personalities (Wilkinson & Goodyer, 2011). It is estimated that between 70-80% of individuals diagnosed with BPD engage in some form of self-injurious behavior (Kress & Hoffman, 2008). BPD is characterized as a disorder in which individuals experience affective instability, dysregulated behaviors, and an intense fear of abandonment

(Selby, Anestis, Bender, & Joiner, 2009). The diagnostic criterion for BPD also includes “recurrent suicidal behavior, gestures or threats, or self-mutilating behavior” (APA, 2000). Emotional dysregulation is one of the hallmark symptoms of BPD, which decreases an individual’s ability to tolerate stress (Chapman et al., 2006). It has also been suggested that emotional dysregulation for individuals with BPD is experienced as 1) extremely intense experience of emotion, 2) increased sensitivity to emotional stimuli, and 3) difficulty returning to emotional baseline (Linehan, 1993).

Although diagnosis prior to age 18 is generally discouraged, many adolescents (especially in the inpatient setting) may show signs that are indicative of BPD, including using self-injury as an impulsive reaction to real or perceived abandonment (Kress & Hoffman, 2008). Adolescents with features of BPD may also engage in a wide variety of high-risk behaviors that often include substance abuse, promiscuity, self-mutilation and eating disorders. These high-risk behaviors are often the determining factor in hospitalization, especially when the adolescent has accidentally overdosed, cut themselves too deeply or become pregnant (Bleiberg, 2001).

Anxiety is also strongly associated with self-injurious behaviors in both the clinical and community populations, and NSSI is believed to coincide with a significant reduction in tension (Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005). Individuals engaging in NSSI generally have maladaptive coping strategies, and it has been hypothesized that as anxiety increases, these individuals use self-injury as a way to cope with feelings of tension (Ross &

Heath, 2003). That is, as anxiety builds to intolerable levels, some individuals use NSSI as a strategy to decrease anxiousness (Ross & Heath, 2003). For individuals engaging in NSSI for anxiety reduction, there is generally an immediate feeling of relief following self-injury (Favazza, 1998). Specifically, individuals with high levels of anxiety showed significant decreases in respiration, skin conductancy level and heart rate in response to NSSI scripts (Andover et al., 2005). These findings suggest that individuals with high levels of anxiety may be more likely to engage in NSSI to decrease their levels of anxiousness (Andover et al., 2005).

While there is significant co-morbidity between anxiety and NSSI, the connection between NSSI and depression is less consistent (Andover et al., 2005). Some research has suggested that there is a link between individuals experiencing major depressive episodes and NSSI, while other studies have found no link between a diagnosis of major depression and self-injury (Andover et al., 2005). Guerry & Prinstein, (2010) found a cognitive-vulnerability stress interaction as a significant predictor of NSSI in the time period of 9-18 months following a hospital discharge. They noted that individuals with more negative attributional styles in combination with more stressful interpersonal events reported increasing levels of NSSI behaviors over time. They also found that individuals engaging in NSSI experience significantly higher levels of negative affect, as well as lower levels of distress tolerance (Guerry & Prinstein, 2010).

Additionally, eating disorders also demonstrate co-morbidity with NSSI. Research suggests that approximately 22-62% of individuals diagnosed with

anorexia (Croyle & Waltz, 2007; Hilt et al., 2008; Serras et al., 2010), and up to 72% of individuals diagnosed with bulimia (Croyle & Waltz, 2007) also engage in self-injurious behaviors. There are several common characteristics among those who engage in NSSI and individuals identified with eating disorders. In both cases, adolescence is the typical age of onset for these disorders, and they are both commonly associated with body dissatisfaction and self-punishment (Favaro & Santonastaso, 2000). Both eating disorders and NSSI are generally conceptualized as a set of behaviors that serve an emotional regulation function (Muehlenkamp, Engel, Wadeson, Crosby, Wonderlich, Simonich, & Mitchell, 2009).

There is also significant evidence to suggest co-morbidity between substance abuse and NSSI. Self-injury is common among clinical substance using samples, with prevalence ratings ranging from 34-50% (Serras, Saules, Cranford, & Eisenberg, 2010). In the Serras et al., (2010) study, drug use was found to be associated with higher rates of all self-injurious behavior, however, the relationship between alcohol use and NSSI was less clear. Serras et al., (2010) found that, while binge-drinking behavior within the past two-weeks did not correlate with NSSI, frequent binge drinking behavior did. This distinction is consistent with the research that suggests that 'typical' binge drinking behavior among college students (consuming 4 or more drinks on one occasion within the past two weeks) is not significantly correlated with poorer mental health outcomes (Serras et al., 2010). Gollust and colleagues (2008) found similar results in their investigation of binge drinking and self-injury. That is, no

significant relationship was found between binge drinking and self-injury. However, in this study, no distinction was made between binge drinking and frequent binge drinking, which may have accounted for the lack of statistically significant results.

### **Epidemiology and Functional Models**

Although research in the area of NSSI has increased substantially, it is still difficult for psychologists and researchers to determine the multi-faceted etiology of this complex behavior. As Lloyd-Richardson, Nock, & Prinstein note, “NSSI is contextually complex, meaning that an individual is inextricably tied to his environment” (2008, p. 31). That is, an individual may engage in self-injury for different reasons at different times and contexts, which changes the functions of the behavior. Additionally, self-injury has been identified as an “over-determined” behavior, meaning that it may simultaneously serve several functions for an individual (Lloyd-Richardson, Nock, & Prinstein, 2009).

As a result, multiple models of NSSI have been proposed to explain the functionality of the phenomenon. The theories presented in this section have been developed by key self-injury researchers and generated significant empirical support. However, it should be noted, there is significant overlap within theories, and researchers often use different terms to describe similar functions and behaviors. Therefore, while the theories are presented as separate, there are many significant aspects of each theory that may be closely associated with other models.

## **Four-function Model (FFM)**

The four-function model (FFM) has recently been posited to help understand the processes that produce and maintain NSSI behavior (Nock & Cha, 2009). The model was developed as a comprehensive, integrative model that draws on information from learning theory and behavior therapy (Lloyd-Richardson, Nock, & Prinstein, 2008). According to this model, self-injury functions along two dichotomous dimensions: reinforcement that is either positive or negative, and contingencies that are either automatic (i.e., intrapersonal) or social (i.e., interpersonal) (Nock & Cha, 2009). These four functions are not mutually exclusive, and individuals often engage in self-injury for more than one purpose. (Hilt, Nock, Lloyd-Richardson, & Prinstein, 2008). The four-function model is illustrated in Table 1-1 (Lloyd-Richardson, Nock, & Prinstein, 2008, p. 34).

The first function proposed by this model is the automatic negative reinforcement (ANR) function. In this function, self-injury serves to regulate an individual's internal emotional states or to remove an undesirable cognitive or emotional state (Lloyd-Richardson, Nock, & Prinstein, 2009). The ANR function is the one most often endorsed by self-injurers in research studies, (Nixon, Cloutier, & Aggarwal, 2002; Nock & Cha, 2009; Polk & Liss, 2009) and is also the only function that is closely associated with a history of suicidal attempts and hopelessness (Lloyd-Richardson, Nock, & Prinstein, 2009; Nock & Prinstein, 2005). Studies with both the community population and hospitalized inpatients lend strong support to the ANR function, with individuals often citing reasons for

self-injuring such as, “to reduce emotional pain,” “to get out my frustrations,” and “to reduce tension” (Lloyd-Richardson, Nock, & Prinstein, 2009, p. 33).

The second function proposed by the FFM is automatic positive reinforcement (APR). These individuals engage in NSSI for the purpose of generating feeling and minimizing anhedonia (Nock & Cha, 2009). Prior to engaging in self-injury, these individuals often report feelings of numbness or disassociation, which is alleviated by engaging in the behavior (Hilt, Cha, & Nolen-Hoeksema, 2008). Dissociation occurs when an individual feels overwhelmed by an external stressor and begins to disconnect and disengage from reality (Low, Jones, MacLeod, Power, & Duggan, 2000). Although the dissociation function is often adaptive during times of severe trauma, many individuals continue to dissociate throughout their lives, which may prompt NSSI behavior (Low et al., 2000).

Individuals engaging in NSSI for automatic positive reinforcement often have a higher pain threshold and may be more likely to engage in NSSI to feel more alive (Hilt, Cha, & Nolen-Hoeksema, 2008; Polk & Liss, 2009). Individuals engaging in NSSI for the purpose of APR are also more likely to experience symptoms of major depressive disorder (MDD), Borderline Personality Disorder (BPD), or posttraumatic stress disorder (PTSD) (Klonsky, 2007; Nock & Prinstein, 2005). As a result of its strong association with psychopathology, APR is the second most endorsed function within the clinical population (Lloyd-Richardson, Nock, & Prinstein, 2009).

The third function proposed by the FFM model is social positive reinforcement (SPR), in which individuals engage in NSSI to obtain attention or environmental resources (Nock & Cha, 2009). This may also be used as a means of managing an individual's social environment by eliciting a response from others (Prinstein et al., 2009). SPR is endorsed almost as often as the ANR function by community adolescents, who may use self-injury as a way to "let others know how I am feeling" or to "get a reaction from my parents" (Lloyd-Richardson, Nock, & Prinstein, 2009, p. 35). Although many adolescents do not initiate NSSI behaviors for social positive reinforcement reasons, they may find that when others discover their injuries they receive access to the care they need (Lloyd-Richardson, Nock, & Prinstein, 2009).

Finally, social negative reinforcement (SNR) functions to remove some interpersonal demand or task (Nock & Cha, 2009). Individuals who endorse this function of self-injury may use it to "get other people to leave me alone," "to get out of going to school," or "to get my parents to stop fighting" (Lloyd-Richardson, Nock, & Prinstein, 2009, p. 35). Among college students, NSSI may be used as a way to escape from the increasing demands of adult life and academic responsibilities (Lloyd-Richardson, Nock, & Prinstein, 2009).

While the ANR function has received the most support from both community and clinical populations, the other three functions have received significant support as well. Research by Lloyd-Richardson, Nock, & Prinstein (2009) has suggested that while hospitalized samples are more likely to report automatic functions of NSSI, samples from the community are as likely to report

social functions as they are to report automatic ones. This theoretical functional framework has gained considerable empirical support, through both self-report studies and psychological and behavioral studies (Glenn & Klonsky, 2009; Nock, 2009; Nock & Cha, 2009; Nock & Prinstein, 2004; Nock, Teper, & Hollander, 2007).

### **Emotional Regulation Theory**

The emotional regulation theory, which is most similar to the ANR function of the four-function model, also has garnered significant support to explain the functions of NSSI (Prinstein, Guerry, Browne, & Rancourt, 2009). Individuals engaging in self-injury for the purpose of regulating emotions do so as a way to remove unpleasant affective states (Hilt, Cha, & Nolen-Hoeksema, 2008). The emotional regulation theory suggests that early unstable environments decrease an individual's ability to learn to cope with difficult situations (Klonsky, 2007). As a result, these individuals are less able to manage their own affect and may use self-injury as a maladaptive means of coping or to alleviate acute emotional distress of affective arousal (Klonsky, 2007).

The emotional regulation model posits that NSSI is often related to poor emotional-regulation skills (Hilt, Cha, & Nolen-Hoeksema, 2008). Thus, these individuals use NSSI to mediate or avoid unwanted emotional states. Often, these individuals experience heightened levels of distress that they feel unable to control through other coping mechanisms. In support of this model, Nock & Mendes (2008) found that adolescents who engage in NSSI generally exhibit higher levels of physiological reactivity to stress, decreased problem-solving skills and a reduced ability to tolerate stress.

### **Anxiety Reduction Model**

The anxiety reduction model represents an extension of the emotional regulation model and offers another functional explanation for NSSI. This model proposes that individuals use NSSI when they experience tension or anxiety that reaches an intolerable level (Ross & Heath, 2003). NSSI often allows these individuals to experience immediate relief from anxiety following the act (Favazza, 1998). Following NSSI, these individuals are able to return to a normal emotional state (Ross & Heath, 2003). Ross & Heath (2003) argue that individuals engaging in NSSI for anxiety regulation are more likely to experience higher levels of generalized anxiety (i.e. trait anxiety) and more feelings of anxiety immediately preceding self-injury (i.e. state anxiety). These individuals often lack adaptive coping mechanisms, and use NSSI as a way to regulate their affect.

### **Hostility Model**

The hostility model, also developed by Ross and Heath (2003) is an extension of the anxiety reduction model, wherein individuals use NSSI as a cathartic action to reduce hostility in times of stress. This theory is more often associated with male self-injurers who feel it is unacceptable to outwardly express hostility. This model suggests that individuals are unable to appropriately express feelings of hostility, causing an increase in feelings of tension, and the direction of anger on an acceptable source (i.e., the self) (Ross & Heath, 2003). As in the anxiety reduction model, it is expected that individuals who self-injure report greater generalized feelings of hostility (i.e. trait hostility) as well as greater feelings of hostility before engaging in NSSI (i.e. state hostility) (Ross & Heath,

2003). Ross & Heath hypothesize that some individuals experience both anxiety and hostility before NSSI, while others experience only anxiety *or* hostility prior to the act (Ross & Heath, 2003).

### **Experiential Avoidance Theory**

The experiential avoidance theory posits that NSSI is a way for individuals to reduce or control high levels of emotional arousal (Chapman, Gratz, & Brown, 2006). Experiential avoidance includes any behavior that serves to avoid or escape from unwanted internal conditions and the external conditions that surround them (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). The class of behaviors defined as experiential avoidance are maintained through negative reinforcement, and include other behaviors besides NSSI, such as avoidant coping styles, thought suppression, drug or alcohol use, or avoidance of certain objects and situations (Chapman, Gratz, & Brown, 2006) (See Figure 1).

### **Social Learning, Modeling, and Reinforcement Perspectives**

While there are varying degrees of support for each model described above, it is also important for researchers to consider the interpersonal perspectives of NSSI, especially when examining adolescent and young adult populations. Research has suggested that interpersonal relationships may influence the development of NSSI (Bureau, Martin, Freynet, Poirier, Lafontaine, & Cloutier, 2010), and that interpersonal stressors often immediately precede NSSI behaviors in adolescents (Prinstein et al., 2009).

### **NSSI Contagion**

A contagion effect also has been noted among self-injurers, wherein adolescents normalize NSSI behavior within their group of friends and use it as a

way to create or solidify friendships (Heilbron & Prinstein, 2008). Research indicates that one of the most reliable predictors of whether an adolescent will engage in a behavior or adoption of a belief is their perception of their peers' attitudes or beliefs (Heilbron & Prinstein, 2008). A causal link has also been suggested between affiliations with high-risk peers and the likelihood of adolescents engaging in high-risk behavior (Prinstein, Boergers, & Spirito, 2001). For example, adolescents engaging in a high frequency of physical aggression or substance abuse tend to have larger proportions of friends engaging in these same behaviors (Prinstein et al., 2001).

The association between peers and high-risk behavior may be a combination of selection effects, where adolescents prefer peers who engage in similar types of behavior, as well as socialization effects, wherein adolescents implicitly or explicitly influence others to engage in similar behaviors (Prinstein et al., 2001). Accumulating evidence suggests that NSSI is a behavior strongly subject to peer influence (Prinstein et al., 2009). In fact, one study found that adolescents had thoughts of NSSI after being encouraged by others approximately 1.7%-3.8% of the time (Nock, Prinstein, & Sterba, 2009).

Adolescents and young adults may also engage in self-injury in each other's presence or even using the same tools to injure themselves (Lieberman, Toste, & Heath, 2009). This form of contagion is thought to be more prevalent among males (Lloyd-Richardson et al., 2007). The contagion effect makes it even more difficult to effectively treat NSSI, because there is concern that treating the behavior within certain therapeutic group settings may increase the

rates of NSSI, as individuals share their stories of self-injury in detail, or in a positive light (Kibler, 2009).

### **Social Learning Theories**

Social psychological theories have determined that individuals may imitate the behavior of peers to maintain or elevate their self-image (Prinstein et al., 2009). As a result, if adolescents perceive NSSI to be a behavior of high status, it is more likely that they will engage in the behavior as a way to seek positive reinforcement from their environment (Prinstein et al., 2009). Social learning theory dictates that learning about and observing the NSSI behaviors of others may influence an individual's own decision to begin self-injuring (Nock, 2009). Interestingly, a correlation has been found between the increasing prevalence of NSSI and the increase in references to NSSI in movies, songs, print media and the internet in the past ten years (Whitlock, Purington, & Gershkovich, 2009).

Social learning effects may also be heightened when adolescents perceive low support from peers, increasing the possibility that they will imitate risky behaviors of their friends (Prinstein et al., 2001). Behavioral theorists also suggest that positive reinforcement and social modeling may influence self-injuring behavior (Prinstein et al., 2009). Granic and Dishion (2003) determined that the manner in which adolescents talk about deviant acts may serve to reinforce externalizing and aggressive behavior over time. Their work also noted that deviant adolescents were more likely to engage in verbal positive reinforcements towards peers when discussing antisocial acts than prosocial acts (Granic & Dishion, 2003).

The social functions of NSSI may also serve as a form of communication to others about thoughts and feelings. Nock (2009) notes that when higher order processes such as language fail, individuals often feel compelled to use more primitive means to convey messages. Thus, it can be theorized that these individuals do not feel successful communicating their message, and feel that they must resort to increasingly intense modes of communication until their message is recognized (Nock, 2009). Evidence from the literature suggests that adolescents engaging in NSSI do not differ from other adolescents on general intelligence, problem solving, or design fluency, but they do have significantly poorer verbal fluency than non self-injurers, and report being less aware of their own emotions and having difficulty expressing their emotions (Nock, 2009).

It has also been suggested that emotional dysregulation stems from a lack of social support, both in family and peer relationships (Adrian, Zeman, Erdley, Lisa, & Sim, 2011). In their 2011 study, Adrian and colleagues found that family and peer interpersonal problems have negative and independent effects on an adolescent's ability to emotionally regulate, which may place them at greater risk for developing NSSI behaviors. Further, their model gave support to the notion that poor familial relationships often predicted poor outcomes in peer relationships (Adrian et al., 2011).

### **Treatment Approaches**

While many elements of NSSI have been examined in the research, effective treatment options are still relatively limited for this population. Nonsuicidal self-injury has typically been regarded as a treatment resistant behavior that has historically created great frustration among the medical and

psychological communities (Muehlenkamp, 2006). Although it is considered a behavior distinct from suicide, self-injury can often lead to serious injury and accidental death (Muehlenkamp, 2006). It is important to note that even though NSSI is considered a separate behavior from suicide, a correlation still exists between the two (Newman, 2009). Thus, NSSI should be taken seriously, and examined in conjunction with a thorough assessment for suicide.

Individuals with NSSI are commonly treated in an inpatient hospital setting, and usually experience minimal success (Muehlenkamp, 2006). Because of the significant expense and minimal effectiveness of inpatient hospitalization, it is important to find empirically supported treatments that work on an outpatient basis with NSSI. Currently, treatments utilizing a cognitive-behavioral therapy (CBT) approach have demonstrated the most effectiveness when treating NSSI (Muehlenkamp, 2006). These approaches help individuals manage the emotions that lead to repeated episodes of self-injury. CBT treatments aim to help individuals successfully regulate their emotions by understanding the functionality of all emotions, rather than simply using thought suppression strategies to deal with certain emotions. Research has found that suppressing negative or unwanted emotions or thoughts can ultimately create negative consequences for individuals engaging in NSSI (Gratz, 2007) by increasing distressing thoughts and emotions. Individuals may engage NSSI as a way to reduce the emotional arousal that comes as a result of attempting to suppress one's thoughts (Najmi, Wegner, & Nock, 2007).

Behavioral interventions also help adolescents find alternative means of coping as well as adaptive ways to understand and manage their stress and emotions (Lieberman, Toste, & Heath, 2009). Behavioral strategies to help reduce depression and increase self-esteem through physical exercise and 'self-care' practices are also beneficial for treating NSSI (Lieberman, Heath, & Toste, 2009).

A cognitive framework of NSSI asserts that individuals engaging in self-injurious behaviors harbor maladaptive beliefs and flawed coping mechanisms. These behaviors are maintained by a variety of environmental and internal consequences that prove to be reinforcing to the individual (Newman, 2009). It is important for cognitive treatment to focus on these maladaptive beliefs and allow the client to modify these beliefs into something more productive and adaptive (Newman, 2009). Namely, individuals engaging in NSSI usually have a variety of automatic negative thoughts about themselves or others (Lieberman, Heath, & Toste, 2009). These negative cognitions often include a) the behavior is necessary and acceptable, b) the individual is disgusting and deserves to be punished, c) the action of self-injury is the only way to reduce unpleasant feelings to solve crises, and d) the action is needed to help communicate feelings (Walsh & Rosen, 1985). Treatments targeting the emotional dysregulation that is associated with self-injury may also be useful. However, treatments aimed at helping individuals better regulate their emotions should focus on learning other more adaptive ways to experience emotions, rather than suppressing or attempting to control them (Gratz, 2007).

Problem solving therapy (PST) and dialectical behavior therapy (DBT) are two cognitive behavioral approaches that have been identified as having some effectiveness with self-injuring individuals (Muehlenkamp, 2006). While both treatments are short-term and focus directly on NSSI and its associated skill deficits, DBT is considered an intense treatment paradigm that is often difficult to utilize (Muehlenkamp, 2006; Slee, Arensman, Garnefski, & Spinhoven, 2007). However, both of these models are widely used to treat NSSI, and can be adapted for a variety of settings or populations.

PST is based on the research-supported notion that individuals who self-injure generally present with specific problem-solving deficits (Townsend et al., 2001). As a result, this treatment focuses on teaching problem solving skills and general coping strategies, as well as helping individuals identify and solve problems in their lives (Muehlenkamp, 2006). Problem-solving treatment is considered a pragmatic approach for helping people with emotional regulation problems, suicidal behavior and NSSI (Townsend et al., 2001).

The primary goal of PST is to help patients develop skills to problem-solve current difficulties, with a secondary aim of teaching them overall strategies which will serve to help them better solve problems in the future (Townsend et al., 2001). During therapy, individuals are taught the different steps in effective problem solving, including identification and operationalization of the problem, generating possible solutions, choosing a solution and evaluating its results (Muehlenkamp, 2006; Townsend et al., 2001). More flexible thinking styles are also encouraged in PST, as it has been shown that individuals engaging in NSSI

often have rigid, inflexible ways of thinking (Muehlenkamp, 2006). The formation of a strong therapeutic alliance is also stressed in PST (Muehlenkamp, 2006). Research on the effectiveness of PST has been limited, and the results are often inconclusive because of the small sample sizes used and limited studies conducted (Townsend et al., 2001). One study conducted by Hawton et al., (2000), found that PST was more effective in decreasing the repetition of NSSI (15.5% repetition for PST and 19.2% for control patients), however, these results were not statistically significant, which may be a result of the small sample size used in this study. Therefore, more systematic research in this area is needed with larger samples to determine treatment efficacy (Muehlenkamp, 2006).

DBT is a treatment originally developed for individuals with borderline personality disorder, but is now often used with individuals engaging in NSSI. This treatment has recently emerged as one of the most effective methods of treating BPD, and has been shown in randomized clinical trials to reduce the overall incidence of self-injurious behaviors (Nock, Teper & Hollander, 2007). DBT is generally conducted by utilizing a combination of individual psychotherapy as well as group therapy and skills training (Gratz, 2007). It incorporates aspects of mindfulness, behaviorism and dialectical philosophy (Lynch & Cozza, 2009) and includes a significant element of self-acceptance and change (Robins & Chapman, 2004). Thus, DBT seeks to balance the idea of accepting individuals where they are, while gently requesting and implementing the idea of change (Trupin, Stewart, Beach, & Boesky, 2002). Individual therapy focuses on achieving the primary targets of DBT, which are 1) decreasing life-

threatening behaviors, 2) decreasing therapy-interfering behaviors, 3) decreasing quality-of-life interfering behaviors, and 4) increasing behavioral skills (Nock, Teper & Hollander, 2007). Group-based skills training focuses primarily on 1) mindfulness, 2) emotional regulation, 3) interpersonal effectiveness, 4) distress tolerance, and 5) “walking the middle path” skills (Nock, Teper, & Hollander, 2007). The last group skill is specific to adolescent DBT and includes suggestions for navigating family interactions (Nock, Teper, & Hollander, 2007).

DBT also can help individuals become more aware and manage the behaviors associated with their emotions, allowing them to more successfully utilize adaptive coping strategies (Gratz, 2007). Individuals are taught to identify an emotional response and the associated physiological, subjective and behavioral aspects of the emotion and event (Gratz, 2007). The functions of emotions are also explained, which allows self-injurers to gain increased understanding and subsequent acceptance of negative emotions (Gratz, 2007). Distress tolerance skills are also taught to increase emotional regulation and facilitate acceptance of one’s emotions. Individuals are taught to better manage the behaviors associated with emotions by considering the short and long-term consequences of behaviors. Self-soothing techniques are demonstrated to help self-injurers more adaptively cope with negative emotions (Gratz, 2007).

The four functions of DBT treatment include helping the individual develop adaptive skills, addressing obstacles to using new skills, allowing the individual to generalize new skills to their daily life, and keeping therapists motivated and skilled, while minimizing burnout (Robins & Chapman, 2004). DBT can be

adapted for adolescents and young adults by shortening the duration of treatment, reducing the number and complexity of skills taught, including other family members and engaging caregivers in skill-building groups (Robins & Chapman, 2004).

### **Limitations of Current Research**

Literature on NSSI has expanded considerably within the last decade as researchers continue to gain understanding of the different components of this complex behavior. However, significant limitations and inconsistent findings still exist in the research in several important areas of self-injury. Defining self-injury continues to be one of the most discrepant and difficult issues surrounding NSSI research. While “nonsuicidal self-injury” has recently become a standard term for the behavior (ISSS, 2007), there remains a multitude of different names for self-injury, which often causes disagreements in the literature. Terms such as parasuicide, self-injurious behavior, self-mutilation, deliberate self-harm, self-carving, and self-cutting generally encompass the behaviors found in NSSI (Nixon & Heath, 2009). Current research reflects the idea that NSSI exists within a continuum of deliberate self-harming behaviors. That is, while NSSI is considered a self-harm behavior, there are many other self-harming behaviors (either direct or indirect) that cannot be included within the NSSI spectrum (Nixon & Heath, 2009).

The true prevalence of self-injurious behavior is also difficult to ascertain, both within community and clinical samples. Community based estimates range from .75% to 46% for adolescents (Carlson et al., 2005; Heilbron & Prinstein, 2008; Latzman, Gratz, Young, Heiden, Damon, & Hight, 2010; Levesque,

Lafontaine, Bureau, Cloutier, & Dandurand, 2010; Nock, 2009; Ross & Heath, 2002; Weismore & Esposito-Smythers, 2010) and 21 to 80% in clinical samples (Glenn & Klonsky, 2009; Heilbron & Prinstein, 2008; Hilt et al., 2008). Prevalence estimates for young adults have similar discrepancies, ranging from approximately 14 to 38% of college-age students (Gollust, Eisenberg, Golberstein, 2008; Laye-Gindhu & Schonert-Reichl, 2005). These wide ranges reflect disagreement over the actual rates of self-injury as well as the specificity of the term.

Prevalence rates likely differ due to variability in the terms and definitions used by researchers. For example, some surveys ask students if they have ever “engaged in self-injury” which elicits broader responses and higher prevalence rates than asking a student if they have ever “cut themselves” (Kanan et al., 2008). Other studies utilize a definition of self-injury that includes high-risk behaviors such as self-poisoning, jumping from heights, and drug overdoses (De Leo & Heller, 2004; Hawton et al., 1998) Nixon & Heath, 2009). Most of the recent literature concurs that while high-risk behaviors pose potential risks, they should not be included in the NSSI paradigm (Nixon & Heath, 2009). Including these behaviors in the definition of self-injury usually yield higher prevalence ratings than studies excluding these behaviors from the definitions. A study conducted by Lloyd-Richardson et al., (2007) found a 12-month prevalence rate of 46.5% of self-injury of adolescents in a community sample. The measure used in this study included more innocuous behaviors such as picking at an area of skin until it bleeds as a type of self-injury. However, when this item was removed,

the prevalence rate dropped to 27.7% (Lloyd-Richardson et al., 2007). The use of broad definitions in studies is especially problematic if the questionnaires are retrospective and encompass all of childhood as some innocuous behaviors have developmental implications. For example, items worded as, “have you ever picked at a sore” may capture behaviors that are not uncommon for children.

Debate over the methods and functions of NSSI has also caused problems when considering various research studies as researchers may limit or broaden questionnaire items for behaviors that reflect their particular model preference. For example, while many studies investigate all forms of self-injury, other studies limit the definition of self-injury to “cutting”, eliminating other methods such as burning, self-hitting and erasing skin (Heath, Schaub, Holly, & Nixon, 2009). Furthermore, European studies often use the Child and Adolescent Self-Harm in Europe (CASE) group definition, whereas self-harm is defined as:

An act with a non-fatal outcome in which an individual deliberately did one or more of the following: Initiated behavior (for example, self-cutting, jumping from a height), which they intended to cause self-harm; Ingested a substance in excess of the prescribed or generally recognized therapeutic dose; Ingested a recreational or illicit drug that was an act that the person regarded as self-harm; Ingested a non-ingestible substance or object (Hawton, Rodham, Evans, & Weatherall, 2002, p. 1208).

This definition further complicates the study of NSSI because several of these risky behaviors (e.g. jumping from a height, ingesting a substance) are not considered self-injury in most American scholarship. Another significant difference between American and European research is the idea of suicidal intent. While the large majority of American researchers conceptualize NSSI as a behavior without suicidal intent, many British researchers include behaviors that

indicate suicidal intent in the NSSI spectrum (Fliege, Lee, Grimm, & Klapp, 2009). This limits the utility of comparing data cross-nationally, as prevalence rates will differ based on definitional issues (Fliege et al., 2009). To date, only one study has compared international rates of NSSI using cross-nationally validated assessment scales (Plener et al., 2009). This study, conducted by Plener and colleagues (2009) assessed the rates of NSSI in a community sample of students from the United States and Germany. The data derived from this study suggested no significant differences between the prevalence rates found in Germany (25.6%) and those found in the United States (23.2%) (Plener et al., 2009).

Research methodology may also affect prevalence rates of NSSI. It has been shown that interviews are likely to yield lower prevalence rates than anonymous surveys because of social desirability bias (Heath, Schaub, Holly, & Nixon, 2009). This may be because individuals are more comfortable disclosing self-injury anonymously, or because interviewers are more discriminating in what they consider self-injury when talking to participants (Heath, Schaub, Holly, & Nixon, 2009).

The disagreement over prevalence rates also makes it difficult to determine how widespread the behavior is among adolescents and young adults. Some of the disagreements over prevalence rates relate to the methods of data collection, as well as concerns over accurate self-disclosure. It is also important for researchers to appropriately distinguish between incidence and prevalence rates of self-injury. While prevalence refers to the proportion of the sample that is

currently engaging in the behavior, incidence refers to the proportion that has exhibited the behavior anytime during a specific time period (Cheng, Mallinckrodt, Soet, & Sevig, 2010). In a survey, questions that begin with the phrase “Have you ever” are meant to encompass the individual’s lifespan, and essentially assess the incidence of NSSI. As a result, surveys attempting to assess lifetime incidence rates of NSSI consistently obtain higher rates than surveys assessing prevalence rates of NSSI (Cheng, Mallinckrodt, Soet, & Sevig, 2010).

Many studies examining community populations of self-injurers rely on self-report measures given at a school. While this method offers the best way to survey large numbers of adolescents, it may be difficult to determine if all students who self-injure are identifying themselves. These students may have concerns that their behaviors will be disclosed to school staff or their parents; even if they are assured their information will remain confidential. While many researchers disagree about the exact prevalence of adolescents and young adults engaging in NSSI, the existing estimates of this behavior are alarming.

While prevalence rates of NSSI present a significant challenge for researchers, there are also significant discrepancies regarding the etiology of self-injury within the NSSI literature. Although many researchers believe that NSSI is an over-determined behavior, caused by multiple psychological vulnerabilities and environmental deficits (Prinstein et al., 2009), there are significant disagreements over the correlation between events such as childhood maltreatment and NSSI. Much of the research conducted in these areas has

been unsystematic or utilized small case-study samples (Klonsky & Glenn, 2009). Early psychoanalytically focused research in this area strongly linked NSSI to early childhood maltreatment, specifically sexual abuse. For example, Connors (1996) asserts that NSSI “mirrors” the original act of trauma, and allows individuals to reconnect with their bodies during periods of dissociation. Conversely, more recent literature has failed to find significant correlations between early sexual abuse and subsequent NSSI (Klonsky & Moyer, 2008). Other recent studies have linked sexual abuse with NSSI in a multiple mediational model, which uses PTSD, depressive symptoms and psychological dysregulation as mediating variables in the relationship between childhood maltreatment and NSSI (Shenk, Noll, & Cassarly, 2010).

Some of the disagreements over the prevalence and etiology in the literature may also contribute to obstacles regarding intervention and prevention of NSSI. It may be difficult to properly assess and plan interventions for NSSI if the behavior itself has not been appropriately operationalized and understood. Currently, the DSM-IV-TR (APA, 2000) identifies NSSI only in the context of Borderline Personality Disorder. This presents challenges for mental health professionals assessing and treating individuals engaging in these behaviors.

### **DSM-V Proposed Revisions**

The Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition, Text Revision, (DSM-IV-TR) (APA, 2000) does not conceptualize NSSI as a separate psychiatric disorder. Currently, NSSI is listed only once in the DSM-IV-TR, as a symptom classification for Borderline Personality Disorder (BPD) (Glenn & Klonsky, 2010). There has been significant controversy

regarding the addition of NSSI as a clinically distinct syndrome (Muehlenkamp, 2005). The earliest argument for the addition of self-injury to the DSM was made in 1967 by Graff and Malin, and then again in 1969 by Pao (Muehlenkamp, 2005). In 1983, Pattison and Kahan suggested including a “deliberate self-harm syndrome” under impulse-control disorders based on their belief that NSSI stemmed from the inability to resist an urge to self-injure (Lynam et al., 2011). Since that time, many researchers have attempted to describe a syndrome of self-injury, however, these proposed syndromes were often difficult to substantiate due to the lack of research in the area (Muehlenkamp, 2005).

One of the strongest arguments against including NSSI as a separate disorder in the DSM-V comes from the lack of large-scale, empirically sound research (Muehlenkamp, 2005). However, others argue that this lack of research is an indication that the DSM-V should include NSSI as a way to increase consistent understanding of NSSI and make researchers more likely to use rigorous research methods to study the behavior (Muehlenkamp, 2005). Another reason researchers have proposed the addition of a separate NSSI disorder is the number of self-injuring individuals who do not fall into any of the current Axis I or Axis II diagnostic categories. Muehlenkamp (2005) argues that the impulse disorder, not otherwise specified (NOS) is currently the best fit for individuals engaging in NSSI, although it is far from sufficient.

Currently, the only guideline for determining diagnostic validity is that of Feighner et al., (1972) who describes five criteria for the inclusion of a new diagnostic category (Muehlenkamp, 2005). These criteria include; clinical

description, laboratory studies, delimitation from other disorders (i.e., exclusionary criteria) follow-up studies, and family studies to determine heritability factors (Muehlenkamp, 2005). Using this model to measure the necessity of including NSSI as a distinct clinical disorder shows that NSSI “warrants consideration and inclusion as a distinct syndrome, but may not yet achieve support as a full mental disorder” (Muehlenkamp, 2005, p. 330). Specifically, clinical descriptions of NSSI are well defined, and current research has found some physiological associations with NSSI, however, more longitudinal and follow-up studies are needed, as well as family studies to determine heritability factors (Muehlenkamp, 2005).

As a result of the increasing prevalence and negative psychological implications of NSSI, two DSM-V workgroups (i.e. Child and Adolescent Disorders and Mood Disorders) have been created that propose classifying NSSI as a distinct DSM diagnosis (Glenn & Klonsky, 2010). According to the American Psychiatric Association DSM-V Development website, the proposed diagnostic classification for NSSI will be:

- A. In the last year, the individual has, on 5 or more days, engaged in intentional self-inflicted damage to the surface of his or her body, of a sort likely to induce bleeding or bruising or pain (e.g., cutting, burning, stabbing, hitting, excessive rubbing), for purposes not socially sanctioned (e.g., body piercing, tattooing, etc.), but performed with the expectation that the injury will lead to only minor or moderate physical harm. The absence of suicidal intent is either reported by the patient or can be inferred by frequent use of methods that the patient knows, by experience, not to have lethal potential. (When uncertain, code with NOS 2.) The behavior is not of a common and trivial nature, such as picking at a wound or nail biting.
- B. The intentional injury is associated with at least 2 of the following:

1. Negative feelings or thoughts, such as depression, anxiety, tension, anger, generalized distress, or self-criticism, occurring in the period immediately prior to the self-injurious act.
  2. Prior to engaging in the act, a period of preoccupation with the intended behavior that is difficult to resist.
  3. The urge to engage in self-injury occurs frequently, although it might not be acted upon.
  4. The activity is engaged in with a purpose; this might be relief from a negative feeling/cognitive state or interpersonal difficulty or induction of a positive feeling state. The patient anticipates these will occur either during or immediately following the self-injury.
- C. The behavior and its consequences cause clinically significant distress or impairment in interpersonal, academic, or other important areas of functioning.
- D. The behavior does not occur exclusively during states of psychosis, delirium, or intoxication. In individuals with a developmental disorder, the behavior is not part of a pattern of repetitive stereotypies. The behavior cannot be accounted for by another mental or medical disorder (i.e., psychotic disorder, pervasive developmental disorder, mental retardation, Lesch-Nyhan Syndrome) (APA, 2010, p. 4).

The proposed addition of this diagnostic category will likely reduce problems associated with the lack of consensus among mental health professionals regarding the definition of NSSI (Wilkinson & Goodyer, 2011). It may also improve treatment options for individuals with NSSI, as well as streamline and improve research efforts in the area of self-injury (Wilkinson & Goodyer, 2011).

If the diagnostic category is adopted, subtyping is also suggested to further clarify definitional issues surrounding NSSI. Specifically, a Non-Suicidal Self Injury, Not Otherwise Specified (NOS) Type 1: Subthreshold was proposed to include individuals who “meet all other criteria for NSSI disorder, but has injured himself or herself fewer than five times in the past month. This can

include individuals who, despite a low frequency of the behavior, frequently think about performing the act” (Schaffer & Jacobson, 2009, p. 4). The second proposed subtype was identified as Non-Suicidal Self-Injury Disorder, Not Otherwise Specified (NOS), Type 2, Intent Uncertain. This subtype is meant to include those individuals who “meet the criteria for NSSI but insist that in addition to the thoughts expressed in B.4 also intended to commit suicide” (APA, 2010).

*The Proposal to the DSM-V Childhood Disorder and Mood Disorder Work Groups to Include Non-Suicidal Self-Injury (NSSI) as a DSM-V Disorder* was published by Shaffer and Jacobson (2009) as a discussion of the benefits of adding NSSI to the list of DSM-V modifications. The proposal was suggested, “not solely by NSSI’s absence from DSM, but also by misperceptions and problems of a public health and clinical nature that arise because of a lack of clarity about its meaning and significance that we feel could be remediated by adoption” (Shaffer & Jacobson, 2009). This work group recognizes the significant discrepancies in NSSI research and treatment represented by the broad notion of “self-harm” and its considerable variability. The lack of a universally accepted diagnostic criterion for NSSI creates significant difficulty for clinicians, researchers and individuals engaging in NSSI.

The concept of subclinical levels of self-injury has also added to some of the definitional confusion surrounding NSSI. While it is important to distinguish between clinical levels of NSSI and more minor types of self-harm (e.g. skin picking, scratching, interfering with wound healing), it should be noted that these behaviors are still cause for concern. Many of these actions are also referred to

as body-focused repetitive behaviors, and are often associated with increased anxiety, depression, obsessive-compulsive spectrum disorder (OCD) and body dysmorphic disorder (BDD) (Croyle & Waltz, 2007).

A study conducted by Croyle & Waltz (2007) attempted to examine self-injury as a behavior lying on a continuum. They found that 68% of their total sample engaged in at least one type of mildly self-injurious behavior in their lifetime, including skin picking, nail biting, and wound interference. While many of these students did not endorse any negative affect associated with the behavior, as many as 20% of individuals in the low self-harm group endorsed some levels of negative affect associated with the behavior. Additionally, thirty-five percent of participants fell in the moderately injurious self-harm group. These individuals had higher levels of somatic symptoms, impulsivity, OCD characteristics, disordered eating behaviors, higher levels of shame and were more likely to have a history of abuse (Croyle & Waltz, 2007). This information suggests that NSSI lies on a continuum, and there is a positive correlation between NSSI, psychopathology, and overall negative outcomes (Croyle & Waltz, 2007).

The definition is further complicated by the continuing belief that NSSI is a “failed suicide attempt,” although only .4% of all suicides under the age of 24 were the result of cutting or piercing (National Center for Injury Prevention and Control, 2012). The lack of differentiation between suicidal attempts and NSSI may also contribute to an overestimation of reported suicide attempts in adolescents. For example, in a study conducted by Kumar, Pepe, & Steer (2004),

approximately 80% of the sample noted that their self-injurious behavior had been misconstrued as a suicidal attempt.

A study conducted by Cheng, Mallinckrodt, Soet, & Sevig (2010) used the Counseling Center Assessment of Psychological Symptoms, 62, (CCAPS-62) to determine if there were any psychological symptoms that strongly correlated with NSSI, and could be used as an NSSI warning sign for clinicians when conducting intake sessions with new counseling center patients. Archival data was obtained from 2,184 college students using the CCAPS-62, a self-injury screening item, and a 16-item self-injury measure. While no specific subscales were found to be significantly associated with NSSI, 11 specific items on the CCAPS-62 were found to moderately predict the presence of NSSI (Cheng et al., 2010). These items were found to tap symptoms of depression, self-loathing, anxiety, anger, and feelings of losing control (Cheng et al., 2010).

While the aforementioned study is similar to the present study, there are several important differences that should be noted. First, Cheng et al., (2010) used a threshold of five total NSSI incidents to determine NSSI grouping to attempt to identify “repetitive self-injurers” rather than those engaging in a single self-injurious incident. However, there was no specific time frame in which these five incidents must have occurred. The current study will utilize the criterion of five incidents within the past year to determine clinical levels of NSSI; a threshold that is more consistent with the proposed DSM-V criteria. Additionally, Cheng et al., (2010) sought to determine if any of the items on the CCAPS-62 could be used as a screening question for NSSI behavior. To accomplish this, the eight

subscale items of the CCAPS-62 were examined in relation to two groups; individuals who engaged in NSSI (with five or more incidents) and individuals who did not engage in NSSI. As a result, individuals engaging in subclinical levels of NSSI are included in the 'no NSSI' group, which may have affected the results of the study. The current study examines NSSI in a way that is different from prior studies because it separates individuals who engaged in NSSI in the past from those who currently self-injure and investigates the differences between these two groups. This distinction is important because there may be different psychosocial outcomes for those who continue to engage in the behavior, versus the individuals who no longer self-injure.

### **Problem Statement**

As indicated by the literature review, mental health issues among college students have become an increasingly more complex and significant problem within the past decade (Gallagher, 2009). The increase in the number of college students, combined with the vulnerable developmental period for emergent mental health issues, make college students an important age group for research and intervention. Additionally, research has indicated that college students are using NSSI more often as a coping mechanism during times of stress (Gallagher, 2009). Specifically, prevalence rates for adolescents and young adults within the community population appear to be increasing at an alarming rate (Brausch & Gutierrez, 2010). This shift in population corresponds with an increase in research targeted at nonclinical samples with less known psychopathology. Recent estimates indicate that somewhere between 14 to 36% of college-age students have engaged in NSSI behaviors at some point in their lives, (Gollust,

Eisenberg, & Golberstein, 2008; Laye-Gindhu & Schonert-Reichl, 2005), with approximately 7% self-injuring within the past year (Gollust, Eisenberg, & Golberstein, 2008).

NSSI has been found to be a known risk factor for suicidal behavior, although it is recognized as being distinct from suicidal thoughts and actions (Glenn & Klonsky, 2009). While suicidal behaviors function to end an individual's life, the functions of NSSI are complicated and not well understood. Several theoretical models attempt to determine the functionality of NSSI, with varying degrees of research and support. Currently, the four-function model (FFM) represents the most comprehensive theoretical representation of the functions of self-injury (Nock & Cha, 2009). This model proposes that the functions of self-injury fall along two dichotomous categories: reinforcement that is either positive or negative, and contingencies that are either automatic or social (Nock & Cha, 2009). Other theories, such as the emotional regulation theory, (Prinstein, Guerry, Browne, & Rancourt, 2009) anxiety reduction model, hostility model (Ross & Heath, 2003) and the experiential avoidance theory (Chapman, Gratz, & Brown, 2006) also posit explanations for the functions of self-injury.

Although there has been a substantial increase in NSSI scholarship, significant gaps in the literature still exist. Despite the increase in prevalence rates, NSSI still does not exist as a separate diagnostic category in the DSM. This creates diagnostic and treatment complications, as NSSI has only been distinguished as a symptom of Borderline Personality Disorder (BPD), despite the fact that the majority of self-injurers do not meet diagnostic criteria for BPD.

As a result, NSSI has been proposed as a separate diagnostic category for the updated DSM-V (American Psychiatric Association, 2010) which will publish on May 18<sup>th</sup>, 2013. If included, this addition will not only distinguish NSSI as a distinct disorder, but the operational definition will also help alleviate discrepancies in prevalence rates. The large discrepancies within prevalence rates present one of the most significant gaps in current NSSI scholarship. It has been difficult for researchers to accurately determine the true rate of self-injury among the young adult population, primarily because of the differences in NSSI measures and definitions. Including NSSI in the DSM-V will significantly decrease the confusion surrounding the definition of self-injury and streamline empirical studies.

Partly because of the conflicting definitions of NSSI, research has not been conducted to determine whether significant differences exist among individuals who do not self-injure, those who have engaged in NSSI at some point in their lives, and those who currently self-injure. Understanding the psychosocial outcomes for these three groups can have substantial clinical implications. If individuals currently engaging in NSSI are found to have significantly worse psychosocial outcomes than the other two groups, it can lend further support to the notion that NSSI should be a separate, diagnostic category within the DSM-V. Additionally, comparing the psychosocial outcomes of those with no NSSI behaviors, with individuals who have engaged in NSSI either currently or in the past, can help determine the necessity of treatment aimed specifically at self-injury. The findings of this proposed study may also help

develop additional treatment options for individuals engaging in NSSI behaviors.

To address identified gaps in the literature on NSSI, the primary research

question of this study was:

1. Is there a significant difference in levels of symptomology as measured by the CCAPS-62 for students who currently engage in NSSI, those who have engaged in NSSI in the past, and those who have never engaged in NSSI?

Table 1-1. Four Function Model of NSSI

	<i>Positive Reinforcement</i>	<i>Negative Reinforcement</i>
<i>Automatic (A)</i>	<b>APR</b> Creates a desirable physiological state (a means of feeling generation)	<b>ANR</b> Reduces tension or other affective state(s)
<i>Social (S)</i>	<b>SPR</b> Provides attention from others	<b>SNR</b> Offers escape from interpersonal tasks or demands

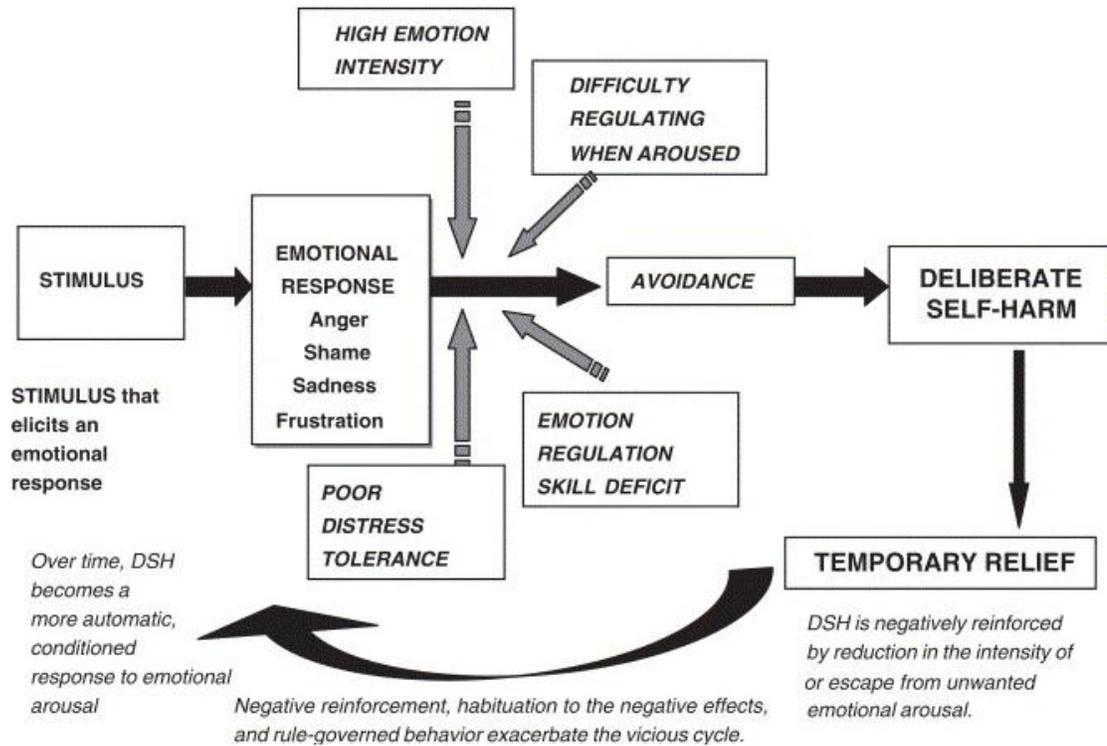


Figure 1-1. The experiential avoidance model (EAM) of deliberate self-harm

\*In this model, the term DSH (deliberate self-harm) is used to describe self-injury\*

(Chapman, Gratz, & Brown, 2006, p. 373)

(Author permission was obtained prior to using this diagram)

## CHAPTER 2 METHODS AND PROCEDURES

### **Participants**

A random sampling of 5,000 undergraduate students at the University of Florida was recruited through an email listserv provided by the Office of Institutional Research. Out of the 5,000 students that were recruited for the study, a sample size of 1,131 students completed the survey, giving a 22.6% response rate. This response rate was somewhat lower than expected as electronic response rates have been found to be between 30-35% (Shannon & Bradshaw, 2002; Shih & Fan, 2009). According to the survey results, a total of 42 students (3.4%) had self-injured in the past twelve months, and 142 students (11.4%) have self-injured throughout their lives.

The demographic information derived from this study was compared to the 2010 Healthy Gators Student Survey, as well as the University of Florida undergraduate population as a whole. The Healthy Gators Student Survey was used as a comparison because it is one of the most large-scale, comprehensive surveys conducted on University of Florida students and includes questions regarding physical and mental health. The majority of the demographic information from the current study was similar to both the Healthy Gators Survey, as well as the University population, and can be found in Table 2-1.

Gender was not as closely aligned with the University of Florida demographics, though it was almost identical to the gender breakdown from the Healthy Gator Survey (Table 2-2). This is not surprising, as survey literature

suggests that females are generally more likely to fill out surveys than males (Porter & Umbach, 2006).

A total of 386 (52.7%) of the survey respondents were between the ages of 17-20, 325 (44.3%) were between the ages of 21-29, and 22 (3%) were 30 or older. Students were also asked their current year in school, and the results were as follows; 158 (21.5%) were first-year students, 130, (17.7%) were in their second year, 216 (29.5%) were third-year students, 208 (28.4%) were in their fourth year, and 21 (2.9%) were in their fifth year or beyond. Finally, participants' sexual orientation were as follows; 680 (92.8%) identified as heterosexual, 13 (1.8%) identified as gay, 8 (1.1%) identified as lesbian, 23 (3.1%) identified as bisexual/pansexual/queer, and 9 (1.2%) identified themselves as 'unsure.'

### **Measures**

Participants completed three measures as part of the online survey for this study. The first measure, (CCAPS-62) was a brief assessment to determine participant's current psychosocial functioning across several domains. Author permission was obtained prior to using the CCAPS-62. A copy of written author permission can be found in Appendix B. Next, participants were given a screening question to determine the presence of self-injurious behaviors (Appendix C). Participants then filled out the NSSI Questionnaire to determine their current or past self-injury (Appendix C). Finally, participants were asked to provide demographic information including, gender, ethnicity, marital status and sexual orientation (Appendix D).

## **The Counseling Center Assessment of Psychological Symptoms-62 (CCAPS-62)**

The Counseling Center Assessment of Psychological Symptoms (CCAPS-62) was developed in 2009 as a measure to assess common issues associated with the mental health of college-aged students. It is a global assessment of mental health functioning that assesses eight different subscales, including, depression, (13 items) eating concerns, (9 items) substance use, (6 items) generalized anxiety, (9 items) hostility, (7 items) social anxiety, (7 items) family distress, (6 items) and academic distress (5 items). It was designed as a standardized assessment for university counseling centers working specifically with individuals ages 18-25 (Locke et al., 2011). The assessment may be used as a screening instrument or for initial and post-assessments, and takes 7-10 minutes to complete (Center for Collegiate Mental Health, 2010). It may also be used for progress monitoring purposes, as the measure is sensitive to change (Center for Collegiate Mental Health, 2010). The full CCAPS-62 can be found in Appendix A of this manuscript.

The CCAPS-62 includes a total of 62 statements describing thoughts, feelings and experiences that college students may have. Students are asked to consider how well each statement describes them during the past two weeks. A Likert-type scale is used with answer choices ranging from 1 (not at all like me) to 5 (extremely like me). Items include statements such as, "I feel out of control when I eat", "My thoughts are racing", and "I enjoy my classes." A user manual is provided, and administrators have the option of scoring the assessment by hand or through the use of the Titanium Schedule program (Center for Collegiate

Mental Health, 2010). When scoring by hand, items are grouped by subscale and the answers given (0-5) are added up. Any items that are reverse scored are indicated in the manual. This total is then divided by the number of items in the subscale, yielding a mean raw score for each subscale. These raw scores can be converted to percentiles using the percentile table found in the CCAPS-62 scoring manual. For the purposes of this study, the CCAPS-62 was scored using a CCAPS Excel Scoring Program provided by the Center for Collegiate Mental Health. In order to score the measures, individual answers to each question were imputed into an excel spreadsheet which converted the answers into raw scores, normalized clinical scores (NCS), and percentile scores. For the purposes of this analysis, NCS scores were utilized for each participant.

The 2009 normative sample used for the CCAPS-62 includes college students at 52 different American institutions (N=19,247) presenting for treatment at college mental health centers. That the normative sample was derived from a clinical setting makes it different from the present study, which used the CCAPS-62 with a random sample of college students, yielding primarily nonclinical students. Thus, it is important to note that the distribution of scores from the normative sample cannot be considered representative of the general population. As a result, even scores falling in the average range may still indicate participant distress in certain areas. The normative sample used for the CCAPS-62 included ages 18-63 years with a modal age of 19 and a mean age of 22.6 (SD=5.07). The population was 64.2% female, 35.4% male, and .2% transgender. 72.6% identified as White/Caucasian, 7.0% as Black/African American, 6.0% as

Asian/Asian American, 4.9% as Hispanic/Latino, 3.1% as Multiracial, 2.7% preferred not to answer, 2.5% as other, .5% as Native American, and .3% as Native Hawaiian or Pacific Islander. Finally, among the normative sample, 18.1% were identified as first-year students, 19.7% as sophomores, 22.1% as juniors, 22.8% as seniors, and 14.9% as graduate students (Center for Collegiate Mental Health, 2010).

The authors of the CCAPS-62 argue that many college-age assessments have been developed and normed without accounting for significant features of college students' lives, including eating concerns and body image issues (Locke et al., 2011). Locke et al., (2011) argue that ignoring some of these issues detracts from the validity of measures assessing the psychological symptoms of college students. The CCAPS-62 also includes questions that measure academic functioning, which generally plays a significant role in a college student's life (Locke et al., 2011).

Two different factor analyses of the original CCAPS (which included 101 items) were completed during the initial stages of development. The factor structure remained largely consistent over the two studies completed, with a few minor changes within the measure. The first completed factor analysis included a sample of 2,155 clients from one counseling center and revealed 20 factors, with 64.4% of the variance accounted for by those 20 factors (Locke et al., 2011). From this first study, 14 scales were identified on the measure. When the clinical team further reviewed the factors, three subscales were removed due to overlap or lack of clinical utility (Locke et al., 2011). An additional subscale was removed

due to its poor performance with clients. The final factor analysis in this study determined nine subscales with five additional freestanding items that did not load on any of the subscales. These five items were deemed important enough to stand alone, and included items regarding dissociative symptoms, cultural/ethnic identity, violent thoughts and history of abuse (Locke et al., 2011). The final set of items in the first study included a minimum factor loading of .32 for each item and an item-total correlation of .3 or above (Locke et al., 2011). This initial factor analysis yielded a measure with 70 items and nine different subscales. Following the factor analysis, the measure became the CCAPS-70.

The second factor analysis was conducted on the CCAPS-70 with subsample of 11,106 clients from 52 institutions and also yielded nine subscales; however, the decision was made to eliminate the Spirituality subscale. While this subscale loaded cleanly and did not cross-load with other factors, researchers decided to remove it because of its lack of clarity in defining religion and spirituality, and its relative lack of clinical utility. Thus, the second factor analysis yielded 62 questions and 8 subscales (Locke et al., 2011). Specifically, the primary factor loading range for each subscale was; Depression=. 37-.74, Eating Concerns=. 59-.89, Substance Use=. 52-.94, Generalized anxiety=. 4-.84, Hostility=. 45-.92, Social Anxiety=. 55-.8, Family Distress=. 55-.9, and Academic Distress=. 56-.83 (Locke et al., 2011). The consistency of factor loadings across the two studies suggests a robust factor structure (Locke et al., 2011). The second factor analysis yielded the final CCAPS-62, which will be utilized in this study.

Overall, the CCAPS-62 demonstrates internal consistency that ranged from acceptable to very good. Specifically, Cronbach's alpha was determined to be; Depression subscale=. 913, Eating Concerns=. 883, Substance Use=. 853, Generalized Anxiety=. 846, Hostility=. 863, Social Anxiety=. 823, Family Distress=. 811, and Academic Distress=. 781 (Locke et al., 2011). Additionally, two-week test-retest reliability was conducted with 117 undergraduate students and found to be significant ( $p < .001$ ) for all CCAPS-62 subscales (Locke et al., 2011). The correlation coefficients for each subscale can be found in Table 2-3.

Convergent validity was established with several other measures examining constructs on the CCAPS-62 (Locke et al., 2011). Pearson product-moment correlations coefficients were determined between each subscale on the CCAPS-62 and another referent measure. The measures included in this analysis were the Beck Depression Inventory (BDI); Eating Attitudes Test (EAT); Alcohol Use Disorders Identification Test (AUDIT); Beck Anxiety Inventory (BAI); Social Phobia Diagnostic Questionnaire (SPDQ); Self-Report Family Inventory total score (SFI); the Academic Adjustment subscale of the Student Adaption to College Questionnaire (A.A); the Trait Anger subscales of the State-Trait Anger Expression Inventory-2; and the Marlowe-Crowne Social Desirability Scale (MCSD). The Pearson product-moment correlation coefficients between the CCAPS-62 subscales and referent measures can be found in Table 2-4.

There is literature linking the majority of the constructs on the CCAPS-62 with increased rates of NSSI behaviors in the undergraduate population (Ballard, Bosk, & Pao, 2010; Kress & Hoffman, 2008). The relationships between NSSI

and depression, eating concerns, substance use, generalized anxiety, social anxiety, family distress, academic distress and hostility (Nock, Teper, & Hollander, 2007) suggest that the CCAPS-62 is an acceptable measure to use when studying NSSI behaviors. The CCAPS-62 is a free measure that is available to all college counseling centers. As a result, a large number of universities utilize the CCAPS-62. The information obtained by the CCAPS-62 is often used to assess the needs of students in university counseling centers, as well as examine trends over time. Additionally, the CCAPS (both the current version [CCAPS-62] and the prior version [CCAPS-70]) have been used in several studies seeking to examine the psychological functioning of college students. Ma (2006) used the CCAPS-70 with a nonclinical sample of 1,056 students in a large Midwestern public university to determine some of the most salient psychological issues facing college students.

### **NSSI Questionnaire**

The NSSI questionnaire utilized in this study was created by the principal investigator using the theoretical framework from Schaffer & Jacobson's (2009) "Proposal to the DSM-V childhood disorder and mood disorder work groups to include Non-suicidal Self-injury (NSSI) as a DSM-V disorder." The decision to create a questionnaire rather than use a pre-existing measure was twofold. First, there was a lack of instruments that provided all of the specific diagnostic criteria included in the new DSM-V proposed revision of NSSI. Several measures provided most of the information, but were considered incomplete. Additionally, some of these measures did not use items that were consistent with the wording

of the proposed criteria. A complete copy of this measure may be found in Appendix C.

Secondly, there are no measures that can be considered the 'gold standard' of assessing NSSI. The majority of measures in the literature are based on several small studies and do not have robust reliability or validity information (Gutierrez, Osman, Barrios, & Kopper, 2001). Further, the majority of the measures yield an unmanageable combination of quantitative and qualitative answers. Generally, these measures do not provide scoring information, which produces a data set that is without any criteria or set cut-off points (Gutierrez, Osman, Barrios, & Kopper, 2001; Heath, Schaub, Holly, & Nixon, 2009; Kopper, Nixon & Cloutier, 2005) Thus, it would be exceedingly difficult to effectively analyze the results of the surveys in any valuable manner.

When creating this NSSI questionnaire, the wording of the questions was kept as close to the actual proposed DSM-V criteria as possible. The primary changes in wording were; pronouns "he/she" were replaced with "you", and the criteria was formatted into question design. Additionally, two questions were added to assess any NSSI behavior that was completed in an individual's lifetime, as well as the frequency of that behavior. The wording was kept the same as the question assessing NSSI within the past year, except the wording was changed to "in your lifetime". These questions attempt to discern any participants who engaged in NSSI during the past. The complete questionnaire can be found in the Appendix C. Individuals who endorsed self-injury on the screening question were placed in the 'past NSSI' group if they self-injured more

than a year ago, and the 'present NSSI' group if the behavior occurred within the past year.

### **Demographic Information**

All participants were asked to complete a demographic information questionnaire. The demographic questions for this questionnaire were adapted from the 2010 Healthy Gators Student Survey Report. Healthy Gators sought to provide insight into ten key health and health-risk related areas impacting University of Florida students. In order to provide the most comprehensive answer choices to questions such as ethnicity and sexual preference, the wording and choices from the 2010 survey were utilized. The demographics included in the questionnaire were: gender, age, current year in school, ethnicity, and sexual orientation. A copy of the demographics information sheet can be found in Appendix D.

### **Procedures**

The procedures and protocol for this study were submitted to the University of Florida's Institutional Review Board (IRB) for approval. A copy of the IRB approval can be found in Appendix E. Following IRB approval, the Principal Investigator (PI) contacted the assistant Vice President of Student Affairs at the University of Florida (UF) who, in turn, provided a sample of 5,000 students selected randomly by the University Registrar. All students included in the study were currently enrolled as undergraduates. Data collection began in February 2012 and was completed in March 2012.

Student Voice, an online survey generator and manager used by the UF Office of Institutional Research was utilized to prepare the questionnaires in an

online format and collect the data. One week prior to the release of the survey, the Assistant Vice President of Student Affairs initially sent an email to the 5,000 randomly selected students encouraging their participation in the study.

Following this contact, Student Voice sent an email to all students in the sample with the link to the questionnaire and measures. Each email provided students with a unique link to access the survey, ensuring students completed the survey only once, and making all responses independent. Students were informed that they were being asked to participate in a study examining the psychosocial outcomes of college students engaging in different degrees of self-injurious behaviors. Additionally, students were informed that they were not selected for the survey due to any knowledge of past self-injurious behaviors or counseling center records. This was added to ensure that students understood their selection was completely random and not due to any other factor.

Data collection for the study consisted of three measures and took students approximately 20 minutes to complete online. When students clicked on the link in their email, they were directed to the study page hosted by Student Voice. This page included the IRB protocol, informed consent form, (Appendix E) and a brief explanation of the purpose of the study. Following the IRB and informed consent, students were asked to check a box indicating that they read the informed consent and agreed to participate. They were also informed that they were free to stop completing the survey at any time. If participants chose to stop while completing the survey, incomplete answers were reported to the PI. Incomplete surveys were not used in the data analysis of this study.

Participants began the study by completing an online version of the Counseling Center Assessment of Psychological Symptoms (CCAPS-62) (Locke et al., 2011) This measure took approximately five minutes to complete, and measured psychosocial functioning in eight distinct domains. Following completion of the CCAPS-62, students were given an NSSI screening question (Appendix C). This question, (“Have you ever intentionally hurt yourself?”) was deliberately broad, and meant to identify anyone who had ever engaged in any type of self-injurious behavior. Following this question, participants were asked to endorse the types of self-injury they had engaged in (e.g. scratching, cutting, burning, stabbing, hitting, and interfering with wound healing) either currently, or in the past. According to the literature, providing a checklist of self-injurious behaviors generally elicits higher numbers of incident reporting (Heath, Toste, Nedecheva, & Charlebois, 2008), as some individuals who engage in behaviors such as interfering with wound healing do not always identify as self-injurers. This question was constructed specifically to identify a broad group of self-injurers, including those that do not meet DSM-V proposed criteria for diagnosis. Individuals who answered “no” to this question and did not endorse any type of self-injury were directed to a demographic measure and were then instructed that they had finished the survey. However, individuals who answered “yes” to this question and/or endorsed any type of self-injury were directed to a NSSI questionnaire prior to filling out demographic information. This screening question was designed to eliminate individuals who had no experience whatsoever with self-injury.

Following the screening question, the NSSI measure was presented, and was used to determine the participant's level of self-injury. This measure took approximately 5-10 minutes for students to complete. Finally, these students were also asked several demographic questions to determine their age, gender, race/ethnicity, educational status, and sexual preference. At the conclusion of the survey, participants were directed to the University of Florida's Counseling and Wellness homepage, and were provided with the Alachua County Crisis Center hotline. These resources were provided in case participants experienced any undue stress while participating in the study.

Following the initial email contact, all students who had not yet completed the survey were sent a weekly reminder email encouraging them to do so for a period of four weeks. Because of the unique link sent to each student, it was possible for Student Voice to only send reminders out to students who had not yet participated in the study.

Table 2-1. Ethnicity Breakdown of Sample

	White, Non- Hispanic	Black, African- American	Hispanic or Latino/a	Asian/ Pacific Islander	Multiracial	American Indian or Alaskan Native	Other
Current Study	69.8%	6%	13.2%	6.4%	2.9%	0%	1.9%
Healthy Gators 2010 Survey	72%	8.2%	17.3%	14.4%	4.2%	1.1%	Not specified
University of Florida undergraduate population* (2010 enrollment)	58.5%	9.4%	16.5%	8.3%	1.7%	.4%	Not specified

\*(National Center for Education Statistics, 2010).

Table 2-2. Gender Breakdown of Sample

	Male	Female
Current Study	32.7%	67.3%
Healthy Gators 2010 Survey	32.3%	67.8%
University of Florida undergraduate population* (2010 enrollment)	45%	55%

\*(National Center for Education Statistics, 2010)

Table 2-3. CCAPS-62 Correlation Coefficients

Subscale	Correlation coefficient
Depression	.917
Eating Concerns	.896
Substance Use	.900
Generalized Anxiety	.842
Hostility	.834
Social Anxiety	.888
Family Distress	.914
Academic Distress	.759

Table 2-4. Pearson Product-Moment Correlation Coefficients of the CCAPS-62

Referent Measure	CCAPS-62 Subscale	Correlation Coefficient
BDI	Depression	.721**
EAT-26	Eating Concerns	.648**
AUDIT	Substance Use	.811**
BAI	Generalized Anxiety	.643**
SPDQ	Social Anxiety	.733**
SFI	Family Distress	.648**
A.A	Academic Distress	-.680**
Trait Anger	Hostility	.566**

\*\* Indicates  $p < .001$

Table 2-5. Data collection timeline

	First Stage	Second Stage	Third Stage
What participants received	Participants received a preliminary email from the Vice President of the Office of Student Affairs informing them of the upcoming study	Participants received an email from Student Voice with a unique link to access the online survey	Students who had not completed the survey received weekly follow-up emails for a period of four weeks after the survey had been disseminated
Date of receipt	One week prior to survey dissemination- occurred during the first week of February 2012	Second week of February 2012	Weekly; until the second week of March 2012

## CHAPTER 3 RESULTS

The current study examined the psychosocial functioning of college students in relation to nonsuicidal self-injurious (NSSI) behaviors. Specifically, it sought to determine whether there were significant differences in psychosocial functioning among individuals that do not self-injure, individuals who have engaged in self-injury in the past, and individuals who currently self-injure. The goal of creating three distinct groups was to determine if psychosocial outcomes are significantly different between groups and to examine NSSI in accordance with the proposed DSM-V revisions that categorize NSSI as a separate diagnostic category.

The eight subscales from the CCAPS-62 were used as independent variables for the first research question in this study, and as the dependent variables in the subsequent research questions. These variables were identified as depression, eating concerns, substance use, generalized anxiety, hostility, social anxiety, family distress, and academic distress. The dependent variables for the first research question were identified as past NSSI, present NSSI, and no NSSI. These variables were used as independent variables for the remaining research questions. The research questions examined in this study were:

1. Which of the eight subscales on the CCAPS-62 are most strongly associated with NSSI behavior (either past or present behavior)?
2. Will individuals reporting present NSSI behaviors have significantly different levels of depression than those who report past NSSI behaviors, or no NSSI behaviors?
3. Will individuals reporting present NSSI behaviors have significantly different levels of eating concerns than those who report past NSSI behaviors, or no NSSI behaviors?

4. Will individuals reporting present NSSI behaviors have significantly different levels of substance use than those who report past NSSI behaviors or no NSSI behaviors?
5. Will individuals reporting present NSSI behaviors have significantly different levels of generalized anxiety than those who report past NSSI behaviors or no NSSI behaviors?
6. Will individuals reporting present NSSI behaviors have significantly different levels of hostility than those who report past NSSI behaviors or no NSSI behaviors?
7. Will individuals reporting present NSSI behaviors have significantly different levels of social anxiety than those who report past NSSI behaviors or no NSSI behaviors?
8. Will individuals reporting present NSSI behaviors have significantly different levels of family distress than those who report past NSSI behaviors or no NSSI behaviors?
9. Will individuals reporting present NSSI behaviors have significantly different levels of academic distress than those who report past NSSI behaviors or no NSSI behaviors?

This study sought to determine which of the constructs on the CCAPS-62 are most strongly associated with current levels of NSSI. Examining this relationship may help practitioners and researchers prioritize and develop treatments for some of the more commonly co-occurring symptoms of NSSI. Identifying these relationships will also assist practitioners in recognizing the common risk factors and disorders associated with NSSI, which may make it easier to identify individuals who self-injure. For example, if an individual presents for counseling with a disorder that was found to be significantly correlated with NSSI, it can be helpful for the patient to be assessed for NSSI as well as the presenting concern. This study hypothesized that individuals who currently engage in NSSI will show significantly higher levels of depression, eating concerns, substance use, generalized and social anxiety, hostility, family

distress and academic distress than individuals who have engaged in NSSI in the past, or those who have never engaged in NSSI behaviors.

Of the 5,000 survey requests that were sent out, 1,131 (22.6%) students responded to the request. This total number produced a sample size of 733 completed surveys, yielding an overall response rate of 14.6%. Students who began surveys and then abandoned them, or submitted surveys with missing data were excluded from the final analysis. The majority of those who did not complete surveys stopped while completing the NSSI Questionnaire. Because the surveys were anonymous and answers were not associated with names or ID numbers, it was not possible to follow up with participants to further explore the missing data.

Of the 733 completed surveys, 172 participants (23.5%) answered “yes” to the self-injury screening question “Have you every intentionally hurt yourself?” A total of 54 respondents (7.4%) reported engaging in NSSI in the past year (present NSSI group), and 118 (16.1%) indicated that they have engaged in NSSI at some time in the past, but not within the past year. Descriptive statistics were also calculated for gender and ethnicity of each of the groups (past NSSI, present NSSI, and no NSSI) and can be found in Tables 3-1 and 3-2.

Males and females who engaged in NSSI in the past showed no significant differences on any of the eight CCAPS-62 variables (Table 3-3). The present NSSI group showed statistically significant differences on the variables Depression,  $t(51.285)=-2.271$   $p=.004$  and Academic Distress,  $t(52)=-2.260$   $p=.012$  (Table 3-4). Finally, there were no statistically significant differences

found among males and females in the non-NSSI group on any of the CCAPS-62 variables (Table 3-5).

The data from the first research question was analyzed using multinomial logistic regression to determine which of the eight CCAPS domains were most strongly associated with NSSI behaviors. Eight one-way ANOVA tests were used to analyze the data for the remaining research questions to determine if there were any significant differences between the eight independent variables identified on the CCAPS-62, and the three levels of NSSI identified on the self-injury questionnaire (no NSSI/past NSSI/present NSSI). ANOVA tests were chosen because of their increased ability to demonstrate differences between the eight independent variables. The first research question posed in this study is:

1. Which of the eight subscales on the CCAPS-62 are the most strongly associated with NSSI behavior (either past or present behavior)?

Multinomial logistic regression was used to analyze the data associated with this research question. Regression coefficients are reported in Tables 3-6 for prediction of membership in the present NSSI group versus the no NSSI group and in Table 3-7 for prediction of membership in the past NSSI group versus the no NSSI group. A chi-square test was used to determine if there was a significant relationship between the dependent variable (past, present, no NSSI) and the combination of 8 independent variables. The chi-square statistic was significant,  $\chi^2(16; n = 733) = 124.164$ ,  $p = .000$ , indicating that one or more of the 8 independent variables was significantly associated with classification in one of the three groups (i.e., past NSSI, present NSSI, or no NSSI groups). Anxiety,  $\chi^2(2; n = 733) = 13.933$ ,  $p = .001$  and hostility  $\chi^2(2; n = 733) = 12.765$ ,  $p = .002$

significantly predicted group membership. More specifically, hostility significantly discriminated between membership in the present and No NSSI groups,  $\chi^2(1; n = 773) = 5.584, p = .018$ , and membership in the past and No NSSI groups,  $\chi^2(1; n = 773) = 10.286, p = .001$ . In addition, anxiety discriminated between the past and No NSSI groups,  $\chi^2(1; n = 773) = 14.056, p = .000$ . In this study, hostility was found to be the strongest predictor of NSSI behaviors overall. Anxiety was the second strongest predictor.

Table 3-8 presents means and standard deviations for the eight variables from the CCAPS-62 for each of the three NSSI groups. Research questions 2-8 asked whether there were differences among the groups on the means. To address these research questions, one-way Welch ANOVA tests were conducted to determine if there were significant differences among the means of the three groups of self-injury identified on the self-injury questionnaire (no NSSI, past NSSI behaviors, and present NSSI behaviors) on any of the eight variables from the CCAPS-62. The Welch ANOVA test was used because the alternative, the ANOVA test, is known to be negatively impacted by unequal variances across the groups being compared, particularly when the groups are dramatically unequal in size, as they are in this study. As an additional check on the necessity of the Welch test, a Levene test comparing the variance was conducted for each of the eight variables to determine if equal variance assumptions are met. Significant differences among the variances for the three NSSI groups were found for all variables, except Social Anxiety and Academic Distress. Because difference among the variances was prevalent, the Welch

ANOVA was used for all variables. Pairwise comparisons of the three NSSI groups were conducted following a significant Welch ANOVA. Pairwise comparisons were conducted using the Games-Howell test, which is also designed for use when variances are not equal for the groups being compared.

2. Will individuals reporting present NSSI behaviors endorse significantly different levels of depression than those who report past NSSI behaviors, or no NSSI behaviors?

For the depression variable, a statistically significant difference between the three groups was determined by the one-way Welch ANOVA,  $F(2, 111.365) = 24.225, p = .000$ . Results of the Games-Howell post-hoc test (see Table 3-8) indicated that mean depression was significantly different for all pairs of NSSI groups. Sample means indicate that individuals who currently engage in NSSI had the highest mean depression and individuals who do not engage in NSSI have the lowest mean depression.

3. Will individuals reporting present NSSI behaviors have significantly different levels of eating concerns than those who report past NSSI behaviors, or no NSSI behaviors?

A statistically significant difference was found between the three groups as determined by a one-way Welch ANOVA,  $F(2, 115.968) = 5.649, p = .005$ . The Games-Howell test (see Table 3-8) indicated that there was no significant difference in mean eating concerns between those who engaged in NSSI in the past versus those currently engaging in NSSI. However, the mean for individuals who engaged in NSSI in the past was significantly different from the mean individuals who have never engaged in NSSI. The mean for individuals who currently engage in NSSI was not significantly different from that of individuals who never engaged in NSSI. Sample means indicate that individuals who

currently engage in NSSI had the highest mean eating concerns, while individuals who have never engaged in NSSI had the lowest mean eating concerns.

4. Will individuals reporting present NSSI behaviors have significantly different levels of substance use than those who report past NSSI behaviors or no NSSI behaviors?

A non-statistically significant difference was found between the three groups as determined by a one-way Welch ANOVA ( $F(2, 109.836) = 2.970, p = .055$ ).

5. Will individuals reporting present NSSI behaviors have significantly different levels of generalized anxiety than those who report past NSSI behaviors or no NSSI behaviors?

A statistically significant difference was found between the three groups as determined by a one-way Welch ANOVA test ( $F(2, 108.367) = 25.578, p = .000$ ). The Games Howell post-hoc test (see Table 3-8) found no significant mean anxiety difference found among individuals who engaged in NSSI in the past, and those who currently engage in NSSI. However, there was a significant mean anxiety difference between individuals who engaged in NSSI in the past and those who have never engaged in NSSI. There also was a significant mean difference between those individuals who currently engage in NSSI and those who have never engaged in NSSI behavior. Sample means indicate that individuals who currently engage in NSSI have the highest generalized anxiety mean, while individuals who have never engaged in NSSI have the lowest generalized anxiety mean.

6. Will individuals reporting present NSSI behaviors have significantly different levels of hostility than those who report past NSSI behaviors or no NSSI behaviors?

A statistically significant difference was found between the three groups as determined by a one-way Welch ANOVA test ( $F(2, 111.559)=33.002, p=.000$ ). The Games-Howell post-hoc test (see Table 3-8) determined that there was no significant mean difference in hostility between individuals that engaged in NSSI in the past and those currently engaging in NSSI. A significant mean difference in hostility was found between individuals who engaged in NSSI in the past and those individuals who never engaged in NSSI. Additionally, there was a significant mean difference between individuals who currently engage in NSSI and those who had never engaged in NSSI. Sample means indicate that those who currently engage in NSSI behaviors have the highest hostility mean, and those who have never engaged in NSSI have the lowest.

7. Will individuals reporting present NSSI behaviors have significantly different levels of social anxiety than those endorsed past NSSI behaviors or no NSSI behaviors?

A statistically significant difference was found between the three groups as determined by the one-way Welch ANOVA test ( $F(2, 118.306)=29.902, p=.000$ ). The Games-Howell post-hoc test (see Table 3-8) determined that individuals who engaged in NSSI in the past did not show a significant difference in social anxiety than those who are presently engaging in NSSI behaviors. However, there was a significant mean difference between individuals who engaged in NSSI behaviors in the past and those who had never engaged in NSSI. There was also a significant mean difference between individuals who currently engage in NSSI behaviors and those who have never engaged in NSSI. Sample means indicate that individuals who currently engage in NSSI have the highest social anxiety mean, while individuals who have never engaged in NSSI have the lowest.

8. Will individuals reporting present NSSI behaviors have significantly different levels of family distress than those who report past NSSI behaviors or no NSSI behaviors?

A statistically significant difference was found between the groups as determined by a one-way Welch ANOVA test ( $F(2, 111.598) = 12.946, p = .000$ ). The Game-Howell post-hoc test (see Table 3-8) found that there was no significant mean difference between individuals who engaged in NSSI in the past and those who currently engage in NSSI. A significant mean difference was found between individuals who engaged in NSSI in the past and those who had never engaged in NSSI. Additionally, there was a significant mean difference found between those individuals currently engaging in NSSI and those who had never engaged in NSSI. Sample family distress means were highest for individuals who are currently engaging in NSSI and lowest for those who have never engaged in NSSI.

9. Will individuals reporting present NSSI behaviors have significantly different levels of academic distress than those who endorsed past NSSI behaviors or no NSSI behaviors?

A statistically significant difference was found between the groups as determined by a one-way Welch ANOVA test ( $F(2, 116.305) = 25.519, p = .000$ ). The Games-Howell post-hoc test (see Table 3-8) determined that mean academic distress was significantly different for all pairs of NSSI groups. Sample means indicate that individuals who currently engage in NSSI had the highest academic distress mean, while those who had never engaged in NSSI had the lowest.

Table 3-1. Gender Breakdown by Group

	Male	Female
Past NSSI	30.5% n=36	69.5% n=82
Present NSSI	35.2% n=19	64.8% n=35
No NSSI	32.3% n=181	67.7% n=380
Overall Sample	32.7% n=236	67.3% n=497

Table 3-2. Ethnic Breakdown by Group

	White, Non- Hispanic	Black, African- American	Hispanic or Latino/a	Asian/ Pacific Islander	Multiracial	American Indian/ Alaskan Native	Others
Past NSSI	65.3% n=77	5.9% n=7	12.7% n=15	7.6% n=9	5.9% n=7	0% n=0	2.5% n=3
Present NSSI	74.1% n=40	3.7% n=2	9.3% n=5	7.4% n=4	3.7% n=2	0% n=0	1.9% n=1
No NSSI	69.5% n=390	6.2% n=35	13.4% n=75	6.6% n=37	2.7% n=15	0% n=0	1.6% n=9
Total	69.8% n=507	6% n=44	13.2% n=95	6.4% n=50	2.9% n=24	0% n=0	1.9% n=13

Table 3-3. Means and Standard Deviations by Gender and CCAPS-62 Scale for the Past NSSI Group

	Male	Female
Depression	-.141 (1.14)	-.22 (1.41)
Eating Concerns	3.00 (3.62)	1.97 (3.29)
Substance Use	.44 (2.60)	1.20 (4.49)
Anxiety	2.21 (3.46)	1.67 (3.12)
Hostility	-.06 (1.06)	-.02 (.89)
Social Anxiety	.21 (1.00)	.22 (.96)
Family Distress	.12 (1.08)	-.12 (.82)
Academic Distress	-.19 (.87)	-.42 (.94)

Note. In each cell means are shown without parentheses and standard deviations are shown in parentheses.

Table 3-4. Means and Standard Deviations by Gender and CCAPS-62 Scale for the Present NSSI Group

	Male	Female
Depression	.03 (1.30)	1.09 (2.14)
Eating Concerns	2.40 (3.56)	2.76 (3.99)
Substance Use	2.09 (4.90)	3.36 (6.69)
Anxiety	1.86 (3.66)	2.33 (3.44)
Hostility	-.04 (.90)	.33 (.77)
Social Anxiety	.23 (.92)	.64 (.87)
Family Distress	-.10 (.99)	.06 (.99)
Academic Distress	-.23 (.71)	.38 (.87)

Note. In each cell means are shown without parentheses and standard deviations are shown in parentheses.

Table 3-5. Means and Standard Deviations by Gender and CCAPS-62 Scale for the non- NSSI Group

	Male	Female
Depression	-.83 (1.20)	-.79 (1.24)
Eating Concerns	1.59 (3.49)	1.27 (3.18)
Substance Use	1.23 (4.08)	.67 (3.23)
Anxiety	-.04 (2.40)	.02 (2.23)
Hostility	-.57 (.63)	-.52 (.70)
Social Anxiety	-.28 (.89)	-.31 (.90)
Family Distress	-.42 (.77)	-.44 (.73)
Academic Distress	-.64 (.84)	-.66 (.80)

Note. In each cell means are shown without parentheses and standard deviations are shown in parentheses.

Table 3-6. Present NSSI compared to no NSSI

	Regression Coefficient	Standard Error	Wald Chi-Square Statistic	<i>p</i> -value
Depression	.175	.111	2.503	.114
Eating Concerns	-.009	.044	.040	.841
Substance Use	.045	.031	2.162	.141
Anxiety	.083	.053	2.437	.119
Hostility	.479	.203	5.584	.018*
Social Anxiety	.375	.202	3.456	.063
Family Distress	-.043	.205	.043	.836
Academic Distress	.362	.214	2.852	.091

*p* < .05\*, *p* < .001\*\*

Table 3-7. Past NSSI compared to no NSSI

	Regression Coefficient	Standard Error	Wald Chi-Square Statistic	<i>p</i> -value
Depression	.013	.102	.017	.896
Eating Concerns	.001	.032	.001	.975
Substance Use	-.018	.030	.377	.539
Anxiety	.151	.040	14.046	.000**
Hostility	.495	.154	10.286	.001**
Social Anxiety	.231	.138	2.789	.095
Family Distress	.169	.144	1.389	.238
Academic Distress	-.116	.158	.539	.463

*p* < .05\*, *p* < .001\*\*

Table 3-8. Means and Standard Deviations for Each Variable

	Past NSSI ( <i>n</i> = 118 )	Present NSSI ( <i>n</i> = 54)	No NSSI ( <i>n</i> = 561 )
Depression	-.20 <sup>a</sup> (1.33)	.72 <sup>b</sup> (1.94)	-.80 <sup>c</sup> (1.23)
Eating Concerns	2.28 <sup>a</sup> (3.41)	2.63 <sup>ab</sup> (3.81)	1.37 <sup>b</sup> (3.28)
Substance Use	.97 <sup>a</sup> (4.01)	2.91 <sup>a</sup> (6.10)	.85 <sup>b</sup> (3.54)
Anxiety	1.83 <sup>a</sup> (3.22)	2.16 <sup>a</sup> (3.50)	-.00 <sup>b</sup> (2.29)
Hostility	-.028 <sup>a</sup> (.94)	.20 <sup>a</sup> (.83)	-.54 <sup>b</sup> (.68)
Social Anxiety	.22 <sup>a</sup> (.97)	.49 <sup>a</sup> (.90)	-.30 <sup>b</sup> (.90)
Family Distress	-.05 <sup>a</sup> (.91)	.00 <sup>a</sup> (.98)	-.43 <sup>b</sup> (.74)
Academic Distress	-.35 <sup>a</sup> (.93)	.17 <sup>b</sup> (.87)	-.65 <sup>c</sup> (.81)

Note. In each cell means are shown without parentheses and standard deviations are shown in parentheses. Means within a row that share a common superscript are not significantly different by the Games-Howell test

## CHAPTER 4 DISCUSSION

Late adolescence and early adulthood represents a developmentally challenging transition for many college students (Hunt & Eisenberg, 2010). Mental health problems are highly prevalent among this population, and the onset of most major mental illnesses begins prior to the age of 24 (Eisenberg, Downs, Golberstein, & Zivin, 2009). Additionally, college counseling centers have reported an increase in the complexity and severity of young adults seen for treatment in the past decade (Blanco et al., 2008). Of concern is also the number of college-age individuals using nonsuicidal self-injury (NSSI) as a means of coping with stressful events or mental illness. It has been estimated that approximately 12-17% of students in college populations have engaged in NSSI at least once in their lives (Whitlock, Eels, Cummings, & Purington, 2009). The proportion of college-age individuals engaging in NSSI necessitates the need for additional research; however, the scholarship in this area continues to have significant gaps.

Limitations in the literature have caused confusion among researchers regarding the definition and prevalence rates of NSSI, and has made it difficult to effectively identify and treat individuals engaging in the behavior. The most current edition of the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition, Text Revision (DSM-IV, TR) only includes NSSI as a symptom of Borderline Personality Disorder (BPD). However, research indicates that a large proportion of individuals engaging in NSSI may not fall into any of the identified Axis I or Axis II categories (Muehlenkamp, 2005). This discrepancy has led many

researchers to argue that NSSI should be identified as a separate diagnostic category. Additionally, the lack of organized diagnostic information regarding NSSI has made it difficult for researchers to study its co-morbidity and psychological outcomes. The overall lack of consensus regarding definition, prevalence, and outcomes have complicated and diluted the understanding of NSSI and the best ways to identify and treat the behavior.

This study examined whether there were significant differences in the psychosocial functioning among college students who currently engage in NSSI, those who engaged in NSSI in the past, and those who have never engaged in NSSI behaviors. The first aim of this study was to determine whether there were any specific areas of mental health functioning strongly associated with NSSI behaviors. This question was posed in an effort to determine whether certain deficits in psychological functioning could help identify if an individual was more likely to self-injure. The second aim of this study was to determine whether individuals who presently engage in NSSI, or engaged in NSSI in the past have significantly higher levels of psychopathology than those who have never self-injured. Another major purpose of this study was to consider the newly proposed diagnostic criteria in the DSM-V and issues associated with these proposed changes. This chapter will discuss the evolution of the research question and analysis, highlight key findings from this study and consider how these findings relate and add to the current NSSI literature, including the proposed DSM-V addition of NSSI. Additionally, limitations of the current study will be discussed, as well as future directions for research.

## **Evolution of Research Question and Analysis**

The present study was originally designed to compare the psychosocial functioning of individuals who met the clinical criteria for NSSI with those who self-injured but did not meet clinical criteria, and those who had never self-injured. The information derived from this study was intended to align with the proposed DSM-V criteria for a NSSI diagnosis. Prior to conducting this study, the NSSI questionnaire was developed based on the proposed DSM-V criteria, with the projected groups of, Clinical NSSI, Subclinical NSSI, and No NSSI. If a participant endorsed all of the criteria required in making a diagnosis of NSSI; that is, they endorsed criteria A (“Have you engaged in intentional, self-inflicted damage to the surface of your body, (e.g., cutting, burning, stabbing, hitting, excessive rubbing), for purposes not socially sanctioned?”) (American Psychiatric Association, 2010) two out of four statements associated with the functions of NSSI stated in criteria B, criteria C, (“The behavior and its consequences cause clinically significant distress or impairment in interpersonal, academic, or other important areas of functioning”) (American Psychiatric Association, 2010) and criteria D (“The behavior does not occur exclusively during states of psychosis, delirium, or intoxication”) (American Psychiatric Association, 2010) then they would be placed in the Clinical group.

Participants who endorsed criteria A and D, or reported engaging in two or more self-injurious episodes over their lifetime (but not necessarily in the past year) would be placed in the Subclinical group. Finally, any participant that answered “no” to the screening question, “Have you ever intentionally hurt

yourself?” and did not endorse any type of self-injury would be placed in the No NSSI group.

During data analysis, several issues arose that necessitated the revision of the original research questions. Specifically, when scoring the NSSI measure, it was determined that only 2 out of 172 participants fell into the Clinical category. Upon further examination, it was found that an additional 9 participants were one criterion short of falling into Clinical category. The most predominant criterion not endorsed was, “Does the self-injurious behavior cause significant distress or impairment in interpersonal, academic, or other important areas of functioning?” It is possible that the participants did not feel that their self-injurious behaviors significantly interfered with their functioning, or caused significant distress, although a clinician might disagree with this statement. Because it was not possible to determine whether the participant’s perception of their own functioning was accurate, this question may have yielded inaccurate responses.

These results made it impossible to examine the data in relation to the Clinical and Subclinical groups, as a group of 2 cannot yield reliable statistical information. Consequently, it was necessary to reorganize the data into more appropriate groups. It was determined that the question, “In the past year, have you engaged in intentional, self-inflicted damage to the surface of your body, (e.g., cutting, burning, stabbing, hitting, excessive rubbing), for purposes not socially sanctioned (e.g., body piercing, tattooing, etc.)” would be used to determine whether participants could be classified as current self-injurers or past self-injurers.

The revision of the NSSI groups and subsequent research questions has important implications for the proposed DSM-V addition of NSSI. It is possible that the diagnostic criterion for the proposed NSSI disorder is too stringent, thus making it difficult for clinicians to diagnose self-injuring individuals with an NSSI disorder. If this is the case, it once again makes it difficult to accurately measure and determine the incidence and prevalence of NSSI in both the community and clinical populations. An underestimation of individuals with NSSI may also contribute to an untreated population of individuals who are engaging in NSSI but do not meet the formal criteria to be diagnosed with a disorder.

There has been some preliminary data collected for the DSM-V, and kappa statistics for several of the new or revised disorders have been published in the *American Journal of Psychiatry*. These kappa statistics were derived from the test-retest reliability of clinicians in diagnosing the disorders in clinical field trials. A kappa value of 0.6-0.8 is considered excellent, 0.4-0.6 is considered good, and 0.2-0.4 may be acceptable. Any kappa statistics below 0.2 are considered unacceptable. The initial field trials for the NSSI diagnosis yielded a kappa statistic of -.03, which can be considered unacceptable in terms of test-retest reliability (Freedman, et al., 2013). Borderline Personality Disorder, which includes in its symptoms the only reference to NSSI in the DSM-IV, had a kappa statistic of 0.54, which represents stronger diagnostic reliability. The final revision of the DSM-V, which will be released in May 2013, does not include a diagnostic category of NSSI. While this diagnosis was ultimately not added to the DSM-V, it still remains an important behavior worthy of further clinical research.

## **Study Implications**

Cheng, Mallinckrodt, Soet, & Sevig (2010) hypothesized that college students presenting at a counseling center would be unlikely to disclose self-injurious behaviors at the time of intake due to stigma and anonymity concerns. It has also been suggested that presenting a self-injury measure at time of intake would result in inaccurate answers and lengthy intakes. Additionally, a 2006 study conducted by Whitlock et al., found that 36% of respondents reported that no one else was aware of their NSSI behavior. Because many college counseling centers already utilize the CCAPS-62 as a screening tool for new intakes, it would be extremely useful for clinicians to know if there are any subscales that could be considered a 'red flag' for NSSI.

In this study, high levels of hostility and anxiety were found to be the best predictors of NSSI in college students. Individuals who engage in NSSI behaviors were found to have significantly higher levels of hostility than those who had never engaged in NSSI. Individuals who engaged in NSSI in the past were also found to have higher levels of hostility than those who had never engaged in NSSI. However, individuals who currently engaged in NSSI behaviors did not demonstrate significantly different levels of hostility than those who engaged in NSSI in the past.

Hostility has been described as a "negativistic disposition consisting of chronic suspicion, mistrust and cynicism, the frequent experience of angry thoughts and emotions, and a tendency for easily evoked anger and aggressive behavior" (Maier, Goble, Neumann, Giggey, Suarez, & Waldstein, 2009). Past research has found hostility to be an important indicator for a wide range of

physical and psychosocial outcomes (Maier, et al., 2009). Hostility as a predictor of self-injurious behavior aligns with one prior study examining the hostility model of NSSI (Ross & Heath, 2003). This model proposed that individuals engage in NSSI when they are unable to openly express feelings of anger and hostility (Ross & Heath, 2003). Essentially, self-injury provides a cathartic outlet for individuals who are unable to adequately express these feelings. Ross & Heath's (2003) study was the only study found that attempted to find a relationship between hostility and NSSI. However, the current study provides additional evidence that there is a significant link between hostility traits and NSSI. This finding may be especially useful to college counseling centers hoping to identify psychosocial characteristics that may be a 'red flag' or critical marker for NSSI behaviors. It is important to note that this finding cannot be used to inform diagnostic decision-making, as it is only one piece of understanding an individual's psychological functioning. However, it can be used as a tool to prompt clinicians to complete a follow-up assessment in this area. This finding also provides support to criteria B.1 on the DSM-V proposed NSSI diagnosis, "Negative feelings or thoughts, such as depression, anxiety, tension, anger, generalized distress, or self-criticism, occurring in the period immediately prior to the self-injurious act." Hostility as a predictor of NSSI also supports the four-function model (FFM), wherein NSSI serves an automatic negative function that reduces hostile feelings in an individual.

Anxiety was also identified as a predictor of NSSI in this study. Historically, literature has determined that anxiety is the psychological

characteristic perhaps most strongly associated with NSSI (Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005). The current study supports the link between anxiety and NSSI behaviors by finding that individuals currently engaging in NSSI had significantly higher levels of generalized and social anxiety than those who had never engaged in NSSI. Additionally, those who had engaged in NSSI in the past were also found to have significantly higher levels of social and overall anxiety than those who had never engaged in NSSI.

This finding also supports the automatic negative reinforcement (ANR) function of the four-function model of NSSI. ANR is generally understood as a way to moderate anxiety (reduce a negative feeling or state) (Lloyd-Richardson, Nock, & Prinstein, 2009). NSSI may function as a way for individuals to experience immediate relief from anxious thoughts or feelings (Favazza, 1998). This finding is also consistent with the psychological precipitant criterion that notes that psychological distress such as depression or anxiety accompanies the NSSI behaviors (American Psychiatric Association, 2012).

The second goal of this study was to examine each of the eight subscale domains on the CCAPS-62 in relation to NSSI. Specifically, the research questions sought to determine if individuals engaging in NSSI behaviors (either presently or in the past) showed more psychological symptoms than individuals who have never engaged in NSSI. The subscale domains identified in the CCAPS-62 were; depression, eating concerns, substance use, generalized anxiety, hostility, social anxiety, academic distress, and family distress. The

below discussion does not include anxiety or hostility, as they have already been mentioned in relation to research question one.

## **Depression**

The current study found that individuals who engaged in NSSI behaviors (either presently or in the past) showed significantly more depressive symptoms than those who had never engaged in NSSI. Furthermore, individuals who currently engage in NSSI demonstrated significantly more depressive symptoms than those who engaged in NSSI more than one year ago. According to the DSM-V proposed revisions, one of the criteria required to diagnose NSSI is the psychological precipitant. This includes, “interpersonal difficulties or negative feelings or thoughts, such as depression, anxiety, tension, anger, generalized distress, or self-criticism, occurring in the period immediately prior to the self-injurious act” (APA, 2012). This finding provides support for the inclusion of the psychological precipitant, specifically depression, in the diagnostic criteria.

As the research in this area has been mixed, the current study adds support to the notion that there is a link between individuals who engage in NSSI and depression. A recent study conducted by Wilcox, Arria, Caldeira, Vincent, Pinchevsky & O’Grady (2012) aligns with the current one, and found that a diagnosis of depression predicted past-year NSSI and had independent associations with NSSI in one’s lifetime. It is important to note, however, that there was also questionable reliability with the kappa statistic associated with Major Depressive Disorder (MDD) in the upcoming DSM-V, which was 0.28 (Freedman et al., 2013). The diagnostic criteria for MDD remains unchanged from the DSM-IV-TR, calling into question the reliability of the current diagnostic

definition. It is possible that the parameters of depression are still not well defined, which may affect how it relates to NSSI symptoms.

### **Eating Concerns**

This study also found a significant correlation between eating concerns and individuals who have engaged in NSSI, both currently and in the past. Specifically, it was found that individuals engaging in NSSI (presently or in the past) have significantly more eating concerns than those who have never engaged in NSSI. This finding aligns with past research indicating that there is a significant relationship between disordered eating and NSSI behaviors (Claes, Vandereycken, & Vertommen, 2005; Gollust, Eisenberg, & Golberstein, 2008; MacLaren & Best, 2010; Ross, Heath, & Toste, 2009). Studies have found that prevalence rates for eating disordered patients who also engage in NSSI are between 25.4% and 55.2% (Muehlenkamp, Claes, Smits, Peat, & Vandereycken, 2011; Svirko & Hawton, 2007). Research suggests that trait impulsivity is a common characteristic of both disordered eating and NSSI, (MacLaren & Best, 2010; Ross, Heath, & Toste, 2009) as well as child abuse, low self-esteem, and childhood traumatic experiences. (Muehlenkamp et al., 2011).

### **Substance Abuse**

A non-statistically significant difference was found between the three groups and the substance use variable. According to research, there is significant evidence of comorbidity between the substance abuse and nonsuicidal self-injury. NSSI is common among clinical samples of substance dependent individuals, with prevalence rates reported between 34-50% (Serras, Saules, Cranford, & Eisenberg, 2010), and drug use has been found to be a risk

factor for self-injury among adolescents (Serras, Saules, Cranford, & Eisenberg, 2010). It is important to note that in previous studies, drug use has been found to be more predictive of NSSI behaviors than alcohol use (Serras, Saules, Cranford, & Eisenberg, 2010). The distinction could not be made in this study, however, because drug and alcohol abuse were measured as one variable.

### **Family Distress**

Family distress also had a significant relationship with NSSI. Specifically, individuals who endorsed NSSI behaviors (either presently or in the past) had significantly higher rates of self-reported family distress than those who had never engaged in NSSI. However, there was no significant difference in family distress found between individuals who currently engage in NSSI, and those who engaged in NSSI in the past. Research has suggested that individuals who self-injure often experience family distress, such as parental criticism, family incohesiveness, parental overprotection or over-involvement, and poor parental communication (Tulloch, Blizzard & Pinkus, 1997; Wedig & Nock, 2007, Wong, Stewart, Ho, & Lam, 2007; You & Leung 2012). A recent study conducted by Claes, Houben, Vandereycken, Bijttebier, & Muehlenkamp, (2010) found that adolescents who engage in NSSI tend to have less positive relationships with their parents than their non-self-injuring peers. Additionally, the DSM-V proposed revision for NSSI states that the behavior must cause significant impairment in interpersonal, academic, or other areas of functioning (American Psychiatric Association, 2012). The above finding supports the idea that individuals engaging in NSSI have more family distress and interpersonal difficulties than those who do not engage in NSSI.

## **Academic Distress**

Finally, academic distress was found to have a significant relationship with NSSI. Individuals who self-injured both presently and in the past were found to have higher levels of academic distress than their non self-injuring peers. Additionally, individuals who engaged in self-injury in the past exhibited significantly less academic distress than those who still self-injure. While there have been relatively few studies conducted related to NSSI and academic distress, Claes, et al., (2010) found that adolescents with NSSI scored lower in four academic areas (Verbal, Mathematics, Problem Solving, and General Academics) than their non self-injuring peers. The concerns associated with performing poorly in school appear to cause significant distress in these adolescents engaging in NSSI behaviors. While examining this variable, it is important to note that all the students surveyed in this sample were from a Research One (R1) institution with rigorous academic expectations. It is possible that a sample from a community college, or a non-college sample would yield a different set of outcomes.

## **Summary of Implications**

The findings in this study indicate that, as hypothesized, individuals engaging in NSSI experience significantly more negative psychosocial outcomes than their non-self injuring peers. Specifically, those who engaged in NSSI in the past year were significantly different on all of the psychosocial variables examined, with the exception of substance abuse. Those who had endorsed at least two episodes of self-injury in their lifetimes (but not in the past year) had significantly different rates of depression, eating concerns, anxiety, family

distress, and academic distress than those who never engaged in NSSI. The only variable that was not associated with past NSSI behaviors was substance abuse. Hostility was also found to be the most strongly correlated with NSSI behaviors, lending support to Ross & Heath's 2009 hostility model.

The information derived from this study provides further support to the four-function model (FFM) proposed by Lloyd-Richardson, Nock, & Prinstein (2009). Specifically, the results support the Automatic Negative Reinforcement (ANR) function, which posits that NSSI is used as a means to alleviate a negative feeling or state. While it is not certain whether the individuals using NSSI are doing it to alleviate feelings of depression, anxiety, or hostility, these feelings have generally been found to precede the behavior (American Psychiatric Association, 2012).

### **Limitations**

Although this study was beneficial in contributing to the current scholarship in the area of NSSI in college students, several limitations can be identified. The following will describe these limitations in terms of the internal and external validity of the results.

#### **Internal Validity**

This study was conducted as an online survey completed by undergraduate students. Self-selection bias is always a problem when conducting online survey research, as students have the opportunity to opt in or out of the survey based on any number of mitigating factors. While the ultimate sample size was relatively large (733), it was a small proportion considering the original number of survey requests sent out (5,000). Perhaps the biggest threat

to the internal validity of this study was the 398 students who began filling out the survey and discontinued it before finishing. Because of the anonymity of online survey research, there was no way to follow up with these students to determine why they decided to withdraw their participation from the study. It is impossible to know whether these students discontinued their participation at random, or due to specific circumstances. It appeared that many students terminated their participation in the study after answering the preliminary questions regarding self-injury. Specifically, participants often stopped when asked about questions regarding their thoughts, feelings and behaviors during and surrounding the time of the self-injurious act. It is possible that the students who abandoned the survey would have been the ones falling into the clinical group, but there was no way to determine what that pattern may be under the design of the current study.

The norming sample used in the CCAPS-62 also represents a threat to this study's internal validity. The CCAPS-62 is used as an assessment tool for students presenting to college counseling centers, thus, a clinical sample was used for norming. This sample is not representative of the country's college population as a whole; rather it is indicative of college students who present for counseling services. As a result, students who fell in the average range on this assessment may still be experiencing distress in some of the areas assessed. If the study was conducted with a measure from a community sample, more statistically significant results may have been found.

## **External Validity**

While this study represents a contribution to the field of NSSI research, there are threats to external validity that should be mentioned. While the sample size can be considered relatively large, it was restricted to one public university in the southeastern United States. From the results of this study, it is not possible to determine if students in another part of the country or from a different school would have similar experiences regarding psychological health and NSSI. As mentioned earlier, University of Florida is a highly ranked and academically rigorous institution, which may also have influenced any of the variables examined. The age and education level of the students filling out this survey also restricts the application of the study, as the survey was limited to college students. Individuals who are college-aged but not attending a university may have different experiences with NSSI.

## **Future Directions**

Research suggests that college student mental health is rapidly becoming a more complex and significant issue deserving of further study. Additionally, an increase among individuals engaging in NSSI has necessitated further research and intervention in this area as well. This study was designed to contribute to the research on NSSI and provide support to the proposed DSM-V criteria for non-suicidal self injury. This study added to the current research base on NSSI, and also lent support to several of the diagnostic criteria proposed for the DSM-V NSSI diagnosis. Specifically, the current findings strengthened the proposed criteria stating psychological precipitants and significant interpersonal distress.

The sample size of this study did not provide support for the existence of a clinical category for NSSI, as only 2 participants fell into the Clinical category. As a result, it was impossible to say whether there were significant psychological differences between individuals fitting the clinical criteria, and those falling into a subclinical category. It would be beneficial for future studies on this subject to increase the sample size to better capture the true nature of the clinical diagnosis. It is possible that a larger sample size across several universities would have yielded a clinical group that could be statistically analyzed.

Future studies in this area might also utilize other methods of data collection. If a follow-up study were planned, it would be useful to use a data collection method other than online survey data. This method of data collection made it impossible to determine why 398 participants abandoned the survey in the middle. If it was possible to follow up with these 398 participants, it may have strengthened the results of this study.

The results of this study supports the adoption of a NSSI Not Otherwise Specified (NOS) category in which individuals engage in NSSI, but the severity of the behavior does not reach clinical levels. Future research examining this issue will be useful in light of the decision not to include NSSI to the DSM-V. It will be imperative for future studies to determine the most appropriate way to measure NSSI behaviors.

APPENDIX A  
IRB AND INFORMED CONSENT

**UF** Institutional Review Board  
UNIVERSITY of FLORIDA

PO Box 112250  
Gainesville, FL 32611-2250  
352-392-0433 (Phone)  
352-392-9234 (Fax)  
irb2@ufl.edu

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DATE: January 25, 2012

TO: Stacey Rice; Jeanna Mastrodicasa  
[REDACTED]  
[REDACTED]

FROM: Ira S. Fischler, PhD, Chair *ISF*  
University of Florida  
Institutional Review Board 02

SUBJECT: Approval of Protocol #2011-U-1305

TITLE: Differences in Psychosocial Functioning of College Students with and without Nonsuicidal Self-Injury (NSSI)

SPONSOR: None

I am pleased to advise you that the University of Florida Institutional Review Board has recommended approval of this protocol. Based on its review, the UFIRB determined that this research presents no more than minimal risk to participants, and based on 45 CFR 46.117(c), An IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds either: (1) *That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern;* or (2) *That the research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.*

The IRB authorizes you to administer the informed consent process as specified in the protocol. If you wish to make any changes to this protocol, **including the need to increase the number of participants authorized**, you must disclose your plans before you implement them so that the Board can assess their impact on your protocol. In addition, you must report to the Board any unexpected complications that affect your participants.

This approval is valid through **January 24, 2013**. If you have not completed the study by this date, please telephone our office (392-0433), and we will discuss the renewal process with you. **Additionally, should you complete the study before the expiration date, please submit the study closure report to our office.** The form can be located at [http://irb.ufl.edu/irb02/Continuing\\_Review.html](http://irb.ufl.edu/irb02/Continuing_Review.html). It is important that you keep your Department Chair informed about the status of this research protocol.

ISF:dl

## **Informed Consent**

**Protocol Title:** Differences in Psychosocial Functioning of College Students With and Without Nonsuicidal Self-Injury (NSSI)

**Please read this consent document carefully before you decide to participate in this study.**

### **Purpose of the research study:**

The purpose of this study is to examine a sample of college students and determine whether those engaging in nonsuicidal self-injury (NSSI) have similar levels of psychosocial functioning as those not engaging in NSSI. For this study, a random sampling of University of Florida undergraduate students has been selected to examine individuals with and without NSSI behaviors. No one in this sample was selected based on past mental health history, mental health records or any knowledge of this kind.

### **What you will be asked to do in the study:**

During this study, you will be asked to participate in three different surveys that will take a total of approximately 15-20 minutes. You will be given a unique on-line link to the survey questions, which will ensure participant confidentiality. This link will correspond to a unique link that will not be connected with your name or identifying information in any way, and this link will only be used to remind nonparticipants about their invitation to participate. Once the survey is completed, you will not be contacted again about the survey.

The first questionnaire contains questions about an individual's psychosocial functioning in the past month. The second questionnaire contains questions asking about whether participants have engaged in nonsuicidal self-injury (NSSI) during their lifetime. Finally, participants will be asked several demographic questions.

### **Time required:**

Approximately 15-20 minutes

<p>Approved by University of Florida Institutional Review Board 02 Protocol # 2011-U-1305 For Use Through 1-24-2013</p>
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### **Risks and Benefits:**

There are no direct benefits to participants. However, the study may help inform future treatment options for college students. There are no anticipated risks associated with this study. However, due to the sensitive nature of the questions, it is possible that participants may experience some psychological distress.

If, after taking this survey, you would like to discuss this topic or any of your responses with a counselor, or you experience psychological distress during this study, please contact the Alachua County Crisis Center hotline at: **(352) 264-6789**, or the UF Counseling and Wellness Center at **(352) 392-1575**

### **Compensation:**

There is no compensation associated with this study.

**Confidentiality:**

Your name and information will not be collected or associated with your survey answers in any way. The Student Voice on-line program assures confidentiality throughout the survey process. There is a minimal risk that security of any online data may be breached, but since (1) no identifying information will be collected, (2) the online host uses several layers of encryption, and (3) your data will be removed from the server soon after you complete the study, it is highly unlikely that a security breach of the online data will result in any adverse consequence for you.

**Voluntary participation:**

Your participation in this study is completely voluntary. There is no penalty for not participating.

**Right to withdraw from the study:**

You have the right to withdraw from the study at anytime without consequence.

**Whom to contact if you have questions about the study:**

Stacey Rice, M.Ed, School of Special Education, School Psychology and Early Childhood Studies, [REDACTED]

Nancy Waldron, Ph.D, School of Special Education, School Psychology and Early Childhood Studies, 1412 Norman Hall, [REDACTED]

**Whom to contact about your rights as a research participant in the study:**

IRB02 Office, Box 112250, University of Florida, Gainesville, FL 32611-2250; phone (352) 392-0433.

Approved by  
University of Florida  
Institutional Review Board 02  
Protocol # 2011-U-1305  
For Use Through 1-24-2013

Dear Research Participant,

You are receiving this email because you were selected as part of a random undergraduate university sample for a research study. The study will help researchers understand more about individuals who engage in Nonsuicidal Self-Injury (NSSI, or 'cutting'). Even if you have never engaged in NSSI, you are still a critical component to this study. You have not been selected for this survey because of any disclosure of self-injurious behavior, and your identity in this research project will remain completely anonymous.

The survey will take approximately 10 minutes to complete and involves answering several multiple-choice questions. While it is not expected that this survey will have any negative consequences, the material may be considered sensitive for some individuals. If you feel distressed at any time during or after the survey, a number for the Alachua County Crisis Center and the UF Counseling and Wellness Center will be provided.

Thank you for your participation in this study. The knowledge gained from your survey will help aid in the identification, study and treatment of individuals engaging in NSSI.

Sincerely,

Stacey Rice

Approved by  
University of Florida  
Institutional Review Board 02  
Protocol # 2011-U-1305  
For Use Through 1-24-2013

APPENDIX B  
CCAPS-62

CCAPS-62

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**INSTRUCTIONS:** The following statements describe thoughts, feelings, and experiences that people may have. Please indicate how well each statement describes you, during the past two weeks, from "not at all like me" (0) to "extremely like me" (4), by marking the correct number. Read each statement carefully, select only one answer per statement, and please do not skip any questions.

	Not at all like me				Extremely like me
1. I get sad or angry when I think of my family	0	1	2	3	4
2. I am shy around others	0	1	2	3	4
3. There are many things I am afraid of	0	1	2	3	4
4. My heart races for no good reason	0	1	2	3	4
5. I feel out of control when I eat	0	1	2	3	4
6. I enjoy my classes	0	1	2	3	4
7. I feel that my family loves me	0	1	2	3	4
8. I feel disconnected from myself	0	1	2	3	4
9. I don't enjoy being around people as much as I used to	0	1	2	3	4
10. I feel isolated and alone	0	1	2	3	4
11. My family gets on my nerves	0	1	2	3	4
12. I lose touch with reality	0	1	2	3	4
13. I think about food more than I would like to	0	1	2	3	4
14. I am anxious that I might have a panic attack while in public	0	1	2	3	4
15. I feel confident that I can succeed academically	0	1	2	3	4
16. I become anxious when I have to speak in front of audiences	0	1	2	3	4
17. I have sleep difficulties	0	1	2	3	4
18. My thoughts are racing	0	1	2	3	4
19. I am satisfied with my body shape	0	1	2	3	4
20. I feel worthless	0	1	2	3	4
21. My family is basically a happy one	0	1	2	3	4
22. I am dissatisfied with my weight	0	1	2	3	4
23. I feel helpless	0	1	2	3	4
24. I use drugs more than I should	0	1	2	3	4
25. I eat too much	0	1	2	3	4
26. I drink alcohol frequently	0	1	2	3	4
27. I have spells of terror or panic	0	1	2	3	4
28. I am enthusiastic about life	0	1	2	3	4
29. When I drink alcohol I can't remember what happened	0	1	2	3	4
30. I feel tense	0	1	2	3	4
31. When I start eating I can't stop	0	1	2	3	4
32. I have difficulty controlling my temper	0	1	2	3	4
33. I am easily frightened or startled	0	1	2	3	4

CCAPS-62

34. I diet frequently	0	1	2	3	4
35. I make friends easily	0	1	2	3	4
36. I sometimes feel like breaking or smashing things	0	1	2	3	4
37. I have unwanted thoughts I can't control	0	1	2	3	4
38. There is a history of abuse in my family	0	1	2	3	4
39. I experience nightmares or flashbacks	0	1	2	3	4
40. I feel sad all the time	0	1	2	3	4
41. I am concerned that other people do not like me	0	1	2	3	4
42. I wish my family got along better	0	1	2	3	4
43. I get angry easily	0	1	2	3	4
44. I feel uncomfortable around people I don't know	0	1	2	3	4
45. I feel irritable	0	1	2	3	4
46. I have thoughts of ending my life	0	1	2	3	4
47. I feel self conscious around others	0	1	2	3	4
48. I purge to control my weight	0	1	2	3	4
49. I drink more than I should	0	1	2	3	4
50. I enjoy getting drunk	0	1	2	3	4
51. I am not able to concentrate as well as usual	0	1	2	3	4
52. I am afraid I may lose control and act violently	0	1	2	3	4
53. It's hard to stay motivated for my classes	0	1	2	3	4
54. I feel comfortable around other people	0	1	2	3	4
55. I like myself	0	1	2	3	4
56. I have done something I have regretted because of drinking	0	1	2	3	4
57. I frequently get into arguments	0	1	2	3	4
58. I find that I cry frequently	0	1	2	3	4
59. I am unable to keep up with my schoolwork	0	1	2	3	4
60. I have thoughts of hurting others	0	1	2	3	4
61. The less I eat, the better I feel about myself	0	1	2	3	4
62. I feel that I have no one who understands me	0	1	2	3	4

APPENDIX C  
CCAPS-62 AUTHOR APPROVAL

Gmail - CCAPS

<https://mail.google.com/mail/u/0/?ui=2&ik=d32e049c94&view=pt&...>



Stacey Rice <stacrice@gmail.com>

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**CCAPS**

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**Ben Locke** <BDL10@sa.psu.edu>

Thu, Sep 8, 2011 at 8:56 AM

To: Allison Lockard <ail5178@psu.edu>, stacrice@gmail.com

Stacie, please accept this email as permission for the use of the CCAPS in your dissertation.

Best wishes in your research,

Ben

---

Ben Locke, Ph.D.

Associate Director, Clinical Services

Executive Director, CCMH

Affiliate Faculty, Counseling and Clinical Psychology

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APPENDIX D  
NSSI SCREENING QUESTION & QUESTIONNAIRE

Screening Question: "Have you ever intentionally hurt yourself?" Please check any of the following that you have engaged in *during your lifetime*.

- Cutting       Interfering with wound healing (picking a scab until it bleeds)  
 Burning       Hitting self  
 Scratching
- 

In the past year, have you engaged in intentional, self-inflicted damage to the surface of your body, (e.g., cutting, burning, stabbing, hitting, excessive rubbing), for purposes not socially sanctioned (e.g., body piercing, tattooing, etc.) - Please note; this does not include common or trivial behaviors such as nail biting or picking at a wound.

Yes \_\_\_\_\_ No \_\_\_\_\_

How many times have you engaged in this behavior in the past year?

- Once  
 2-4 times  
 5 or more times

Have you engaged in the intentional, self-inflicted damage to the surface of your body, (e.g., cutting, burning, stabbing, hitting, excessive rubbing), for purposes not socially sanctioned (e.g., body piercing, tattooing, etc.) at **ANY TIME** in your life?

Yes \_\_\_\_\_ No \_\_\_\_\_

How many times have you engaged in this behavior *in your lifetime*?

- Once  
 2-4 times  
 5-10 times  
 More than 10 times

Was this behavior done with suicidal intent?

Yes \_\_\_\_\_

No \_\_\_\_\_

Please indicate whether these statements apply to you by checking yes or no for each item:

Negative feelings or thoughts, such as depression, anxiety, tension, anger, generalized distress, or self-criticism, occurred in the period immediately prior to injuring myself

Yes \_\_\_\_\_

No \_\_\_\_\_

Prior to engaging in the act, I experience a period of preoccupation with the intended behavior that was difficult to resist

Yes \_\_\_\_\_

No \_\_\_\_\_

The urge to engage in self-injury occurs frequently, although I might not act on it

Yes \_\_\_\_\_

No \_\_\_\_\_

The act is engaged in with a purpose; this might be relief from a negative feeling/cognitive state, interpersonal difficulty or increase of a positive feeling state- I generally anticipate that these feelings will occur either during or immediately following the self-injury

Yes \_\_\_\_\_

No \_\_\_\_\_

Does the self-injurious behavior cause significant distress or impairment in interpersonal, academic, or other important areas of functioning?

Yes \_\_\_\_\_

No \_\_\_\_\_

Do the episode(s) of self-injury occur only when you are intoxicated with one or more substances?

Yes \_\_\_\_\_

No \_\_\_\_\_

APPENDIX E  
DEMOGRAPHIC INFORMATION

We would like to gather additional information about you to better inform the results of this study. Please answer all questions indicated.

1. Please indicate your gender

Male  
 Female

2. How old are you?

17-20  
 21-29  
 30 or older

3. What is your current year of school?

1<sup>st</sup> year  
 2<sup>nd</sup> year  
 3<sup>rd</sup> year  
 4<sup>th</sup> year  
 5<sup>th</sup> year or more

4. What is the ethnicity you most closely identify with?

Hispanic or Latino/a  
 White  
 Black  
 Asian or Pacific Islander  
 Multiracial  
 American Indian or Alaska Native

5. What is the sexual orientation you most closely identify with?

Heterosexual  
 Gay  
 Lesbian  
 Bisexual/pansexual/queer  
 Unsure

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## BIOGRAPHICAL SKETCH

Stacey Rice was born in 1983 in Wayne, New Jersey. She spent her childhood in Wayne, and graduated from Wayne Valley High School in 2001. Following high school graduation, she moved to New Brunswick, NJ to obtain her bachelor's degree in psychology and communication from Rutgers University. While in her junior year of college, she had the opportunity to study at Macquarie University in Sydney, Australia. For three years following college graduation, Stacey worked as a mental health counselor in both inpatient and outpatient psychiatric facilities.

In 2007, Stacey returned to school to obtain a master's degree in child advocacy from Montclair State University. This multidisciplinary degree furthered Stacey's interest in working with underserved children with significant mental health needs. Following graduation, Stacey was accepted to the University of Florida's school psychology Ph.D program, and obtained her Master of Education in August 2011. While studying at the University of Florida, Stacey had the opportunity to work both in the school system and outpatient mental health clinics. Stacey plans to complete her Ph.D in August 2013, after completion of her internship with the Baltimore City Public School System.