FUNCTIONS OF SELF-INJURIOUS THOUGHTS AND BEHAVIORS
WITHIN ADOLESCENT INPATIENTS

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Dissertation Prepared for the Degree of

DOCTOR OF PHILOSOPHY

UNIVERSITY OF NORTH TEXAS

December 2008

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Thomas, Peter F. Functions of self-injurious thoughts and behaviors within adolescent inpatients. Doctor of Philosophy (Clinical Psychology), December 2008, 78 pp., 9 tables, 1 figure, 78 references.

The primary interest of this investigation concerned the self-injurious thoughts and behaviors (SITBs) of inpatient adolescents. Previous researchers have provided descriptive information regarding either automatic (or intrinsic) and social components using the Self-Injurious Thoughts and Behaviors Interview (SITBI). However, the presence and trends of these components have not firmly been established, suggesting the need to explore this area further. Eighty-two adolescent inpatients were selected and interviewed using the SITBI to evaluate the predictive ability of self-reported self-injurious behavior with regard to social and automatic, negative and positive functions.

Results showed that depending on the type of thought or behavior displayed one could discern the motivation behind their actions. Automatic-Negative was seen to have the strongest relationship across all SITB behaviors while Automatic-Negative was not found to be relatively low compared to other SITB behaviors. Both Social-Positive and Social-Negative were found to be present in moderate relationships compared to Automatic in general.
ACKNOWLEDGEMENTS

I wish to take this moment to thank those whose help and understanding are the primary reason for the completion of this work. Thank you to Time Lane, Ph.D., Patricia Kaminski, Ph.D., Mike Clark, Ph.D., Larry Schneider, Ph.D., and Ed Watkins, Ph.D.
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CHAPTER 1

INTRODUCTION

Both suicidal and non-suicidal behaviors are considered prevalent yet significantly understudied. Prinstein (2008) credits the multiple methodological, ethical, and practical challenges in the area as reasons why research has fallen short of even explaining some of the basic elements to self-injurious thoughts and behaviors (SITBs). Problematic are the numerous correlates and psychological functions to such behaviors. For example, an individual may self injure with or without the goal of suicide. Another individual may self injure to regulate affect or to communicate to others their distress. Furthermore, these behaviors may or may not be complicated by the presence of psychopathology. Prinstein (2008) notes that few prevention or intervention strategies for addressing SITBs, either suicidal or non-suicidal, have been shown to help. Although he notes some promising possibilities, they have yet to come to fruition. With increased trends of these behaviors establishing themselves in the general population predominately over the last decade or so (Prinstein, 2008), research has begun a more thorough examination.

Non-Suicidal Self-Injury

The majority of extant research on the area of self-injury without suicidal intent has focused primarily on populations with developmental disabilities such as autism or mental retardation (Iwata et al., 1994). Not until the last decade when the prevalence of
non-suicidal self-injury (NSSI) seemed to erupt within populations other than people with developmental disabilities did attention shift. Previous research has clearly shown that common reasons for NSSI generally involve attempts to self-regulate negative emotion (Nock & Kessler, 2006; Nock & Prinstein, 2004; Nock, Joiner, Gordon, Lloyd-Richardson & Prinstein, 2006; Hilt, Cha & Nolen-Hoeksema, 2008; DiLazzerzo, 2003; Hjelmeland & Groholt, 2005; Klonsky & Olino, 2008; Nock, Holmberg, Photos & Michel, 2007). For example, people who feel overcome by feelings of guilt, anger, or grief may injure themselves as a way of expressing the feeling or distracting themselves from an intensely painful emotion.

Nock and Prinstein (2004, 2005) have also examined NSSI behaviors and found that many engage in these behaviors to generate feelings when they would otherwise feel empty, numb, or dissociated. For example people experiencing psychological numbness, similar to those with post traumatic stress, have been known to achieve emotionless states to protect themselves from debilitating affect and then self-injure to re-establish some level of emotion (Weierich & Nock, 2008).

Interpersonal and social functions are also attributed to NSSI behaviors. Those who self-injure may do so as a form of communication, to regulate social support, or to suppress unwanted social stimulus such as to get away from others (Nock & Prinstein, 2004; Hilt et al., 2008; Klonsky & Olino, 2008). Social functions may become even more important during adolescence.
Suicidality

As compared to NSSI, the area of suicidal behavior has received significantly longer and more thorough examination in empirical literature. However, similar to the study of NSSI, theoretical models that predict how or why some engage in suicidal behaviors or explain the functions of suicide remain elusive. Little has been done to understand or illuminate how or if similar functions apply to suicidal behaviors such as suicidal gesturing (suicidal behaviors without the intent to die), suicidal ideation and planning, and suicidal attempts. Nock et al. (2007) and Hilt et al. (2008) have shown that suicidal gesturing has social functions similar to NSSI. Likewise, similar studies have found that suicidal gesturers and attempters may do so for the purpose of emotional regulation, or to seek refuge from unpleasant emotions (Holmberg, Photos & Michel 2007; Nock & Prinstein, 2004; Hilt et al.).

Prospective SITB Research of the Past

Iwata et al. (1994) explored the roles or functions that extrinsic and automatic functions had with SITBs. They examined stereotypic self-injury in developmentally disabled populations and found that these behaviors were contingent on social (e.g., interpersonal/relationships or reinforced by others) and automatic (e.g., intrapersonal or reinforced by oneself) functions. The term “Automatic” refers to reinforcement that is carried out by one’s self and not a term that refers to behaviors carried out unconsciously – a common definition in cognitive psychology (Nock & Prinstein, 2004). Results such as these helped provide a reasonable basis for examining automatic and social functions of SITBs in other populations. Their work was expanded by Favazza (1998) and Suyemoto
(1998), who also were among the first to postulate possible functions of self-mutilative behaviors. Even more recently, works from Brown, Comtois, and Linehan, (2002), have also contributed to the perspectives on the functions of these behaviors.

In the past decade, a group of researchers led by Matthew Nock of Harvard University has been able to make noteworthy advances in the understanding of NSSI and suicidal behaviors using an instrument they developed, the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock et al., 2007). Nock and Prinstein (2004) applied a functional approach to the assessment of self-mutilative behavior among community adolescents and young adults. Whereas the majority of past research within the area focused on identification of those patients who may be at increased risk for SITBs, Nock and Prinstein focused more on why individuals perform self-mutilation to begin with. Their functional approach is more concerned with the processes that produce and maintain these behaviors. The goal of their research was to explore the reasons adolescents said they used to self-mutilate and to assess whether these reasons can be classified into functions for self-mutilative behavior. They evaluated how contingencies that are automatic versus social and reinforcement functions that are positive (e.g., followed by the presentation of a favorable stimulus) versus negative (e.g., followed the presentation or removal of a negative stimulus) applied to self-mutilative behavior.

Nock and Prinstein (2004, p. 886) define automatic-negative reinforcement as “an individual’s use of self-mutilation to achieve a reduction in tension or other negative affective states” (e.g., to stop bad feelings). Automatic-positive reinforcement is described as “an individual’s attempt to engage in self-mutilative behavior to create a
desirable psychological state” (e.g., to feel something else or to generate feelings after being emotionally numb).

Social reinforcement functions reflect the use of self-mutilation to manipulate or change the environment (including people in the environment). Social-negative reinforcement refers to “an individual’s use of self-mutilation from interpersonal task demands” (e.g., “to avoid punishment from others or avoid doing something unpleasant; Nock & Prinstein, 2004). Social-positive reinforcement involves “gaining attention” or attempts to communicate something (e.g., “to try to get a reaction from someone, even if it’s negative or to let others know I am unhappy”). Neither of these social functions has received much attention within the empirical literature. Thus, this study will attempt to shed more light on this function.

Other behaviors categorized under SITBs besides non-suicidal self-mutilation can fit with the Nock and Prinstein (2004) model. As a matter of fact, Nock (2006) includes all four reinforcements within his SITBI questionnaire suggesting that other groups of SITBs (those with suicidal ideation, suicidal gesturers, and suicide attempters) may function within this model. The SITBI also included questions about suicide attempts and the presence of intent to die. Most measures of suicidality do not include this important content. Data from the National Comorbidity Survey (Kessler, Berglund, Borges, Nock & Wang, 2005) showed that requiring intent to die in the definition of suicide attempt reduced the U.S. lifetime prevalence of self-reported suicide attempts from 4.6% to 2.7% and exposed significant differences between those with intent to die and those who engaged in self-injury without such intent (Nock & Kessler, 2006). Additionally, the
SITBI adheres to operational definitions of these behaviors more stringently than previous measures, and differentiates among the various SITBI constructs. Other measures before have had poor operational definitions and classified all self-injurious constructs as “parasuicide” or “suicide attempts.” Previous measures have been limited in the range of self-injurious behavior as well. They have mainly focused on suicidal ideation, a few on attempts. The narrow focus of these measures limits the availability of information gathered for research and most importantly, clinical use. The SITBI allows the examinations of relationships across self-injury related constructs. This is important because understanding how these constructs relate is critical to understand the overall functions of self-injury. Earlier works have emphasized this point and found that milder forms of SITBIs are often the best predictors of more severe SITBIs. For example, Kessler, Borges, and Walters, 1999 and Nock et al., 2006 have all found that the presence of a suicidal plan with non-suicidal self injury are both associated with an increased risk of suicide attempt.

Two distinct models dominate the conceptualization of the relationship between self-injurious behaviors and suicidal behaviors. One model views self-injury as part of a constellation of suicidal behaviors. Skegg (2005), along with many others, saw self injury as part of the continuum for suicidal acts. They saw that the risk of eventual suicide was higher in populations of repetitious self-injurers. Skegg reported that more than 5% of those seen in a hospital setting for self-injury will have committed suicide within the next nine years. Skegg’s work suggests that individuals vulnerable to self-injury may also be at a heightened risk of suicidality when situational stressors or trauma overwhelms their
capacity to cope effectively or in maladaptive ways like self injury. The other model views individuals who deliberately self harm and those who are suicidal as two different populations (Favazza & Conterio, 1989; Linehan, 1986; Linehan, 2000; Muehlenkamp, 2005). Typically, the later model is used to argue that self-injurious behavior is most commonly used as a way to regulate negative affect and avoid suicide.

Whitlock and Knox (2007) suggested an alternative to both models. They concluded that self-injurious behaviors were a coping strategy to manage psychological distress that may co-occur or lead to suicidal behaviors. They found that a reported history of self-injurious behavior predicted all forms of suicidal behavior, not solely ideation as previously thought and that the risk of suicidality increased with an increase in self-injurious behavior. Their work suggested that for individuals using self-injurious behaviors as a means of coping with undesired affect, suicide may become a viable consideration when overwhelmed by psychological distress and their capacity to function when using self-injury as a coping method is exhausted.

Current Trends and Statistics

Suicide, the sixth leading cause of death in the United States, accounts for more than 30,000 deaths per year (DeLeo, Bertolote & Lester, 2002). The World Health Organization reports the total number of suicides has changed little over time (Dahlberg, Mercy, Zwi & Lozano, 2005). The suicide rate in men (18.7 suicides per 100,000) is more than four times that in women (4.4 suicides per 100,000 women). In women, suicide rates remain relatively constant beginning mid-adolescence. In men, suicide rates are stable from the late teenage years until the late 70’s, when the rate substantially
increases (to 41 suicides per 100,000 annually) as reported by the Center for Disease Control and Prevention in 2005. Caucasian men have a twofold higher risk for suicide compared with African-American men. The risk in Caucasian women is double that of minority women.

Suicide is the second leading cause of death in persons 15 to 34 years of age. Worldwide, from 1950 to 2000 in adolescents, suicide rates increased by approximately 35% in men and 10% in women. The presence of suicidal ideations and attempts are suspected to be even more common. Peterson, Zhang, Lucia, King, and Lewis (1996) reviewed recent psychiatric emergency room visits for patients 16 years of age and found that 30% of all visits were due primarily to suicidal ideation and an additional 17% due to suicidal behaviors. Self-poisoning, or overdosing, represents the most common reason for acute medical admission of women to hospitals and the second most common reason for men (Hawton & Catalan, 1987).

Non-suicidal self injury, such as self-mutilation, is also a pervasive public health issue. The estimated rate (Briere & Gil, 1998; Klonsky & Olino, 2008) is 4% of the general adult population and 21% of the adult psychiatric inpatient population with adolescents showing over five times increased risk of non-suicidal self-injury. Ross and Heath (2002) suggest that 14% to 39% of adolescents in the community, and 40% to 61% of adolescents in psychiatric inpatients display some sort of self-injuring behavior (DiClemente, Ponton, & Hartley, 1991). Ross and Heath interviewed 440 high school students and found that 13.9% of all students reported having engaged in self-mutilation at some time in their life. Ross and Heath concluded that girls reported significantly
higher rates than boys with 64% of girls reporting versus 36% of boys. Cutting was found to be the most common type of self-injury, followed by hitting, pinching, scratching, and biting.

The Problems with SITB Research

One of the significant limitations to empirical research within this area has been its under developed and confused nomenclature. Most of the literature shows a lack of clarity and consistency in the definition of self-injurious behaviors. Unfortunately, this has negatively impacted the way that these behaviors have been measured in studies. This limitation has restricted even further the advancement of an area of study related to adolescents that already has sparse amounts of empirical literature. Even with operational definitions for specific types of SITBs suggested (O’Carroll, Berman, Maris, & Moscicki, 1996), there has been only minimal consensus. For example, some studies will include non-suicidal self injurers, such as cutters with no intent to die, in groups with people who reported they cut as part of their suicide attempt. To further aggravate the confusion, different assessments to measure these behaviors address different constructs within self-injury and suicide. As a result, the empirical evidence from certain studies makes it difficult to compare findings and come to more harmonious conclusions across the literature. Nock and Kessler (2006) suggested that this lack of clarity and consistency in defining SITBs was the result of previous research mistakenly not accounting for the difference between self-injurers with and without the intent to suicide. Most of the research used a more lax criterion for defining suicide attempts and included all types of self-injurious behavior without considering the presence or absence of the intent to die.
from the behaviors (e.g., Seidlitz, Conwell, Duberstein, Cox, & Denning, 2001). Researchers did not consider the distinction of those with and without intent to die and the impact it may have on measuring their risk of completing suicide. Thus, some conclusions failed to describe and distinguish the important factor of the self-injurers intent to die. To account for these problems, this study will draw on the definitions of O’Carroll et al. (1996). Their research has helped narrow and identify researchable constructs of SITBs that are consistent with constructs used in the SITBI assessment.

The literature has addressed to a moderate extent the motivation for SITBs. Jean Bachelor (1980) had proposed the model that suicide denotes all behaviors that seek to find solutions to problems by an attempt on one’s life suggesting that suicidal behavior is in some way an attempt to fix the situation. He viewed suicidal action as problem solving behavior that is oriented to accomplishing some objective or serves a function and suggested a typology of suicidal motivations: hostility, escape, sacrificial, and manipulation. He stated that not only were there motivations behind self-injurious behavior, but identified motivations such as suicidal behavior as an expression of anger or revenge (hostility), as a way of escaping uncomfortable affect (escape), as a means of self-punishment or altruistic behavior (sacrificial), or as way to manipulate support systems or seek attention for the behavior (manipulation). These actions were seen as strategic solutions, albeit irrational and dangerous, for the suicidal person. This perspective denotes the idea that acts of self-injury carry with them some sort of problem solving purpose such as to find relief or escape from psychological distress and serve some purpose or function.
Although the last ten years of research has moved the study of SITB forward, there is no consensus about the motivations and functions of suicidal and self-injurious behaviors. Moreover, what has been done reflects the processes that occur mainly among adults. Several researchers, however, have identified why those conclusions may not apply to adolescents. For example, Hjelmeland and Groholt (2005) suggested that during adolescence the situations teens face may be less predictable than in later life, and that adolescents lack life experience of having succeeded in coping with life difficulties. Cognitive immaturity may reduce their capability for abstract thinking and problem solving. Thus, they may experience, or perceive problems differently and experience a totally different problem set than adults. Hjelmeland and Groholt also suggested that the functions of suicidal behavior by adults may be irrelevant to the adolescent population. Another important consideration is that adolescents may have a lower threshold and a more accepting attitude for SITBs that is significantly different than adults (Gould, Petrie, Kleinman, & Wallenstein, 1994).

Most psychological autopsy studies have found that more than 90% of suicide victims had a psychiatric disorder at the time of suicide (Rich, Fowler, Fogarty, & Young, 1988). Psychiatric problems, such as depression or anxiety are thus commonly associated between the two. Also, it is not uncommon to see diagnoses of schizophrenia, bi-polar, substance abuse, and personality disorders. Investigators have compared persons who have attempted suicide and those who have not by matching psychiatric diagnosis and comparable objective severity of illness (Mann, Waternalux, Haas, & Malone, 1999).
Suicide attempters differ in two important ways from non-attempters with the same psychiatric disorder. First, they experience more subjective depression and hopelessness and, in particular, have more severe suicidal ideation. They also perceive fewer reasons for living despite having the same objective severity of psychiatric illness. Secondly, these individuals are more aggressive towards others and their environment and are more impulsive in other ways that involve, for example, relationships or personal decisions about a job or purchase. There is also susceptibility for more severe suicidal ideation and greater likelihood of acting on powerful feelings combined to place some patients at greater risk for suicide attempts than others.

Suicidal behavior is known to be transmitted within families, and the presence of a family history indicates potential for transmission of both a psychiatric illness that generates suicidal ideation. Other clinical features that increase the risk for suicidal behavior include comorbid substance abuse and alcoholism (Murphy, 1998; Roy & Linnoila, 1986), and a history of physical or sexual abuse during childhood (Brodsky, Malone, Ellis, Dulit, & Mann, 1997). There are family and genetic factors in adolescent suicidal behaviors. Adolescents who attempted or committed suicide have a significantly increased reported rate of suicidal acts in their families (Roy, 1983). Twin studies have shown a high concordance rate for suicides (Roy, Segal, Centerwall, & Robinette, 1991) and suicide attempts. Adoption studies (Schulsinger, Kety, Rosenthal, & Wender, 1979) have shown a higher rate of reported suicide in the biological parents of adoptees who commit suicide than in biological relatives of control adoptees. This relationship holds true even after adjustment for rates of psychoses and mood disorders. Studies of
transmission indicate that parents of youth suicide victims have had higher rates of suicidal behavior independent of the presence of psychopathology (Brent, Bridge, Johnson, & Connolly, 1996). It would seem that the heritability of suicide is comparable to the heritability of other major psychiatric disorders, such as bipolar and schizophrenia. The specific genetic factors that contribute to this risk, independent of the genetic factors involved in psychiatric disorders themselves, remain unknown. In association and linkage studies, researchers have identified candidate genes linked to suicidal behavior.

The observation that there is a genetic component involved in suicide risk raises the question of how genetic factors can influence suicide risk. Because some genetic factors regulate serotonergic functions, it has been suggested that genetic factors can influence suicide risk by affecting serotonergic function. Candidate gene studies are testing this hypothesis and have reported promising associations between particular genes and suicide attempt behavior and lower serotonergic levels (Mann, Brent, & Arango, 2001).

As mentioned previously, suicide research has notoriously been ill-defined and not clearly differentiated between non-suicidal self-injury. Like suicidal behavior, NSSI or non-suicidal self-injury is given many names within the literature. Commonly, it receives labels such as self-mutilation, parasuicide, self-inflicted violence, self-abuse, and cutting. Dabrowski (1937) traced the history of NSSI to the ancient Hebrews, Greeks, Romans and Japanese. In civilized Sparta, boys were hardened by torturing themselves. The ancient Christian doctrine did not allow self torture. Instead, it directed the exercise
of self-denial in accordance with the principle that through mastery one gained authority over one’s self and others.

In his historical review, Dabrowski is one of the first to distinguish between physical and mental mutilation, the latter being similar to feelings of worthlessness, inferiority, and depression. Lubin (1961), in a paper on Van Gogh’s self-mutilation of his ear, suggested that his self-injury was motivated largely by severe depression and despair. This was not Van Gogh’s first self-injury. Previously he had hit himself with a cudgel when his concentration waned from his biblical studies. He also caused himself severe burns and blistering after making several advances towards his cousin. Pao (1969) defined self-mutilation in terms of those patients who willfully wound themselves using sharp instruments.

Since the signs are that NSSI is becoming increasingly prevalent, it is important to understand both the practice and the functions that contribute to the increasing popularity of these behaviors in the adolescents. Perhaps one of the most paradoxical features of self-injury is that most sufferers report doing it in order to relieve pain or just to feel something. Those who self-injure without suicidal intent do so to feel in control of their bodies and minds, to express feelings, communicate needs, to create visible and treatable wounds, to purify themselves, to reenact a trauma in an attempt to resolve it, or even to protect others for their emotional pain (DiLazzerro, 2003). NSSI is best understood as a maladaptive coping mechanism, but one that works for the time being for the self-injurer.

While only little is known about the causes of self-injury in a general population, clinical studies have shed some light on this question. Self-injury is strongly linked to
childhood abuse, especially childhood sexual abuse (Brodsky, Cloitre, & Dulit, 1995; Kolk, Perry & Herman, 1991) and has been well documented in the literature.

Biomedical models are more relatively new and gaining some support as well. The endorphins released by self-injurious behavior can become quite addictive as well. The process can be likened to that of a growing drug addiction; where at first, small amounts provide a sense of calm and well-being that provide a temporary escape from current distress. As tolerance builds, the self-injurer needs increasing amounts to achieve the same effect. It is possible that in some cases, a suicide might result in an “overdose” for the habitual self-injurer.

While this may be a link between suicide and NSSI, anecdotal evidence reveals that self-injury may also sometimes be a “practice run” for a later suicide attempt (Ross & Heath, 2002). In this way, self-injury and suicide might be understood as two potential outcomes on a continuum of coping responses. Additionally, many assume that adolescents engage in NSSI behaviors because it is a popular thing to do, and that it spreads through peer groups like a social infection. Research still debates whether the social infection effect is a real factor in adoption of the behavior, but there is some evidence that some individuals who try or begin to self-injure do so because they have learned about it through others (Yates, 2004).

One of the difficulties faced by researchers in the area of deliberate self-injury is that much of the literature is buried within reports and statistics on suicide. Although suicide and deliberate self-injury share some obvious connections, they are by no means one in the same. Perhaps the first to point this out was Karl Menninger (1938).
Menninger describes deliberate self-injury as the focusing of suicidal impulse on part of the body instead of the whole body to avoid actual suicide. He went on to speculate that in the future, counseling professionals would talk about deliberate self-injury as separate from acute, generalized self-destruction. Over half a century later, there are still reports of clinicians who believe that the intent of deliberate self-injury is necessarily suicidal.

The Differences between Self-mutilation and Suicidal Behavior

Graff and Mallin (1967) asserted that self-mutilation is different from suicidal behavior for several reasons. Suicidal clients want to end their lives, while individuals who self-mutilate may not have the intent of death. A suicide attempt often elicits an active response from members of the individual’s environment or social support network. This response may diminish the number of subsequent attempts as a result. Self-mutilation, on the other hand, prompts others to react with anger, disgust, and confusion, and the frequency of self-mutilation does not diminish. Furthermore, suicidal clients often improve when they are removed from stressful situations. Clients who self-mutilate tend to continue their patterns of self-destructive behavior despite efforts to change the level of stress in the environment.

Muehlenkamp and Guterierrez (2004) examined the differences between adolescents who had attempted suicide and those who engaged in self-injurious behavior on measures of depression, suicidal ideation, and attitudes towards life and death. Comparisons between the self-injury group and the suicide attempt group failed to find significant differences in suicidal ideation and depressive symptoms. These results add to
other existing literature that has found mixed results regarding differences between the two groups.

Most studies find that suicidal ideation during self-injury is low or nonexistent (Walsh & Rosen, 1988). However, others have found that individuals who engage in self-injury report suicidal ideation at some point (Favazza, 1996). As a result, it becomes difficult to determine whether an act of self-injury is just self-injurious behavior or a suicide attempt on the basis of suicidal ideation alone. Favazza concluded that the difference between the choice to self-injure and attempt suicide may be more subtle than what can be detected by depression scores or suicide ideation scores. He believed that self-injurious behavior is viewed as distinct from suicide in that self-injury is seen as an attempt to avert suicide.

Nock and Prinstein (2004) make a critical delineation between the two groups. Building upon the work of others, they view intent to die as a major separating factor. Like Graff and Mallin (1967), Nock and Prinstein (2004) concluded that self-injurers lacked the intent to kill themselves, suggesting other motivations were at hand, while those with suicidal ideation or attempts predictably did. As a result, the intent to die was a major differentiation in their descriptions of their research groups. Later, it was seen beneficial to examine not only the motivational differences in these groups but also the similarities.

Podvoll (1969) began to describe the self-mutilator’s acts in terms of the functions the individual wished to achieve. Podvoll discussed the internal and external goals for this behavior. An internal goal attempts to relieve tension, whereas an external goal
attempts to change the environment in some way. This was an important distinction in
describing the functions of these behaviors and critical to future research in the area. The
functions and motivations behind these behaviors slowly became identified in terms of
internal or automatic and external, environmental or social. This was critical to the

Theoretical Models of SITBs

To further understand SITBs, it is important to review particular theoretical
models of these behaviors found within the empirical research that validate Nock and
Prinstein’s (2004) concepts of automatic and social reinforcers for self-destructive
behaviors. Bennun (1984), described models of self-mutilation in several broad
categories. The first category included psychodynamic formulations, the second category
addressed anxiety reduction, hostility, behavioral learning and an appeal to others model.
The third category consisted of social learning models such as the group epidemic model
and a violence and punishment model.

Bennun examined redirection of aggression back at one’s self as part of the
psychodynamic explanation of self-injury. Anger and aggression are turned back onto
one’s self to manage unacceptable aggressive impulses or thoughts. Menninger (1935)
discussed something similar. He stated that aggressive impulses or wishes against some
external object or person are returned back upon the person and reinforced via self-
punishment.

More recent examination found the act of self punishment in self-mutilation and
self-injury still remained as a motivation for these behaviors (Apter et al., 1989). Glasser,
Laufer and Wohl (1982) reporting on a psychoanalytic adolescent study, saw that part of normal adolescent development was conflict and anger towards one’s parents. They hypothesized that the hostility and anger directed towards the parents becomes could become redirected back to one’s self as a way to limit outburst of hostility onto others. For example, if the adolescent was shamed about expressing their anger towards parents or even forbidden to do so, they may internalize it or redirect it back onto themselves.

Bennun (1984) related that the behavioral learning model was derived from self-mutilation and self-injury within the mentally challenged and handicapped population. This model examines SITBs as learned operant or instrumental behaviors with some sort of reward or punishment as the reinforcer. Carr, (1977) and Lester, (1972) described similar conditioning within these populations. However, our primary concerns for SITBs will stay in populations considered higher functioning.

Next, Bennun (1984) described a social psychological model of SITBs. Similar to Nock et al. (2008) Social motivations, this model explains motivations SITBs that include an “appeal” to others around them. Stengel (1972) related this to many cases of attempted suicide in which the goal of the act was to communicate to the self-injurer’s social network. Bostock and Williams (1974) described a variant to this model. They suggested that repeated attempters find reinforcement from their support networks with gestures to hurt themselves by discovering how effective the behavior is at gaining attention for their distress when support rallies to their cause.

What are critical in these situations are the individual’s support network and the level of communication to them. Not surprisingly then, impaired parent-child
relationships are associated with increased risk of suicide and suicide attempts among youths (Beautrais & Joyce, 1996; Brent, Baugher, Bridge, Chen, & Chiapetta, 1999; McKeown, Garrison, Cuffe, & Waller, 1998). Additionally, Gould (1996) found that individuals who attempt suicide have significantly less frequent and less communication with their mothers and fathers. Others find that the association between non-lethal suicidal behavior (including self-mutilation), poor attachment and family cohesion (Fergusson, Woodward, & Horwood, 2000) may increase risk of suicide. As a result, family cohesion is considered a protective factor for suicidal behavior among adolescents (McKeown, Garrison, Cuffe & Waller, 1998). Adolescents whose family life consisted of high degrees of mutual involvement, shared interests, and emotional support were significantly less likely to be suicidal (Rubenstein, Halton, Kasten, Rubin, & Stechler, 1998). Rutter (2004) stated that one of the major psychosocial factors contributing to adolescent SITBs was social isolation. Adolescents who reported strong social support and fewer problems with isolation showed lower levels of suicide risk. In contrast, adolescents who lack social support and experience isolation showed increased risk of self-injurious behavior.

Bennun (1984) also described a model of self-injury that considered anxiety reduction as motivation for SITBs. DiLazzero, (2003) that anxiety was a common feature present before SITBs are acted out. Given the adolescent’s decreased ability to manage strong affect and the enormous amount of difficult emotions that are unique to this stage of life, the desire to find some way to reduce tension, appropriately or even inappropriately, of these emotions is quite significant. It is not difficult to find research
that concludes that self-injurers experience some form of relief after they perform some self-mutilative behavior (Carr, 1977; Dabrowski, 1937; DiLazzero, 2003; Gardner & Gardner, 1975; Hjelmeland & Groholt, 2005). There is significant evidence to support the idea that self-injurers along with suicidal ideators, planners and attempters use SITBs as a form of intrinsic affect regulation (Nock & Kessler (2006); Nock & Prinstein (2004); Nock et al. (2008); Hilt et al. (2008); Carr (1977); Dabrowski (1937); DiLazzero (2003); Hjelmeland & Groholt (2005); Gardner and Gardner (1975); Klonsky & Olino (2008). Nock and Prinstein (2007) utilized this concept in part of their model of SITB motivations. They suggested that affect management and affect generation were key components to automatic variables.

Bennun (1984) related the presence of a hostility model as motivations for SITBs within the psychodynamic explanations. He described that through a cathartic process of an emotional outbursts, the individual experiences some relief or reduction in tension through the release of powerful emotion. This is similar to the “letting it all out” explosive behavior we see in persons extremely overwhelmed with anxiety and tension and the relief they may experience after doing so. Kendell (1970) thought that depression was initiated by the individual not being able to outwardly express aggression and frustration. As a result, emotions were “swallowed” and contained. As Raine (1992) further explained that in instances like this, self-injury will be directed against the self, with the self representing the object of attack. Nonetheless, the expression of hostility still decreases the anxiety or frustration even when the individual redirects it onto themselves.
In studies of depression and hostility among self-mutilators (Bennun, 1984; Brent, Bridge, Johnson & Connolly, 1996), a history of violence in relationships was more apparent among self-mutilators and suicidal attempters when compared to those who did not endorse SITBs. Similarly, those who were abused as children showed a significantly higher incidence of self-destructive behavior, self-mutilation, suicide attempts, and suicidal ideation when compared with non-abused control groups (Gelles, 1980). Carroll, Schaffer, Spensley and Abramowitz (1980) developed the idea that parental hostility fosters a punitive superego that triggers self-directed violence and self-injury. Raine (1982) further stated that the punitive superego becomes a way to punish one’s self either cognitively or physically.

Finally, Brennun (1984) described a group epidemic model of motivation for SITBs. Although there has been minimal research on the topic within recent decades, epidemic cutting and group self-injury have been reported in hospitals (Simpson, 1975). Offer & Barglow (1970) offer some explanation for the group occurrence of SITBs in hospital settings. Mutilators can imitate models that obtain rewards and attention. Group cohesion and peer influence may also be prevalent on hospital units for adolescents as a form of rebellion against authority figures and hospital staff. There may also be competition between patients for attention.

It is important to understand how Brennun’s (1984) models of self-injury relate to the current model proposed. In doing so, it becomes clear that numerous motivations behind SITBs within the automatic and social variables.
At the heart of the psychodynamic model (Friedman et al., 1982; Menninger, 1935) lays the fundamental idea that aggression turned inward fulfills the attempts to reduce unacceptable aggressive thoughts, feelings and impulses by turning them against the self. Although loosely tied here to automatic-negative reinforcement, it can represent an attempt by the patient to halt negative emotion - pinnacle to this type of reinforcement. However, a stronger connection to support automatic-negative reinforcement within SITBs is the anxiety-reduction model (Carr, 1977; Dabrowski, 1937; DiLazzero, 2003; Gardner & Gardner, 1975; Hjelmeland & Groholt, 2005). It has been well documented that anxiety and frustration are common emotional factors preceding self-injury. The anxiety reduction model is based upon the repeated findings that the majority of self-injurers report feelings of relief and a reduction of tension following their thoughts of suicide, formation of plans for suicide, suicide attempts and cutting, an idea pinnacle to automatic-negative reinforcement. The hostility model, an extension of the anxiety reduction perspective, also lends support to automatic-negative reinforcement. Hostility catharsis as a means of reducing emotional tension suggests that an opportunity to express hostility is an opportunity to reduce physiological and emotional tension (Bennun, 1983).

With regard to automatic-positive motivation, Brown et al. (2002) has examined reasons for suicide attempts and non-suicidal self-injury in women with borderline personality disorder. They found that the self-reported reasons for suicide attempts and non-suicidal self-injury were different. They find that the non-suicidal self injurers report self-harm to generate normal feelings or to regain normal feelings. This finding is in line
with the automatic-positive motivation model. However, suicidal borderline women did not endorse this as a function of their suicidal attempts and ideation, suggesting that the automatic-positive motivation may not apply to some suicidal groups. Several factors limit the conclusions that can be drawn from this study. Most studies have not reported whether reasons for self-injury depend on gender or diagnosis, although it is known that both are important in determining risk for suicidal behavior.

The social motivation functions serve to have these behaviors regulate one’s social environment. Social-negative motivation reflects the behavioral learning model. This model considers the phenomenon as a learned operant or instrumental behavior with reward or punishment being the contingent. In the case of negative motivation, the frequency of the self-injurious behavior is maintained by the avoidance or termination of some negative stimulus following the occurrence of the self-injury (Carr, 1977; Lester 1972). The focus here is to avoid punishment by the self-injurer.

Social-positive motivation finds support from the social psychological model and from the group-epidemic model (Raine, 1992; Offer & Barglow, 1970). The Social Psychological theory suggests that the SITBs might serve some function to communicate or represent a vague cry for help (Raine, 1992). Bostock and Williams (1974) describe these behaviors as serving the purpose of generating an active response from the environment or attention for the distress that the person may be in. The group-epidemic model suggests that SITBs are performed by patients who imitate models that are seen to be obtaining rewards and attention for their acts. There may also be competition between patients for attention (Offer & Barglow, 1970).
Purpose and Goals

The goal of this study is to examine the SITBs of inpatient adolescents, both with regard to frequencies of the various types and the perceived functions of them. Nock and Prinstein (2004) and Nock et al. (2007) have provided descriptive information regarding both automatic and social components using the SITBI. However, their work needs extension. The current study is another step toward that goal and aims to add to the literature regarding SITBs among adolescents who have been hospitalized.

Hypotheses

Based on previous research from Nock and Prinstein (2004, 2005); and implied by Nock et al. (2007), the SITBs of suicidal planning, suicidal gesture, suicidal attempt, non-suicidal self injurious thoughts and behaviors will relate to the areas of automatic and social motivation variables.

General Hypothesis. It is expected that each type of SITBs endorsed will be associated with one or more type(s) of motivation variables. I am predicting the motivations from the behaviors because I am interested in what motivations go into those behaviors, such as Suicidal Gesturing (SG). This behavior is a strong predictor of Social Positive. That is, for each type of behavior engaged in, the reason or reasons for that behavior will appear on the SITBI.

Hypothesis one (1a-1d): Automatic-Positive research questions. It is expected that (1a) NSSI will positively correlate with Automatic-Positive motivation as suggested by Nock and Kessler (2006), Nock and Prinstein (2004), Nock et al. (2006), Hilt et al. (2008), Carr (1977), Dabrowski (1937), DiLazzero (2003), Hjelmeland and Groholt
(2005), Gardner and Gardner (1975), Klonsky and Olino (2008), and Nock et al. (2007).

It is hypothesized that (1b) SG will have a moderately negative relationship to
Automatic-Positive motivation as evidenced by Nock et al. (2007) and Nock and
Prinstein (2004) and Hilt et al. (2008).

Exploratory hypotheses are given for relationships that have little or no
explanation in current literature and may be given based on clinical experience. Analyses
will examine the relationship between Suicidal Attempts (SA) and Suicidal Planning (SP)
to the variable of Automatic-Positive. Specifically, it is expected that (1c) SA will
positively relate to Automatic-Positive (Nock et al., 2007) and that (1d) no relationship
would be found with SP.

_Hypothesis two (2a-2d): Auto-Negative research questions._ NSSI (2a) will show a
positively strong correlate with Automatic-Negative motivations as suggested by Nock
and Kessler (2006), Nock and Prinstein (2004), Nock et al. (2006), Hilt et al. (2008), Carr
(1977), Dabrowski (1937), DiLazzero (2003), Hjelmeland and Groholt (2005), Gardner
and Gardner (1975), Klonsky and Olino (2008), and Nock et al. (2007). It is also
predicted that (2b) SITBI behaviors of SG will have a strongly negative relationship to
Automatic-Negative motivation as shown by Nock et al. (2007), Nock and Prinstein,
(2004), and Hilt et al. (2008).

Exploratory analysis will examine the relationship between SA and SP to the
variable of Automatic-Negative. Specifically, it is expected that (2c) SA will positively
relate to Automatic-Negative and that (2d) SP will show no relation (Nock et al., 2007).
Hypothesis three (3a-3d): Social-Positive research questions. SG (3a) will show a strong positive relationship to Social-Positive motivation as stated by Nock and Prinstein (2004, 2005), Nock et al. (2007), Hilt et al. (2008), and Nock and Kessler (2006). SITBs of NSSI (3b) will positively correlate to Social-Positive motivation as stated by Hilt et al. (2008) and Klonsky and Olino, T. (2008), even though Nock and Prinstein (2004, 2005) and Nock et al. (2007) found evidence to the contrary.

Exploratory analysis will examine the relationship between SA and SP to the variable of Social-Positive. Specifically, it is expected that (3c) SA might positively relate to Social-Positive contrary to what Nock et al. (2007) suggests. It is believed that (3d) SP will show either no relationship or a negative relationship.

Hypothesis four (4a-4d): Social-Negative research questions. SG (4a) will show a strong positive correlation with Social-Negative motivation as suggested by Nock et al. (2007). SA (4b) will positively correlate to Social-Negative motivation as suggested by Nock et al. (2007). It is predicted that (4c) NSSI will show a moderately positive correlation with Social-Negative motivation as Nock and Prinstein (2004, 2005), Hilt et al. (2008), and Klonsky and Olino (2008) found, even though Nock et al. (2007) found small relationship to the contrary.

Exploratory analysis will examine the relationship between SP to the variable of Social-Negative. Specifically, it is expected that (4d) SP might positively relate to Social-Negative.
CHAPTER 2

METHOD

Inpatient adolescents were given the Self-Injurious Thoughts and Behaviors Interview and their responses recorded. Parental consent and adolescent Assent was obtained prior to each interview. Subjects were asked to participate if they presented with a history of current self-injurious behavior.

Participants

A total of 82 (female $n = 33$; male $n = 49$) adolescents (age in years: $M = 15.23$, $SD = 1.34$, range 12-17) were recruited from an inpatient psychiatric unit. Inclusion criteria were ages 12-17 years and provision of written informed assent to participate in the research, with parental consent also required. There were 52 Caucasian participants, 16 African-American, 12 Hispanic, and 2 Asian participants. Of the 82 participants, 31 were classified as having more than one diagnosis on Axis I, or dually diagnosed. Forty-one patients had been diagnosed with major depressive disorder, 25 with bipolar disorder, 6 with conduct disorder, 8 with ADHD, 11 with substance abuse disorders, 11 with mood disorder NOS, and 12 were classified as having ‘other’ as a diagnosis. Inclusion also required a current or previous history of self-injurious thoughts or behaviors. Potential participants were excluded only if they demonstrated an impaired ability to comprehend and effectively participate in the study (because of factors such as an inability to speak English, the presence of gross cognitive impairment due to psychosis, mental retardation, intoxication, or the like.)
Materials

The Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock et al., 2007) is a structured interview consisting of 169 items in five sections. The items assess both thoughts and behaviors, including suicidal ideation (SI), suicidal plans (SP), suicide gestures (SG), suicide attempts (SA), and non-suicidal self-injury (NSSI).

The SITBI contains five modules for each type of SITB. Each module starts with a screening question that asks about the presence of that thought or behavior over the course of the participant’s lifetime. Once the initial screening question is endorsed, the questions for that module are then asked in their entirety. If the initial screening item is not endorsed, then the questions from that module are not given. For example, if an adolescent denies ever having suicidal ideation, he/she is not given the questions related to that module. The interviewer then proceeds to the screening question for the next module. The SITBI assesses the frequency of each type of thought or behavior in the respondent’s lifetime, past year, and past month, as their age-of-onset of each thought or behavior endorsed. The severity of each thought or behavior endorsed (on a 0 to 4 scale) is also assessed, with severity being assessed on average and at the worst point. An open-ended question about the methods of self-injury is also used.

Most importantly related to the purpose of this study, the SITBI assesses the reported function or motivation of each type of SITB via four questions about the extent to which the respondent has engaged in each thought or behavior (on a 0 to 4 scale) for the function of emotion regulation (e.g., to escape from aversive feelings or to generate feelings) or communication or regulation of the social environment (e.g., to get attention...
from others or to escape from others). Previous research had shown that these were the most common functions of such behaviors (Boergers, Spirito, & Donaldson, 1998; Hawton, Cole, O’Grady, & Osborn, 1982; Nock & Prinstein, 2004, 2005). The 0 to 4 scale in the SITBI is not anchored, nor is it explained what 0 or 4 represent quantitatively in the question itself. As a result, a brief description of the scales was given prior to the interview stating to rank those items from 0 (never), 1 (little), 2 (somewhat), 3 (much), 4 (a great deal) to avoid any confusion. If needed, the scale was repeated to the participant during the interview. This procedure was confirmed by the authors to ensure proper interpretation of the scale and administration of the interview.

The SITBI also determines the amount the respondent believes different variables may have contributed to their behavior (on the 0 to 4 scale), including family, friends, relationships, peers, work/school, and mental state. Other characteristics about SITBs are also assessed in the interview, including the amount of physical pain experienced (with self-injurious behaviors) the percentage of times that SITBs were done in conjunction with alcohol or drug use, and impulsiveness with acts of SITBs (typically the amount of time thought about the behaviors before initiating it). The SITBI also examines social components to each group as well. The number the participant’s peers that engage in SITBs are assessed, as well as the extent that their peer’s behaviors have influenced them, which further helps examine the degree of peer influence on the initiation and maintenance of SITBs. Finally, the interview also assesses the participant’s self-reported likelihood that he/she will do each SITB in the future. Average administration time was between 10 to 20 minutes.
Although the majority of the SITBI items reflect quantitative information, several qualitative, open-ended questions are asked as well. Nock et al. (2007) stated that the wording and reading level for the SITBI was appropriate for both adolescents and adults. The authors stated that the SITBI was intended to be administered and scored by master and doctoral level clinicians. Bachelor level assistants may administer the interview as well, but only if closely supervised.

Nock et al. (2007) reported an excellent inter-rater reliability for the SITBI yielding strong agreement between raters \((n = 21)\) on these behaviors. Their examination of the interview showed a perfect agreement \((k = 1.0)\) between raters for suicidal ideation, suicidal gesture, suicide attempt and NSSI, and strong agreement for suicidal plan \((k = .90)\).

Test-retest reliability was examined as well (Nock et al., 2007). Test-retest reliability was evaluated by examining the correspondence between the reported lifetime presence \((k)\) and frequency of each type of SITBI at the first interview and the presence and frequency reported at a six month follow-up interview. Test-retest reliability for the presence versus the non-presence of each lifetime outcome reported at both the initial and follow-up interview was strong for suicidal ideation \((k = .70)\), suicidal plan \((k = .71)\), suicide attempt \((k = .80)\), and NSSI \((k = 1.0)\). Suicidal gesture was lacking \((k = .25)\). The six month follow-up yielded a lower rate of lifetime reported suicidal gesturing. The SITBI showed strong test-retest reliability for the lifetime frequency for suicidal ideation \((ICC = .74, p < .001)\), suicide attempt \((ICC = .50, p < .001)\), and NSSI \((ICC = .71, p < \)
Somewhat less reliability for suicidal plans ($ICC = .23, p < .001$), and poor reliability for suicidal gestures ($ICC = .01 ns$) were reported. Agreement between adolescents and their parents, or inter-informant agreement, on the presence versus non-presence of each behavior was completed at the initial interview (Nock et al. 2007). Agreement between adolescents and their parents was strong for suicidal ideation ($k = .75$), suicide attempt ($k = .67$), and NSSI ($k = .91$). Agreement was fair for suicide plan ($k = .44$) and poor for suicide gesture ($k = .21$). The authors reflect that poor agreement was due to parents under reporting the presence of SITBs in their adolescents. These results are consistent with research that has shown that agreement is typically poor between both groups on suicide related constructs (Nock & Prinstein, 2004).

Nock et al. (2007) also examined the construct validity of the SITBI to show it was a valid measure of SITB-related constructs. Construct validity was examined by testing the correspondence of responses to the SITBI items assessing the frequency and presence of suicidal ideation, attempts and NSSI to responses from similar items taken from the Kiddie-Sads-Present and Lifetime Version (K-SADS-PL), Beck Suicide Inventory (BSI), and the Functional Assessment of Self-Injury (FASM). Good agreement was shown between the SITBI and the K-SADS-PL on the presence of suicide attempt ($k = .65$) and NSSI ($k = .74$). However, slightly lower agreement was shown with the presence of suicidal ideation ($k = .48$). The SITBI was also compared to the BSI on assessing suicidal ideation. Agreement on the SITBI and the BSI was good ($k = .59$). The functions and presence of NSSI on the SITBI were also examined with the FASM. There
was perfect agreement on the presence of NSSI \((k = 1.0)\) and almost perfect on lifetime frequency \((k = .99)\). The behavioral functions of NSSI were assessed by looking at the four functional items from the SITBI and the corresponding four functional subscales from the FASM. Correlations between the two were significant on Automatic-Positive motivation \((r = .71)\), Automatic-Negative motivation \((r = .72)\), Social-Positive motivation \((r = .73)\) and Social-Negative motivation \((r = .64)\) functions of NSSI (all \(p < .001\)).

Procedure

This study was approved by the University of North Texas Institutional Review Board and the Green Oaks Hospital Institutional Review Board. Participants completed the interview during one visit. It was explained that the interview was for research purposes only and that participation was voluntary. Additionally, they were told they could decline at any time during or after the interview to participate in the study. Once criteria for participation had been met, parents and participants were asked to participate and times were scheduled for the parents or guardian to come in and discuss the purpose of the research and review and sign the consent forms. The SITBI was administered after agreement from both the parent and the adolescent, and the consent and assent forms were signed. Consent and assent were explained with both the parent and the adolescent together. If consent was given, the adolescent was administered the interview separate from their parent or guardian.

Participants were taken to a private office located on the inpatient unit and away from the social milieu. It was explained that the interview was for research purposes only and that participation was voluntary. Additionally, they were told they could decline at
any time during or after the interview to participate in the study. Consent and assent were reviewed and explained in greater detail if needed. Demographic information was then obtained through the medical record of the participant. Only information related to gender, race, and diagnosis were obtained for the purposes of the study.

The SITBI was administered by the researcher. Depending upon their responses to the initial questions in the SITBI, the participants were classified into at least one of the five SITBI groups: SI, SP, SG, SA, and NSSI. As instructed by the SITBI, each participant received the interviews for the groups they were assigned to. Participants were debriefed afterward and time was given for additional questions. The researcher received the SITBI and training from Matthew Nock, author of the SITBI, via email regarding the administration procedures. Training included a review of the SITBI items and practice administering the interview.

Risk assessment interviews were giving during the debriefing and safety planning was conducted as needed, which could have been to inform the treatment team of elevated risk of self-harm. Time was allotted by hospital staff, if needed, to further discuss their issues. However, at no point was this requested by any of the participants.

Participants were assigned random numbers and demographics were written directly on the SITBI cover. Participant name was not included on the SITBI interview form. Parental consent and adolescent assent forms were stored in a locked facility located at the hospital.
CHAPTER 3
RESULTS

Descriptive statistics regarding variables under consideration can be found in Tables 1-9 and Figure 1. Table 1 provides information regarding the means and standard deviations for motivations. Table 2 provides information regarding means and standard deviations for motivations by behaviors exhibited. Table 3 shows correlations among the dependent variables. Almost all endorsed Suicidal Ideation (SI; \( n = 78 \) out of 82), 34 endorsed Suicidal Planning (SP), 25 endorsed Suicidal Gesturing (SG), 32 endorsed Suicidal Attempts (SA) and 37 endorsed Non-Suicidal Self-Injury (NSSI). Automatic-Negative was rated highest relative to other motivations and Automatic-Positive was rated the lowest. Surprisingly, correlations among those motivations were low, suggesting they are largely independent constructs. This is in stark contrast to correlations found with Nock and Prinstein (2004) with NSSI groups.

Bivariate relationships between the behaviors and motivations can be found in Table 4 though discussion is reserved for the regression analyses. With almost everyone endorsing SI, the results are reflective of the overall means for the motivations. For those who reported SP and SA, Automatic-Negative was highest and lowest for Automatic-Positive. With SG, Social-Positive was rated highest while Automatic-Positive was lowest. Relative to the other behaviors exhibited SG rated Automatic-Negative lower but was still relatively high. With respect to NSSI, Automatic-Negative was highest and Social-Negative was lowest.
SI was found to be near constant and almost every participant endorsed SI, thus, contributing no information to the model as a predictor and failing to provide any significant information. Along similar lines, every participant that endorsed NSSI behaviors also endorsed NSSI thoughts. As a result, the NSSI variable will reflect those that exhibited the behavior overall.

Regression analyses investigated the relationship of behaviors endorsed to specific motivations. To this end, scores of the motivations reflected the average for an individual across the behaviors endorsed, and as such were bound by the original 0 to 4 scale. The predictors in this case are dummy-coded indicating whether a behavior was endorsed or not.

**Automatic- Positive**

Results regarding the prediction of Automatic-Positive motivation can be found in Table 5. Assumptions were tested for regression and the data inspected in general for its integrity. Normality for the residuals was found lacking and as such bootstrapped confidence intervals for the coefficients are presented. Outliers were examined and one problematic case was one subject who attempted suicide without endorsing suicidal ideation. Robust regression was conducted as a check and results were not noticeably different. As such, the regular OLS results are given. While predicted patterns were present, overall the model was not found to be significant \( F(4, 77) = 1.49, p = 0.22 \), and only accounted for 7% of the variance in Auto-Positive motivation before bias adjustment suggested roughly 2%. The only predictor appearing to have any weight was NSSI, but still was not statistically significant. With a robust regression, fit improved and
coefficients for NSSI, SG, and SP were slightly strengthened, but still none were statistically significant.

**Automatic- Negative**

Results regarding the prediction of Auto-Negative motivation can be found in Table 6. Assumptions were tested for regression and the data inspected in general for its integrity. Normality for the residuals was found lacking and as such bootstrapped confidence intervals for the coefficients are presented. Outliers were examined and one problematic case was one subject who attempted suicide without endorsing suicidal ideation. Robust regression was conducted as a check and results were not noticeably different. As such, the regular OLS results are given. Overall, the model was not statistically significant $F(4, 77) = 1.91, \ p = 0.12$ and the SITBs combined only accounted for roughly 9% of variance (4% bias-adjusted) in Automatic-Negative motivation.

However, the hypothesized pattern was present regarding NSSI and Suicidal Gesture (SG) behaviors. Only one behavior was statistically or clinically noteworthy in that prediction. Given that the assumption of normality was problematic (in particular, the residuals in the Automatic-Negative variable itself, were negatively skewed) and as a general check on possible influential cases, a robust regression was run. The overall fit was noticeably better (robust $R^2 = .46$) with both NSSI and SG regression coefficients becoming stronger (to .30 and -.52 respectively).
Social-Positive

Results regarding the prediction of Social-Positive motivation can be found in Table 7. Upon check of assumptions, they were largely met, though the results in the table are presented in a consistent manner as before (confidence intervals for the coefficients are the result of the percentile bootstrap). The model was statistically significant \((F(4, 77) = 5.20, p < .001)\) with 21% variance accounted for (17% bias adjusted). A robust regression again suggested a better fit \((R^2 = .31)\). SG was statistically significant though results suggested that SA and NSSI are clinically relevant predictors as well. SG contributed 63% of the \(R^2\), and SA and NSSI contributed 15 and 20% respectively. SG was statistically different from SP in terms of their relative importance.

Social-Negative

Results regarding the prediction of Social-Negative motivation can be found in Table 8. Upon check of assumptions, they were largely met, though the results here will be presented in a consistent manner as before. Overall, the model was statistically significant \((F(4, 77) = 3.22, p < .05)\) with 14% variance accounted for (10% bias adjusted). A robust regression showed a better fit \((R^2 = .33)\) though the pattern was the same with SP not only being the sole statistically significant contributor, but statistically contributing most of the variance accounted for (roughly 84% of the \(R^2\) is attributable to SP, which was statistically more than NSSI and SA at the 90% confidence level).

Suicidal Ideation Removed

While almost all the subjects reported the presence of SI rendering it inadequate as a predictor, 16 subjects endorsed only SI without the presence of any other SITBs. As
a practical problem, this meant that individuals had scores for these motivations but had not endorsed any of the behaviors retained as the model predictors. While each predictor includes both those who did and did not endorse a particular behavior, and as such these SI-only subjects fell into the ‘did not endorse behavior X’ category for all predictors, it was thought this issue should be addressed with separate analyses with those subjects removed to assess any major discrepancies or changes. In short, these analyses generalize only to those who made suicidal plans or exhibited physical self-harm.

Overall, the results were largely reminiscent of the original analyses. In regard to Automatic-Negative, the overall model was statistically significant and was seen as a better fit. Automatic-Negative remained one of the strongest variables present for SITBs compared to Automatic-Positive and both Social-Positive and Social-Negative. The coefficient for SP moved from of .24 to .44 suggesting a stronger relationship to Automatic-Negative than before. With Automatic-Positive, no significant changes were noted in the relationships. Concerning Social-Negative, the overall relationship showed stronger significance ($R^2 = .14$ to .28, $p = .004$). SP continued to move in the similar direction; the coefficient changed from .90 in the original model to 1.23. However, most noticeably, SG doubled in significance coefficient rose from .30 to .59. In regard to Social-Positive, the overall model remained significant. Minimal changes were noted to SA (coefficient moving from -.53 to -.61) and NSSI (coefficient moving from -.48 to -.53).
Comparing Independent Groups

A t-test was done to look at different subgroups that were independent of one another to see if any clinical implications would arise that were not as easily discerned in the regression models (see Table 9). A comparison was made between participants who only endorsed Cognition versus those who also exhibited Behaviors. A moderate effect can be seen concerning negative motivation in general (for both Automatic-Negative and Social-Negative), with those who expressed thoughts/plans (cognitions) scoring higher than those who exhibited overt behaviors (SA, SG, NSSI).
CHAPTER 4

DISCUSSION

The primary interest of this investigation concerned the self-injurious thoughts and behaviors (SITBs) of inpatient adolescents. Nock and Prinstein (2004) and Nock et al. (2007) have provided descriptive information regarding both automatic (and intrinsic) and social components using the SITBI. However, the presence and trends of these components have not firmly been established, suggesting the need to explore this area further.

Initial Findings

In general, when examining means for motivations for this sample, results regarding this clinical population showed both similarities and differences to previous findings reported by Nock et al. (2007; see Figure 1). Automatic-Positive motivations were rated the lowest, suggesting that reasons of affect generation or to feel something because they ‘were numb or empty,’ were less of a motivation for SITBs than other Social or Automatic-Negative reasons. Suicidal Gesturers (SG) were lower than other SITBs for this Automatic variable. However, ratings for Suicidal Planners (SP), Suicide Attempters (SA) and Non-Suicidal Self-Injury (NSSI) were similar to what was endorsed with Social-Negative. This finding suggests that affect generation may not be as strong a motivation for SITBs, and even less likely to be part of the motivation for SG. Still present in SITBs to some varying degree, affect generation or to feel something because
one was feeling numb or empty, should be considered less when looking at appropriate interventions for SITBs.

Regarding Automatic-Negative, subjects endorsed those motives more importantly than any other. In addition, the endorsement of Automatic-Negative among the present sample was higher than what had been previously reported by Nock et al. (2007). Also notable is that the Automatic-Negative scores are higher, and they appear to have less variability which may imply restriction of range. Similar to Nock et al., Automatic-Negative motivation was endorsed higher as a motivation for all SITBs, except for suicidal gesturers (SG). This finding suggests that the goal or motivation behind SITBs has, to a varying degree, some purpose to stop distressing emotions as playing a role in the behavior. When thinking about the clinical importance of this finding, it is suggested that interventions should be addressing ways to show the adolescent that negative emotions are temporary and introduce new ways to manage negative feelings until they pass. Adolescents are sometimes told by peers and family that their feelings do not matter or that they are unimportant. Interventions should work to acknowledge how difficult affect is for adolescents and understand how limited this population may be at dealing with difficult emotions when compared to adults.

Social-Positive motivations were rated second highest as reasons for SITBs suggesting that the need to communicate distress or to get attention for how they feel is an important part of these behaviors. As mentioned previously, SG was rated highest when compared to other behaviors. It is commonly seen that self-injury and even non-suicidal self-injury are cries for help. Clinicians and parents are told explicitly to pay
attention to these signs and “listen” to these indirect methods of communicating distress. However, these behaviors are often confusing to support networks and often those involved are left with little information of what is going on with the adolescent. If Social-Positive is a part of these behaviors, especially for suicidal gesturers, interventions can benefit supportive families and friends more by helping them to interpret and understand what the adolescent is trying to communicate or get attention for. Likewise, helping the adolescent communicate more directly, and thus increase the likelihood that their message will be heard and understood, should be an important focus as well. If more direct communication can be achieved, it is possible that the need for SITBs to communicate will be decreased.

Social-Negative motivations for SITBs were rated third overall when compared to other motivations. Perhaps not as important to SITBs as Social-Positive or Automatic-Negative motivations, reasons to avoid social demands were present as motivators, especially the SP group. These findings indicate that motivations for SITBs include ways to manipulate or avoid social demands. Perhaps another factor to address when intervening with SITBs is to identify specific people or situations that the adolescent desires to change or avoid. Adolescents sometimes feel powerless over their environment and thus may be more likely motivated to use SITBs to this end. If that is the case, then working with them to identify, change or manage better social demands is important. Helping the adolescent understand the level of control they do have and finding new ways to implement change could be very helpful.
It was seen that overall levels of Automatic and Social motivation for SITBs were found in higher levels for this sample than what Nock et al. (2007) found. It could be assumed that given that the sample population was psychiatric inpatients, that these variables might be elevated given the increased severity of the group when compared to non-inpatient samples. It is likely that within the inpatient population, one would encounter adolescents still in crisis and exhibiting more intense symptoms. It is something to consider when exploring the needs of inpatient adolescents and evaluating level of care appropriate for them. Regarding Social motivation, in general, results were higher for the inpatient population when compared to community samples, which may result from the inclusion of scores from ideators and planners (e.g. SI and SP) in the interviewing process which Nock et al. (2007) did not include. Weighting their means by their sample size for comparison and collapsing across different types of motivation, Automatic scores were slightly higher for this inpatient population as well. This suggested that for clinical populations, both Automatic and Social motivations are present at higher degrees.

Automatic-Positive Motivation

Descriptives for each behavior followed a similar pattern to what Nock et al. (2007) found but, the model did not fit the data well suggesting that the behaviors exhibited do not give an indication that one will score higher or lower regarding Automatic-Positive, and no change was seen after the removal of the SI only endorsers. In general this is likely due to the fact that everyone typically scored very low regardless of SITB. This result was not expected and brings into question the overall presence of Automatic-
Positive motivation in SITBs. Previous research has clearly documented the use of NSSI, such as cutting, to generate affect as shown by Nock and Kessler (2006), Nock and Prinstein (2004), Nock et al. (2006), Hilt et al. (2008), Carr (1977), Dabrowski (1937), DiLazzero (2003), Hjelmeland and Groholt (2005), Gardner and Gardner (1975), Klonsky and Olino (2008), and Nock et al. (2007). Although the pattern was present, consistent with such research, it was not statistically significant. If we interpret the pattern, then we must assume that Automatic-Positive is a motivation for NSSI as the literature suggests. If not, then we might suspend judgment given the mixed results. However, given the substantial research suggesting that Automatic-Positive is motivation, it would be prudent not to consider it as a motivation for self-injury.

It was predicted that SG would show a moderately negative relationship with Automatic-Positive. However, the results did not confirm this and were not statistically or clinically significant. It is thought that those who engage in SG behaviors do so for more social than internal or automatic motivations. Previous research from Nock et al. (2007) suggested that those adolescents and young adults who endorsed SG behaviors did so less for Automatic reasons. Similar patterns were found in this study, but again, they were not statistically or clinically significant. Again, if we interpret the pattern we might determine that Automatic-Positive reasons for gesturers would not be a clinical focus for intervention.

Exploratory hypotheses examined those adolescents who endorsed SA or SP behaviors. Previous research (Nock & Prinstein, 2005) suggested no relationship between SA and Automatic-Positive, which results here seemed to confirm. Similar results were
seen for SP. It was thought that those who attempt suicide might do so to generate positive emotions, such as a sense of relief. However, this was not found to be true. Along similar lines, it was thought that those who plan or fantasize about how they might kill themselves would do so to also generate positive emotions such as relief.

Automatic-Negative Motivations

As mentioned previously, Automatic-Negative descriptive results reveal that this type of motive is the most frequently endorsed across all types of SITBs. Nock et al. (2007) and Nock and Prinstein (2004) also found this to be the case. Affect control or affect management appeared to be an important motivation endorsed by individuals performing SITBs. Previous research (Nock & Prinstein, 2004) has validated that self-mutilators report they may feel a sense of relief after they self-injure. Self-injurers have also reported that their physical pain was distraction away from their emotional pain. Others have reported relief with using self-injury to express repressed anger that has built up over time. All of these behaviors are said to lead to some reduction in tension by those individuals.

Results from the initial analysis did not show a statistically significant fit, suggesting that the behaviors exhibited do not give an indication that one will score higher or lower regarding Automatic-Negative. While unexpected, this seems to be due to the fact that all behaviors scored highly on this motivation. However, when the SI only endorsed group is removed, the overall model was statistically significant and was seen as a better fit. If we were to speculate on this, clinicians would have to address the idea that Automatic motivations are not present. Clinical experience and previous research
would contradict this. Even with these particular results and given the literature in support of Automatic and Automatic-Negative motivations present in SITBs, it is still prudent to consider this part of those behaviors. Despite these findings, these motivations could still be present. More research would be warranted to further support this finding before removing it as part of the motivational picture for SITBs. If these findings were true, then it would imply a significant change in thinking was needed. Again it is prudent to consider these findings in relation to what has already been established.

Results regarding the idea that individuals who engaged in NSSI did so for reasons of Automatic-Negative motivation as shown by previous research by Nock and Kessler (2006), Nock and Prinstein (2004), Nock et al. (2006), Hilt et al. (2008), Carr (1977), Dabrowski (1937), DiLazzer (2003), Hjelmeland and Groholt (2005), Gardner and Gardner (1975), Klonsky and Olino (2008), and Nock et al. (2007) were not statistically significant. As suggested above, previous research has shown this relationship before and clinicians should still take these results relative to what has been already established.

It was also predicted that SG would have a strong negative relationship to Automatic-Negative motives. Results confirmed the hypothesis that those who reported engaging in SG did so less for reasons than Automatic-Negative motivation when compared to other motivations. It is believed that those who report this behavior do so for more social reasons than intrinsic management of emotions. Again, although this finding is not statistically significant, a strong trend was indicated. This trend is clinically relative and important. If affect management is not a function for those who engage in suicidal
gestures, it may be more relevant to focus on the social aspects, specifically Social-Positive functions, such as communication of distress.

It was thought that SA behaviors would have some degree of a positive relationship to Automatic-Negative (Nock et al., 2007). It was believed that the act of a suicide attempt would have some component of changing one’s feelings or to stop bad feelings. As mentioned earlier it was suggested that the act of a suicide attempt might be used to generate a more desirable psychological or emotional state as a result of committing to the attempt and believing that an end to their distress would be soon at hand. It was also thought that the act of suicide would be a means to stop bad feelings, albeit all emotions as well. Suicide has been seen as a means of negative coping in which the individual finds death as an escape or end to their suffering. However, no relationship was found suggesting that this sample of adolescents did not endorse that as a function of the behavior. Similar to the findings for SG, this is likely due to the overall high mean on SA for this motivation, leaving little room for predictability.

Social-Positive Variable

Overall, scores were higher for Social-Positive than Social-Negative, but still notably lower than Automatic-Negative. However, results were not consistent across behaviors. SG was higher as expected; of note, NSSI and SA scored relatively low. Regarding the model, all three of the behavior indicators (NSSI, SA, SG) were clinically significant with NSSI and SA exhibiting strong negative coefficients and SG possessing the strongest positive coefficient seen in any of the models. SP scored second highest relative to the other behaviors (but more than a full point less than SG), but it was not a
worthwhile predictor of this function. In regard to the no SI-only analysis, the overall model continued the trend and was even a slightly better fit.

In regard to Social-Positive motivation, a statistically significant fit was found. Results indicated that reasons to communicate distress, gaining attention or access to materials from others were reasons for SITBs. The concept of attention seeking for NSSI has been discussed in the literature and speculated on in numerous theoretical articles. However, support for this function for NSSI and other SITBs has received little empirical attention.

It was predicted that SG would have a strong positive relationship to Social-Positive as suggested by Nock et al. (2007). Results indicated a significant relationship suggesting that SG was done for the purpose of communicating and gaining attention. Although there has been a larger amount of research in the area of SG than some of the other SITBs, strong conclusions and direction are still lacking. Nock and Kessler (2006) examined groups of SA versus those who reported SG. They discuss that a difference between the two groups is the intent to die. In their article they described suicidal gestures as a behavior, not only lacking in intent to die and to give the appearance of a suicide, but for the purpose of communicating with others. This is consistent with this finding stating that communication is a direct function of SG.

The strong results here are not only statistically important, but clinically important as well. Understanding the function of suicidal gesturing is important to developing the proper interventions for the behavior. The act of suicidal gesturing is
often confusing to families, friends and professionals involved. As mentioned previously, the reactions of others to the gesturer can increase the severity and frequency of the behavior under certain circumstances. If we understand that suicidal gesturing has a strong component of communication or a cry for assistance, we can be better prepared to respond effectively. As mentioned before, SG was also related, albeit not significantly, to functions of Social-Negative. Both of these results suggested the importance of social functions to SG and should be considered when developing effective interventions and treatments.

It was predicted that NSSI would positively correlate to Social-Positive motivation as implicated by Hilt et al. (2008) and Klonsky and Olino (2008). However, Nock et al. (2007) found lower scores related to variables of both Social-Positive and Social Negative. Results of the present study showed, although not statistically significant, a strong negative relationship to Social-Positive and support the idea that adolescents who endorsed NSSI did not do so for these reasons. Additionally, no relationship for this group was found with Social-Negative indicating little support to social functions for NSSI. This particular behavior appeared more related to Automatic functions overall, specifically Automatic-Negative. These results have some clinical implications as well. Interventions for NSSI must take into consideration the Automatic components implicated. Often, individuals who self-mutilate are mistakenly called out as attention seekers perhaps due to a lack of understanding about the behavior. Classic treatments for NSSI, such as Linehan’s Dialectical Behavior Therapy (DBT), focus interventions on affect
management and are considered a core component to working with borderline personality NSSI groups. Not to say that this approach does not include interpersonal skills building as well, but many specific techniques address managing difficult emotions. Given Klonsky and Olino’s (2008) results, again it is possible that if different classes of NSSI exist, then little is known about how the NSSI variable is represented in this sample or how different the psychiatric inpatient population would be from their sample of college students. Hilt et al. (2008), found that interpersonal distress (peer victimization) mediated the relationship between NSSI groups for Social functions. Likewise, Nock and Prinstein (2005), found that societal perfectionism was associated with Social, not Automatic functions of NSSI. Overall, it is difficult to comment on this particular group given the subgroups and subtypes of NSSI possibly present.

Exploratory analysis examined those adolescents who endorsed SA and SP behaviors in conjunction with Social-Positive. It was expected that SA would most likely positively correlate while SP would negatively correlate. Similar to NSSI, SA was significantly negatively correlated to Social-Positive suggesting that suicide attempters do not endorse attempts to communicate distress or to get attention as functions of that behavior. As a matter of fact, SA was not strongly related positively to any of the variables of either Social or Automatic. Often a failed suicide attempt is labeled as a cry for help, more of a Social function. Results from this sample would suggest that is more likely with SG behaviors than SA. Mentioned previously, the functions of SA may relate
more to Automatic-Positive than any other function, but mildly so. SP showed little or no relationship to Social-Positive.

Social-Negative Variable

Scores are fairly consistent regardless of behavior and relatively moderate on the scale. Given that this was seen with Automatic-Negative as well, negative motivation should be considered an important factor to SITBs when considering interventions. However, in this research, we also asked about possible social motivation with regard to cognition. Interestingly, there seems to be a social negative motivation component with regard to suicidal planning. In fact, it was the only statistically significant indicator of the SITBs.

Descriptive results were not quite as consistent with Nock et al.’s (2007) previous results, but these scores were low relative to the other motivations in this sample except for Automatic-Positive. In particular, results indicated that escaping from interpersonal social demands, avoiding punishment from others, or avoiding something unpleasant were not strong reasons for SITBs but may be present for some individuals.

A statistically significant fit was shown with Social-Negative as the dependant variable. It was predicted that SG would show a strong positive relationship to Social-Negative. Results indicated that the assumption was correct but not as strong as expected. Although not statistically significant, it does appear that the predictor tends towards clinical significance in terms of its coefficient. The no SI-only analysis seems to confirm this sentiment.
Generally speaking, gesturers may use that behavior as a way to avoid social demands and to manipulate their environment as a means of coping with their distress. Suicidal gestures may be attempts by those individuals to manipulate the social environment to avoid negative situations or people. The act of suicidal gesturing, or to make others believe they truly wish to kill themselves, can be used as manipulation to achieve the goal of avoidance. If this is the case, then efforts to eliminate or increase problem solving for those situations could decrease the presence of suicidal gesturing. Clinical experience has shown that when efforts of support are not made by the social network of the gesturer, or worse, when the suicidal gesture is written off as just manipulation, future suicidal gestures may increase in intensity and frequency. For example, an adolescent may use suicidal gesture if he believes that his girlfriend is going to leave him to avoid that event or to make it less likely to happen. Typically, suicidal gesturing has been viewed as a cry for help or some type of communication (Social-Positive). It may be important to assess what social demands are present as something that is almost as important. The initial interview question for the SITBI might also have had an impact here as well. The subject is asked if they have ever done something to lead others to believe you wanted to kill yourself when you really had no intention of doing so. The nature of the question and the terms “to lead others” implies a social reason for the behavior to begin with. This may be leading and thus loading the response of the item more towards social reasons.

It was predicted that SA would positively correlate to Social-Negative as indicated by Nock et al. (2007). However, no relationship was shown between the
two suggesting that avoiding others or doing something they did not want to do were not reasons for SA. Perhaps, those who attempt suicide and have intent to die are looking for more affect management, as suggested previously, than social functions to the behavior. SA showed the strongest relationship to Automatic-Positive in this sample, although still mild. Nonetheless, Automatic-Positive reasons appeared to be more of a function for this behavior. What remained clinically important is that suicide attempters may not perform those behaviors for strong Social reasons. When thinking about interventions for this behavior, it will most likely be more important to consider responses that help the adolescent focus on better ways to manage their affect in their crisis. Although problem solving can be a major component to crisis intervention, results indicated that directing the adolescent’s attention towards managing how they feel, especially finding ways to stop bad feelings other than suicide would be critical.

It was predicted that NSSI would show a moderately positive correlation with Social-Negative motivations as stated by Nock and Prinstein (2004, 2005), Hilt et al. (2008), and Klonsky and Olino (2008), even though Nock et al. (2007) suggested a small relationship to the contrary. Results showed that no relationship exists within our sample. These results do not help further clarify the relationship between Social-Negative and NSSI as hoped. The issue as to whether Social components are present with NSSI remains debatable. Klonsky and Olino (2008) suggested that certain classes of NSSI may be present that endorse social functions and those that do not. They found that one class endorsed both social and automatic functions characterized by high levels of anxiety.
while another class only endorsed automatic functions characterized by higher levels of suicidality. The SITBI does not differentiate any specific classes of NSSI. Thus, if present, all classes are categorized under NSSI. Delineating specific classes of NSSI and the presence of social and automatic components would be needed to fully understand any relationship.

Exploratory analysis examined the relationship between SP and Social-Negative. It was thought that the relationship between adolescents who endorsed SP would be negatively correlated with Social-Negative. However, results suggest a strong positive relationship. Perhaps the act of planning one’s suicide or fantasizing about how one might kill themselves is connected to the purpose of avoiding negative social demands. This would be interesting if it could be shown that those specific plans relate to situations and people that the individual wishes to avoid. Likewise, if it could be shown that reductions in those specific social demands decreased the likelihood of suicidal planning it would be of significant clinical importance. It is generally accepted that the more detailed or higher level of suicidal planning is associated with increased suicidal intent. It might mean that with more detail and attention given to a suicidal plan, clues to specific Social demands that wish to be avoided might be present. For example, the question of when, such as date intended to kill oneself, could reflect specific upcoming situations that the person wishes to avoid.
Comparisons with Independent Groups

A comparison was made between subjects who only endorsed cognitions versus those who also exhibited behaviors. Interestingly, results showed a moderate effect with negative motivations in general; those who expressed thoughts/plans (cognitions) scored higher than those who exhibited overt behaviors (SA, SG, NSSI). This may suggest that those who think about self injury do so more to manage affect than those who endorse behaviors. Interventions with those who think about it should focus more on alternative means to better manage their distress. For example, it may be preferred to address better coping mechanisms and introduce new ways of affect management to ideators and planners.

A Social motivation in general has not been examined in the literature for ideators and planners. A moderate difference was found between the two groups with Social-Negative. This result showed that ideators endorsed motivations to avoid social demands more so than those who exhibited behaviors. This suggests that motivations for planners and ideators reflect the need to manipulate or change social demands, which is a factor to consider again with interventions. It would be helpful to address more closely what the adolescent was specifically trying to avoid and help problem solve better means to cope with the situation. Support from family and peers should be maximized to help the adolescent not feel isolated and alone to face these situations. In addition, when addressing those who have not yet engaged in self-harm, focus should be directed at identifying those situations and feelings the adolescent wishes to remove.
Limitations to the Research

Nock et al. (2007) discuss several limitations to the SITBI. They acknowledge the relatively small sample size \( (N = 94) \) that make the data, scores, reliability and validity only preliminary. In addition, although the SITBI is worded for both adolescents and adults, only adolescents and their parents were administered the interview. The results cannot be generalized at this early stage of the SITBI’s development. Additionally, the SITBI does not assess psychological states likely to be associated with SITBs (e.g., depression or bipolar disorder). Thus, it is unknown whether variables like that impact the SITBI. Although diagnostic data was collected for the purpose of this research, those particular variables were not explored just yet. Finally, it was acknowledged that the SITBI is best used as a broad screening device perhaps in conjunction with evidenced-based assessments.

Several other concerns not addressed by the authors should also be noted. The scales used in the SITBI score the individual’s response from 0 to 4. Results from our sample at times found the variability limited, which is quite possibly due to the small scale range. For example, Automatic-Negative was one of the strongest relationships with SITBs but showed low amounts of variance. Additional robust tests were needed to elicit more power into the analysis. However, it is still unknown if a larger scale could have brought more reasonable variance to the results. Perhaps future versions of the SITBI could extend the scale more to capture variability that might have been missed to better distinguish between individuals.
Another limitation is the lack of support of the SITBI from additional research. This was, of course, due to the newness of the measure. However, it was part of the goal of this research to add to the growing body of research on the SITBI. Continued efforts are needed to further validate this measure as a reliable and valid assessment. The SITBI is one of the first measures to focus on SITBs. This lends hope that it will find usefulness in both clinical and research applications.

Another issue to consider is that the SITBI is a self-report measure and has the same limitations common to all self-report measures. Again, there is more speculation than research regarding the self-report of SITBs as well. It was noted by Nock et al. (2007) that the test-retest reliability was strong overall, SG showed poor test-retest reliability. Further research on how SITBs are reported would be helpful to understand how adolescents talk about and describe these behaviors.

For this research, the overall sample size was an issue. A higher number of participants could have shown more clearly trends and distinctions between groups that were otherwise fuzzy or in need of more robust analysis. Although the low sample size was accounted for, a more clear perception of certain results could have been seen with an increased number of participants. Perhaps even the issue with variability seen with Automatic-Negative could have been better resolved with a larger sample.

Directions of Future Research

In sum, SITBs remains a challenging area for research. However, the study of SITBs is an important avenue into the development of more effective interventions.
Given the limited scope of this research, several suggestions must be made regarding future research in the area.

Research examining interventions for these behaviors that address both the intrinsic and social functions are needed. With the continued development of theoretical models regarding intrinsic and social functions, effective interventions will be needed within clinical and community settings. Research such as this may help identify if treatments should focus on Automatic, Social or both functions.

Further research is encouraged regarding adolescents in different settings, such as long-term residential hospitals, to further evaluate differences in populations. Findings from this sample showed a stronger presence overall for Automatic and Social functions to SITBs. Similar results could be identified in other clinical and non-clinical settings to better understand SITBs in different populations of adolescents.

Additionally, longitudinal research is needed to further evaluate trends in these functions over time. This research and similar studies have only examined the motivations for these behaviors at one point in time and historical accounts for reasons in the past. More research is needed to examine whether these motivations are stable over time and across populations.

As mentioned previously, we do not know how these functions relate to specific psychological states, such as depression or bipolar disorder. Nock et al. (2007) suggested that additional modules, such as one for an eating disorder population, be developed to further progress our understanding.
Further research on how SITBs are reported would be helpful to understand how adolescents talk about and describe these behaviors as well. Self-report measures like the SITBI are only best utilized and understood when we can know more about how they are reported by adolescents. Given the problems with SG suggested in the SITBI related to test-retest reliability, it may suggest that how SITBs are related is important to explore.
Table 1

*Means and Standard Deviations for Motivations*

<table>
<thead>
<tr>
<th>Motivation</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Negative</td>
<td>3.02 (0.96)</td>
</tr>
<tr>
<td>Automatic Positive</td>
<td>1.57 (1.36)</td>
</tr>
<tr>
<td>Social Negative</td>
<td>1.90 (1.30)</td>
</tr>
<tr>
<td>Social Positive</td>
<td>2.20 (1.37)</td>
</tr>
<tr>
<td>Auto (Collapsed)</td>
<td>2.29 (0.92)</td>
</tr>
<tr>
<td>Social (Collapsed)</td>
<td>2.05 (1.03)</td>
</tr>
<tr>
<td>Positive (Collapsed)</td>
<td>1.89 (0.94)</td>
</tr>
<tr>
<td>Negative (Collapsed)</td>
<td>2.46 (0.86)</td>
</tr>
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</table>
Table 2

*Means and Standard Deviations for Motivations by Behaviors Exhibited*

<table>
<thead>
<tr>
<th>Behavior (n)</th>
<th>Auto-Neg</th>
<th>Auto-Pos</th>
<th>Social-Neg</th>
<th>Social-Pos</th>
<th>Total*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (SD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (78)</td>
<td>3.00 (0.97)</td>
<td>1.63 (1.36)</td>
<td>2.00 (1.26)</td>
<td>2.25 (1.35)</td>
<td>2.22 (0.67)</td>
</tr>
<tr>
<td>No (4)</td>
<td>3.25 (0.96)</td>
<td>0.50 (1.00)</td>
<td>0.00 (0.00)</td>
<td>1.25 (1.50)</td>
<td>1.25 (0.35)</td>
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<tr>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes (34)</td>
<td>3.11 (.75)</td>
<td>1.77 (1.31)</td>
<td>2.29 (1.20)</td>
<td>2.13 (1.41)</td>
<td>2.32 (0.62)</td>
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<tr>
<td>No (48)</td>
<td>2.95 (1.09)</td>
<td>1.44 (1.39)</td>
<td>1.62 (1.31)</td>
<td>2.25 (1.35)</td>
<td>2.07 (0.72)</td>
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<tr>
<td>SG</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes (25)</td>
<td>2.55 (0.90)</td>
<td>1.36 (1.23)</td>
<td>1.96 (1.11)</td>
<td>2.83 (0.93)</td>
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<td>No (57)</td>
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<td>1.67 (1.41)</td>
<td>1.88 (1.38)</td>
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<td>SA</td>
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<tr>
<td>Yes (32)</td>
<td>2.92 (0.85)</td>
<td>1.79 (1.42)</td>
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<td>1.43 (1.31)</td>
<td>1.84 (1.36)</td>
<td>2.33 (1.39)</td>
<td>2.17 (0.77)</td>
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<td>NSSI</td>
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<td></td>
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<tr>
<td>Yes (37)</td>
<td>3.15 (0.84)</td>
<td>1.87 (1.23)</td>
<td>1.78 (1.27)</td>
<td>1.87 (1.40)</td>
<td>2.17 (0.65)</td>
</tr>
<tr>
<td>No (45)</td>
<td>2.90 (1.05)</td>
<td>1.33 (1.42)</td>
<td>2.00 (1.33)</td>
<td>2.48 (1.29)</td>
<td>2.18 (0.72)</td>
</tr>
</tbody>
</table>

*SD based on individual scores
Table 3

*Correlations among the Dependent Variables (N = 82)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Auto-Neg</th>
<th>Auto-Pos</th>
<th>Soc-Neg</th>
<th>Soc-Pos</th>
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<tbody>
<tr>
<td>Auto-Neg</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto-Pos</td>
<td>0.22*</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soc-Neg</td>
<td>0.11</td>
<td>0.07</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Soc-Pos</td>
<td>-0.12</td>
<td>-0.05</td>
<td>0.19</td>
<td>-</td>
</tr>
</tbody>
</table>

* p ≤ .05 for two-tailed test.

Table 4

*Point-biserial Correlations of the Predictors and Motivations Outcomes*

<table>
<thead>
<tr>
<th></th>
<th>Auto-Neg</th>
<th>Auto-Pos</th>
<th>Soc-Neg</th>
<th>Soc-Pos</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>0.08</td>
<td>0.12</td>
<td>0.26*</td>
<td>-0.05</td>
</tr>
<tr>
<td>SG</td>
<td>-0.33*</td>
<td>-0.11</td>
<td>0.03</td>
<td>0.30*</td>
</tr>
<tr>
<td>SA</td>
<td>-0.08</td>
<td>0.13</td>
<td>0.06</td>
<td>0.11</td>
</tr>
<tr>
<td>NSSI</td>
<td>0.12</td>
<td>0.20</td>
<td>-0.08</td>
<td>0.22*</td>
</tr>
</tbody>
</table>

* p ≤ .05 for two-tailed test.
Table 5

Regression Results with Automatic-Positive as the Dependent Variable

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>Mean</th>
<th>Mean Square</th>
<th>$R^2$</th>
<th>(90% CI)</th>
<th>bias adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>25.48</td>
<td>4</td>
<td>6.37</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>330.35</td>
<td>77</td>
<td>4.29</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>355.83</td>
<td>81</td>
<td>0.07</td>
<td>(0.00, 0.14)</td>
<td>0.02</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$b$(se)</th>
<th>95% CI*</th>
<th>$t$</th>
<th>$p$</th>
<th>Importance**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.29 (0.31)</td>
<td>(0.73, 1.89)</td>
<td>4.17</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>1. SP</td>
<td>0.16 (0.32)</td>
<td>(-0.61, 0.83)</td>
<td>0.49</td>
<td>.63</td>
<td>0.13</td>
</tr>
<tr>
<td>2. SG</td>
<td>-0.28 (0.30)</td>
<td>(-0.98, 0.32)</td>
<td>-0.93</td>
<td>.35</td>
<td>0.17</td>
</tr>
<tr>
<td>3. SA</td>
<td>0.28 (0.32)</td>
<td>(-0.44, 0.98)</td>
<td>0.89</td>
<td>.38</td>
<td>0.22</td>
</tr>
<tr>
<td>4. NSSI</td>
<td>0.46 (0.30)</td>
<td>(-0.15, 1.12)</td>
<td>1.55</td>
<td>.13</td>
<td>0.49</td>
</tr>
</tbody>
</table>

*Due to lack of normality of residuals for two of the models, percentile bootstrapped confidence intervals (see e.g. Davison & Hinkley, 1997) are provided for regression coefficients for all models to address the issue for those which required it and for consistency across the models.

**Relative importance metrics are based on the average semi-partial squared values, which decompose R-squared into the relative contributions of the predictors. They are normed to represent the percentage of R-squared each variable accounts for, e.g. they add up to 100%. See Lindeman, Merenda, and Gold (1980), Kruskal (1987), Grömping (2006) for further details, the latter in particular for the implementation used here.
Table 6

**Regression Results with Automatic-Negative as the Dependent Variable**

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>$R^2$</th>
<th>(90% CI)</th>
<th>bias adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>14.85</td>
<td>4</td>
<td>3.71</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>149.66</td>
<td>77</td>
<td>1.94</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>164.51</td>
<td>81</td>
<td>0.09</td>
<td>(0.00, 0.17)</td>
<td>0.04</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$b$ (se)</th>
<th>95% CI*</th>
<th>$t$</th>
<th>$p$</th>
<th>Importance**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.94 (0.21)</td>
<td>(2.56, 3.30)</td>
<td>14.06</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>1. SP</td>
<td>0.24 (0.21)</td>
<td>(-0.20, 0.64)</td>
<td>1.10</td>
<td>.28</td>
<td>0.20</td>
</tr>
<tr>
<td>2. SG</td>
<td>-0.41 (0.20)</td>
<td>(-0.84, 0.00)</td>
<td>-2.05</td>
<td>.04</td>
<td>0.62</td>
</tr>
<tr>
<td>3. SA</td>
<td>-0.09 (0.21)</td>
<td>(-0.57, 0.30)</td>
<td>-0.43</td>
<td>.67</td>
<td>0.02</td>
</tr>
<tr>
<td>4. NSSI</td>
<td>0.21 (0.20)</td>
<td>(-0.19, 0.61)</td>
<td>1.00</td>
<td>.32</td>
<td>0.16</td>
</tr>
</tbody>
</table>

*Due to lack of normality of residuals for two of the models, percentile bootstrapped confidence intervals (see Davison & Hinkley, 1997) are provided for regression coefficients for all models to address the issue for those which required it and for consistency across the models.

**Relative importance metrics are based on the average semi-partial squared values, which decompose $R^2$ into the relative contributions of the predictors. They are normed to represent the percentage of $R^2$ each variable accounts for, e.g. they add up to 100%. See Lindeman et al. (1980), Kruskal (1987), Grömping (2006) for further details, the latter in particular for the implementation used here.
### Table 7

**Regression Results with Social-Positive as the Dependent Variable**

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>$R^2$</th>
<th>(90% CI)</th>
<th>bias adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Regression</strong></td>
<td>78.47</td>
<td>4</td>
<td>19.62</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Residual</strong></td>
<td>290.48</td>
<td>77</td>
<td>3.77</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>368.95</td>
<td>81</td>
<td>0.21</td>
<td>0.06, 0.32</td>
<td>0.17</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$b$(se)</th>
<th>95% CI*</th>
<th>$t$</th>
<th>$p$</th>
<th>Importance**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>2.30 (0.29)</td>
<td>1.79, 2.83</td>
<td>7.91</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>1. SP</td>
<td>0.09 (0.30)</td>
<td>-0.56, 0.77</td>
<td>0.30</td>
<td>.77</td>
<td>0.02</td>
</tr>
<tr>
<td>2. SG</td>
<td>1.01 (0.28)</td>
<td>0.47, 1.53</td>
<td>3.62</td>
<td>&lt;.001</td>
<td>0.63</td>
</tr>
<tr>
<td>3. SA</td>
<td>-0.53 (0.30)</td>
<td>-1.18, 0.18</td>
<td>-1.76</td>
<td>.08</td>
<td>0.15</td>
</tr>
<tr>
<td>4. NSSI</td>
<td>-0.48 (0.28)</td>
<td>-1.10, 0.04</td>
<td>-1.73</td>
<td>.09</td>
<td>0.20</td>
</tr>
</tbody>
</table>

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Table 8

**Regression Results with Social-Negative as the Dependent Variable**

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>$R^2$</th>
<th>(90% CI)</th>
<th>bias adjusted $R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>44.01</td>
<td>4</td>
<td>11.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Residual</td>
<td>263.49</td>
<td>77</td>
<td>3.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>307.50</td>
<td>81</td>
<td>0.14</td>
<td>(0.02, 0.24)</td>
<td>0.10</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictors</th>
<th>$b$ (se)</th>
<th>95% CI*</th>
<th>$t$</th>
<th>$p$</th>
<th>Importance**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1.38 (0.28)</td>
<td>0.90, 1.92</td>
<td>4.97</td>
<td>&lt; .001</td>
<td></td>
</tr>
<tr>
<td>1. SP</td>
<td>0.91 (0.28)</td>
<td>0.38, 1.45</td>
<td>3.19</td>
<td>&lt; .01</td>
<td>.84</td>
</tr>
<tr>
<td>2. SG</td>
<td>0.30 (0.27)</td>
<td>-0.29, 0.78</td>
<td>1.12</td>
<td>.26</td>
<td>.07</td>
</tr>
<tr>
<td>3. SA</td>
<td>0.03 (0.28)</td>
<td>-0.47, 0.55</td>
<td>0.11</td>
<td>.91</td>
<td>.08</td>
</tr>
<tr>
<td>4. NSSI</td>
<td>-0.05 (0.27)</td>
<td>-0.58, 0.47</td>
<td>-0.17</td>
<td>.86</td>
<td>&lt; .01</td>
</tr>
</tbody>
</table>

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Table 9

*T-Tests Comparing Those with Cognitions Only vs. Those Who Performed Overt Behavior*

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Cognition (n=23)</th>
<th>Behavior (n=59)</th>
<th>t (80)</th>
<th>p</th>
<th>Cohen’s d (CI 90%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean (sd)</td>
<td>Mean (sd)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auto-Neg</td>
<td>3.30 (1.03)</td>
<td>2.91 (.92)</td>
<td>1.70</td>
<td>0.09</td>
<td>0.39 (-0.02, 0.80)</td>
</tr>
<tr>
<td>Auto-Pos</td>
<td>1.41 (1.44)</td>
<td>1.64 (1.33)</td>
<td>-0.67</td>
<td>0.51</td>
<td>-0.16 (-0.57, 0.24)</td>
</tr>
<tr>
<td>Soc-Neg</td>
<td>2.28 (1.46)</td>
<td>1.75 (1.21)</td>
<td>1.68</td>
<td>0.10</td>
<td>0.41 (0.00, 0.82)</td>
</tr>
<tr>
<td>Social-Pos</td>
<td>2.28 (1.40)</td>
<td>2.17 (1.37)</td>
<td>0.32</td>
<td>0.74</td>
<td>0.08 (-0.49, 0.32)</td>
</tr>
</tbody>
</table>
Figure 1. Means and standard errors for the motivation variables for the entire data set (N = 82). Dots represent means for those who exhibited the behaviors noted. Those who exhibit one behavior may or may not display another.
References


