A Comparison of the Functions of Eating Disorder Behaviors to Non-Suicidal, Self-Injury

Naomi L. Peyerl

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A COMPARISON OF THE FUNCTIONS OF EATING DISORDER BEHAVIORS TO NON-SUICIDAL SELF-INJURY

By

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A Dissertation
Submitted to the Graduate Faculty
of the
University of North Dakota
In partial fulfillment of the requirements

For the degree of
Doctor of Philosophy

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August
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ABSTRACT

Non-suicidal self-injury and eating disorder behaviors have begun to be linked frequently in recent research. Few studies have examined the functions of either non-suicidal self-injury or eating disorder behaviors and no known studies have examined the function of both behaviors simultaneously. The current study explored the functions of non-suicidal self-injury and compared it to the functions of eating disorder behaviors. It was hypothesized that a factor structure describing the functions of non-suicidal self-injury would also adequately describe the functions of eating disorder behavior. The current study also compared comorbid psychopathology and perfectionism rates among individuals who engaged in non-suicidal self-injury, eating disorder behaviors, and those who engaged in both non-suicidal self-injury and eating disorder behaviors. The study population included 1219 individuals who completed a series of questionnaires on an internet survey pertaining to demographics, functions of the behaviors, comorbid psychopathology, and perfectionism. Results demonstrated that an 11 factor structure adequately described the functions of non-suicidal self-injury and was similar to the 13 scales offered by the Inventory of Statements about Self-Injury. Examining superordinate factors using the original 13 scales demonstrated that a four-factor structure, similar to behavior models represented in previous literature, could describe non-suicidal self-injury. The function of eating disorder behaviors was best described by an eight factor structure, though this was thematically similar to the functions of non-suicidal self-injury. Rates of psychopathology were generally higher among individuals who engaged in both
non-suicidal self-injury and eating disorder behaviors than among individuals who engaged in just one behavior. Perfectionism rates were also highest among participants who engaged in both behaviors. Implications of results and suggestions for further research are described.
CHAPTER I

INTRODUCTION

NSSI and ED Background Information

Non-suicidal self injury (NSSI) and eating disorders (ED) superficially appear very different; however, recent research has demonstrated that they are highly correlated and have similar risk factors (Wildman, Lilenfeld, & Marcus, 2003; Sansone & Levitt, 2002; Claes, Vandereycken, & Vertommen, 2005; Solano, Fernandez-Aranda, Aitken, Lopez, & Vallejo, 2005). Individuals who engage in NSSI and those who are diagnosed with ED are causing bodily harm, which can be dangerous and is cause for concern for clinicians. Diagnoses of ED and engaging in NSSI are both growing problems (Gratz & Roemer, 2007; Hoeken, Seidell, & Hoek, 2005) that also place individuals at higher risk for suicide (Muehlenkamp & Gutierrez, 2007; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006; Sansone et al., 2002; Pompili, Girardi, Tatarella, Ruberto, & Tatarella, 2005).

Though the common risk factors and psychological comorbidity between ED and NSSI have recently received the attention of researchers (Wildman et al., 2003; Sansone et al., 2002), little or no research has examined whether the functions of the behaviors in ED are similar to the functions of NSSI. In fact, the functions of NSSI and ED, separately, have just begun to be researched (Klonsky, 2007; Nock & Prinstein, 2004). Given some of the similarities between ED and NSSI (reviewed below), it is possible
they may be influenced by similar psychosocial functions. The purpose of this study will be to investigate the motivation, or functions, underlying both NSSI and ED to determine the extent to which they are similar or different. In order to gain a better understanding of both ED and NSSI, it is important to first examine the prevalence of each, common risk factors, and common psychological constructs. A full review of the functions of ED and the functions of NSSI, separately, will also be necessary.

**Non-suicidal Self injury: Definition and Prevalence**

NSSI is defined as “the intentional destruction of body tissue without suicidal intent and for purposes not socially sanctioned” (Klonsky & Muehlenkamp, 2007, pp 1045). The typical age of onset of NSSI is typically between 12 to 14 years old (Nock & Prinstein, 2004; Lloyd-Richardson & Prinstein, 2006); however, more recent studies have also documented a second modal age of onset between 17 and 19 years (Whitlock, Powers, & Eckenrode, 2006). The most common methods of NSSI include skin-cutting, scratching, and burning. Other reported methods include banging, needle poking, erasing the skin, interfering with wound healing, punching, kicking, and hitting (Briere & Gil, 1998; Herpertz, 1995). Tattoos or piercings are not considered NSSI because they are socially sanctioned activities with different intentional outcomes (Klonsky, 2007; Suyemoto, 1998; Walsh, 2006). Behaviors such as drug and alcohol use, bingeing, purging, and self-starvation are also not considered NSSI because the intention is not to cause bodily harm, though bodily harm often is a resulting side-effect (Walsh, 2006). The differentiation between NSSI and other behaviors that cause bodily harm is in the intention of, and potentially, the function served by the behavior. If, for instance, piercing the body became habitual and was done to cope with distress or purposefully cause harm
to the body it may fall into the category of NSSI. Thus, occasionally the boundaries between NSSI and other behaviors causing harm may be unclear.

According to a review conducted by Klonsky and Muehlenkamp (2007) approximately 4% of the adult population and 14-15% of adolescents report a history of at least one NSSI behavior. Whitlock reported a prevalence rate of 17% among undergraduate college students (Whitlock, 2006). Higher rates have been found among a recent survey of 9th and 10th graders, indicating that 46% had engaged in at least one NSSI act and 28% of the participants engaged in moderate/severe NSSI in the past year (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007). The rate of NSSI among adolescents in psychiatric inpatient settings has been noted to range from 40-60% (Nock & Prinstein, 2004; Darche, 1990). Though it was originally believed that females were more likely to engage in NSSI, some research has shown no differences between the prevalence of NSSI of males and females (Lloyd-Richardson et al., 2007, Briere & Gil, 1997).

**Eating Disorders: Types and Prevalence**

Anorexia nervosa (AN), bulimia nervosa (BN), and eating disorder not otherwise specified are all included in the category of eating disorders and will be considered in this study. According to the DSM IV (APA, 2000), AN is diagnosed when 1) there is a refusal to maintain 85% of normal body weight or gain weight during a growth period, 2) there is an irrational intense fear of gaining weight or being fat, 3) a disturbance in body image or denial of the dangerousness of current weight, and 4) amenorrhea. However, the fourth criteria is clearly only useful when diagnosing females. AN is diagnosed as either restricting type or binge-eating/purging type (APA, 2000). BN is diagnosed when there
are 1) recurrent episodes of binge eating in which the person eats a large portion of food in a short time period and feels a loss of control over eating, 2) recurrent compensatory behavior to prevent weight gain, 3) the sense of self is highly influenced by the body shape and weight, and 4) episodes do not occur during periods of AN (APA, 2000). A diagnosis of eating disorder not otherwise specified is used for disorders of eating that do not meet full criteria for anorexia or BN but cause distress and impairment (APA, 2000). Eating disorder not otherwise specified is also used to diagnosis people with binge eating disorder, in which no compensatory mechanisms follow binges.

Eating disorders such as AN and BN are present in five to ten million females and one million males in the United States (NIMH, 2002). Eating disorder NOS shows a prevalence rate of 5.5% nationwide and affects about 16 million Americans (Hudson, Hiripi, Pope, & Kessler, 2007). Sub-clinical levels of ED have been found to affect up to 61% of women at some time in their lives (Mintz & Betz, 1988). The mortality rate for individuals with ED stands at about 10% (Crow & Nyman, 2004). AN has been reported to have the highest mortality rate of any psychiatric disorder, with death resulting from medical consequences of the disorder as well as suicide (Farber, Jackson, Tabin, & Bachar, 2007). A diagnosis of an eating disorder is a serious and potentially life-threatening disorder, which merits continued research to gain understanding of its underlying motivational mechanisms and reinforcing properties to further guide current treatments.

Prevalence: Overlap between NSSI and Ed

A review examining the prevalence of NSSI among people with ED has shown that NSSI occurs among 25% of inpatient and outpatient bulimics, and 23% of outpatient...
anorexics (Sansone & Levitt, 2002). Svirko and Hawton (2007) conducted a similar review and found a larger range of NSSI among eating disorder patients, ranging from 25.4% to 55.2%. Favazza (1987) examined NSSI rates according to ED type and found that 35% of anorexics, 25% of bulimics, and 40% of bulimics who use laxatives engaged in NSSI. Similarly, when examining ED rates among patients with a history of NSSI, research has found rates between 54% and 61% (Sansone et al., 2002; Conterio & Lader, 1998; Favazza, 1987). Thus, it appears more patients with NSSI tend to have a history of, or current, ED diagnosis than ED patients who also report NSSI. Based on the extent of co-occurrence between ED and NSSI, an association between the two clearly exists. Recent research has started to examine why these two self-destructive behaviors co-occur to such an extent (Svirko et al., 2007; Claes et al., 2005; Solano et al., 2005; Claes et al., 2005b; Sansone et al, 2002; and Anderson et al., 2002).

**Shared Risk Factors and Characteristics: NSSI and ED**

**Suicide**

NSSI, by definition, is self-injury without suicidal intent. Thus, suicide attempts need to be clearly distinguished from NSSI. Walsh (2007) provides a clear distinction between suicidal behaviors and self-injury making note that the most common methods used for suicide are not the same as those used in NSSI. For instance, firearms, suffocation, poison, and falls represent 94% of the causes of death by suicide among young people (Center for Disease Control, 2004). Cutting does represent about 1.4% of the methods used for death by suicide, however, cutting in suicide attempts generally occur on the neck by cutting the jugular vein or carotid artery (Walsh, 2007). Whereas,
cutting for NSSI generally occurs on the arms, legs or abdomens when used as a method of NSSI.

In addition to the qualitative distinctions offered by Walsh (2006), there is emerging research providing empirical distinctions between suicide and NSSI. Muehlenkamp and Gutierrez (2004) found significant differences between adolescents who attempted suicide and those who engaged in NSSI on attitudes towards life. Those who engaged in NSSI were less repulsed by life than those who had attempted suicide. The authors suggest that adolescents who engage in NSSI have less negative life experiences and more positive, life preserving, attitudes toward life than adolescents who attempt suicide (Muehlenkamp et al., 2004). Significant differences were also found between adolescents with NSSI who did and did not attempt suicide on reasons for living, depression, and suicidal ideation (Muehlenkamp & Gutierrez, 2007). Whitlock and Knox (2007) found that in a sample of young adults, individuals who attempted suicide but did not report NSSI differed from those who reported NSSI but had no history of suicide attempts in that they reported less attraction to life and were more likely to be African American or Asian American than Caucasian. Other research suggests that demographic, diagnostic, and abuse history variables can provide further distinction between suicide and NSSI (Nock & Kessler, 2006; Jacobson, Muehlenkamp, Miller, & Turner, 2008).

Research focusing on women with borderline personality disorder compared reasons for suicide attempts versus reasons for engaging in NSSI (Brown, Comtois, & Linehan, 2002). Brown et al. found that participants engaging in NSSI were more likely to express feeling generation ("to feel something"), anger expression, self-punishment, and distraction as reasons than were those who attempted suicide. Participants who...
attempted suicide were more likely to report the reason as “to make others better off”. Thus, Brown et al.’s (2002) study provides further support for the need to distinguish between the functions of suicide and NSSI.

Though research suggests NSSI differs from suicidal behaviors, clinicians must clearly assess for suicidal ideation or plans among individuals who engage in NSSI, as the two behaviors can often coincide. It has been reported in the literature that 50% of community and 70% of inpatient individuals who engage in NSSI have attempted suicide at least once (Muehlenkamp & Gutierrez, 2007; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). Among adolescents who engage in NSSI, Nock et al (2006) found that those who also made a suicide attempt reported a longer period of use of NSSI, use of more than one method, and feeling no pain during NSSI. Whitlock and Knox (2007) reported similar findings in that increased frequency of reported NSSI increased the risk of suicide attempts. Thus, assessing for the frequency and length of NSSI may be helpful in assessing suicide risk.

It is equally important to assess for suicide risk, in addition to NSSI, among individuals with ED symptoms. The literature suggests that individuals with ED are also at increased risk for suicide (Sansone et al., 2002; Ruuska, Kaltiala-Heino, Rantanen, & Koivisoto, 2005; Favaro et al., 2008; Lewingson, Streigel-Moore, & Seeley, 2000). A review conducted by Sansone et al., (2002) reported that 39% of bulimics, and 16% of outpatient anorexics have attempted suicide. Ruuska et al., (2005) found that a diagnosis of bulimia and depression can be predictive of suicidal ideation among adolescents with ED. Favaro and Santonastaso (1997) found that purging, both anorexia bingeing-purging type and bulimia, are linked to suicidal ideation and attempts. Not surprisingly, Foulon et
al., (2007) suggests that switching from restricting to bingeing-purging type in anorexia leads to an increased risk of suicide. Research also suggests that ED patients who engage in NSSI are at an even greater risk for suicide (Stein et al., 2004). Thus, among ED, both purging and engaging in NSSI appear to be risk factors for suicidal ideation and attempts. Favaro et al. (2000) suggests that impulsivity or compulsivity may be the common factor underlying purging and NSSI behaviors, which leads to increased risk of suicide.

**Trauma**

Family environment, and especially abuse or neglect have been linked to both NSSI and ED in a number of studies (Favazza & Conterio, 1989; Van der Kolk, Perry, & Herman, 1991; Welch & Fairburn, 1994; Everill & Waller, 1995; Farber, 2007). A review conducted by Svirko & Hawton (2007) suggests that trauma may be a common pathway in the development of both ED and NSSI. For instance, trauma in the form of childhood physical or sexual abuse may lead to dissociation, increased impulsivity, or higher levels of mood or anxiety disorders, which, in turn, can lead to the development of an eating disorder or NSSI (Svirko & Hawton, 2007), suggesting a moderator effect. Trauma has also been found to be associated with increased rates of NSSI among individuals with ED (Tobin & Griffing, 1996).

**Dissociation**

Dissociation has been found to be associated with both ED and NSSI (Eigelbert, Steiger, Gauvin, & Wonderlich, 2007; Lyobomirsky, Casper, Sausa, 2001; Abrahm & Beumont, 1982; NSSI ones). For example, Farber (2008) describes self-starvation, bulimic behavior, and NSSI as different forms of self-harm that take place where the individual acts as two dissociated self-states; the abuser/punisher and the punished.
Farber (2008) theorizes, from a psychoanalytic view, that individuals engage in eating disorder behavior, or NSSI, as a form of dissociated re-enactment of interactions from poor attachment relationships.

The bingeing and purging behaviors of bulimia have been long been believed to occur during dissociative states (Meyer, Waller, & Waters, 1998). Studies have found that individuals with bulimia retrospectively report experiencing dissociative states before and during binge-purge episodes (Lyubomirsky, et al, 2001; Abrahm et al., 1982). Eigelberg, Steiger, Gauvin, and Wonderlich (2007) found that dissociative states helped predict subsequent binge-eating episodes among bulimic individuals who monitored ongoing dissociation, eating behaviors, and affect on a personal handheld computer over a period of 7 to 29 days. Heatherton and Baumeister (1991) theorize in the escape theory that binge eating occurs due to a motivation to shift to low levels of self-awareness. They theorize further that self-awareness can be aversive and people turn to binge-eating to escape self-awareness (dissociate) by focusing solely on the present environment and stimuli. Farrington et al. (2002) found that adolescent girls with anorexia did not differ in terms of the prevalence of dissociation from other girls. However, dissociation among the anorexic girls appeared to serve to avoid negative affect stemming from interpersonal situations. It was also related to obsessive compulsive features and use of somatization.

Unlike the association between dissociation and ED, the association between NSSI and dissociation appears to be less clear in the literature. For instance, Gratz, Conrad, and Roemer (2002) found that dissociation was the strongest predictor of NSSI among women and also a strong predictor for men. Claes et al. (2005) found that dissociation may account for the lack of pain sensation during NSSI. Whereas, Hanstock
(2007) found a less direct association between NSSI and dissociation, in that dissociation in combination with bipolar disorder can increase risk for NSSI as well as suicide. Her findings indicate the possibility that when dissociation is co-morbid with clinical disorders, rates of NSSI increase. Low, Jones, MacCleod, Power, and Duggan (2000) found that dissociative experiences are linked to self harm and the tendency to dissociate stems from previous sexual abuse. Armey and Crowther (2008) found that dissociation was not significantly associated with NSSI and did not mediate the relationship between NSSI and negative self-awareness. However, they proposed that NSSI and dissociation interact to help regulate negative self-awareness. Overall, the literature implies that dissociation and NSSI are linked; however, findings appear to be mixed in terms of the mechanism by which they are linked.

Axis II Comorbidity

Axis II comorbidity among individuals with ED and has been fairly well researched (Godt, 2008; Ro, Martinsen, Hoffar, & Rosenvinge, 2005; Vitousek & Stumpf, 2005; Sansone & Levitt, 2005). Aside from NSSI being a symptom of borderline personality disorder, little research has been conducted on the comorbidity of NSSI and other Axis II disorders. One piece of literature examined rates of comorbidity among adolescents (Nock et al., 2006) but little can be said about Axis II disorders among college students or adult populations with NSSI. Nock et al. (2006) found that among 89 adolescents with NSSI, 67.3% met criteria for an axis II diagnosis with the most common axis II disorders including borderline personality disorder (51.7%), avoidant personality disorder (31%), and paranoid personality disorder (20.7%).

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The literature regarding the comorbidity of Axis II disorders among individuals with ED is much more extensive than that of NSSI. Among 545 eating disorder patients, Godt (2008) found that 29.5% of those studied had at least one Axis II disorder, with the anxious disorders, cluster C, the most highly represented (17.1%). The most common diagnosis was avoidant disorder, which was diagnosed among 12.1% of individuals in study. Individuals with BN were more likely to have a cluster B diagnosis, especially borderline personality disorder, than were individuals with AN. Ro, Martinson, Hoffart, and Rosenvinge (2005) found substantially higher rates of personality disorders among inpatient women with ED in that 77% of inpatient admissions were diagnosed with a personality disorder. However, this rate was substantially lower and more similar to Godt’s (2008) rate when they examined rates of personality disorders among women who had recovered, with 21% maintaining an Axis II diagnosis.

**Perfectionism**

Perfectionism has long been associated with ED (Bardone-Cone et al., 2007, Kaye, 2007; Sassaroli et al., 2008). However, the relationship between NSSI and perfectionism has just recently begun to be examined (Hoff & Muehlenkamp, 2008; Kubal, 2006; Nock & Prinstein, 2005). No known research has looked at the role perfectionism plays among people who are diagnosed with ED and engage in NSSI.

The literature focused on ED and perfectionism continues to find strong relationships between AN and perfectionism (Peck & Lightsey, 2008; Wade et al., 2008). However, the relationship between perfectionism and bulimia is found less consistently (Bardone-Cone et al., 2007). A review examining the relationship between ED and perfectionism found that the majority of the literature agrees that women with AN have
higher levels of perfectionism than healthy controls (Bardone-Cone et al., 2007). Peck and Lightsey (2008) examined ED among undergraduate women as a continuum and found that as a woman's placement on the continuum became more severe, she had higher rates of perfectionism as well as lower rates of self-esteem. Wade and colleagues (2008) conducted studies of female-female twins and found that perfectionism was associated with AN. Specifically, they found that certain aspects of perfectionism, reward dependence and high personal standards were genetic risk factors among the twins' relatives. Sassaroli et al. (2008) also found that personal standards were elevated, along with concerns over mistakes and doubts about actions, among individuals with ED. Perfectionism has further retrospectively been found to be a pre-morbid trait among individuals with bulimia nervosa and AN (Fairburn, Welch, Doll, Davies & O'Connor, 1997; Fairburn, Cooper, Doll, & Welch, 1999).

Nock and Prinstein (2005) found that socially prescribed perfectionism plays a role in the social reinforcement function of NSSI. Hoff and Muehlenkamp (2008) found that NSSI positively correlated with several aspects of perfectionism including: parental criticism and doubt over actions. Hoff et al. (2008) also found that NSSI negatively correlated with organization, another sub-factor of perfectionism, hypothesizing that depression and anxiety led to difficulty maintaining high organizational standards.

Control

Related to perfectionism, the need for control is believed to be at the core of ED by many researchers in the field (e.g., Fairburn, Shafran, & Copper, 1999; Svirko & Hawton, 2007). Eating Disorders and lower levels of perceived external control have been linked in several studies (Williams, Gwenllian, Chamove, & Miller, 1990; Williams
et al., 1993; Dalgleish, Tchanturia, Serpell, Hems, Silva, & Treasure, 2001). The feeling of control has also been put forth as a reason for engaging in NSSI (Favazza et al., 1989; Herpertz, 1995). Both ED and NSSI behavior tend to emerge during adolescence, which is a time of intense physical and hormonal changes. These uncontrollable changes may lead adolescents to feel overwhelmed and controlling eating behavior or engaging in NSSI may be one way to re-establish some control. However, the need for control has not been empirically established as a link between NSSI and ED (Svirko & Hawton, 2007).

Self-Criticism

Self-criticism and a self-critical style have often been reported to coincide with ED and NSSI (Svirko & Hawton, 2007). For example, Glassman, Weierich, Hooley, Deliberto, & Nock (2007) found that self-criticism predicted the presence of NSSI among a group of community adolescents even after controlling for the effect of major depression. Self-criticism has been theorized to be the component of perfectionism that leads people with ED to pursue rigidly high standards (Dunkley, Blankstein, Masheb, & Grilo, 2006). Steiger, Leung, Peuntes-Newman, and Gotthiel (1992) found that among high school students with subclinical eating disturbances and body image concerns, self-criticism was associated with higher levels of body image concerns as well as mood disturbances. A self-criticizing cognitive style has been theorized to an underlying factor among individuals with an eating disorder who engage in NSSI (Tobin & Griffing, 1996). To support this idea, Claes, Vandereyken, and Vertommen, (2003) found that among individuals with ED, those who engage in NSSI report more guilt and self-criticism than those who do not engage in NSSI. This association may indicate that self-criticism intensifies psychological distress leading to engaging in NSSI.
**Depression**

Depression has been linked to both NSSI (Kumar, Pepe, & Steer, 2004; Jacobson & Gould, 2007) and ED (Jimerson, Lesem, Kay, & Hegg, 1990) and acts as a moderator among eating disorder patients who engage in NSSI (Solano et al., 2005; Kaye, 2007). In fact, individuals with ED who report higher rates of depression tend to have higher rates of NSSI (Solano et al., 2005). Major depressive disorder is often described as a comorbid disorder among both individuals with ED and those with NSSI (Jimerson, Lesem, Kay, & Hegg, 1990; Jacobson & Gould, 2007).

The literature has shown a common link between faulty serotonin pathways with ED and depression (Jimerson et al., 1990). Guilt has also been proposed as a link between depression and eating disturbances, specifically guilt related to eating and exercise (Bybee, Zigler, Berliner, & Merisca, 1996). A review examining depression among individuals with bulimia found that across many different types of studies (structured interview, laboratory, self-report, etc.) depression is a major problem that often accompanies BN, with incidence ranging from 11% to as high as 88% for lifetime depressive disorder (Hinz & Williamson, 1987). Fornari et al. (1992) reported the differences among co-morbidities among different eating disorder subtypes and found that anorexia binge-purge type had higher rates of major depression than did anorexia restricting type or bulimia.

A review conducted by Levy and Dixon (1985) evaluated the relationship between AN and depression and found that in many of the studies examined, individuals with AN had very high rates of depression, with a range from 25% to 74%. However, it is unclear whether depression is primarily caused by malnutrition or may be pre-morbid to
anorexia as studies have found that many anorexics find relief from depression when weight gain is achieved (Eckert, 1982). Levy et al.'s (1985) review reported that the literature has shown no change in depression with weight gain and in some cases, increased depression. Pollice, Kaye, Greeno, & Weltzin (1997) reported that among a group of women with anorexia, those who were currently underweight had more depressive symptoms than those who were weight restored. However, even after women had restored weight, mild symptoms persisted suggesting that anorexia may increase symptomotology but underlying depression may have been pre-morbid and has been shown to persist after recovery (Pollice et al., 2007). Whether depression occurs prior to or follows the progression of the eating disorder, it remains an important aspect and affects many individuals with ED.

The literature shows that NSSI and depression are consistently correlated (Klonsky, 2007; Jacobson & Gould, 2007). For instance, Slee, Garnefski, Spinhoven, and Arensman (2008) reported that NSSI generally occurs when individuals are in a depressed state. Kumar and colleagues (2007) found that 59% of inpatient adolescents who engage in NSSI were also diagnosed with uni-polar depression and 29% were diagnosed with bipolar disorder. Data has also shown that the combination of NSSI and depression can increase risk for suicide (Guertin, Lloyd-Richardson, Spirito, Donaldson, & Boergers, 2001). For example, Guertin et al. (2001) found that depression among a sample of adolescents who engage in NSSI serves as a predictor for suicide attempts. In a later section, the link between depression and NSSI will be further explored in terms of a function of affect regulation.
Anxiety

Similar to depression, anxiety has also been commonly linked with both ED (Salbach-Andrea, Lenz, Simmendinger, Klinkowsky, Lehmkuhl, & Pfeiffer, 2007, Kaye, 2007; Fornari et al., 2007) and NSSI (Kumar et al., 2007; Swenson, Spirito, Dyl, Kittler, & Hunt, 2008). Kaye (2007) reports high rates of anxiety disorders among individuals with bulimia and AN and reviews data showing that there may be some physiological predisposition to ED that is also linked to both depression and anxiety. Kaye (2007) further reports malnutrition from the eating disorder increases physiological vulnerability to depressive and anxious symptoms. Salbach-Andrea et al. (2007) examined comorbidity rates of anxiety with AN and found that anxiety disorders without obsessive compulsive disorder ranged from 16.9% to 46.7%, with restricting-purging types having higher anxiety rates than restricting types. Obsessive compulsive disorder was comorbid for both types of anorexia at the same rate (16.8%, Salbach-Andrea et al., 2007). Fornari et al. (2007) also compared anxiety rates among different subgroups of ED and their results showed that anorexia binge-purge type had higher rates of obsessive compulsive disorder than either bulimia or anorexia restricting type.

Data has also shown anxiety to be comorbid with NSSI (Swenson et al., 2008; Kumar et al., 2007; Hoff & Muehlenkamp, 2008). For example, Kumar et al. (2007) found that 22% of inpatient adolescents who engaged in NSSI were diagnosed with at least one anxiety disorder. Jacobson and Gould’s (2007) review of NSSI studies found anxiety to be consistently correlated with NSSI. However, the relationship between NSSI and anxiety remains unclear in terms of the temporal link and epidemiology (Jacobson &
Gould, 2007). Like depression, anxiety has also been shown to play a role in the function of NSSI which will be further discussed in a later section.

Affect Dysregulation

Affective characteristics, such as depression and anxiety, have been established to be commonly associated with both NSSI and ED. Individuals who engage in NSSI and ED often report overwhelming emotions that lead them to engage in NSSI or eating disorder behaviors (Svirko & Hawton, 2007). Mood disorders, such as major depression and anxiety, have often been found to precede ED or NSSI (Wildman, Lilienfeld, & Marcus, 2004), suggesting that affective dysregulation may underlie the development of later pathogenesis (Svirko & Hawton, 2007).

The literature on NSSI reports the important role emotional dysregulation plays in both the development and maintenance of NSSI. For example, Gratz and Chapman (2007) studied male college students who engaged in self-injury and found that emotional dysregulation helped distinguished men with frequent NSSI from those who do not engage in NSSI. They also found that emotional dysregulation was associated with increased frequency of NSSI among those with a history of NSSI. Gratz and Chapman (2007) suggested that since emotional regulation was linked to the frequency of NSSI and other environmental factors were not, that emotional regulation may be underlying the maintenance of NSSI among men. Crowell (2005) reported that among adolescent girls, those with a history of NSSI took longer to physiologically calm after induced negative affect than did those without a NSSI history, suggesting further evidence for difficulty regulating affect and its association to NSSI. Gratz (2004) found that emotional dysregulation can serve as a mediator between emotional in-expressivity and NSSI, as

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well as the relationship between emotional reactivity/intensity and NSSI. Emotional
dysregulation also contributed to the risk of developing NSSI as a coping technique
(Gratz, 2004). Herpertz (1995) studied 54 NSSI patients and found that the majority of
his study participants reported emotions such as anger, despair, anxiety and dysphoria
that led to increased tension and NSSI behavior.

Welsher and Telch (1999) reported that binge eating can be triggered by negative
affect and that binge eaters have difficulty regulating negative affective and emotional
states leading to bingeing as a regulating coping mechanism. Whiteside, Chen,
Neighbors, Hunters, Lo, and Larimore (2005) examined different aspects of emotional
regulation and the relationship to binge eating. Findings showed that emotional regulation
accounted for 6.6% of the variance for binge eating, over and above the affect of food
restriction and over-evaluation of weight and shape. Rezek and Leary (1991) report that
individuals with AN may use food restriction to regulate negative emotions that
accompany feelings of lack of control. Taylor (1997) reported that individuals with
bulimia nervosa and AN use eating behaviors and the physical body (vomiting,
exercising, etc.) to regulate negative emotions. Gilboa-Schechtman, Avnon, Zubery, and
Jeczmien (2006) compared individuals with AN, BN and normal controls in terms of
emotional processing and found that individuals with ED report lower levels of emotional
awareness and more deficient emotional regulation than normal controls. Findings also
showed that individuals with AN had lower levels of emotional awareness than
individuals with BN but similar rates of emotional dysregulation. Overall, the literature
suggests that emotional dysregulation is closely associated with unhealthy coping
behaviors such as NSSI, and disordered eating.
Function

Since ED and NSSI share many psychological characteristics and are often comorbid, it is possible that eating disorder behaviors and NSSI may also serve similar functions. The function of both eating disorder behaviors and NSSI are relatively new areas of research in which the function of each area separately has just begun to be studied. In order to better understand how ED and NSSI may be related, it is necessary to examine the commonalities of the functions of the behaviors. In order to fully review the current literature on the function of ED and NSSI, each will be introduced separately before examining possible commonalities.

Functions of NSSI

Early literature examining why individuals self-injure was purely theoretical in nature. Suyemoto (1998) provides a comprehensive overview of the early theoretical functional models of NSSI. She suggests that NSSI likely serves several different functions simultaneously, which makes the behavior more attractive. Suyemoto’s (1998) review of the literature noted four major categories made up of six specific functional models. The four major categories included environment, drive, affect regulation, and interpersonal.

One of the most researched models is the affect regulation model, which include both an affect regulation model and a dissociation model (Suyemoto, 1998). In the affect regulation model, NSSI allows individuals to express and cope with perceived overwhelming emotions. NSSI can serve as a way to externalize negative feelings and to show physical evidence of emotional pain (Leibenluft et al., 1987). NSSI can help regulate negative affect and emotions by creating a sense of control (Darche, 1990; Laye-
Gindhu & Schonert-Reichl, 2005). It may also serve as a way of expressing emotions when one has difficulty verbally stating how he or she feels (Klonsky et al., 2007). Briere et al., (1998) conducted a study with individuals with a history of trauma and found that participants reported engaging in NSSI to reduce negative emotions and distress and to gain a sense of relief. Study results lend some support for a tension release and emotional regulation function.

Najmi, Wegner, and Nock (2006) add thought suppression and distraction as potential functions of NSSI among an adolescent and young adult population. They proposed that NSSI is used to suppress aversive thoughts and emotions by the method of distraction. Findings from the study suggest that the tendency to suppress aversive thoughts mediates the relation between the frequency of NSSI and emotional reactivity (Najmi et al., 2006). Research focusing on the unique population of women with borderline personality disorder examined reasons for engaging in NSSI by using the Parasuicidal History Interview (Brown, Comtois, & Linehan, 2002). They found that participants engaging in NSSI expressed feeling generation ("to feel something"), anger expression, self-punishment, distraction, emotional relief and interpersonal influence as reasons for engaging in NSSI. This study adds increasing support for an emotional regulation function of NSSI, and introduces feeling generation as a function, as well as provides support for a distraction function of NSSI. The feeling generation function appears to be parallel to the dissociation model that will be described next.

The dissociation model reports on two different functions that NSSI may serve in relationship to dissociation. One function NSSI may serve as an end to dissociation, providing the individual with a clearer sense of existence or a way to feel something
(Miller & Bashkin, 1974; Klonsky, 2007). It has been suggested that ending dissociation may occur by shocking the system possibly through the sight of blood (Simpson, 1975) or through feeling pain (Gunderson, 1984). NSSI could also serve to create a sense of dissociation or a way to externalize strong emotions (Himber, 1994).

Nock and Prinstein (2004) include the affect regulation model within a comprehensive behavioral model to explain the function of NSSI among adolescents. The model is based on behavioral theory and includes four functions: 1) automatic-negative reinforcement, 2) automatic-positive reinforcement, 3) social-negative reinforcement, and 4) social positive reinforcement. Items included in the automatic-negative reinforcement included "to stop bad feelings" and "to relieve feeling numb or empty". Items included in the automatic positive-reinforcement included "to punish yourself", and "to feel relaxed". Social negative reinforcement included items such as "to avoid school, work, and other activities", or "to avoid being with people". Social positive reinforcement included items such as "to get control of a situation" and "to make others angry". Their participants included 109 inpatient adolescents who reported a history of or current NSSI. Results from a factor analysis supported the four factor model, where the incremental fit index = 0.91 and the comparative fit index = 0.90. In examining the relative frequency of each function, automatic negative-reinforcement emerged as the most commonly endorsed function, which is most consistent with an affect regulation model. Overall, 23-53% of participants endorsed automatic-reinforcement subscales, whereas only 6-24% endorsed social-reinforcement subscales (Nock et al., 2004). Emotional regulation is found to be the most common reason endorsed for engaging in NSSI.
Lloyd-Richardson et al. (2007) completed a larger scale study with a school sample of 633 adolescents. The students completed the Functional Assessment of Self-Mutilation (FASM) to aid in the examination of the function of self-injury. A factor analysis was utilized to determine the best model for the function of NSSI. Lloyd-Richardson et al. (2007) reported that the same four factor model that was proposed by Nock and Prinstein (2004) showed the best fit for the data. Again, affect regulation emerged as the most frequently endorsed reason for NSSI. The results from this study indicate that adolescents in both clinical and school settings report similar reasons for engaging in NSSI. Findings also provide support for the behavioral four-factor model.

Klonsky and Glenn (2009) developed a comprehensive model of NSSI, which was studied using the Inventory of Statements about Self-injury (ISAS) scale. They proposed a 13 function model that fell across two main factors. The thirteen NSSI functions included: affect-regulation, anti-dissociation, anti-suicide, autonomy, interpersonal boundaries, interpersonal influence, marking distress, peer-bonding, self-care, self-punishment, revenge, sensation seeking, and toughness. The inclusion of these theoretically based functions or subscales offered a broad understanding of NSSI. Using the ISAS with 235 college students, Klonsky and Glenn (2009) found that these thirteen functions fell across two main factors, interpersonal and intrapersonal. Intrapersonal functions were more frequently endorsed than interpersonal functions. Specifically, affect-regulation was the most highly endorsed function, replicating previously discussed literature (Klonsky, 2007; Lloyd-Richardson et al., 2007; Nock & Prinstein, 2004). Though, structurally similar to Nock and Prinstein’s (2004) behavioral model in that the intrapersonal function could be considered autonomic and interpersonal could be
considered social, evidence was not found for the negative and positive reinforcement aspects of these functions and the more parsimonious two-factor model was supported.

The *environmental model* appears to incorporate aspects of the interpersonal functions discussed earlier in that it proposes that NSSI leads to reinforcing environmental responses for the self-injurer. However, it expands on this idea to include that NSSI also serves the system (family, inpatient unit, etc.). This model incorporates both social learning theory (Bandura, 1977) and operant conditioning to explain the function NSSI serves (Suyemoto, 1998). Social learning theory maintains that individuals who self-injure learn the behavior through the modeling of others, possibly through watching or experiencing abuse and linking pain with care (Simpson & Porter, 1981). Then, through operant conditioning, the individual is reinforced internally (feeling relief), or externally through reinforcing reactions from others (i.e. care, concern, attention) (Suyemoto, 1998). The theory also reports that NSSI serves the system (e.g. family, inpatient unit, social group) and Suyemoto (1998) explains that NSSI serves to maintain homeostasis, to express feelings or conflicts, or divert attention from a dysfunction system.

Aside from the affect regulation and behavioral models, there are a number of other models that have not received as much consideration within the NSSI literature. One of these, the *Drive Model* is grounded in psychoanalytic theory and includes an *antisuicide* and a *sexual model* (Suyemoto, 1998). The *antisuicide model* proposes that self-injury can act as a suicide replacement by serving as a coping mechanism to avoid suicide. For instance, Himber (1994, p. 662) provides a quote by a patient that describes this phenomenon “It’s not like I want to kill myself...when I cut a lot I don’t [try to] kill
myself. I don’t want to. But if I don’t cut for a long, long time then I end up overdosing”.

This quote describes how a person may use NSSI as a way to distract from suicide. The 
sexual model states that NSSI may be used to achieve sexual gratification, avoid sexual 
urges, or control sexual activity. However, the drive model does not appear to have any 
empirical support and currently remains purely theoretical (Suyemoto, 1998).

Another model is the interpersonal model focused on boundaries (Suyemoto, 1998). This model is based on the idea that individuals use NSSI in order to assert 
boundaries between themselves and others. In this model, one’s boundaries between self 
and other are blurred which, in turn, leads to sense of loss of self when one experiences 
the loss of another. Thus, NSSI is used to define this boundary because the “skin is the 
most basic boundary between self and other” (Suyemoto, 1998, p. 547). NSSI can also be 
used to help create a unique identity, for instance an adolescent who engages in cutting 
behavior may refer to herself as a cutter (Podovoll, 1969). The fact that most NSSI occurs 
within the adolescent and early adult years lends itself well to this model as establishing 
an independent identity can be seen as the goal of this period of life, according to 
Erickson’s developmental model (Miller, 2001).

Connors (1996) examined NSSI among trauma survivors and focused on the 
functions and meaning of NSSI among this population. Connors (1996) proposed four 
primary functions for NSSI among trauma survivors: “1) the re-enactment of the original 
act, 2) the expression of feelings and needs, 3) a way to organize the self and regain 
homeostasis, and 4) the management and maintenance of dissociative process” (p. 202). 
While three of Connors proposed functions are similar to those already reviewed, the first 
one, re-enactment of the original act, is unique. The re-enactment of the original act is
thought to help survivors gain control over the overwhelming past by being able to control how much pain will be inflicted, and what will happen. Re-enactment may also be a way to communicate past trauma, whether communicating to oneself or communicating to others the abuse that has occurred. Re-enactment may also happen unconsciously due to threats or suggestions given by perpetrators during habitual abuse (Connor, 1996). Connor’s (1996) model draws from work with abuse victims and may not be relevant for non-abuse victims who self-injure.

The available literature on the function of NSSI is generally limited to theoretical models based on interview data, with the exception of the four-factor behavioral model and Klonsky and Glenn’s (2009) two factor model that have received some empirical support. Though the behavioral model appears to identify some primary functions underlying NSSI among some individuals, it is possible that there are other functions served by NSSI, or other motivations underlying the behavior as suggested by Suyemoto (1998), Klonsky (2007), and proposed by Connors (1996) and Najmi et al., (2006).

Function of Eating Disorder Behaviors

There are several theories and proposed functions of eating disorders that have been empirically tested over recent years. The most represented theories are based on emotional regulation or behavioral principles (Burton, Stice, Bearman, & Rohde, 2007; McManus & Walter, 1995; Weding & Nock, 2007). Other theories have been based on parental attachment (Orzolek-Kronner, 2002, Bowlby, 1973). All known studies to date have focused on the female experience with eating disorders, due to lack of response from males and the over-representation of females among the eating disorder population.
One of the most prominent theories is the affect regulation theory, which has been studied mainly with BN population (Johnson & Larson, 1982; Heatherton & Baumeister, 1991; McManus & Walter, 1995; Wedig & Nock, 2008). A preliminary study by Johnson and Larson (1982) reported that women with BN report stronger dysphoric and fluctuating mood states and they proposed that bulimic behaviors may be used in attempt to modulate these negative moods. Johnson and Larson (1982) also reported that the women in their study, who had an average length of illness of 5 years, reported feeling relief of some negative emotions from purging but not from bingeing. This indicates negative reinforcement is maintaining the purging due to removing negative emotions, such as anger and frustration. Hubert, Coker, & Birtchnell (1986) interviewed fifty patients with BN and found similar results in that participants used binge eating for sedative qualities, or to replace loneliness or boredom. They also noted that participants reported binge eating to relieve carbohydrate cravings.

Similar to early research, Heatherton and Baumeister (1991) proposed the escape theory, which describes the function of binge eating as decreasing or escaping from negative self-awareness. Support for the escape theory has been established by Lacey, Coker, and Birtchnell (1986) who studied 50 patients entering an eating disorder clinic with a BN diagnosis. Lacey and colleagues found that 46 of the 50 patients reported abusing food to decrease negative emotions, such as anger and frustration. They also found that 76% of patients described abusing food to replace loneliness or boredom. A more recent study by Burton and colleagues (2007) tested the affect regulation theory of bulimic symptoms through the use of a randomized trial. They found indirect evidence...
for the affect regulation theory in that decreasing depressive symptoms also decreased bulimic behaviors.

Behavioral models using functional analysis have also been suggested for use with binge-eating and purging (McManus & Waller, 1995; Wedig & Nock, 2007). An early model was suggested by McManus & Waller (1995) and described bingeing as being triggered by appetitive cues and negative emotions and being maintained by immediate negative reinforcement (relieving negative emotions and physical cravings) as well as long-term consequences (fear of weight gain, perceived lack of emotional control). A more recent conceptualization of bulimic symptoms focuses on the behavioral principles related to affect regulation and reinforcement. This conceptualization was based on the model proposed for NSSI (Nock & Prinstein, 2004) and the model explains that bulimic symptoms are maintained through either intrapersonal or interpersonal positive or negative reinforcement creating a four-factor model (Wedig & Nock, 2007). Wedig and Nock (2007) proposed that many different maladaptive behaviors, including NSSI and eating disorder behaviors, may operate under the same behavioral principles and thus they tested the behavioral NSSI model with bingeing and purging behavior of 298 females. They found that bingeing and purging fit the four-factor behavior model and that autonomic negative reinforcement (removing negative internal states or negative affect) was the most prominently reported function. Autonomic negative reinforcement was followed by autonomic positive reinforcement (inducing positive affect), followed by social negative reinforcement and social positive reinforcement (Wedig & Nock, 2007). The rate of endorsement of the four functional factors was very similar to the rate reported by Nock and Prinstein (2004) from an NSSI sample. This suggests that eating
disorder behaviors, and at the least, bulimic behaviors serve a similar reinforcement function to NSSI.

Nordbo et al. (2006) interviewed 18 women with AN and established eight constructs describing the subjective meaning or function of AN. The eight constructs consisted of 1) Security described as using structure and organization to feel secure, 2) Avoidance described as avoiding both emotions as well as negative experiences, 3) Mental Strength reported as a sense of mastery or inner drive, 4) Self-Confidence described as being worth of compliments and achieved through affirmation of others, 5) Identity reported as establishing a sense of identity from AN 6) Care in terms of obtaining care from others, 7) Communication described as using AN to communicate difficulties to other people, and 8) Death in terms of starving to death.

Four of these constructs: 1) avoidance, 2) self-confidence, 3) care, and 4) mental strength, can easily be mapped onto the behavioral constructs proposed by Nock and Prinstein (2004). Avoidance can be considered autonomic negative reinforcement, self-confidence and mental strength can be considered autonomic positive reinforcement, and obtaining care and self-confidence can be considered positive social reinforcement.

Woolrich, Cooper, & Turner (2006) also completed interviews of women (n = 15) with AN to learn more about the function of restricting and placating behavior. Participants reported that they used behaviors to reduce negative cognitions and emotions deriving from negative self-beliefs, lending support to negative reinforcement. Also lending support for negative reinforcement principles, Crisp (2006) reports that adolescents and adults with AN suffer from weight phobia and that they use restricting or purging behaviors to avoid this fear. These studies indicate that behavioral functions can be
applied to anorexic behavior as well as bulimic behavior. However, there are likely functions that disordered eating plays that do not fit nicely into pure behavioral terms, such as communication and identity functions.

Orzolek-Kronner (2002) examined a proximity-seeking function of the symptoms of eating disorders among females. The author proposes, based on Bowlby’s (1969, 1973) original proximity theory, that restricting, bingeing, and purging behaviors represent proximity-seeking behaviors that lead to increased physical closeness between the patient and her mother. Orzolek-Kronner reports that anecdotally mothers report knowing more about the internal lives of their daughters after they developed the eating disorder due to greater concern about her eating habits and stressors. The author tested this hypothesis by comparing an eating disorder group to both a clinical (non-eating disorder) group and normal control group on aspects of parental attachment and proximity-seeking behaviors. She found that the clinical and eating disorder group scored lower on levels of parental attachment than the normal control group but did not differ from one another. She also found that the eating disorder group reported higher numbers of proximity seeking behaviors than either the clinical group or the normal controls, lending some support for a proximity seeking function of eating disorders (Orzolek-Kronner, 2002). More research will need to be conducted on this and other non-behavioral hypotheses to determine their strength.

Summary and Hypotheses

NSSI and ED have been shown to share numerous features including comorbid diagnoses, personality variants, and historical backgrounds. It is logical that NSSI and disordered eating could possibly be behaviors that serve many of the same functions. As
reviewed, emotional regulation appears to be the most common function studied and reported by individuals with ED and those who engage in NSSI. The behavioral 4-factor model proposed by Nock and Prinstein (2004) has also been found to hold up in both NSSI and BN populations (Wedig & Nock, 2007). Another common function of these behaviors that has been suggested in the literature is self-punishment. Research has shown that many individuals who engage in purging, excessive exercise, or NSSI have reported to engage in the behavior as a form of self-punishment (Svirko & Hawton, 2007; Herpertz, 1995). Favaro and Santonastaso (2000) reported that both NSSI and purging in bulimia have been described by participants as a form of self-punishment. Paul, Schroeter, Dahme, and Nutzinger (2002) found that patients with ED reported engaging in NSSI as a form of self-punishment. Bruch (1982) reported that individuals with AN may use self-punishment as a defensive tactic when fearing lack of control. Thus, self-punishment as a function may take on different meanings among the different subtypes of ED and among NSSI but still may be a common function reported.

The purpose of this study was to examine the functions of NSSI and compare those to the functions of ED to determine whether a common model exists. This study went beyond previous literature by including behavioral functions and adding social and emotional functions to create a more comprehensive model. It was hypothesized that if a common model was found, it may possible to examine common treatment options as well as theoretical etiology. This study also planned to replicate previous literature by examining common psychological comorbidity among individuals who engage in NSSI and those diagnosed with an ED.
Hypotheses

1. A functional model created using the Inventory of Statements about Self-Injury (ISAS) will be a good fit for NSSI behavior of this sample.

2. The model created for NSSI will also provide a good model of fit for disordered eating behaviors.

3. Individuals who are diagnosed with ED and also engage in NSSI will show higher rates of psychopathology, according to the Patient Health Questionnaire, than either those diagnosed with ED without NSSI or those engaged in NSSI without a concurrent ED diagnosis.

4. Individuals who are diagnosed with ED but do not engage in NSSI will score higher on the Neurotic Perfectionism Questionnaire than those who engage in NSSI without a subsequent ED diagnosis as perfectionism has shown more consistent associations among the ED population than among those who engage in NSSI.
CHAPTER 2
METHODS

Participants

Participants included 1608 individuals recruited from social networking, disordered eating, and NSSI themed websites. Three hundred eighty nine participants had incomplete surveys and were excluded from analysis. The remaining 1219 individuals completed a majority of the surveys and were included in analyses. The average age of participants was 27.11 (SD=9.55; mode = 18) and the majority of participants were female (93%). The ethnicity of participants were 85.1% Caucasian, 1.4% Black/African American, 5.2% Hispanic/Latino, 2.5% Asian, 5.1% other (including biracial). Participants were evenly split between students and non-students (50.7% and 48.9% respectively). Most participants identified their current SES to be between low average and high average, and the majority of participants were from the United States (91.3%). Participants also reported home countries of Canada (3.8%), the United Kingdom (1.4%), and Australia (1.5%). Other countries made up 0.2% or less individually, combined to a total of 2.0%. The majority (67.4%) of participants reported experiencing abuse. Of those who reported past abuse, emotional abuse was reported as the most common (66.7%), followed by sexual abuse (40.7%), physical abuse (34.9%), and neglect (23.2%). Many participants (44%) reported experiencing more than one type of abuse.
Thirty-two percent (n=400) of participants reported that they had been hospitalized for NSSI behavior, reporting an average of 1.91 (SD=0.94) hospital stays. A lower number of participants reported hospitalization for ED, with 14.5% (n=181) reporting an average of 1.84 (SD=0.84) hospital stays. A number of participants reported undergoing current treatment for NSSI (28%, n=350) or for ED (15.8%, n=198) with a small percentage reporting undergoing treatment for both NSSI and ED simultaneously (6.2%, n=77).

Procedure

All data collection was conducted via a self-report survey, the link to which was posted on various social networking, NSSI, and ED websites after permission to post links to the survey was obtained. Once permission was obtained, data was gathered through a secured survey administered over the internet using SurveyMonkey, an online survey design program which ensures confidentiality and encryption of data during transmission. No identifying information was obtained and thus all survey respondents remained anonymous. Consistent with current recommendations for conducting online data collection (Kraut et al., 2003), participants read a consent form and gave their consent by clicking on an icon that said “I agree that I am over 18 years of age, I have read and understand the conditions and risks above and I consent to voluntarily participate in this research study. I understand that I may withdraw from participation at any time”.

Those not wishing to participate could exit the survey. Consenting participants completed a brief screening questionnaire to ensure that they meet inclusion criteria (over 18 years of age and speak English as their primary language). Participants who did not
speak English as their primary language, had not engaged in ED or NSSI behavior, or who were not 18 were not allowed to continue with the rest of the survey but thanked for their time and participation.

Participants who met criteria began the survey by completing a demographics questionnaire. They then completed the Inventory of Statements about Self-injury (ISAS) for the behavior they endorsed (NSSI or ED). The ISAS was worded for either NSSI or ED according to the participants’ screening answers (see description below). Participants who reported both ED and NSSI completed the functions questionnaire twice, once for each behavior and the version for NSSI behavior occurred first. Participants then provided their answers to measures of NSSI, disordered eating, perfectionism, and psychopathology. Participants could choose to end the survey at any time by exiting out of the web page. A number of help-lines were provided at the end of the survey as a resource for participants. Participants were invited to email a study-specific email address to enter into a drawing to receive a $10 Amazon gift card. They were not required to give their names as the gift cards were electronic and sent directly to their emails from Amazon.com. Their odds of winning a gift card were one in ten. About 400 entries were received with 40 gift cards provided to participants. Participants did not receive any further compensation.

**Measures**

*Demographic questionnaire:* The demographic questionnaire gathered information regarding the participants’ sex, age, race, country, employment status, education status, socioeconomic status, height, and weight (see appendix A). The demographic questionnaire also contained questions asking whether the participants had
ever experienced abuse or neglect to assess for trauma. Participants were asked if they had ever been hospitalized for NSSI or ED and how many times they were hospitalized. Participants were also asked if they were currently in outpatient treatment for NSSI or ED.

*Inventory of Statements about Self-Injury (ISAS; Klonsky, 2008):* The ISAS is a self-report, 41-item inventory that was used to assess the function of NSSI and ED behaviors (see appendix B). Thirty-nine items were rated on a 3-point Likert scale (2 = very relevant, 1 = somewhat relevant, and 0 = not relevant). The functions assessed included: (a) affect regulation, (b) self-punishment, (c) anti-dissociation, (d) anti-suicide, (e) interpersonal influence, (f) peer bonding, (g) sensation seeking, (h) revenge, (i) self-care, (j) autonomy, (k) toughness, (l) marking distress, and (h) interpersonal boundaries. Each function was assessed by three items. Two open-ended questions were also included in the measure. One asked participants to list any statements that they felt would be more accurate than the ones listed above. The second open-ended question asked participants to list statements they felt should be added to the list, even if they did not necessarily apply to the individual participant. A modified version of the scale was also used to assess the function of eating disorder behavior including bingeing, purging, and restricting. The scale differed in the opening statement which normally states “when I self-harm, I am...” which was rephrased to read “when I restrict, binge, or purge, I am...”. The eight items that describe injury, harm, or pain were also modified to describe disordered eating (see Appendix B). For example, one of the items reads “…proving I can take the physical pain”. This item was modified to read “…proving I can stand the feelings of hunger”.

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The ISAS is a relatively new scale, which was created to be more comprehensive than previous scales (Klonsky, 2007). Klonsky and Glenn (2009) reported strong internal consistency properties for the interpersonal and intrapersonal scales with coefficient alphas of .80 and .88 respectively. They also reported good construct validity with clinical measures, with higher scores on both the interpersonal and intrapersonal scales correlating with higher levels of psychopathology (depression, anxiety, borderline personality disorder, suicide attempts, and suicidal ideation). Only higher scores on the intrapersonal scale were correlated with self-injuring while alone. The current study found excellent internal consistency within the full ISAS scale both for the NSSI and ED versions, with coefficient alphas of .87 and .94 respectively.

*Eating Attitudes Test-26 (EAT-26; Garner & Garfinkel, 1979):* The EAT-26 is a 26 item, self-report questionnaire measuring eating attitudes and behaviors (see appendix C). Participants reported how often they had certain behaviors or feelings on a 6-point Likert scale, which ranged from (6) always to (1) never. On a separate section, participants reported if they had ever gone on eating binges, vomited to control their weight, used laxatives, diet pills or diuretics, or been treated for an eating disorder. Scores are obtained by summing the participant’s answers. A score of 20 or above is suggestive of disordered eating behaviors or attitudes. A score below 20 suggests no serious eating disordered thoughts or behaviors. The questionnaire was used to assess disordered eating behaviors among participants. The EAT-26 has a criterion validity of .90 for overall accuracy in identifying eating disorders and conditional probabilities of .77 for sensitivity and .94 for specificity (Mintz & O’Halloran, 2000). The Chronbach’s
alpha has been reported as .75 (Nunes, 2005). The current study demonstrated excellent internal reliability with a Chronbach’s alpha of .95.

*Deliberate Self-Harm Inventory (DSHI; Gratz, 2001).* The DSHI is a 16-item self-report inventory that assesses the methods of NSSI used, frequency of NSSI, severity of injury, and the duration of NSI (see appendix D). Each general item consists of a particular method of NSSI (cutting, burning, hitting, etc.) and asked participants to respond to whether or not they have engaged in this type of behavior. The last question asked participants “have you ever intentionally (i.e. on purpose) done anything else to hurt herself that was not asked about in this questionnaire”. This question was modified to state “have you ever intentionally (i.e., on purpose) done anything else to hurt yourself without the intention of dying that was not asked about in this questionnaire?” It was modified so that participants would not include suicide attempts. Follow-up questions regarding frequency, severity, and duration were used for items that were positively endorsed. Follow-up items were responded to as yes/no and Likert-type scales. The DSHI has demonstrated strong psychometric properties. Acceptable internal consistency on the dichotomous items ($\alpha = .82$) and test-retest reliability ($r = .92, p<.001$) was found in a sample of undergraduate college students (Gratz, 2001). The DSHI has been found to accurately identify individuals with and without a history of NSSI as determined by follow-up interviews (Gratz, 2001). In this sample the internal consistency was not as strong ($\alpha = 0.60$).

*Neurotic Perfectionism Questionnaire (NPQ; Mitzman, Slade, & Dewey, 1994).*

The NPQ is a 42-item questionnaire that was developed to measure perfectionism among an eating disordered population (see appendix E). It was used in this study to a)
determine the level of perfectionism among the ED sample and b) determine whether neurotic perfectionism may also play a role in NSSI behavior. All items consisted of a statement such as “no matter how well I do, I am never satisfied with my performance” and “I feel guilty a lot of the time” in which participants answered on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The scale was scored by negatively scoring two of the items and then summing all of the items. Higher scores represented higher and more pathological levels of perfectionism. The average score among a sample of 144 non-perfectionists was 112.80 (Mitzman et al., 1994). The scale has shown good internal consistency (α=0.95) and discrimination among eating disorder patients and normal controls with a sensitivity of 86% and specificity of 95% (Mitzman et al., 1994). This scale also demonstrates good concurrent validity with other perfectionism scales including the SCANS P and SCANS D (Mitzman et al., 1994) and with negative body esteem (Davis, 1997). The current sample demonstrated excellent internal consistency with a Chronbach’s alpha of 0.95.

Patient Health Questionnaire (PHQ, Spitzer, Kroenke, Williams, & Patient Health Questionnaire Primary Care Study Group, 1999). The PHQ is a shortened version of the PRIME-MD and was used to assess for comorbidity of psychiatric disorders (see appendix F). The PHQ is a short self-report diagnostic instrument created to be used in primary care settings. The PHQ consists of 58 total questions which assess the presence of 1) major depression, 2) panic disorder, 3) generalized anxiety disorder, 4) bulimia nervosa, 5) binge eating disorder, 6) somatic disorder, and 7) alcohol abuse. The presence of each disorder was measured by multiple items based off the DSM IV (APA, 2000) criteria. Items were measured as yes/no responses or on a four-point Likert scale,
from 1 (not at all) to 4 (nearly every day), asking participants to respond to how often the symptom has bothered them over the past two or four weeks (number of weeks depended on disorder).

For example, one of the nine depression items had participants respond to the item, how often during the past two weeks have you been bothered by "feeling tired or having little energy". An example assessing for panic was "in the past four weeks, have you had an anxiety attack—suddenly feeling fear or panic", in which participants answer yes or no. The PHQ subscales were scored according to different sets of criteria. For example, major depressive disorder was indicated if answers to questions 1a or b and five others are reported as "more than half the days". Other depressive syndromes were indicated if 1a or 1b and two, three, or four of the other items are rated as "more than half the days". The PHQ was used because it is one of the few entirely self-report diagnostic instruments for psychiatric disorders. The PHQ has demonstrated good agreement between diagnoses made with the measure and those made by independent mental health professionals (r=0.65, overall accuracy=85%, sensitivity=75%, specificity=90%, Spitzer et al., 1999; Wedig & Nock, 2007). The PHQ has demonstrated adequate convergent validity of the depression and anxiety modules when compared to the Beck Depression Inventory and the Beck Anxiety Inventory (Kunik et al., 2007). One study has demonstrated adequate convergent and divergent validity for binge eating disorder specifically (Grucza, Przybeck, & Cloninger, 2007). The current study demonstrated excellent internal consistency with a Chronbach’s alpha of 0.88.
CHAPTER 3
RESULTS

Participants were classified into three groups, an NSSI group (N = 406), an ED group (N = 374) and a combined NSSI/ED group (N = 439) based on the behaviors they endorsed. Participants who reported some engagement in both NSSI and ED behaviors but were currently in treatment for only one of the behaviors were considered to be in the behavior group for which they were receiving treatment as it was considered more salient. Those participants who reported engaging in NSSI and ED and were not receiving treatment or were receiving treatment for both behaviors were considered in the combined NSSI/ED group. Participants who did not report either ED or NSSI behaviors were removed from analyses (N = 137).

Participants’ Body Mass Index was calculated using their weight and height. The Body Mass Index can be used as an estimate of body fat and can be used as a screening tool for health problems due to one’s weight class. Below 18.5 is considered underweight, 18.6 to 24.9 is considered normal, 25 to 29.9 is considered overweight, and 30 and above is considered obese. The sample had a range of Body Mass Index (BMI) scores from 10.63 to 75.95 with a mean of 26.76 (SD = 8.44). The NSSI group had an average BMI of 28.10 (SD = 8.31), the ED group had an average BMI of 25.85 (SD =
9.30), and the combined NSSI/ED group had an average BMI of 26.28 (SD= 7.63). An Analysis of Variance (ANOVA) found that the BMI’s were significantly different from each other, F (2, 1199) = 7.98, p< .01. Using a follow-up Tukey test, it was observed that the NSSI group had a significantly higher BMI than both the ED group and the combined NSSI/ED group. There was not a significant difference between the BMI of the ED and the combined NSSI/ED groups. Rates of physical abuse, emotional abuse, or neglect did not differ between groups. Sexual abuse rates, however, did differ significantly between groups $x^2(2, N= 1219) = 12.64, p < .01$. Results demonstrated that the NSSI/ED combined groups had higher rates (40.9%) of sexual abuse than either the NSSI only group (33.5%) or the ED only group (25.6%).

**Descriptive Features of NSSI**

Responses to the DSHI showed that participants reported engaging in an average of 5.80 methods (SD= 2.45, mode= 5) of NSSI. There were no significant differences in number of methods reported between the NSSI group and the combined NSSI/ED group, $t (797) = -.516, p>.05$. The average age of onset of NSSI was 15.42 (SD= 5.90) and differed significantly between the NSSI and NSSI/ED groups with the combined group beginning NSSI at an earlier age, $t (797) =16.50, p<.01$. The combined group’s age of onset was 14.70 (SD=4.70) and the NSSI group’s age of onset was 16.22 (SD=6.93).

**Descriptive Features of ED Behaviors**

Scores on the EAT26 were used to examine rates of eating disorders and also verify that the ED and NSSI/ED group had clinically significant levels of eating disorder behaviors. A test of ANOVA demonstrated that there were significant differences between groups, F (2, 802) =115.04, p < .001. As expected, follow-up bonferroni tests
showed that the ED and the NSSI/ED combined group had higher rates of eating disorder symptoms than the NSSI group. Means for the ED group (33.38, SD = 21.73) and NSSI/ED group (30.72, SD = 18.84) did not significantly differ and were both above the clinical cut-off of 20. The NSSI group fell below the cut-off at a mean of 13.03 (SD=13.19). Out of the participants who reported ED behaviors (n = 695), 270 (33.2%) reported binge episodes, 217 (26.7%) reported vomiting after meals, and 162 (19.9%) reported using laxatives, diet pills or diuretics to lose weight. One hundred and eighty three participants (26.7%) reported that they usually or always avoid eating when they feel hungry and 161(23.5%) participants reported that others would usually or always prefer that they eat more.

**Descriptive Features of the Functions of NSSI and ED**

Examining the individual items from the ISAS provided information regarding the most frequently endorsed items for NSSI and ED behavior. Within the NSSI only group (n = 357), the top ten endorsed functions for the NSSI behavior included all three items from the affect regulation subscale, all three from the self-punishment scale, two items from the anti-dissociation subscale, one item from the self-care skill, and one item from the marking distress subscale (see table 1 for items, means, and SDs). These top ten endorsed items for NSSI behavior varied slightly between the NSSI only and combined NSSI/ED group (see table 1 for means and SDs). Males in either the NSSI or NSSI/ED group endorsed the same 10 items shown as in the larger groups, though the order of the highly endorsed items 6 through 10 varied.
### Table 1

**Highly endorsed ISAS items for NSSI behaviors**

<table>
<thead>
<tr>
<th>Item</th>
<th>NSSI Only Mean (rank)</th>
<th>SD</th>
<th>NSSI/ED Mean (rank)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Releasing Emotional Pressure</td>
<td>1.89 (1)</td>
<td>0.32</td>
<td>1.89 (2)</td>
<td>0.35</td>
</tr>
<tr>
<td>Reducing Anxiety</td>
<td>1.85 (2)</td>
<td>0.41</td>
<td>1.91 (1)</td>
<td>0.32</td>
</tr>
<tr>
<td>Calming Myself Down</td>
<td>1.74 (3)</td>
<td>0.52</td>
<td>1.74 (3)</td>
<td>0.52</td>
</tr>
<tr>
<td>Reacting to feeling unhappy or disgusted with myself</td>
<td>1.55 (4)</td>
<td>0.68</td>
<td>1.70 (4)</td>
<td>0.57</td>
</tr>
<tr>
<td>Expressing anger</td>
<td>1.44 (5)</td>
<td>0.76</td>
<td>1.57 (5)</td>
<td>0.68</td>
</tr>
<tr>
<td>Signifying emotional distress</td>
<td>1.36 (6)</td>
<td>0.75</td>
<td>1.29 (7)</td>
<td>0.76</td>
</tr>
<tr>
<td>Punishing myself</td>
<td>1.29 (7)</td>
<td>0.79</td>
<td>1.39 (6)</td>
<td>0.75</td>
</tr>
<tr>
<td>Causing pain to stop feeling numb</td>
<td>1.27 (8)</td>
<td>0.78</td>
<td>1.28 (8)</td>
<td>0.78</td>
</tr>
<tr>
<td>Physical injury easier to care for than ...</td>
<td>1.25 (9)</td>
<td>0.78</td>
<td>1.23 (9)</td>
<td>0.82</td>
</tr>
<tr>
<td>Feel something</td>
<td>1.21 (10)</td>
<td>0.79</td>
<td>1.23 (10)</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Scores were ranked in order of most high reported functions (1 is the most commonly reported)

Scores on this measure range from 0=not relevant, 1=somewhat relevant, 2=very relevant

The top ten items endorsed for ED behavior among the ED and NSSI/ED groups are shown in table 2. Seven of the top ten items endorsed for NSSI behavior were also endorsed for ED behavior and are depicted in *italics* (see Table 2). The three items that were unique to ED within the highly endorsed items were: "responding to negative thoughts about my body", "Creating a boundary between myself and others", and "giving myself a way to care for myself". When comparing the function of ED behaviors between the ED only group to the NSSI/ED group, 8 of the ten highly endorsed items are similar; however, the ordering of the highly endorsed items varies between groups (see Table 2). The items that were included in the ED only group but not the NSSI/ED group were "creating a boundary between myself and others" and "giving myself a way to care for..."
myself”. The items that were included in the NSSI/ED group but not in the ED only group were: “seeing if I can withstand hunger pains” and “allowing myself to focus on my body, which can be gratifying or satisfying”. For both groups these items fell in the number 9 and 10 spots, indicating that they were endorsed less frequently than the 8 items that were consistent among the groups. When examining highly endorsed items of the ED-ISAS behaviors among males, no items had a score above 1 (somewhat relevant), indicating that males are likely restricting, bingeing, or purging for different reasons than females and for reasons that are not captured by the items included in this study-specific revised, ED-ISAS.

Table 2

<table>
<thead>
<tr>
<th>Item</th>
<th>ED only Mean (rank)</th>
<th>SD</th>
<th>NSSI/ED Mean (rank)</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reacting to unhappy, disgust</td>
<td>1.59 (1)</td>
<td>0.73</td>
<td>1.51 (2)</td>
<td>0.75</td>
</tr>
<tr>
<td>Responding to negative thoughts</td>
<td>1.47 (2)</td>
<td>0.73</td>
<td>1.52 (1)</td>
<td>0.79</td>
</tr>
<tr>
<td>Reducing anxiety, frustration, ...</td>
<td>1.45 (3)</td>
<td>0.75</td>
<td>1.18 (3)</td>
<td>0.89</td>
</tr>
<tr>
<td>Releasing emotional pressure</td>
<td>1.37 (4)</td>
<td>0.78</td>
<td>1.02 (8)</td>
<td>0.88</td>
</tr>
<tr>
<td>Controlling physical sensations</td>
<td>1.26 (5)</td>
<td>0.81</td>
<td>1.14 (4)</td>
<td>0.86</td>
</tr>
<tr>
<td>Calming self</td>
<td>1.21 (6)</td>
<td>0.82</td>
<td>1.02 (7)</td>
<td>0.87</td>
</tr>
<tr>
<td>Expressing Anger</td>
<td>1.12 (7)</td>
<td>0.84</td>
<td>1.12 (5)</td>
<td>0.89</td>
</tr>
<tr>
<td>Punishing Self</td>
<td>1.02 (8)</td>
<td>0.85</td>
<td>1.10 (6)</td>
<td>0.87</td>
</tr>
<tr>
<td>Creating Boundary between self and others</td>
<td>.91 (9)</td>
<td>0.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Give myself a way to care for myself</td>
<td>.87 (10)</td>
<td>0.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seeing if I can withstand hunger pains</td>
<td>.81 (9)</td>
<td>0.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Allowing myself to focus on my body, which can be satisfying or gratifying</td>
<td>.80 (10)</td>
<td>0.86</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Items in italics match those highly endorsed for NSSI behaviors
Scores were ranked in order of most high reported functions (1 is the most commonly reported)
Scores on this measure range from 0=not relevant, 1=somewhat relevant, 2=very relevant
For both NSSI and ED behaviors, a majority of the highly endorsed items are linked to emotional regulation or self-punishment. Anti-dissociation items also are included in the highly endorsed items for NSSI behavior. For ED behavior, creating boundaries and self-care items are also included in the highly endorsed items among the ED only group. Items related to toughness and self-care are included among highly endorsed items for the combined NSSI/ED group.

NSSI function model

The current study sought to explain the functions of NSSI through the data gained by responses to the ISAS and examine whether subscales would emerge similar to those offered theoretically by the ISAS authors. An exploratory factor analysis using principal axis factoring in SPSS with promax rotation was used to examine the factor structure of the items of the ISAS. A promax rotation was chosen in order to most closely replicate the statistical methods used within original ISAS psychometrics study (Klonsky & Glenn, 2009). Since the promax rotation is oblique, it also allows for some degree of correlation between factors, which would be expected when studying functions of NSSI or ED behaviors. Selection of factors was based on Eigen values greater than 1.0, visual inspection of the scree plot, and factor loadings of the items. Results from the first analysis showed that six of the original 39 items exhibited high cross-correlations across factors and were removed. These items were scattered randomly among different subscales. The exploratory factor analysis was re-run and results indicated that the data was best captured within 11 factors that accounted for 70.95 % of the variance. These factors generally mirrored 10 of the originally proposed ISAS functions: 1) anti-suicide, 2) revenge, 3) anti-dissociation, 4) self-punishment, 5) interpersonal influence 6) peer
bonding, 7) self-care, 8) interpersonal boundaries, 9) affect regulation, and 10) sensation-seeking (see Tables 3 and 4). The 11th factor appeared to be a combination of the autonomy and toughness functions listed on the ISAS (see Table 4). The marking distress function did not emerge. The affect regulation factor had the least support, with an alpha of .49, indicating that though affect regulation was the most commonly reported function of NSSI, it is not well supported as an independent factor. All items exhibited adequate factor loadings (.35 or higher) on a single factor (see Tables 3 and 4). The 11 factors displayed intercorrelations ranging from .007 to .525, indicating low to moderate correlations among factors (see Table 5). The highest correlation was between the anti-suicide scale and the sensation seeking scale (r=.525). All other intercorrelations were less than .4. Overall, hypothesis one was well supported in that the functional model created using the ISAS data was a good fit for NSSI behavior.

Table 3

**NSSI factor analysis 1-5**

<table>
<thead>
<tr>
<th>ISAS Items</th>
<th>Peer Bonding</th>
<th>Self-care</th>
<th>Interpersonal Boundaries</th>
<th>Sensation Seeking</th>
<th>Affect Regulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 Bonding with peers</td>
<td>.660</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21 Fitting in with others</td>
<td>.613</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34 Creating a sign of friendship or kinship...</td>
<td>.707</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Giving myself a ways to care for my self...</td>
<td>.776</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 Allowing myself to focus on treating the injury...</td>
<td>.793</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Creating a boundary between myself and others</td>
<td>.810</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28 Establishing a barrier between myself and others</td>
<td>.757</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Doing something to generate excitement...</td>
<td>.537</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36 Proving I can take the physical pain</td>
<td>.392</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33 Pushing my limits in a manner akin to skydiving...</td>
<td>.617</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Calming myself down</td>
<td></td>
<td></td>
<td></td>
<td>.47</td>
<td></td>
</tr>
<tr>
<td>27 Reducing anxiety, frustration...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.753</td>
</tr>
</tbody>
</table>

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Table 4

**NSSI factor analysis 6-11**

<table>
<thead>
<tr>
<th>ISAS Item</th>
<th>Anti-suicide</th>
<th>Revenge</th>
<th>Anti-Dissociation</th>
<th>Interpersonal Influence</th>
<th>Self-Punishment</th>
<th>Autonomy/Toughness</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Avoiding the impulse to attempt suicide</td>
<td>0.863</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32 Putting a stop to suicidal thoughts</td>
<td>0.875</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19 Responding to suicidal thoughts without attempting suicide</td>
<td>0.852</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Getting back at someone</td>
<td>0.831</td>
<td>0.657</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38 trying to hurt someone close to me</td>
<td>0.692</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 Getting revenge against others</td>
<td>0.894</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Causing pain so I will stop feeling numb</td>
<td></td>
<td>0.780</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 Trying to feel something...</td>
<td></td>
<td></td>
<td>0.939</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31 Making sure I am still alive when I don’t feel real</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.639</td>
</tr>
<tr>
<td>37 Signifying the emotional distress...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.578</td>
</tr>
<tr>
<td>22 Seeking care or help from others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.619</td>
</tr>
<tr>
<td>9 letting others know the extent of my emotional pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.818</td>
</tr>
<tr>
<td>11 Creating a physical sign that I feel awful</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.643</td>
</tr>
<tr>
<td>16 Expressing anger...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.841</td>
</tr>
<tr>
<td>3 Punishing myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.693</td>
</tr>
<tr>
<td>29 Reacting to feeling unhappy with myself</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.700</td>
</tr>
<tr>
<td>23 Demonstrating I am tough or strong</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.629</td>
</tr>
<tr>
<td>26 Demonstrating that I do not need to rely on others</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.805</td>
</tr>
<tr>
<td>36 Proving I can take the physical pain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.489</td>
</tr>
<tr>
<td>39 Establishing that I am autonomous/independent</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.754</td>
</tr>
</tbody>
</table>
### Intercorrelations among NSSI factors

<table>
<thead>
<tr>
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<td>0.17</td>
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<td>0.30</td>
<td>0.26</td>
<td>0.39</td>
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<td>0.26</td>
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<td>0.30</td>
<td>0.30</td>
<td>0.27</td>
<td>0.31</td>
<td>1</td>
<td>0.49</td>
<td>0.36</td>
<td>0.58</td>
</tr>
<tr>
<td>0.03</td>
<td>0.39</td>
<td>0.26</td>
<td>0.27</td>
<td>0.27</td>
<td>0.26</td>
<td>0.31</td>
<td>0.49</td>
<td>1</td>
<td>0.39</td>
<td>0.58</td>
</tr>
<tr>
<td>0.05</td>
<td>0.52</td>
<td>0.39</td>
<td>0.36</td>
<td>0.39</td>
<td>0.39</td>
<td>0.58</td>
<td>0.58</td>
<td>0.39</td>
<td>1</td>
<td>0.71</td>
</tr>
</tbody>
</table>

Table 5
To examine whether the superordinate factors of interpersonal and intrapersonal functions (Klonsky & Glenn, 2009) were also represented in the current data, a second factor analysis was conducted. Using the scores from the original 13 subscales from Klonsky and Glenn (2009), principal axis factoring with a promax rotation was conducted. Overall, a clear 2-factor structure as indicated by Klonsky and Glenn (2009) did not emerge with this sample. When two factors were specified within SPSS, only 37.68% of the variance was accounted for. Instead, a principal components analysis demonstrated a clearer factor structure that included 4-components, accounting for 59.91% of the variance (see Table 6) and is therefore described for this sample. Principal components was utilized in this second analysis to account for the maximum amount of variance describing the data.

Table 6

**Four-Factor structure of ISAS subscales**

<table>
<thead>
<tr>
<th>ISAS Subscale</th>
<th>Factor 1 Independence</th>
<th>Factor 2 Interpersonal Influence</th>
<th>Factor 3 Intrapersonal Influence</th>
<th>Factor 4 Peer Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affect Regulation</td>
<td>0.828</td>
<td>0.436</td>
<td>0.766</td>
<td>0.706</td>
</tr>
<tr>
<td>Anti-Dissociation</td>
<td>0.757</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anti-Suicide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>0.650</td>
<td>0.862</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal Boundaries</td>
<td>0.604</td>
<td>0.766</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal Influence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marking Distress</td>
<td></td>
<td></td>
<td>0.766</td>
<td></td>
</tr>
<tr>
<td>Peer Bonding</td>
<td>0.400</td>
<td>0.677</td>
<td></td>
<td>0.449</td>
</tr>
<tr>
<td>Revenge</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation Seeking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toughness</td>
<td>0.779</td>
<td>0.400</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Items in bold print signify highest loading for that item

Two of the subscales, self-care and self-punishment were removed due to high cross-loadings across factors. Two factors appeared to reflect the super ordinate
interpersonal and intrapersonal functions; however, two other factors also emerged (see Table 6). The first super ordinate factor, named independence, appeared to be interpersonal in nature but with a focus on proving independence and strength and was thus named independence. It was comprised primarily of autonomy, toughness, interpersonal boundaries, and sensation seeking, with smaller loadings including marking distress and revenge. The second factor, interpersonal influence, appeared to be based on interpersonal communication and was comprised primarily of interpersonal influence, marking distress, and revenge, with a smaller loading of toughness. The third factor was named intrapersonal as it was comprised of anti-dissociation and anti-suicide. The fourth super ordinate factor was named peer bonding and was comprised of peer bonding, with a negative loading of affect regulation and a smaller loading of sensation seeking. The peer bonding factor is differentiated from the interpersonal factor in that it appears to be focused on building friendships rather than establishing identity and autonomy (see Table 6). The intrapersonal and peer bonding factors had fairly low alphas (see Table 6), indicating that they may be less robust than the independence and interpersonal influence factors. Factor items demonstrated low to moderate correlations with each other (See Table 7). The highest correlation, $r=.47$, was between the first two subscales, independence and interpersonal influence, indicating a moderate relationship between using NSSI to display or achieve independence with that of influencing others.
Table 7

*Intercorrelations among higher order NSSI factors*

<table>
<thead>
<tr>
<th>High order Factors</th>
<th>Factor 1 Independence</th>
<th>Factor 2 Interpersonal Influence</th>
<th>Factor 3 Intrapersonal</th>
<th>Factor 4 Peer Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor 1 Independence</td>
<td>1.00</td>
<td>.471</td>
<td>.382</td>
<td>-.062</td>
</tr>
<tr>
<td>Factor 2 Interpersonal Influence</td>
<td>.471</td>
<td>1.00</td>
<td>.300</td>
<td>.011</td>
</tr>
<tr>
<td>Factor 3 Intrapersonal</td>
<td>.382</td>
<td>.300</td>
<td>1.00</td>
<td>.011</td>
</tr>
<tr>
<td>Factor 4 Peer Influence</td>
<td>-.062</td>
<td>.011</td>
<td>.011</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**ED Function Model**

Hypothesis two stated that the ISAS factor structure identified for NSSI would be reproduced and adequately describe the functions of ED behaviors, in essence confirming the factor structure across both groups. The ED function data was analyzed using principal axis factoring with promax rotation, specifying that 11 factors be extracted (the number of factors supported in the NSSI data). An 11-factor solution was identified and accounted for 68.01% of the variance. Eight of the factors were consistent with those found in the NSSI analysis including: 1) autonomy and toughness, 2) affect regulation, 3) anti-dissociation, 4) revenge, 5) peer bonding, 6) anti-suicide, 7) interpersonal boundaries, and 8) self-care. However, three new factors were extracted; one that was a combination of self-punishment and reaction to negative emotions, a second that was a combination between interpersonal influence and marking distress, and a third that appeared to be a combination of self-care and generating excitement (see Tables 8 and 9). The intercorrelations among the 11 factors ranged from low to moderate correlations ($r = -.292$ to $.571$, see Table 10). There were a number of items with high cross loadings across factors and because of these cross loadings and the fact that an identical factor structure did not appear to be upheld between the NSSI and ED groups, a post-hoc
exploratory analysis with all the items included was conducted to determine what factor structure would best account for the functions underlying disordered eating behavior.

Table 8

**ED factor analysis functions 1 through 5**

<table>
<thead>
<tr>
<th>ISAS Item</th>
<th>Autonomy/ Toughness</th>
<th>Affect Regulation</th>
<th>Self-Punishment/ Reaction to Neg. Emotions</th>
<th>Interpersonal Influence/ Marking Distress</th>
<th>Anti-dissociation</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 Seeing if I can withstand hunger pains</td>
<td>0.653</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13 Ensuring that I am self-sufficient</td>
<td>0.792</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23 Demonstrating I am tough or strong</td>
<td>0.603</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26 Demonstrating that I do not need to rely on others...</td>
<td>0.672</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>36 Proving I can stand the feelings of hunger</td>
<td>0.801</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39 Establishing that I am autonomous/independent</td>
<td>0.796</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Calming myself down</td>
<td>0.702</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Doing something to generate excitement...</td>
<td>0.400</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 releasing emotional pressure</td>
<td>0.813</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 Reducing anxiety, frustration...</td>
<td>0.830</td>
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<td>37 Signifying the emotional distress...</td>
<td>0.397</td>
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<td>3 Punishing myself</td>
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<tr>
<td>16 Expressing anger...</td>
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<tr>
<td>19 Responding to negative thoughts about my body</td>
<td>0.751</td>
<td></td>
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<td>29 Reacting to feeling unhappy with myself...</td>
<td>0.744</td>
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<tr>
<td>9 letting others know the extent of my emotional pain</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>11 Creating a physical sign that I feel awful</td>
<td>0.501</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22 Seeking care or help from others</td>
<td>0.690</td>
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<td>35 keeping a loved one from leaving...</td>
<td>0.514</td>
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<td>0.542</td>
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<td>5 causing physical changes so I will stop feeling numb</td>
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<td>0.745</td>
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<tr>
<td>18 Trying to feel something...</td>
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<td>0.896</td>
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<tr>
<td>31 Making sure I am still alive when I don't feel real</td>
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<td>0.603</td>
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<tr>
<td>ISAS Item</td>
<td>Peer Bonding</td>
<td>Anti-suicide</td>
<td>Interpersonal Boundaries</td>
<td>Self-Care</td>
<td>Self-care/Excitement</td>
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<td>--------------</td>
<td>--------------------------</td>
<td>-----------</td>
<td>----------------------</td>
</tr>
<tr>
<td>12 Getting back at someone</td>
<td>0.754</td>
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<tr>
<td>25 Getting revenge against others</td>
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<tr>
<td>38 trying to hurt someone close to me</td>
<td>0.636</td>
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<tr>
<td>8 Bonding with peers</td>
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<td>34 Creating a sign of friendship or kinship...</td>
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<td>0.792</td>
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<td>2 Creating a boundary between myself and others</td>
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<td>15 demonstrating I am separate from other people</td>
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<tr>
<td>28 Establishing a barrier between myself and others</td>
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</tr>
<tr>
<td>4 Giving myself a ways to care for myself</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>7 Doing something to generate excitement...</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27 Reducing anxiety, frustration...</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>30 Allowing myself to focus on my body, which can be gratifying or satisfying</td>
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</tr>
<tr>
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<td>Factor 3</td>
<td>Factor 4</td>
<td>Factor 5</td>
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<td>0.137</td>
<td>1.000</td>
<td>1.000</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Table 10: Intercorrelations among ED factors

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An exploratory factor analysis utilizing principal components with promax rotations was conducted to determine the factor structure that would best account for the functions of ED behaviors. The principal component method was used instead of the principal axis factoring used in the other analyses to extract maximum variance from the ED data, allowing for the inclusion of error and unique variance. Selection of factors (components) was based on Eigen values greater than 1.0, visual inspection of the scree plot, and factor loadings of the items. Results from the first analysis showed that 11 of the original 39 items exhibited high cross-correlations across factors and were removed. Of the 11 items that were removed, all three autonomy and self-care items were removed, and 2 of the three sensation seeking items were removed. The other three items were randomly scattered among other subscales. The exploratory factor analysis was re-run and results indicated that the data was best captured within 8 factors that accounted for 70.86% of the variance (see Table 11). These 8 factors included: 1) affect regulation/self-punishment, 2) toughness, 3) revenge, 4) interpersonal boundaries, 5) marking distress 6) anti-dissociation, 7) peer bonding, and 8) anti-suicide. When comparing this 8 factor structure to the 11 factor structure found in the first ED analysis, it appears that by removing the items with cross-correlations, the development of a cleaner structure emerged. Overall, the 8 factor structure appears to better describe the functions within eating disorders, yet still offers some thematic consistency with the factors identified for NSSI behaviors. The intercorrelations between the 8 factors were low or negative for all factors, indicating independence or uniqueness among factors (see Table 12).
### Table 11

**Eight-factor model of function of ED behaviors**

<table>
<thead>
<tr>
<th>ISAS Item</th>
<th>Affect regulation/ Self Marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Punishing myself</td>
<td>a=.86</td>
</tr>
<tr>
<td>14 Releasing emotional pressure...</td>
<td>a=.80</td>
</tr>
<tr>
<td>19 Responding to negative thoughts about my body</td>
<td>a=.87</td>
</tr>
<tr>
<td>27 Reducing anxiety, frustration...</td>
<td>a=.85</td>
</tr>
<tr>
<td>16 Expressing anger towards myself...</td>
<td>a=.87</td>
</tr>
<tr>
<td>29 Reacting to feeling unhappy with myself...</td>
<td>a=0.65</td>
</tr>
<tr>
<td>23 Demonstrating I am tough or strong</td>
<td>a=.64</td>
</tr>
<tr>
<td>33 Pushing my limits in a manner akin to skydiving...</td>
<td>a=.506</td>
</tr>
<tr>
<td>36 Proving I can stand the feelings of hunger</td>
<td>a=.82</td>
</tr>
<tr>
<td>10 Seeing if I can stand the pain</td>
<td>a=.82</td>
</tr>
<tr>
<td>25 Getting revenge against others</td>
<td>a=.85</td>
</tr>
<tr>
<td>38 trying to hurt someone close to me</td>
<td>a=.86</td>
</tr>
<tr>
<td>12 Getting back at someone</td>
<td>a=.89</td>
</tr>
<tr>
<td>2 Creating a boundary between myself and others</td>
<td>a=.919</td>
</tr>
<tr>
<td>15 Demonstrating I am separate from other people</td>
<td>a=.826</td>
</tr>
<tr>
<td>28 Establishing a barrier between myself...</td>
<td>a=.921</td>
</tr>
<tr>
<td>9 Letting others know the extent of my emotional pain</td>
<td>a=.920</td>
</tr>
<tr>
<td>22 Seeking care or help from others</td>
<td>a=.784</td>
</tr>
<tr>
<td>11 Creating a physical sign I feel awful</td>
<td>a=.697</td>
</tr>
<tr>
<td>37 Proving I can stand the feelings of hunger</td>
<td>a=.666</td>
</tr>
<tr>
<td>5 Causing physical charges so I will stop feeling numb</td>
<td>a=.874</td>
</tr>
<tr>
<td>18 Trying to feel something...</td>
<td>a=.956</td>
</tr>
<tr>
<td>31 Making sure I am still alive when I don’t feel real</td>
<td>a=.766</td>
</tr>
</tbody>
</table>
Table 11 continued

<table>
<thead>
<tr>
<th>ISAS Item</th>
<th>Affect regulation/ Self Punishment a=.86</th>
<th>Toughness a=.80</th>
<th>Revenge a=.87</th>
<th>Boundaries a=.83</th>
<th>Marking Distress a=.79</th>
<th>Anti-dissociation a=.81</th>
<th>Peer Bonding a=.67</th>
<th>Anti-suicide a=.88</th>
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<tr>
<td>8 Bonding with peers</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td>.844</td>
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<tr>
<td>21 Fitting in with others</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>34 Creating a sign of friendship or kinship...</td>
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<td></td>
<td></td>
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<td></td>
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<td>.788</td>
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<tr>
<td>6 Avoiding the impulse to attempt suicide</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32 Putting a stop to suicidal thoughts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Table 12

**Intercorrelations among 8 ED Function Factors**

<table>
<thead>
<tr>
<th>Factor</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.00</td>
<td>- .216</td>
<td>.144</td>
<td>.157</td>
<td>-.220</td>
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<td>-.120</td>
<td>-.047</td>
<td>.117</td>
<td>.278</td>
<td>.179</td>
<td>.297</td>
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<td>.013</td>
<td>-.192</td>
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<td>-.126</td>
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<td>4</td>
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<td>-.047</td>
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<td>-.011</td>
<td>-.137</td>
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<td>-.113</td>
<td>1.00</td>
<td>.166</td>
<td>.225</td>
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<td>7</td>
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<td>.166</td>
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<td>.157</td>
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<tr>
<td>8</td>
<td>-.275</td>
<td>.297</td>
<td>-.176</td>
<td>-.144</td>
<td>.194</td>
<td>.225</td>
<td>.157</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Psychopathology (PHQ)**

The third hypothesis proposed that participants who engaged in both ED and NSSI would have higher rates of psychopathology as measured by the PHQ. Results partially confirmed this hypothesis. The PHQ provides different scoring methods for each of the sections. Several of the sections provide scoring criteria that creates summed score
as well as scoring that utilized DSM IV criteria to determine clinical levels of psychopathology. ANOVAs were used to determine differences between groups for sections that utilized total scores and Pearson Chi Square analyses were utilized to compare the presence of clinical levels of psychopathology among the three groups. For rates of somatic complaints, chi square analysis demonstrated significant differences between the NSSI group, the ED group, and the NSSI/ED combined group, \( x^2 (2, N= 997) = 7.68, p<.05 \). Comparing the percentages of participants reporting somatic complaints from each of the groups shows that the combined group has a higher number of participants endorsing somatic complaints than either the NSSI or the ED group (See table 13). The NSSI and ED groups were similar in their rates of somatic complaints.

Table 13

| Rates of alcohol abuse, binge eating, somatic complaints, and bulimia |
|------------------|------------------|------------------|------------------|
|                  | NSSI             | ED               | NSSI/ED          |
| Group            | n   | Percentage | n   | Percentage | n   | Percentage | \( x^2 \) |
| Alcohol          | 228 | 45.61      | 162 | 38.27      | 268 | 50.18      | 5.77   |
| Binge            | 48  | 52.08      | 111 | 42.34      | 126 | 37.3       | 3.15   |
| Somatic          | 345 | 49.85      | 273 | 46.89      | 379 | 57.26      | 7.68*  |
| Bulimia          | 22  | 54.55      | 77  | 63.64      | 91  | 51.65      | 2.5    |
| Major Depressive Disorder | 344 | 63.95 | 279 | 43.01 | 381 | 72.18 | 59.34* |
| Anxiety          | 357 | 33.33      | 278 | 29.30      | 387 | 44.94      | 17.97* |
| Panic            | 195 | 47.18      | 118 | 33.90      | 213 | 48.83      | 7.51*  |

*significant at \( p < .05 \)

For depressive symptoms, a test of ANOVA demonstrated that there was significant differences between groups, \( F (2, 998) =37.59, p<.01 \). Follow-up bonferroni tests showed that the NSSI/ED combined group had the highest reported depression scores, followed by the NSSI only group, with the ED group showing the lowest depression scores (see table 14). According to the scoring criteria, the NSSI and
NSSI/ED combined groups mean scores were in the moderately severe range and the ED group’s mean score fell within the moderate depression range. Chi square analysis showed significant differences between the prevalence of major depressive disorder among the three groups, \( x^2(2, \text{N}= 1004) = 59.34, p<.01 \), with the combined NSSI/ED group showing the highest rates of major depressive disorder followed by the NSSI group (see Table 13). Both the combined and the NSSI group have significantly higher rates of major depressive disorder than the ED group. However, the PHQ does not rule out bipolar disorder or normal bereavement so rates could be lower than results demonstrate.

Table 14

<table>
<thead>
<tr>
<th>Psychopathology between groups (PHQ and NPQ)</th>
<th>NSSI</th>
<th>ED</th>
<th>NSSI/ED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression (PHQ)</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>15.05</td>
<td>5.82</td>
<td>12.68</td>
</tr>
<tr>
<td>Anxiety (PHQ)</td>
<td>9.09</td>
<td>2.88</td>
<td>8.54</td>
</tr>
<tr>
<td>NPQ (perfectionism)</td>
<td>150.37</td>
<td>27.36</td>
<td>148.82</td>
</tr>
</tbody>
</table>

When comparing rates of anxiety disorders among the groups, an ANOVA showed significant differences between groups, \( F (2, 964) = 16.681, p<.01 \). Follow-up bonferroni tests demonstrated that the combined NSSI/ED group had higher anxiety scores than either of the other groups (See Table 14). There was no significant difference between the NSSI only and ED only groups. Prevalence rates between clinical anxiety disorders were also significantly different between the groups, \( x^2(2, \text{N}= 1022) = 17.97, p<.01 \); with the combined group again showing much higher prevalence rates than either the NSSI or ED groups (see Table 13). When comparing panic disorders, results showed significant group differences (\( x^2(2, \text{N}= 526) = 7.51, p<.05 \)); with the NSSI and combined...
NSSI/ED groups showing similar prevalence rates, which were much higher than those of the ED group (see Table 13).

Results did not show a significant difference among rates of bulimia between the three groups, \( \chi^2(2, N=190) = 2.50, p > .05 \). However, it appears that the number of participants skipping these items was significant \( (n = 1029) \). A higher rate of missed/skipped items occurred with many of the PHQ items as compared with other measures as it was the last questionnaire administered; however, the rate of missing/skipped items was by far the highest among items related to bulimia and binge eating. Trends show that the ED group has higher rates of bulimia than either the NSSI or combined groups (see Table 13). Results did not show significant differences between groups on rates of binge eating disorder, \( \chi^2(2, N=285) = 3.15, p > .05 \). Interestingly, trends show the highest rates of binge eating disorder among the NSSI group (see Table 13). There were no significant group differences between rates of alcohol abuse among the three groups, \( \chi^2(2, N=657) = 5.77, p > .05 \) (See Table 13).

Perfectionism

The proposed hypothesis that participants with ED would score higher on the NPQ was not confirmed. The ANOVA demonstrated significant group differences, \( F(2, 924) = 15.69, p < 0.01 \). Follow-up Bonferroni analyses showed that participants who engaged in both NSSI and ED behavior scored higher on perfectionism than participants who engaged in only one behavior, either NSSI or ED. There were no group differences between the NSSI and ED group on follow-up analyses (see Table 14 for means and SDs).
CHAPTER 4
DISCUSSION

NSSI Functions

The current study demonstrated what previous literature has shown, in that emotional regulation remains one of the most highly reported reason for engaging in NSSI behavior (Briere et al., 1998; Darche, 1990; Gratz & Chapman, 2007; Klonsky et al., 2007; Najmi, Wegner & Nock, 2006) and was among the top three reported reasons for engaging in NSSI for both males and females within the current sample. The current study also solidified evidence for the utility of the ISAS in examining the functions of NSSI behavior, although the supported factor structure varied somewhat. In the current sample, only 10 of the original 13 subscales within the ISAS (Klonsky & Glenn, 2009) were replicated, and two of the original subscales, autonomy and toughness, were combined. The marking distress function did not represent a factor within the current data, which may suggest that it is not as robust in terms of describing NSSI behaviors.

When attempting to confirm the 2-factor interpersonal/intrapersonal structure found by Klonsky and Glenn (2009), the current data instead demonstrated a four-factor model that includes general interpersonal and intrapersonal functions as well as more specific independence and peer bonding functions. These findings indicate that the function of NSSI behavior may be oversimplified when placed into the two broad categories of interpersonal and intrapersonal functions. The findings from the current study are more consistent with those found by Nock and Prinstein (2004), who also found...
a four-factor model to describe NSSI functions. Their model does indicate both intrapersonal (autonomic) and interpersonal (social) functions but demonstrates more specificity as indicated by the division among positive and negative reinforcement for each.

Using Nock and Prinstein's (2004) model with the four-factor super ordinate functions from the current study, the findings can be clearly explained. Theoretically, the current study's intrapersonal factor could also be named autonomic negative reinforcement as it is comprised of the anti-suicide and anti-dissociation subscales, in other words, the negative reinforcement can be described as ridding oneself of suicidal or dissociative thoughts/feelings. Peer influence could be described as social positive reinforcement as the items suggest gaining attention or friendship with others as well as an element of sensation seeking, part of which is to entertain and generate excitement among others. The independence function could be described as an autonomic positive reinforcement as it included a need to prove oneself as well as signify that one is autonomous and separate from other individuals, indicating that one is gaining independence, identity, and sense of toughness.

The only function from Nock and Prinstein's model that was not consistent with current findings was that social negative reinforcement was not found. However, the items on the ISAS did not assess for social negative reinforcement, and therefore it is unknown whether or not this sample would have demonstrated this factor. Instead the interpersonal influence factor from the current study appeared to be a complex communication factor that included elements of both positive and negative social reinforcement. This interpersonal influence factor appeared to indicate communication...
through NSSI, whether to obtain attention/care, get revenge, or to demonstrate amount of emotional pain one is in (to self or others). The use of NSSI behavior to communicate with self or others is consistent with literature on NSSI and trauma survivors, where it is hypothesized that survivors sometimes externalize their emotional pain through NSSI and therefore express their feelings and needs to oneself or others (Connor, 1996). Overall, the study lends good support for the behavioral model.

*ED Functions*

The most highly endorsed function for eating disorder behavior was emotional regulation, which is consistent with the literature (Heatherton & Baumeister, 1991; McManus & Walter, 1995; Wedig & Nock, 2007). This study found that the functions of ED behaviors are similar to NSSI but are not fully explained by the NSSI functional model. Exploratory analyses using the ISAS-ED found that a number of items from the scale needed to be removed to better describe the functions of ED behaviors due to high cross-loadings. In fact, all of the items from two subscales, self-care and autonomy, were removed as well as two of the three items from the sensations seeking subscale. These items loaded on several factors, possibly indicating that elements of these concepts are spread throughout functions suggesting that ED functions may be more strongly related to one another than functions of NSSI. It also suggests that autonomy, self-care, and sensation seeking are not represented as distinct functions within eating disordered behaviors. As these three functions have not been tested among eating disorder samples before, it is difficult to determine whether aspects of these functions are highly related to others or whether they do not strongly represent functional aspects of ED behaviors. In
this study, low endorsement rates for the items suggest that autonomy, self-care, and sensation seeking are not as salient as functions for ED behaviors.

Many of the factors found within the NSSI sample also were demonstrated by the ED sample, indicating that the behaviors share several functions. The ED factors that mirrored those of the NSSI sample included: 1) revenge, 2) interpersonal boundaries, 3) anti-dissociation, 4) peer bonding, and 5) anti-suicide. There was also a combined affect regulation and self-punishment factor recorded in the ED sample, which indicates that when someone engages in ED behaviors as self-punishment, he or she may also be experiencing a decrease in negative emotions, linking these two functions together. This makes sense within the BN functional analysis literature, which suggests that feelings of guilt or shame often lead to purging, which physiologically calms the body and therefore decreases negative affect (Gilboa-Schechtman et al., 2006; Taylor, 1997; Whiteside et al., 2005). Though purging is not typically described as self-punishment, it is possible that purging can serve as self-punishment for engaging in binge eating. More research would need to examine self-punishment within the binge-purge cycle or restricting to determine what whether purging or another ED behavior is considered self-punishment.

The study’s findings regarding ED functions only holds true for females. The mean scores for males who engaged in ED behaviors on the ISAS items never fell at or above “somewhat relevant to me”, which suggested that the revised ISAS does not capture the function of ED behavior within male populations. Males are therefore engaging in eating disorder behaviors for reasons that were not assessed. The literature on the function of ED behaviors for males is scarce and thus needs to be examined further. However, literature on male body image would suggest that males may be engaging in
ED behaviors to improve their muscular physique (Anderson et al., 2000; Grogan & Richards, 2002). Future studies should include items assessing this and other possible areas to gain a better understanding of ED behaviors within the male population.

**Psychopathology**

As part of the secondary purposes for the current study, this study confirmed what previous literature has provided by demonstrating that individuals who engage in both NSSI and ED have higher rates of psychopathology (Ruuska et al., 2005). For instance, other research has also found higher rates of depressive symptoms (Solano, Fernandez-Aranda, Aitken, Lopez, & Vallejo, 2005) and anxiety disorders (Solano et al., 2005; Wildman et al., 2003) among individuals engaging in both NSSI and ED behaviors. Somatic complaints were also more prevalent among individuals who engaged in both NSSI and ED behaviors in the current study. This was a new finding that has not been tested in previous literature and subsequent research will be needed to confirm this high rate of somaticism among those who engage in ED and NSSI. Alcohol abuse rates did not differ between the groups, which supported Solano et al.'s (2005) findings.

Current findings suggest that individuals who are engaging in both ED and NSSI behaviors are in greater distress than individuals engaged in either behavior alone. Though the current study cannot determine causality, it may be that individuals with higher rates of depression, anxiety, and somatic complaints may feel more out of control and utilize both NSSI and ED behaviors in attempts to regulate their intense emotions. This idea would be consistent with the literature reporting higher rates of emotional dysregulation among ED and NSSI populations (Crowell, 2005; Gratz and Chapman, 2007; Svirko & Hawton, 2007; Whiteside et al., 2005). It is also possible that the
combined NSSI/ED group’s higher rates of sexual abuse history may account, in part, for higher rates of psychopathology, as sexual trauma history has been linked to psychopathology, including ED and NSSI behaviors (Glassman et al., 2007; Steiger et al., 2007; Wonderlich et al., 2007). However, Klonsky & Moyer’s (2008) meta-analysis notes that the relationship between NSSI and sexual abuse is only modest and not causal.

Another area of psychopathology examined in this study was rates of perfectionism. Results demonstrated that perfectionism rates between individuals who engage in NSSI only and ED behaviors only did not differ, though those engaged in both behaviors had significantly higher rates. It should be noted that means for all three groups were well above the norms shown for the general population (Mitzman et al., 1994). This indicates all three groups had high rates of perfectionism and only the degree of perfectionism varied. The lack of difference between rates of perfectionism among the ED only and NSSI only groups was likely influenced by the fact that ED behaviors in this study included individuals who engaged in restricting, bingeing and purging, and binging alone. Perfectionism rates have been highly correlated with anorexia (Peck & Lightsey, 2008; Wade et al., 2008), but have not been as consistently linked with bulimia and binge eating disorder (Bardone-Cone et al., 2007). Thus, examining individuals with all three behaviors possibly washed out the effects of differences that would be expected.

Further, certain aspects of perfectionism, including socially prescribed perfectionism (Nock & Prinstein, 2005); parental criticism, and doubt over actions (Hoff & Muehlenkamp, 2008) have been found to be correlated with NSSI behavior which may also contribute to the lack of difference between the NSSI only and ED only groups. It is possible that individuals who engage in both ED and NSSI behaviors have elevated rates
of perfectionism due to the different aspects of perfectionism that each behavior is related to, compounding the level of perfectionism. For instance, eating disorders (AN and BN) have been correlated to high levels of perfectionism related to concern over mistakes and doubt over actions (Bulik, et al., 2003) and NSSI is also linked to doubt over action, perfectionism related to social situations, and parental criticism (Hoff & Muehlenkamp 2008). Therefore, it is logical that individuals engaging in both behaviors would have higher levels of perfectionism in general.

High comorbidity rates of psychopathology among individuals who engage in both ED behaviors and NSSI, lends to the need for screening for other axis I disorders as well as clinical perfectionism among patients in order to best develop treatment plans. Developing a treatment plan for clients who have a multitude of psychological issues can be complex and though focus on one area may lead to some relief in others; it is helpful to have a full understanding of what the patient is going through. Fairburn (2008), who describes CBT for eating disorders, gives some guidance in terms of setting priority for treatment among patients with eating disorders who have comorbid clinical perfectionism and/or other axis I disorders. He suggests that patients be screened for axis one disorders, clinical perfectionism, and core low self-esteem and that ED treatment be tailored to the individual. For example, Fairburn (2008) notes that clinical depression can interfere with the treatment of an eating disorder and often needs to be treated before beginning ED treatment. He also notes that clinical perfectionism or core low self-esteem, when present, need to be addressed within the framework of CBT for eating disorders. Further, he describes the importance of identifying patients with “mood intolerance”, which could be explained as emotional dysregulation and noted that identifying this intolerance and
teaching strategies to overcome this can lead to decreases in NSSI behaviors among individuals with ED (Fairburn, 2008).

It seems that clinicians would benefit from determining the function of different behaviors in order to better tailor treatment to the individual. The Findings from this study suggest that there is a great deal of overlap between the functions that ED and NSSI behaviors serve. This study demonstrates that emotional regulation and expression are the most common functions for both ED and NSSI behaviors. This indicates that treatment focusing on emotional regulation, such as dialectical behavioral therapy (DBT), may be very helpful in decreasing ED and NSSI behaviors for many individuals. Palmer, Birchall, Damani, Gatward, McGrain, and Parker (2003) conducted a full DBT protocol with 7 patients with eating disorders, borderline personality disorder and significant NSSI behaviors. Though this study was limited in size, it demonstrated the potential usefulness of DBT among those who engage in ED behaviors and NSSI. By the end of the 6-18 month treatment (varied by patient), none of the participants continued to meet criteria for AN or BN, though 4 met criteria for EDNOS and all of the participants significantly reduced the frequency of self-harm (Palmer et al., 2003). DBT has also demonstrated good results for binge eating disorder, with an 89% binge abstinence rate shown after DBT treatment in a clinically controlled trial study conducted with 82 women (Telch, Agras, & Linehan, 2001).

Other functions such as interpersonal influence, interpersonal boundaries, self-punishment, and revenge also play an integral role for many individuals who exhibit either behavior. It will be important to distinguish which functions are being served on a case-by-case basis to determine the best line of treatment. For example, it is likely that
treatment examining revenge functions will look much different that treatment that is focused on improving emotional regulation. Though less commonly reported, a fair number of individuals report engaging in NSSI or ED behaviors for social reasons, such as peer bonding, revenge, interpersonal influence, or entertaining others through sensation seeking. Individuals reporting primarily social functions of the NSSI or ED behavior would likely benefit more from an interpersonal therapy (IPT) that would focus on healthy ways of building and maintaining relationships (Tanofsky-Kraff & Wilfley, 2010). A treatment trial comprised of 59 patients with BN or EDNOS utilized a modified version of IPT and demonstrated that patients showed significant reduction of symptoms within the first 8 sessions (Arcelus, J. et al., 2009). Though no known literature exists on whether IPT would also decrease NSSI behaviors, it seems that this would be likely for at least a minority of individuals who report social positive or negative reinforcement as a reason for engaging in NSSI.

This study also suggests that considering the high degree of overlap between reported functions of ED and NSSI behavior, treatments created for ED should theoretically be easily adapted to NSSI behaviors and vice-versa. Due to the high comorbidity of the two behaviors and the number shared functions, it is likely that treatment of one behavior will overlap to the other when individuals are engaged in both ED and NSSI behaviors. To date, only research on eating disorders and borderline personality disorders, described earlier, seem to examine treatment effectiveness simultaneously on both ED and NSSI behaviors. No known research, aside from case studies, looks at treatment effectiveness for ED and NSSI for individuals without a subsequent borderline personality disorder diagnosis. Outcomes for eating disorder
treatments should also include data on rates of NSSI to help determine the effectiveness of ED treatment generalization to NSSI.

**Implications for Future Research**

Future research should examine whether the 11 NSSI functions are robust among other samples and establish whether or not the marking distress function could be eliminated. Future studies could also examine the four-factor higher-order NSSI functions, especially examining evidence for the inclusion or exclusion of the intrapersonal and peer influence factors that demonstrated lower alphas within the current study. Among the ED factors, studies could examine support for the 8 factor model among inpatient samples and possibly add factors to the ED-ISAS that looked at other likely functions, such as gaining control or getting thin. As the ISAS-ED did not appear to capture the functions of ED behaviors among males, it may be beneficial to use interviews to establish other possible functions, such as obtaining a muscular physique. In terms of the described clinical implications, studies could examine whether matching treatments to identified NSSI or ED functions, as suggested, would result in improved clinical outcomes. Future studies could also include information on whether treatments for ED generalize to NSSI.

**Limitations**

The participants were primarily Caucasian and female, which makes it difficult to generalize to other cultures and males. The gender bias was expected for the eating disorder group as women typically make up 90% of eating disorder research and clinical populations. However, studies with participants who engage in NSSI typically show less of a gender bias (Lloyd-Richardson et al., 2007; Briere et al., 1997). The ethnicity bias is produced with permission of the copyright owner. Further reproduction prohibited without permission.
also somewhat expected as Caucasians typically have higher rates of both eating disorders (Robergeau & Silber, 2006) and NSSI behaviors (Gratz, 2006).

All of the measures were self-report which may represent other biases. For instance, height and weight may not be reported accurately, which could have possibly influenced BMI levels. Participants possibly could have also been over or under-reporting various symptoms; however, almost all measures of psychopathology rely on self-report whether it be in an interview or responding to questionnaires. Thus, self-report biases are difficult to overcome. A further area of interest, which was likely both a limitation and strength, was the use of an internet program to gather data. Participants were potentially more likely to end the study early, possibly resulting in more missing data than would typically occur in other settings. However, it was also easier to reach a wider population than would typically occur in an undergraduate setting. It is likely that a larger variety of participants were willing to fill out questionnaires on the internet regarding ED and NSSI behaviors due to the higher level of anonymity that is provided by the internet. Further, the sample is likely composed of subjects across many areas of the United States and included a minority of participants from other English speaking countries.

Conclusions

The current study adds to a small literature base examining the functions of ED and NSSI behaviors and is the first to examine the functions of both behaviors simultaneously. Findings indicate further support for a behavioral model of NSSI functions, with additional support for more complex interpersonal communication functions. Findings also illustrate a comprehensive 8-factor model of ED behaviors, lending empirical support to functions that have primarily been theoretical in the past. A

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high level of overlap between the functions of NSSI and ED behaviors indicate that they often serve similar functions and may possibly benefit from treatments focusing on such functions. Clinicians working with individuals with ED or NSSI behaviors may benefit from using assessments geared toward identifying functions of various ED and NSSI behaviors to best tailor treatment to the individual. Further, the study adds to the literature on NSSI and ED by demonstrating that individuals who engage in both behaviors have higher rates of depression, anxiety, somatic complaints and perfectionism. Clinicians treating individuals with both ED and NSSI would benefit from an awareness of the high levels of psychopathology among these complex patients in order to best determine treatment strategies and priorities. Further research focusing on applying knowledge of individually reported functions of ED and NSSI behaviors to treatment planning will be necessary to determine the clinical usefulness of assessing functions. Treatment outcomes on ED should also begin to include rates of NSSI to evaluate the generalizability of ED treatments to NSSI behaviors.
Appendix A

About Me

1. Age _________

2. Gender (circle) MALE FEMALE

3. Ethnicity (circle all that apply)
   White/Caucasian
   Native American
   Black/African American
   Hispanic/Latino
   Asian
   Other Ethnicity Specify ____________________


5. Are you presently a student?
   Full-Time Part-Time Not a student

6. Are you presently employed?
   Yes No

7. How would you rank your family financial status/socio-economic standing? (circle)

   1 2 3 4 5 6 7
   Very Poor Low-Average Average High Wealthy Extremely Poor Average Average Wealthy

6. Height ___________

Weight ___________ lbs

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7. Have you experienced abuse or neglect (check all that apply)?

Physical  Emotional  Sexual  Neglect

8. Have you ever been hospitalized for self-harm behavior?
   Yes  No

   b. How many times have you been hospitalized for self-harm behavior?

9. Have you even been hospitalized for an eating disorder?
   Yes  No

   b. How many times have you been hospitalized for an eating disorder?

10. Are you currently receiving treatment for self-harm behavior?
    Yes  No

11. Are you currently receiving treatment for an eating disorder?
    Yes  No
Appendix B

Instructions

This inventory was written to help us better understand the experience of non-suicidal self-harm. Below is a list of statements that may or may not be relevant to your experience of self-harm. Please identify the statements that are most relevant for you:

- Circle 1 if the statement is **very relevant** for you
- Circle 2 if the statement is **somewhat relevant** for you
- Circle 3 if the statement is **not relevant** for you at all

<table>
<thead>
<tr>
<th>ORIGINAL</th>
<th>EATING DISORDER VERSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>“When I self-harm, I am...”</td>
<td>“When I restrict, binge, or purge (use laxatives, excessive exercise, vomiting, etc.), I am...”</td>
</tr>
<tr>
<td>1. ...Calming myself down</td>
<td>Same</td>
</tr>
<tr>
<td>2. ...creating a boundary between myself and others</td>
<td>Same</td>
</tr>
<tr>
<td>3. ...punishing myself</td>
<td>Same</td>
</tr>
<tr>
<td>4. ...giving myself a way to care for myself (by attending to the wound)</td>
<td>...giving myself a way to care for myself</td>
</tr>
<tr>
<td>5. ...causing pain so I will stop feeling numb</td>
<td>...causing physical changes so I will stop feeling numb</td>
</tr>
<tr>
<td>6. ...avoiding the impulse to attempt suicide</td>
<td>Same</td>
</tr>
<tr>
<td>7. ...doing something to generate excitement or exhilaration</td>
<td>Same</td>
</tr>
<tr>
<td>8. ...bonding with peers</td>
<td>Same</td>
</tr>
<tr>
<td>9. ...letting others know the extent of my emotional pain</td>
<td>Same</td>
</tr>
<tr>
<td>10. ...seeing if I can stand the pain</td>
<td>...seeing if I withstand hunger pains</td>
</tr>
<tr>
<td>11. ...creating a physical sign that I feel awful</td>
<td>Same</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>12.</td>
<td>...getting back at someone</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>13.</td>
<td>...ensuring that I am self-sufficient</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>14.</td>
<td>...releasing emotional pressure that has built up inside of me</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>15.</td>
<td>...demonstrating that I am separate from other people</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>16.</td>
<td>...expressing anger towards myself for being worthless or stupid</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>17.</td>
<td>...creating a physical injury that is easier to care for than my emotional distress</td>
</tr>
<tr>
<td></td>
<td>...controlling physical sensations (e.g. hunger, fullness) that are easier to care for than emotional distress</td>
</tr>
<tr>
<td>18.</td>
<td>...trying to feel something (as opposed to nothing) even if it is physical</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>19.</td>
<td>...responding to suicidal thoughts without actually attempting suicide</td>
</tr>
<tr>
<td></td>
<td>...responding to negative thoughts about my body</td>
</tr>
<tr>
<td>20.</td>
<td>...entertaining myself and others by doing something extreme</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>21.</td>
<td>...fitting in with others</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>22.</td>
<td>...seeking care or help from others</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>23.</td>
<td>...demonstrating I am tough or strong</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>24.</td>
<td>...proving to myself that my emotional pain is real</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>25.</td>
<td>...getting revenge against others</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>26.</td>
<td>...demonstrating that I do not need to rely on others for help</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>27.</td>
<td>...reducing anxiety, frustration, anger, or other overwhelming emotions</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>28.</td>
<td>...establishing a barrier between myself and others</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>29.</td>
<td>...reacting to feeling unhappy with myself or disgusted with myself</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>30.</td>
<td>...allowing myself to focus on treating the injury, which can be gratifying or satisfying</td>
</tr>
<tr>
<td></td>
<td>Allowing myself to focus on my body, which can be gratifying or satisfying</td>
</tr>
<tr>
<td>31.</td>
<td>...making sure I am still alive when I don’t feel real</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td>32.</td>
<td>...putting a stop to suicidal thoughts</td>
</tr>
<tr>
<td></td>
<td>Same</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>33. ...pushing my limits in a manner akin to skydiving or other extreme activities</td>
<td>Same</td>
</tr>
<tr>
<td>34. ...creating a sign of friendship or kinship with friends or loved ones</td>
<td>Same</td>
</tr>
<tr>
<td>35. ...keeping a loved one from leaving or abandoning me</td>
<td>Same</td>
</tr>
<tr>
<td>36. ...proving I can take the physical pain</td>
<td>...proving I can stand the feelings of hunger</td>
</tr>
<tr>
<td>37. ...signifying the emotional distress I'm experiencing</td>
<td>Same</td>
</tr>
<tr>
<td>38. ...trying to hurt someone close to me</td>
<td>Same</td>
</tr>
<tr>
<td>39. ...establishing that I am autonomous/independent</td>
<td>Same</td>
</tr>
</tbody>
</table>

Open ended questions:

1. Please list any statements that you feel would be more accurate for you than the ones listed above:

2. Please list any statements you feel should be added to the above list, even if they do not necessarily apply to you:
Appendix C

Eating Attitudes Test (Eat-26)

<table>
<thead>
<tr>
<th>Age</th>
<th>Current Weight</th>
<th>Highest Weight (excluding pregnancy)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sex</th>
<th>Height</th>
<th>Lowest Adult Weight:</th>
<th>Ideal Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

√ Please choose one response by marking a check to the right for each of the following statements:

<table>
<thead>
<tr>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Am terrified about being overweight</td>
</tr>
<tr>
<td>2. Avoid eating when I am hungry.</td>
</tr>
<tr>
<td>3. Find myself preoccupied with food.</td>
</tr>
<tr>
<td>4. Have gone on eating binges where I feel that I may not be able to stop.</td>
</tr>
<tr>
<td>5. Cut my food into small pieces.</td>
</tr>
<tr>
<td>6. Aware of the calorie content in the foods that I eat.</td>
</tr>
<tr>
<td>7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)</td>
</tr>
<tr>
<td>8. Feel that others would prefer if I ate more.</td>
</tr>
<tr>
<td>9. Vomit after I have eaten.</td>
</tr>
<tr>
<td>10. Feel extremely guilty after eating.</td>
</tr>
<tr>
<td>11. Am preoccupied with a desire to be thinner.</td>
</tr>
<tr>
<td>12. Think about burning up calories when I exercise.</td>
</tr>
<tr>
<td>13. Other people think that I am too thin.</td>
</tr>
</tbody>
</table>
14. Am preoccupied with the thought of having fat on my body.  

15. Take longer than others to eat my meals.  

16. Avoid foods with sugar in them.  

17. Eat diet foods.  

18. Feel that food controls my life.  

19. Display self-control around food.  

20. Feel that others pressure me to eat.  

21. Give too much time and thought to food.  

22. Feel uncomfortable after eating sweets.  

23. Engage in dieting behavior.  

24. Like my stomach to be empty.  

25. Have the impulse to vomit after meals.  


Total Score = 

<table>
<thead>
<tr>
<th>Behavioral Questions</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Gone on binges where you feel that you may not be able to stop? (eating much more than most people would eat under the same circumstances)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you answered yes, how often during the worst week:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Ever made yourself sick (vomited) to control your weight or shape?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you answered yes, how often during the worst week:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Ever used laxatives, diet pills or diuretics (water pills) to control your weight or shape?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If you answered yes, how often during the worst week:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Ever been treated for an eating disorder? When:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

EAT-26 From: Garner et al. 1982, Psychological Medicine, 12, 871-878; adapted by D. Garner with permission.
Appendix D

**Deliberate Self-Harm Inventory**

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

1. Have you ever intentionally (i.e., on purpose) cut your wrist, arms, or other area(s) of your body (without intending to kill yourself)? (circle one):
   
   **If yes,**
   
   How old were you when you first did this? _____________

   How many times have you done this? (please place a check by **ONE** of the following)
   
<table>
<thead>
<tr>
<th>_1 time</th>
<th>_3 times</th>
<th>_5 times</th>
</tr>
</thead>
<tbody>
<tr>
<td>_2 times</td>
<td>_4 times</td>
<td>_6 or more times</td>
</tr>
</tbody>
</table>

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

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

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No

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

   1. Yes 2. No

   **If yes,**
   How old were you when you first did this? ________________
   How many times have you done this? (please place a check by **ONE** of the following)

   _1 time  _2 times
   _3 times  _4 times
   _5 times  _6 or more times

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

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

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

   Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No
3. Have you ever intentionally (i.e., on purpose) carved words into your skin? (circle one):

   1. Yes  
   2. No

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

   How many times have you done this? (please place a check by ONE of the following)
   _1 time  
   _3 times  
   _5 times

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

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

   Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?  
   1. Yes  
   2. No

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

   1. Yes  
   2. No

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

   How many times have you done this? (please place a check by ONE of the following)
   _1 time  
   _3 times  
   _5 times

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

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

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

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No

5. Have you ever intentionally (i.e., on purpose) severely scratched yourself, to the extent that scarring or bleeding occurred? (circle one):
   1. Yes 2. No

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

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

- 1 time
- 3 times
- 5 times
- 2 times
- 4 times
- 6 or more times

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

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

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

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No

6. Have you ever intentionally (i.e., on purpose) bit yourself, to the extent that you broke the skin? (circle one): 1. Yes 2. No

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

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

1. 1 time  2. 2 times
2. 3 times  4. 4 times
3. 5 times  6. 6 or more times

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

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

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

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No
7. Have you ever intentionally (i.e., on purpose) rubbed sandpaper on your body? (circle one):

   1. Yes                  2. No

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

   How many times have you done this? (please place a check by **ONE** of the following)
   
   - _1 time_  _2 times_
   - _3 times_  _4 times_
   - _5 times_  _6 or more times_

   When was the last time you did this? (please place a check by **ONE** of the following)
   
   - _Within the past 2 weeks_  _4 months to less than 5 months ago_
   - _3-4 weeks ago_  _5 months to less than 6 months ago_
   - _More 1 month but less than 2 months ago_  _6 months to less than 9 months ago_
   - _2 months to less than 3 months ago_  _9 to 12 months ago_
   - _3 months to less than 4 months ago_  _More than 12 months ago_

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

   Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?  
   1. Yes  2. No

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

   1. Yes                  2. No

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

   How many times have you done this? (please place a check by **ONE** of the following)
   
   - _1 time_  _2 times_
   - _3 times_  _4 times_
   - _5 times_  _6 or more times_
When was the last time you did this (please place a check by ONE of the following)

- Within the past 2 weeks
- 3-4 weeks ago
- More than 1 month but less than 2 months ago
- 2 months to less than 3 months ago
- 3 months to less than 4 months ago

4 months to less than 5 months ago
- 5 months to less than 6 months ago
- 6 months to less than 9 months ago
- 9 to 12 months ago
- More than 12 months ago

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

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No

2. Have you ever intentionally (i.e., on purpose) used bleach, comet, or oven cleaner to scrub your skin? (circle one): 1. Yes 2. No

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

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

- 1 time
- 3 times
- 5 times

- 2 times
- 4 times
- 6 or more times

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

- Within the past 2 weeks
- 3-4 weeks ago
- More than 1 month but less than 2 months ago
- 2 months to less than 3 months ago
- 3 months to less than 4 months ago

4 months to less than 5 months ago
- 5 months to less than 6 months ago
- 6 months to less than 9 months ago
- 9 to 12 months ago
- More than 12 months ago

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

____________________

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No

10. Have you ever intentionally (i.e., on purpose) stuck sharp objects such as needles, pins, staples, etc. into your skin, **not including** tattoos, ear piercing, needles used for drug use, or body piercing? (circle one) 1. Yes 2. No

If yes,

How old were you when you first did this? __________

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

__ 1 time  __ 2 times
__ 3 times  __ 4 times
__ 5 times  __ 6 or more times

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

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

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

____________________

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No

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

   1. Yes  2. No

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

   How many times have you done this? (please place a check by ONE of the following)
   _1 time  _2 times
   _3 times  _4 times
   _5 times  _6 or more times

   When was the last time you did this (please place a check by ONE of the following)
   _ Within the past 2 weeks  _4 months to less than 5 months ago
   _ 3-4 weeks ago  _5 months to less than 6 months ago
   _ More 1 month but less than 2 months ago  _6 months to less than 9 months ago
   _ 2 months to less than 3 months ago  _9 to 12 months ago
   _ 3 months to less than 4 months ago  _More than 12 months ago

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

   Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?  1. Yes  2. No

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

   1. Yes  2. No

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

   How many times have you done this? (please place a check by ONE of the following)
   _1 time  _2 times
When was the last time you did this (please place a check by ONE of the following)

- Within the past 2 weeks
- 3-4 weeks ago
- More 1 month but less than 2 months ago
- 2 months to less than 3 months ago
- 3 months to less than 4 months ago

- 4 months to less than 5 months ago
- 5 months to less than 6 months ago
- 6 months to less than 9 months ago
- 9 to 12 months ago
- More than 12 months ago

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

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No

13. Have you ever intentionally (i.e., on purpose) banged your head against something, to the extent that you caused a bruise to appear? (circle one): 1. Yes 2. No

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

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

- 1 time
- 3 times
- 5 times
- 2 times
- 4 times
- 6 or more times

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

- Within the past 2 weeks
- 3-4 weeks ago
- More 1 month but less than 2 months ago
- 2 months to less than 3 months ago
- 3 months to less than 4 months ago

- 4 months to less than 5 months ago
- 5 months to less than 6 months ago
- More than 12 months ago
How many years have you been doing this? (If you are no longer doing this, how many years did you do this before you stopped?) Please write the actual number of years you engaged in this behavior. ________________

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No

Have you ever intentionally (i.e., on purpose) punched yourself or another object, to the extent that you caused a bruise to appear? (circle one): 1. Yes 2. No

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

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

___1 time ___2 times
___3 times ___4 times
___5 times ___6 or more times

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

___Within the past 2 weeks ___4 months to less than 5 months ago
___3-4 weeks ago ___5 months to less than 6 months ago
___More 1 month but less than 2 months ago ___6 months to less than 9 months ago
___2 months to less than 3 months ago ___9 to 12 months ago
___3 months to less than 4 months ago ___More than 12 months ago

How many years have you been doing this? (If you are no longer doing this, how many years
15. Have you ever intentionally (i.e., on purpose) prevented wounds from healing? (circle one):

1. Yes 2. No

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

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

1. 1 time 2. 2 times
3. 3 times 4. 4 times
5. 5 times 6. 6 or more times

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

1. Within the past 2 weeks 2. 4 months to less than 5 months ago
3. 3-4 weeks ago 4. 5 months to less than 6 months ago
5. More 1 month but less than 2 months ago 6. 6 months to less than 9 months ago
6. 2 months to less than 3 months ago 7. 9 to 12 months ago
7. 3 months to less than 4 months ago 8. More than 12 months ago

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

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment? 1. Yes 2. No
16. Have you ever intentionally (i.e., on purpose) done anything else to hurt yourself without the intention of dying that was not asked about in this questionnaire? (circle one):
   1. Yes 2. No

If yes,
What did you do?

How old were you when you first did this?

How many times have you done this? (please place a check by ONE of the following)
   _1 time  _2 times
   _3 times  _4 times
   _5 times  _6 or more times

When was the last time you did this (please place a check by ONE of the following)
   _ Within the past 2 weeks  _4 months to less than 5 months ago
   _ 3-4 weeks ago  _5 months to less than 6 months ago
   _ More 1 month but less than 2 months ago  _6 months to less than 9 months ago
   _ 2 months to less than 3 months ago  _9 to 12 months ago
   _ 3 months to less than 4 months ago  _More than 12 months ago

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

Has this behavior ever resulted in hospitalization or injury severe enough to require medical treatment?
   1. Yes 2. No

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Appendix E

Neurotic Perfectionism Questionnaire

Please report how strongly you disagree or agree with each of the statements below according to this scale:

1-----------------2-----------------3-----------------4---------------5

Strongly Disagree Strongly Agree

1. ______ I am “over-sensitive” to criticism.
2. ______ I try to avoid the disapproval of others at all costs.
3. ______ I often feel anxious or confused before beginning a task.
4. ______ At times my emotions get so confused, I can’t make any sense of them.
5. ______ I constantly monitor my performance/behavior.
6. ______ I am harshly critical of myself.
7. ______ At times I feel empty and hollow inside.
8. ______ I constantly compare myself with people I consider to be better than me.
9. ______ I have a clear idea of the kind of person I would like to be, or ought to be, but I feel that I always fall short of this.
10. ______ I tend to think in extremes, i.e. feeling “all good or all bad,” all successful or all failing”
11. ______ I often feel like withdrawing from people and social gatherings.
12. ______ When I most need to be close to a person, I often find myself deliberately trying to reject or push them away.

13. ______ At times my anger toward other people seems so intense, it feels destructive and unsafe.

14. ______ If I do badly in something, I feel like a total failure.

15. ______ I often feel lonely/isolated.

16. ______ If I do less than my best I feel guilty and ashamed.

17. ______ No matter how successful my performance, I still feel that I could/should have done better.

18. ______ No matter how well I do, I never feel satisfied with my performance.

19. ______ I feel O.K. if I lapse or make mistakes.

20. ______ I am usually good at making decisions.

21. ______ I set impossibly high standards for myself.

22. ______ Sometimes I feel as though I don’t really know “who I am.”

23. ______ As soon as I succeed in reaching a goal, I have to set myself an even more difficult target to work toward.

24. ______ I feel guilty a lot of the time

25. ______ Unless I am constantly working toward achieving a goal, I feel dissatisfied.

26. ______ As a child, however well I did, it felt as if it were never enough to please others.

27. ______ It often feels as if people make impossible/excessive demands of me.

28. ______ I measure myself by other people’s standards.

29. ______ I often experience feelings of self-contempt or worthlessness.

30. ______ I believe if I fail someone they will cease to respect me, or care for me.

31. ______ I often feel ashamed.
32. ______ Important others (i.e. mother, father) seemed to love me more for HOW WELL I DID rather than WHO I was.

33. ______ I am always punishing myself.

34. ______ I feel I have to be perfect in order to gain approval.

35. ______ On occasions I feel if people could “see through me” they would expose me for the fraud that I sometimes feel I am.

36. ______ It feels as if my best is never good enough.

37. ______ As a child I couldn’t understand what others expected or required of me.

38. ______ If one is to attempt anything, one should do it perfectly or not at all.

39. ______ I sometimes feel blaming and hostile toward other people.

40. ______ In order to feel O.K. about myself, I have to be what others expect me to be.

41. ______ I find it difficult to obtain excitement/pleasure from life.

42. ______ When I get what I want (i.e. achieve my goal) I feel dissatisfied or disillusioned.
Appendix F

Patient Health Questionnaire

This questionnaire is an important part of providing you with the best health care possible. Your answers will help in understanding problems that you may have. Please answer every question to the best of your ability unless you are requested to skip over a question.

Name________________________ Age _____ Sex: ☐ Female ☐ Male
Today’s Date________

1. During the last 4 weeks, how much have you been bothered by any of the following problems?
   a. Stomach pain........................................................
   b. Back pain..............................................................
   c. Pain in your arms, legs, or joints (knees, hips, etc.)........................................................................
   d. Menstrual cramps or other problems with your periods..........................................................
   e. Pain or problems during sexual intercourse........
   f. Headaches.............................................................
   g. Chest pain..............................................................
   h. Dizziness..............................................................
   i. Fainting spells...................................................
   j. Feeling your heart pound or race........................
   k. Shortness of breath............................................
   l. Constipation, loose bowels, or diarrhea.............
   m. Nausea, gas, or indigestion..............................

2. Over the last 2 weeks, how often have you been bothered by any of the following problems?
   a. Little interest or pleasure in doing things.........
   b. Feeling down, depressed, or hopeless...............

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c. Trouble falling or staying asleep, or sleeping too much..................................................□ □ □ □
d. Feeling tired or having little energy..........................□ □ □ □
e. Poor appetite or overeating........................................□ □ □ □
f. Feeling bad about yourself — or that you are a failure or have let yourself or your family down..........................□ □ □ □
g. Trouble concentrating on things, such as reading the newspaper or watching television...............□ □ □ □
h. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual..........................□ □ □ □
i. Thoughts that you would be better off dead or of hurting yourself in some way..........................□ □ □ □

FOR OFFICE CODING: Som Dis if at least 3 of #1a-m are “a lot” and lack an adequate biol explanation.
Maj Dep Syn if answers to #2a or b and five or more of #2a-i are at least “More than half the days” (count #2i if present at all).
Other Dep Syn if #2a or b and two, three, or four of #2a-i are at least “More than half the days” (count #2i if present at all).
3. Questions about anxiety.
   a. In the last 4 weeks, have you had an anxiety attack — suddenly feeling fear or panic?................................................... NO □ YES □
      If you checked “NO”, go to question #5.
   b. Has this ever happened before?................................. □ □
   c. Do some of these attacks come suddenly out of the blue — that is, in situations where you don’t expect to be nervous or uncomfortable?.......................................................... □ □
   d. Do these attacks bother you a lot or are you worried about having another attack?.................................................. □ □

4. Think about your last bad anxiety attack.
   a. Were you short of breath?........................................... □ □
   b. Did your heart race, pound, or skip?.......................... □ □
   c. Did you have chest pain or pressure?........................ □ □
   d. Did you sweat?........................................................... □ □
   e. Did you feel as if you were choking?........................... □ □
   f. Did you have hot flashes or chills?.............................. □ □
   g. Did you have nausea or an upset stomach, or the feeling that you were going to have diarrhea?.......................... □ □
   h. Did you feel dizzy, unsteady, or faint?....................... □ □
   i. Did you have tingling or numbness in parts of your body?... □ □
   j. Did you tremble or shake?............................................. □ □
   k. Were you afraid you were dying?................................ □ □

5. Over the last 4 weeks, how often have you been bothered by any of the following problems? If you checked “Not at all”, go to question #6.
   a. Feeling nervous, anxious, on edge, or worrying a lot about different things......................................................... Not at all □ □ □
   b. Feeling restless so that it is hard to sit still.................. □ □ □ □
   c. Getting tired very easily............................................. □ □ □ □
   d. Muscle tension, aches, or soreness............................. □ □ □ □
   e. Trouble falling asleep or staying asleep........................ □ □ □ □
   f. Trouble concentrating on things, such as reading a book or
watching TV .............................................. ☐ ☐ ☐
g. Becoming easily annoyed or irritable..................... ☐ ☐ ☐

FOR OFFICE CODING: Pan Syn if all of #3a-d are ‘YES’ and four or more of #4a-k are ‘YES’.
Other Anx Syn if #5a and answers to three or more of #5b-g are “More than half the days”.

6. Questions about eating.
   a. Do you often feel that you can’t control what or how much you eat? .............................................. ☐ ☐ ☐
   b. Do you often eat, within any 2-hour period, what most people would regard as an unusually large amount of food? ................................................................. ☐ ☐ ☐

   If you checked ‘NO’ to either #a or #b, go to question #9.
   c. Has this been as often, on average, as twice a week for the last 3 months? .............................................. ☐ ☐ ☐

7. In the last 3 months have you often done any of the following in order to avoid gaining weight?
   a. Made yourself vomit? .............................................. ☐ ☐ ☐
   b. Took more than twice the recommended dose of laxatives? ................................................................. ☐ ☐ ☐
   c. Fasted — not eaten anything at all for at least 24 hours? ......................................................................... ☐ ☐ ☐
   d. Exercised for more than an hour specifically to avoid gaining weight after binge eating?.......................... ☐ ☐ ☐

8. If you checked ‘YES’ to any of these ways of avoiding gaining weight, were any as often, on average, as twice a week? ............. ☐ ☐ ☐

9. Do you ever drink alcohol (including beer or wine)? ................. ☐ ☐ ☐

   If you checked “NO” go to question #11.

10. Have any of the following happened to you
more than once in the last 6 months?

a. You drank alcohol even though a doctor suggested that you stop drinking because of a problem with your health

b. You drank alcohol, were high from alcohol, or hung over while you were working, going to school, or taking care of children or other responsibilities

c. You missed or were late for work, school, or other activities because you were drinking or hung over

d. You had a problem getting along with other people while you were drinking

e. You drove a car after having several drinks or after drinking too much

11. If you checked off any problems on this questionnaire, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all □ Somewhat difficult □ Very difficult □ Extremely difficult □
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