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## Non-Suicidal Self-Injury with Girls in Tertiary Care: Implications for Assessment and Treatment

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A thesis submitted in partial fulfillment of the requirements for the Master of Education degree in Psychology

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NON-SUICIDAL SELF-INJURY WITH GIRLS IN TERTIARY CARE: IMPLICATIONS FOR  
ASSESSMENT AND TREATMENT

By

Amanda Kerry

Graduate Program in Education

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of  
Master of Education in Counselling Psychology

The School of Graduate and Postdoctoral Studies

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London, Ontario, Canada

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## Abstract

This study examined what differentiates girls in a residential treatment program who engage in non-suicidal self-injury (NSSI) from the girls who do not. Participants included 68 females between the ages of 6 to 17 who resided at a tertiary mental health care facility for children and youth. Secondary data from the Brief Child and Family Phone Interview (BCFPI) was employed to measure internalizing and externalizing behaviours, histories maltreatment, and family disruptions. The findings indicate no significant differences between the low, moderate, and high risk groups. However, according to the primary caregivers' reports, girls who appear to enjoy themselves are less likely to engage in NSSI behaviours. The clinical relevance of these results are discussed, in addition to how the current findings may guide future research to further enhance our understanding of NSSI behaviours among girls in tertiary care.

*Keywords:* Non-Suicidal Self-Injury (NSSI), Residential Treatment, Gender Informed Treatment

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## Introduction

Adolescent females in residential treatment programs experience many challenges and to some, harming themselves may feel like the only coping mechanism available. Research examining non-suicidal self-injury (NSSI) suggests that this population is at high risk for further emotional distress resulting from self injurious behaviours. Recent studies indicate a much higher rate of NSSI among adolescents than among either children or adults (Nock and Prinstein, 2005; Grenville, Goodman, & Macpherson, 2011; Katz, Au, Singal, Brownell, Roos, Martens, Chateau, Enns, Kozyrskyj, & Sareen, 2011). Adolescent females in tertiary care treatment programs, such as residential facilities, have a high incidence of involvement with a variety of mental health services (Katz, et al., 2011). Consequently, it is important to gain a deeper understanding of the factors involved in NSSI among this population such that services will be better equipped to offer appropriate supports. This literature review presents recent and relevant research in the area of NSSI, examining the frequency, functions, and mediators involved in NSSI. It also discusses the relationship between NSSI and gender in addition to the relationship between NSSI and youth in residential treatment.

The aim of the current study was to investigate within a sample of females in a residential treatment program those factors that differentiate females who engage in NSSI from those who do not.



## Literature Review

Various terms such as, “self-injurious behaviour”, “self-mutilative behaviour”, and “deliberate self-harm” have been used to describe a range of behaviours currently referred to as non-suicidal self-injury (NSSI). NSSI refers to the direct and deliberate harm of bodily tissue in the absence of suicidal intent (Glassman, Weierich, Hooley, Deliberto, & Nock, 2007). It is important to note that NSSI does not include culturally acceptable self-inflicted behaviours such as tattooing or piercings. Data suggests the prevalence rate of NSSI in the general adult population is 4% and approximately 40% to 60% in clinical samples (Nock & Prinstein, 2005; Bresin, & Gordon, 2013). Furthermore, adolescence is a period of increased risk with rates of 14% to 39% (Nock & Prinstein, 2005). The high rates of NSSI in adolescence stress the importance for further research to enhance our understanding of these behaviours.

In addition, NSSI differs from risk taking behaviours such as excessive speeding when driving, since with NSSI the intended purpose is physical harm, whereas in risk taking behaviours physical harm is not the intent, rather a possible consequence of the behaviour (Bresin, & Gordon, 2013). Research has found that the most common form of NSSI is skin-cutting, occurring in 70% to 97% of those that self injure. The other common forms of self harm include banging or hitting (21% to 44%) and burning (15% to 35%) (Klonsky, 2007).

### *Frequency of NSSI*

Studies have investigated the frequency of NSSI with both clinical and non-clinical populations. Nixon, Cloutier, and Aggarwal (2002), tested the hypothesis that repetitive self-injurious behaviour (SIB) has addictive properties. This study examined 42 adolescents who were admitted to, or participated in hospitalization programs over a four month period. The

Ottawa/ Queen's Self- Injury Questionnaire was employed to measure the addictive aspects of SIB. A major limitation of this study was the use of the Ottawa/ Queen's Self- Injury Questionnaire which at the time of the study was a new self-report measure and had yet to establish its reliability and validity. The results identified that 64.3% of the adolescent clinical sample reported experiencing suicidal ideation almost daily. Additionally, 78.6% reported almost daily urges to self-injure. In relation to gender differences, outcomes showed 88.9% of females and 50.0% of males reported acts of self-injury to be highly repetitive in nature, occurring from at least once a week to almost daily (Nixon, et al., 2002).

The high frequency of SIB was supported by another study examining adolescent inpatients. Nock and Prinstein, (2004) reported that 82.4% of their sample engaged in at least one incident of SIB in the previous year with 50.6% of adolescents reporting 19 or more incidents in the previous year. Nixon, et al., (2002) and Nock and Prinstein, (2004) provide the frequency of SIB behaviours in a clinical population; however, given that these studies were conducted in a hospital, they may not be generalizable to other populations. Klonsky, Oltmanns, Turkheimer (2003), examined the prevalence of deliberate self-harm (DIB) in a large sample of non-clinical participants. These researchers suggested that previous studies focused on clinical and forensic populations and this may have reflected an inflated estimate of the association between DIB and psychiatric disorders. Klonsky et al., (2003) examined 1, 986 volunteer military recruits. Two items from the Schedule of Non-Adaptive and Adaptive Personality were used to measure DIB. This is a noteworthy limitation because a multi-item scale would have been more reliable. The prevalence rate in the non-clinical population was found to be 4%; thereby, supporting the findings of previous studies. Noteworthy, the prevalence rate of DIB was approximately equivalent for men and women (Klonsky, et al., 2003). Given that the

participants in this study were volunteers, the results may not generalize to those unwilling to volunteer.

### *Functions of NSSI*

Observing the prevalence rates of NSSI is necessary in understanding its importance, severity, and function. Kumar, Pepe, and Steer (2004) examined adolescent self-reported reasons for cutting themselves. The participants in their study included 50 consecutive adolescent admissions to a psychiatric ward of a general hospital. This sample may not be sufficiently large to represent the general population, limiting its generalizability. The measure used was the Self-Injury Motivation Scale II. The results indicated that 60% of the adolescents described feeling a sense of relief after cutting themselves. Additionally, 90% reported actually seeing blood or feeling the flow of blood was important. The results also suggested that 56% of the adolescents described their cutting behaviours as impulsive (Kumar, et al., 2004).

Nixon, et al., (2002) also examined reasons for SIB in hospitalized adolescents and found that 83% engaged in SIB in response to feelings of depression, with 92.9% reporting feeling “relief” after harming themselves. These results support the findings of Kumar, et al., (2004). Nock and Prinstein (2004) evaluated the four primary functions of self-mutilative behaviour (SMB). The functions of SMB identified were: automatic-negative reinforcement (i.e., to stop bad feelings), automatic-positive reinforcement (i.e., to feel something, even if it is pain), social-negative reinforcement (i.e., to avoid punishment from others or avoid doing something unpleasant), and social-positive reinforcement (i.e., to try to get a reaction out of someone or let others know how unhappy I am). The study examined 108 adolescent inpatients who were residing on a psychiatric unit at the time of the study. The measure employed was the Functional

Assessment of Self-Mutilation (FASM). Analysis revealed that scores on the automatic-negative reinforcement subscale were significantly higher than on all other subscales. Furthermore, scores on the automatic-positive reinforcement subscale were significantly higher than on both social-reinforcement subscales. This suggests the primary purpose of most adolescent SMB would appear to be the self regulation (i.e., both decrease and increase) of emotional or physiological experiences (Nock & Prinstein, 2004). This study is a valuable addition to the literature on NSSI. However it should be noted that 72.2% of the participants identified as European American, and thus the sample is not inclusive of diverse ethnicities.

In addition to investigating the functions of SMB, examining the contextual features of the behaviour is important to the overall understanding of NSSI. Nixon, et al., (2002) examined adolescent psychiatric inpatients and found half of the adolescents endorsed the reason “punish self for being bad/bad thoughts”. This function of self-punishment is also supported by Laye-Gindhut and Schonert Reichl (2005). These researchers investigated a community sample of adolescent self-harmers and reported that 70% endorsed the reason “I don’t like myself”, 64% selected “I felt like a failure”, and 63% endorsed “I was angry at myself”. Nock & Prinstein (2005) investigated both behavioural functions and contextual features of SMB among adolescents. Their analysis of results from the FASM revealed that most people who self-mutilate denied using alcohol or drugs during incidents of SMB. Furthermore, 82.1% of adolescents reported SMB among at least one of their friends in the previous year. This study suggested that, to a degree, social modeling may be involved in SMB. The study also found that both social functions, positive and negative, were significantly related with younger age, ethnic minority status, along with symptoms of a major depressive disorder. While the findings of this study are interesting, they may be of limited generalizability since 76.4% of the participants were

identified as European American. Another limitation, prevalent in most research in NSSI, is the reliance on self-report data. This type of data may involve potential biases, with participants responding in a socially desirable manner. Self report data also may have inaccuracies due to distortions in retrospective recall.

Research also suggests that NSSI behaviours may be linked to impulsivity. Kumar, et al., (2004) found that 56% of adolescent psychiatric inpatients described their cutting behaviours as impulsive. Dougherty, et al., (2009) reported that adolescents who engage in NSSI and suicide attempts (SA) had higher self-ratings of trait impulsivity compared to adolescents who engage in only NSSI. They also found that adolescents who engage in NSSI and SA performed more impulsively on a laboratory measure of consequence sensitivity. Additionally, after 4 to 6 weeks of hospitalization the researchers completed follow-up comparisons and found laboratory measures of consequence sensitivity impulsivity were twice as high in the NSSI and SA group compared to the NSSI only group (Dougherty, et al., 2009). Furthermore, Low, et al., (2000) examined 50 women and found that impulsivity was related to the frequency of deliberate self-harm.

Laboratory studies offer an alternative to self report designs and can allow for causal inferences about the psychological and physiological effects of proxies for self-injury. Haines, Williams, Brain, & Wilson (1995) examined prison inmates that self-injured, non-self-injuring prisoners, and college student controls who had no history of self injury. The thirty- eight male participants visualized events of self-injury while they wore a stimulus that measured physiological reactions that included heart rate, finger blood volume, finger pulse amplitude, and respiration. Physiological arousal for self-injurers was found to be higher while participants imagined the period of time leading up to the self-injury and reduced significantly when

participants imagined self-injuring and the period of time after self-injury. Self-injurers also reported feeling tense, anxious, and sad before self-injury and more relaxed, calm, and relieved afterwards (Haines, et al., 1995). Laboratory studies using proxies for self-injury provide interesting physiological results; however, an important limitation to this approach is proxies for self-injury may have poor external validity. Table 1 illustrates and summarizes the potential functions of NSSI behaviours.

Table 1

<i>Functions of NSSI</i>	
Function	Description of Function
Affect-regulation	To alleviate acute negative affect or aversive affective arousal
Anti-dissociation	To end the experience of depersonalization or dissociation
Anti-suicide	To replace, compromise with, or avoid the impulse to commit suicide
Interpersonal boundaries	To assert one's autonomy or a distinction between self and other
Interpersonal-influence	To seek help from or manipulate others
Self-punishment	To derogate or express anger towards oneself
Sensation seeking	To generate exhilaration or excitement

(Nock & Prinstein, 2004)

### *Mediating Factors for NSSI*

Recent research has addressed potential mediating factors for NSSI. Studies have identified a history of sexual abuse is common in adolescents who engage in NSSI. Kumar, et al., (2004) reported the correlation between having been sexually abused and scores on the Self-Injury Motivation Scale II to be .40. Similarly, Nixon, et al., (2002), reported 58.3% of females described a history of sexual abuse, whereas no males reported a similar history. This conclusion was determined through the use of self-report data. It may be that it is more difficult for males to acknowledge having been sexually abused since, in the majority of cases, their perpetrator is often male. Thus, they may fear disclosing their abuse will result in their being considered homosexual. The two aforementioned studies examined adolescent inpatients from a psychiatric unit; thus, the results may not be generalizable to non residential adolescents in treatment.

Glassman, et al., (2007) found sexual abuse as well as physical neglect and emotional abuse were significantly associated with NSSI. These results were obtained from a sample of volunteers. In addition to sexual abuse, self-criticism has been found to mediate NSSI behaviours. Glassman, et al., (2007) has also identified that self-criticism mediated the relationship between emotional abuse during childhood and engagement in NSSI during adolescence. These observations are noteworthy; however, this study was cross-sectional, suggesting it may not be possible to determine the directionality of the observed relationships.

Low, Jones, MacLeod, Power, & Duggan (2000) also investigated the mediators between childhood trauma and subsequent deliberate self harm (DSH). This study examined 50 women divided into non-harmers, infrequent harmers, and frequent harmers. Infrequent harmers were

identified as women who harmed themselves less than once per month and frequent harmers engaged in the behaviour more than once per month. The women completed the following self-report questionnaires: Self-Esteem Scale, Irritability, Depression and Anxiety Scale, Beck Hopelessness Scale, Dissociative Experiences Scale, Suicide Ideation Scale, Impulsiveness Questionnaire, Reasons for Living Inventory, and Traumatic Antecedents Questionnaire. Results found that the frequency of DSH was related to a history of sexual and physical abuse, low self-esteem, increased dissociation, and anger directed both inwardly and outwardly. The study also reported a major path linking childhood sexual abuse to DSH via increased dissociation (Low, et al., 2000). Additionally, De Kloet, Starling, Hainsworth, Bersten, Chapman, Hancock (2011), completed a retrospective file study examining files from 2006 to 2009 to identify risk factors for self-harm for children and adolescents in a mental health inpatient unit. The participants, including both males and females, were ages 6 to 17 years divided into self-harm and non-self-harm groups. Self-harm in the patients was identified from the Incident Management System (IMS), an electronic program developed to track and manage adverse events in hospitals. The findings suggest that several factors increased the likelihood of self-harm, including a diagnosis of depression, increasing age, a history of trauma, and stressors identified as problems with family. The results also noted that living with a step-parent was a risk factor for self-harm. The researchers proposed the potential explanation that living with a step-parent may be an epiphenomenon of earlier abuse. Researchers also hypothesized that living with a step-parent could be a risk factor because of divided parental attention, as the parent may be attempting to meet the needs of both their child and new partner. Additionally, it was suggested that children with psychological disorders may be more likely to develop a conflictual relationship with a step-parent (De Kloet, et al., 2011).



Lundh, Wangby-Lundh, & Bjarehed (2011), examined 879 adolescents to investigate deliberate self-harm and the presence of psychological problems. Self harm was measured by the Deliberate Self- Harm Inventory (DSHI-9r) and psychological problems by the self-report version of the Strengths and Difficulties Questionnaire (SDQ). They concluded that conduct problems significantly predicted self-harm in both genders (Lundh, et al., 2011).

### *Relationship to Gender*

NSSI appears to be more common among females. Matsumoto, Imamura, Chiba, Katsumata, Kitani, & Takeshima (2008), examined 1726 Japanese high school students to measure differences in the prevalence of a lifetime history of self-cutting and suicidal ideation. They concluded that among late teens, females were more likely to report self-cutting than males. In early teens, females were more likely than males to report suicidal ideation. In supporting these findings, Nixon, Cloutier, & Jansson (2008), examined 568 youth and found of those who reported self-harm, 70% were female. Additionally, De Kloet, et al., (2011) examined 56 adolescent patients and found female gender to be a risk factor for self-harm. It is suggested that NSSI behaviours may be more common among females reflecting research that suggests females have a higher risk of internalizing disturbances and stressors compared to males (Bresin, & Gordon, 2013; Crawford, Cohen, Midlarsky, & Brook, 2001; Daughers, et al., 2009; Maschi, Morgen, Bradley, & Hatcher, 2008). In addition, it is important to note that although many studies suggest NSSI is more common among females, there are also studies reporting no gender differences (Nixon, et al., 2002; Kumar et al., 2004).

### *Relationship between NSSI & Children and Adolescents in Residential Treatment*

Adolescence is a period of increased risk of NSSI with rates of 14% to 39% (Nock and Prinstein, 2005). It is also important to note that children and adolescents in child welfare care have higher incidents of NSSI and suicide attempts (Grenville, et al., 2011; Katz, et al., 2011). In a recent study, Grenville, et al., (2011) examined deliberate self-harm (DSH) characteristics in 252 Canadian child welfare youth residing in foster care. Serious Occurrence Reports (SOR), which document DSH incidents and DSH threats, were reviewed. The study found that of 444 repeat DSH incidents, 69.1% were female and 30.9% were male. These findings not only suggest NSSI is higher within child welfare care facilities, but also supports studies that have found NSSI to be more common among females. Noteworthy, some incidents may not have been reported on the SOR; therefore, the percent of incidents may be even higher than the study identified. Katz, et al., (2011), investigated children and youth who were in care, comparing them to a cohort not in care. They concluded that NSSI rates were higher for those in care for both suicide and attempted suicide than the comparison cohort. The researchers proposed that their findings may be explained through youth in care (i.e. group home or foster care) experiencing emotional, intellectual, and educational challenges that youth living with their parents may not face (Katz, et al., 2011).

### *Treatment Approaches for NSSI*

There are a variety of different types of treatments for people who engage in NSSI behaviours. These treatments include both psychological and pharmacological treatments. Psychological treatments include manualized cognitive behaviour therapy (MACT), emotion regulation group therapy (ERGT), and dialectical behaviour therapy (DBT). MACT, ERGT, and

DBT are all forms of cognitive behaviour therapy and share the common goal of teaching problem solving skills for understanding the impact of NSSI, regulating emotions and negative thoughts, and learning healthier alternative coping behaviours in preventing future incidents of NSSI.

Despite the common goal of the aforementioned treatments, there are distinctions. The goal of MACT is to provide brief, structured, practical treatment to help individuals reduce their NSSI behaviours. MACT involves a series of six booklets, which can be used alone by the client as a form of bibliotherapy, or clients can receive six individual therapy sessions that correspond to each booklet. Booklet one explores what reinforces the individuals NSSI; booklets two through four examine how clients can monitor their thoughts and emotions and develop problem-solving skills. Booklet five discusses drugs and alcohol, as some individuals only engage in NSSI when under the influence of these substances. Finally, booklet six helps individuals to cope with future urges to self-injure (Gratz & Chapman, 2009). Tyrer, et al., (2004), compared MACT to treatment as usual (TAU) for recurrent deliberate self-harm in five hospitals in England. This study examined 480 participants and the results suggested that although the portion of those repeating self-harm did not significantly differ between the groups, the MACT group showed fewer frequencies of self-harm episodes (Tyrer, et al., 2004).

ERGT was developed to assist women with bipolar personality disorder (BPD) to reduce their self-harm and can also be used as an adjunct to individual therapy. The rationale behind this treatment suggests that if self-harm helps people regulate their emotions, learning alternative ways to regulate emotions will reduce the need to engage in NSSI (Gratz & Chapman, 2009). Gratz and Tull (2011) followed twenty-four women who received ERGT in addition to their ongoing treatment. Self-report and interview based measures showed significant improvement

from pre to post-treatment in DSH, emotion dysregulation, experiential avoidance, anxiety, and stress. The findings also suggested 55% of participants reported abstinence from DSH during the second half of the group (Gratz & Tull, 2011).

DBT is yet another form of treatment that focuses on developing coping skills including emotion regulation, distress tolerance, mindfulness, and interpersonal effectiveness (Gratz & Chapman, 2009). James, Taylor, Winmill, & Alfoadari (2008) investigated the effectiveness of DBT in a sample of sixteen adolescent females. The study employed outcome measures that included clinical interviews and standardized assessments involving the Beck Depression Inventory (BDI), Beck Hopelessness Scale (BHS), and the DSM-IV Global Assessment of Functioning (GAF). The findings showed a marked decrease in self-report depression scores, hopelessness, episodes of deliberate self-harm and also an increase in general functioning (James, et al., 2008).

In addition to psychological treatments, medication treatments are also used for NSSI. Between 21 and 50 percent of individuals who engage in NSSI behaviours take some kind of psychotropic medication. Some common medications include selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants (TCAs), and antipsychotic medications (Gratz & Chapman, 2009). SSRIs have the most evidence supporting its efficacy in the treatment of NSSI. Bloch, Elliot, Thompson, and Koran (2001), examined fifteen women with clinically significant skin-picking using fluoxetine. In an open-label trial, meaning both the researchers and participants were aware of which treatment was being administered, eight of the fifteen women showed a 30% or greater decrease in the frequency of their skin-picking. Of the eight participants who demonstrated improvements, half were randomly assigned to continue fluoxetine, while the other used a placebo. The findings showed the four women on fluoxetine

maintained their improvements; whereas, the women taking the placebo regressed to their initial high frequency of skin-picking (Bloch, et al., 2001). Studies have also investigated the use of TCAs for NSSI. However, most of the research involves case studies with a focus on populations diagnosed with a developmental disability and hence with limited generalizability (Gratz & Chapman, 2009). In addition to SSRIs and TCAs, studies have examined the treatment of NSSI with antipsychotic medications. One study assessed the effectiveness of clozapine in treating patients with BPD and psychotic symptoms showing some positive benefit in reducing the patients' self-harm behaviours (Gratz & Chapman, 2009).

It is important to note that despite the aforementioned findings supporting the effectiveness of SSRIs, TCAs, and antipsychotic medications for the treatment of NSSI, there are numerous studies showing no effect from medication. (Gratz & Chapman, 2009). In fact, some studies have reported medications can have an increased risk of NSSI, especially in children and adolescents (Martinez, Rietbrock, Wise, Ashby, Chick, Moseley, Evans, & Gunnell, 2005; Scahill, Hamrin, & Pachler, 2005).

### Current Study

While research has been conducted in the area of NSSI among adolescents, few studies have examined NSSI among girls in residential treatment. The primary goal of this study was to investigate what differentiates girls in a residential treatment program who engage in NSSI from the girls that do not. Given the tertiary nature of treatment they are involved in, the girls in the present study have similar backgrounds and challenges; however, not all of the girls in the current study engaged in NSSI.

## *Hypotheses*

The literature on NSSI suggests many potential functions and mediating factors. Affect regulation is the possible function that has received the most theoretical and empirical attention (Bresin & Gordon, 2013). Research has also suggested that possible functions of NSSI include internalizing behaviours such as dissociation, self-criticism, and depression (Laye-Gindhut & Schonert Reichl, 2005; Nock & Prinstein, 2004; Nixon, et al., 2002). Furthermore, previous studies have also suggested that possible mediating factors of NSSI include externalizing behaviours such as anger, impulsivity, and conduct problems (Lundh, et al., 2011; Kumar, et al., 2004), in addition to abuse and maltreatment (Glassman, et al., 2007; Low, et al., 2000) and family disruptions (De Kloet, et al., 2011). Based on the literature, it is expected that girls who are at high and moderate risk of engaging in NSSI relative to girls with low risk of NSSI will have:

1. Higher elevations in internalizing behaviours including dissociation, self-criticism, and depression.
2. Higher elevations in externalizing behaviours including anger, impulsivity, and conduct problems.
3. Histories of maltreatment including sexual, physical, emotional abuse, and physical neglect.
4. Have a higher frequency of family disruptions reflected in higher rates of living with a step parent.

## Method

### *Participants*

Findings from the current analysis were obtained from existing data collected at a residential mental health treatment centre for children and youth in a medium-sized urban community in Ontario. The sample consisted of 68 females between the ages of 6 to 17 who resided in the residential treatment program over a four year period. Children diagnosed at referral with a developmental diagnosis were excluded from this study as they were directed to other treatment teams.

Prior to their involvement in residential treatment at the centre, clients proceed through their local community mental health single point of access agency. This process aids in overcoming issues such as using residential treatment as a “dumping ground” due to lack of service and choosing appropriate clients and not choosing children that would be better served by less intensive services (St. Pierre, Leschied, Stewart, Cullion, Cook, & Johnson 2009). Additionally, St. Pierre, et al., (2009), found that children in residential treatment are characterized by extreme externalizing and internalizing symptoms, multiple comorbid psychiatric diagnoses, extreme parental stress, social deficits, and exposure to child abuse and neglect. Although this sample appears to be an extreme population and may not generalize to children and adolescents not in care, it is important to study this population as they are highly involved with a variety of mental health services. St. Pierre, et al., (2009), reported that this population demonstrates the highest use of social support, mental health, child welfare, and special educational services within the children’s’ service system.

The participants were divided into three groups; High Risk NSSI Group, Moderate Risk NSSI Group, and Low Risk NSSI Group. Group classification was based on the responses to the items “Talks about suicide” and “Harms self or attempts suicide” on the Brief Child and Family Phone Interview (BCFPI). Potential responses include, “never”, “sometimes”, or “often”. For the purpose of this study “sometimes” and “often” were collapsed together and considered a confirmation of the behaviours. The clinical rationale for this was any indication of the aforementioned behaviours was important and clinically relevant. Furthermore, the statistical rationale was to control for Type II errors.

*High Risk NSSI Group:* The inclusion criteria for the high risk NSSI group was the following: the primary caregiver indicated that their child “Talks about suicide” and “Harms self or attempts suicide” on the BCFPI. For those classified in this group the primary caregiver answered “sometimes” or “often” to both of the above items; or the primary caregiver indicated “sometimes” or “often” for “Harms self and attempts suicide” and “never” for “Talks about suicide”.

*Moderate Risk NSSI Group:* The inclusion criteria for the moderate risk NSSI group was the following: the primary caregiver indicated that their child “Talks about suicide” on the BCFPI. For those classified in this group the primary caregiver answered “sometimes” or “often” to the above item.

*Low Risk NSSI Group:* The inclusion criteria for the no risk group was the following: the primary caregiver did not indicate that their child “Talks about suicide” or “Harms self or attempts suicide” on the BCFPI. For those classified in this group the primary caregiver answered “never” to both of the above items.



Table 2.

*Summary of Chi-Square Test for Independence for “Talks about Suicide” and “Harms Self or Attempts Suicide”*

<b>BCFPI Item</b>	<b>Low Risk NSSI Group (N= 18)</b>		<b>Moderate NSSI Group (N= 18)</b>		<b>High Risk NSSI Group (N= 32)</b>		<b>Significance</b>
	<b>Responded Never</b>	<b>Responded Sometimes/ Often</b>	<b>Responded Never</b>	<b>Responded Sometimes/ Often</b>	<b>Responded Never</b>	<b>Responded Sometimes/ Often</b>	
Would you say that your child talks about killing himself/herself, N (%)	18 (100)	0 (0)	0 (0)	18 (100)	4 (13)	28 (88)	Pearson Chi Square = 52.008 Significance = .000
Would you say that your child deliberately harms self or attempts suicide, N (%)	18 (100)	0 (0)	18 (100)	0 (0)	0 (0)	32 (100)	Pearson Chi Square = 68.000 Significance = .000

Table 3.

*Mean and Range of Participants’ Ages*

	<b>Number of Participants, N (%)</b>	<b>Mean Age (Years)</b>	<b>Range (Years)</b>
High Risk NSSI Group	32 (47)	12.4	6-17
Moderate Risk NSSI Group	18 (26)	12.1	10-15
Low Risk NSSI Group	18 (26)	13.1	7-16
TOTAL	68	12.5	6-17

A one-way analysis of variance (ANOVA) was conducted and revealed no significant differences between the groups based on age ( $F=.716, p=.492$ ). Additionally, chi-square tests for independence showed no significant differences between the groups among variables

including the language used in the home, highest level of education completed by primary caregiver and the primary caregiver's partner, and family income over the past year.

### *Demographic Information*

The participants' demographic information was retrieved using the BCFPI. The BCFPI provided the participants family status, language spoken in the home, parental education, and family income.

### *Measures*

The Brief Child and Family Phone Interview (BCFPI) was employed in the current study. The BCFPI is a 30 minute telephone interview conducted with the primary caregiver and is appropriate for use with children 3 to 18 years of age. It is a standardized intake screening and outcome measure used by children's mental health service providers in a wide variety of settings and is mandatory within all Ontario based children's mental health services. The reliability of the BCFPI for 6 to 12, and 13 to 18 year old samples of boys and girls was maintained when it was distributed to front line practise settings (Cunningham, Boyle, Hong, Pettingill, & Bohaychuk 2009). Furthermore, the BCFPI has been shown to have high test-retest reliability for a variety of childhood mental health disorders (Boyle, Cunningham, Georgiades, Cullen, Racine, & Pettingill, 2009). The current study focused primarily on two items from the BCFPI in differentiating NSSI within the sample. The first item was "Talks about suicide" and the second, "Harms self or attempts suicide". For the purpose of comparing the three groups, the following sections of the BCFPI were also used: Basic Demographic, Regulation of Attention, Impulsivity & Activity, Conduct, Managing Anxiety, Managing Mood, and Abuse.

As previously discussed, NSSI is defined as deliberate bodily harm in the absence of suicidal intent (Glassman, et al., 2007). In contrast, suicide attempts refer to deliberate bodily harm with the intent to cause death (Dougherty, et al., 2009). Therefore, the presentation of NSSI and suicide attempts may appear similar but the underlying purpose of the behaviour is where NSSI and suicidal self-injury (SSI) differ. Consequently, it is difficult to infer the intent of the behaviour without directly asking the individual who committed the act. The current study relied on secondary data from a questionnaire completed by the primary caregiver. Specifically, the primary caregiver responded on the Brief Child and Family Phone Interview (BCFPI) to whether their child or adolescent “Talks about suicide” and “Harms self or attempts suicide”. The primary caregiver was limited in their response based on observable behaviours and hence it was difficult to determine if their child’s intent was to engage in NSSI or SSI. Hence, given the items that are included in the BCFPI, the aforementioned two items that were used should be considered, for the purposes of this study, as proxies for identifying NSSI behaviours.

### *Data Analysis*

The current research was a descriptive field study using the aforementioned secondary data. The analyses, which were completed using SPSS version 19, consisted of both bivariate and multivariate analyses. The bivariate analyses used were chi-square tests of independence and the multivariate analysis used was an ordinal logistic regression. Chi-square tests for independence were performed to examine the extent to which differences existed between the high risk NSSI group, moderate risk NSSI group, and low risk NSSI group on the BCFPI items related to internalizing behaviours, externalizing behaviours, history of maltreatment, and family disruption. Subsequently, variables that were shown to be potentially important based on the chi-square analyses were further investigated using an ordinal logistic regression.

### *Ethical Considerations*

The current study examined children and adolescents, a population considered to fit the current definition of a vulnerable person. With the use of secondary data there was no personal information used (i.e. names) that identified the individuals. To maintain security and confidentiality of all participants, all data was kept locked and accessed solely at the centre. An important ethical consideration addressed was that although no identifying information was used, there is the potential for individuals to recognize that they or their child was part of the residential treatment program at the time the data was collected. However, given the sufficiently large sample size (n=68), it was believed that there is a very low risk of self identification. Additionally, the years during which the data was collected was not identified. Finally, with regards to ethical issues related to this study, it was noted that at the time of treatment at the centre, clients and/or their guardians signed a consent form authorizing the use of their data in future research studies.

### Results

All analyses were completed on a sample of 68 girls. However, it is important to note that there was some data loss with sample sizes, for each analysis varied as a function of missing data. In these respects, primary caregivers may have chosen not to answer, or may have missed responding to a question on the BCFPI.

Hypothesis 1: Higher elevations in internalizing behaviours including dissociation, self-criticism, and depression.

Contrary to what was expected, there were no significant differences among the groups for internalizing behaviours including dissociation, self-criticism, and depression. With the

exclusion of “Has lost weight without trying”, all girls, regardless of whether they were in the high, moderate, or low risk group, showed relatively high levels of internalizing behaviours.

Table 4.

*Summary of Chi-Square Test for Independence for Internalizing Behaviours*

BCFPI Item	Low Risk NSSI Group (N= 18)		Moderate NSSI Group (N= 18)		High Risk NSSI Group (N= 32)		Significance
	Responded Never	Responded Sometimes/ Often	Responded Never	Responded Sometimes/ Often	Responded Never	Responded Sometimes/ Often	
Worries about doing things better, N (%)	3 (17)	15 (83)	4 (22)	14 (78)	10 (31)	22 (69)	Pearson Chi Square = 1.407 Significance = .495
Worries about past behaviour, N (%)	6 (33)	12 (67)	7 (39)	11 (61)	16 (50)	16 (50)	Pearson Chi Square = 1.450 Significance = .484
Worries about doing things wrong, N (%)	3 (17)	15 (83)	7 (41)	10 (59)	11 (34)	21 (66)	Pearson Chi Square = 2.702 Significance = .259
Worries about things in the future, N (%)	3 (17)	15 (83)	5 (28)	13 (72)	6 (19)	26 (81)	Pearson Chi Square = .805 Significance = .669
Is afraid of making mistakes, N (%)	4 (22)	14 (78)	6 (33)	12 (67)	10 (31)	22 (69)	Pearson Chi Square = .634 Significance = .728
Is overly anxious to please people, N (%)	2 (11)	16 (89)	5 (28)	13 (72)	11 (34)	21 (66)	Pearson Chi Square = 3.225 Significance = .199
No interest in usual activities, N (%)	6 (35)	11 (65)	8 (44)	10 (56)	7 (22)	25 (78)	Pearson Chi Square = 2.892 Significance = .235
Gets no pleasure from usual activities, N (%)	6 (35)	11 (65)	8 (44)	10 (56)	8 (25)	24 (75)	Pearson Chi Square = 2.037 Significance = .361
Has trouble enjoying self, N (%)	4 (22)	14 (78)	2 (11)	16 (89)	1 (3)	31 (97)	Pearson Chi Square = 4.567 Significance = .102
Not as happy as other children, N (%)	2 (11)	16 (89)	1 (6)	16 (94)	1 (3)	31 (97)	Pearson Chi Square = 1.309 Significance = .520
Feels hopeless, N (%)	5 (28)	13 (72)	2 (11)	16 (89)	3 (9)	29 (91)	Pearson Chi Square = 3.363 Significance = .186
Unhappy, sad, or depressed, N (%)	1 (6)	17 (94)	1 (6)	17 (94)	0 (0)	31 (97)	Pearson Chi Square = 1.775 Significance = .412
Has lost weight without trying, N (%)	16 (89)	2 (11)	15 (88)	2 (12)	27 (93)	2 (7)	Pearson Chi Square = .256

Hypothesis 2: Higher elevations in externalizing behaviours including anger, impulsivity, and conduct problems.

Contrary to what was expected, there were no significant differences among the groups for externalizing behaviours including anger, impulsivity, and conduct problems. With the exclusion of “Engages in vandalism”, “Has broken into a house, building, or car”, and “Uses weapons when fighting”, all girls, regardless of whether they were in the high, moderate, or low risk group, showed relatively high levels of externalizing behaviours.

Table 5.

*Summary of Chi-Square Test for Independence for Externalizing Behaviours*

BCFPI Item	Low Risk NSSI Group (N= 18)		Moderate NSSI Group (N= 18)		High Risk NSSI Group (N= 32)		Significance
	Responded Never	Responded Sometimes/ Often	Responded Never	Responded Sometimes/ Often	Responded Never	Responded Sometimes/ Often	
Distractible, has trouble sticking to an activity, N (%)	1 (6)	16 (94)	0 (0)	18 (100)	0 (0)	32 (100)	Pearson Chi Square = 2.986 Significance = .225
Fails to finish something he/she starts, N (%)	0 (0)	18 (100)	0 (0)	18 (100)	0 (0)	32 (100)	*No statistics computed because “never” was constant
Has difficulty following directions, N (%)	2 (11)	16 (89)	0 (0)	18 (100)	1 (3)	31 (97)	Pearson Chi Square = 2.872 Significance = .238
Impulsive, acts without stopping to think, N (%)	1 (6)	17 (94)	0 (0)	18 (100)	1 (3)	30 (97)	Pearson Chi Square = .971 Significance = .615
Jumps from one activity to another, N (%)	3 (17)	15 (83)	1 (6)	17 (94)	2 (6)	30 (94)	Pearson Chi Square = 1.879 Significance = .391
Fidgets, N (%)	2 (12)	15 (88)	0 (0)	18 (100)	5 (16)	27 (84)	Pearson Chi Square = 3.048 Significance =

Steals things at home, N (%)	6 (33)	12 (67)	6 (33)	12 (67)	11 (34)	21 (66)	.218 Pearson Chi Square = .008 Significance = .996
Destroys things belonging to others, N (%)	6 (33)	12 (67)	4 (22)	14 (78)	9 (28)	23 (72)	Pearson Chi Square = .553 Significance = .758
Engages in vandalism, N (%)	13 (76)	4 (24)	11 (61)	7 (39)	20 (63)	12 (38)	Pearson Chi Square = 1.188 Significance = .552
Has broken into a house, building, or car, N (%)	18 (100)	0 (0)	17 (94)	1 (6)	28 (90)	3 (10)	Pearson Chi Square = 1.907 Significance = .385
Physically attacks people, N (%)	4 (22)	14 (78)	3 (17)	15 (83)	9 (28)	23 (72)	Pearson Chi Square = .864 Significance = .649
Uses weapons when fighting, N (%)	14 (78)	4 (22)	12 (71)	5 (29)	17 (53)	15 (47)	Pearson Chi Square = 3.452 Significance = .178

Hypothesis 3: Histories of maltreatment including sexual, physical, emotional abuse, and physical neglect.

Contrary to what was expected, there were no significant differences among the groups for histories of maltreatment including sexual, physical, emotional abuse, and physical neglect.

Table 6.

*Summary of Chi-Square Test for Independence for History of Maltreatment*

BCFPI Item	Low Risk NSSI Group (N= 18)			Moderate NSSI Group (N= 18)			High Risk NSSI Group (N= 32)			Significance
	No	Yes	I Don't Know	No	Yes	I Don't Know	No	Yes	I Don't Know	
Has ever been physically abused, N (%)	11 (61)	6 (33)	1 (6)	14 (78)	4 (22)	0 (0)	19 (59)	11 (34)	2 (6)	Pearson Chi Square = 2.343 Significance = .673
Has ever been sexually abused, N (%)	11 (61)	3 (17)	4 (22)	12 (67)	4 (22)	2 (11)	18 (56)	7 (22)	7 (22)	Pearson Chi Square = 1.215 Significance = .876

Has ever been neglected to the extent that seemed to impair his/her emotional or physical well-being, N (%)	11 (65)	6 (35)	0 (0)	15 (83)	2 (11)	1 (6)	18 (50)	13 (41)	1 (3)	Pearson Chi Square = 5.513 Significance = .239
Has ever witnessed verbal or physical violence amongst the adults who have been involved in parenting him/her, N (%)	7 (39)	10 (56)	1 (6)	9 (50)	8 (44)	1 (6)	10 (31)	18 (56)	4 (13)	Pearson Chi Square = 2.323 Significance = .677

**Hypothesis 4:** Have a higher frequency of family disruptions reflected in higher rates of living with a step parent.

Contrary to what was expected, there were no significant differences among the groups for family disruptions reflected in higher rates of living with a step parent.

Table 7.

*Summary of Chi-Square Test for Independence for Family Disruptions*

	<b>Low Risk NSSI Group (N= 18)</b>	<b>Moderate NSSI Group (N= 18)</b>	<b>High Risk NSSI Group (N= 32)</b>	<b>Significance</b>
<b>BCFPI Item</b>				
Single Parent, N (%)	6 (43)	6 (38)	11 (41)	Pearson Chi Square = .092
Lives with Partner, N (%)	8 (57)	10 (63)	16 (59)	Significance = .955

Hosmer and Lemeshow (1989), describe that any variable whose univariate test has a  $p$ -value  $< 0.25$  should be considered for the multivariate model. This is based on early work by Bendel and Afifi (1977) on linear regression and on the work of Mickey and Greenland (1989) on logistic regression. These researchers suggest that the more traditional level (i.e.  $p$ -value  $< 0.05$ ) often fails to identify variables that are potentially relevant (Hosmer & Lemeshow, 1989). Based on the screening criterion of 0.25, the following variables were identified as important



following the chi-square tests for independence: child is distractible ( $p= .225$ ), fidgets ( $p=.218$ ), uses weapons when fighting ( $p=.178$ ), is overly anxious to please ( $p=.199$ ), has trouble enjoying self ( $p=.102$ ), and feels hopeless ( $p=.186$ ). The aforementioned variables were then analysed using an ordinal logistic regression. The results showed that the BCFPI item “Do you notice that your child has trouble enjoying him/herself” was significant ( $p< .05$ ). The estimate value for this variable was -1.881. The odds ratio value was then calculated by taking the inverse of the natural logarithm, subtracting that value by 1, and multiplying by 100 to convert to a percentage (84.76%). The odds ratio indicated that according to the primary caregivers’ reports, girls who do not appear to have difficulty enjoying themselves are 85% less likely to move from the low risk to moderate risk group, or moderate risk to high risk group. Noteworthy, the BCFPI items “Uses weapons when fighting” ( $p=.070$ ) and “Is overly anxious to please people” ( $p=.073$ ) are approaching significance.

Table 8.

*Summary of the Ordinal Logistic Regression*

BCFPI Item	Estimate	Odds Ratio (%)	Significance	95% Confidence Interval	
				Lower Bound	Upper Bound
Fidgets	.519	68.0	.557	-1.210	2.247
Distractible, has trouble sticking to an activity	-18.841	99.9	*	-18.841	-18.841
Uses weapons when fighting	-1.028	64.2	.070	-2.139	.083
Is overly anxious to please people	1.163	320 (or 3.20 times more likely)	.073	-.110	2.436
Has trouble enjoying self	-1.881	85	.033	-3.609	-.154
Feels hopeless	-1.029	64.3	.226	-2.695	.636

\* There was no p value for the variable “Distractible, has trouble sticking to an activity” due to the distribution of caregivers’ responses. Of the 65 responses, 1 (1.5%) reported “Never”, while 64 (98.5%) reported “Sometimes/Often”.

## Discussion

The purpose of the current study was to investigate what differentiates girls in a residential treatment program who engage in NSSI from the girls that do not. Contrary to what was expected, the findings suggested no significant differences among the low, moderate, and high risk groups. The results did not support the hypotheses that girls who are at high and moderate risk of engaging in NSSI relative to girls with low risk of NSSI would have higher internalizing and externalizing behaviours, histories of maltreatment, and family disruptions. These findings are likely due in part to the extreme clinical population used. As previously discussed, the participants could not be effectively served with less intensive mental health services in their community and consequently were referred to the centre. The girls in residential treatment are a high needs population and have been characterized by extreme externalizing and internalizing symptoms, multiple comorbid psychiatric diagnoses, extreme parental stress, social deficits, and exposure to child abuse and neglect (St. Pierre, et al., 2009). Although the hypotheses were not supported, the current study found that according to the primary caregivers’ reports, girls who appear to enjoy themselves are less likely to engage in NSSI behaviours. This finding may indicate that being able to enjoy oneself is a protective factor against NSSI behaviours.

### *Findings Linked to Previous Research*

Previous research has suggested that possible functions of NSSI include internalizing behaviours such as dissociation, self-criticism, and depression (Laye-Gindhut & Schonert Reichl,

2005; Nock & Prinstein, 2004; Nixon, et al., 2002). Previous studies have also suggested that possible mediating factors of NSSI include externalizing behaviours such as anger, impulsivity, and conduct problems (Lundh, et al., 2011; Kumar, et al., 2004), in addition to abuse and maltreatment (Glassman, et al., 2007; Low, et al., 2000) and family disruptions (De Kloet, et al., 2011). However, these findings were inconsistent with the current study, which found no significant differences among groups with respect to internalizing behaviours, externalizing behaviours, maltreatment, and family disruptions. It is noteworthy that previous research by Bresin and Gordon (2013) suggested the prevalence rate of NSSI in clinical populations is 40% to 60%. This finding was supported by the current study. According to the reports of primary caregivers, 47% of the girls in the clinical sample engaged in NSSI behaviours. Furthermore, the current study found high levels of internalizing and externalizing behaviours reported in girls, regardless of whether they were in the high, moderate, or low risk group. These results are consistent with research of St. Pierre, et al., (2009) which found that children in residential treatment have been characterized by extreme externalizing and internalizing symptoms.

The current study also found that girls who enjoy themselves are less likely to engage in NSSI behaviours. These findings may indicate that girls who are able to enjoy themselves may be better able to alleviate acute negative affect and generate excitement. According to previous research, affect regulation (Nock & Prinstein, 2004; Nixon, et al., 2002) and sensation seeking (Kumar, et al., 2004; Nock & Prinstein, 2004) are possible functions of NSSI. Consequently, this finding may suggest that girls who are able to enjoy themselves are able to fulfill those functions using other non-harmful behaviours. The results from the current study may also indicate that being able to enjoy oneself is a protective factor against NSSI behaviours. This finding would appear to be consistent with studies examining treatment approaches for NSSI.

Research has shown that treatments such as ERGT and DBT which help individuals learn alternative ways to regulate emotions resulted in a decrease in self-report episodes of deliberate self-harm and also an increase in general functioning (Gratz & Tull, 2011; James, et al., 2008).

### *Relevance to the Counselling Profession*

The results from this study have important implications for the treatment of girls who are engaging in NSSI behaviours. As previously discussed, NSSI refers to the direct and deliberate harm of bodily tissue in the absence of suicidal intent (Glassman, et al., 2007). All behaviour, including NSSI, has meaning and attachment and is a basic need that shapes behaviour (Cassidy & Shaver, 2008). Therefore, a mutually satisfying relationship between a child or adolescent and their primary caregiver may serve as a protective factor against NSSI behaviours. Depending on the type of attachment, attachment relationships may either increase or buffer the effects of other risk factors. Attachment-oriented interventions may be effective for girls who engage in NSSI behaviours. This perspective encourages counsellors and primary caregivers to be curious about the meaning behind the behaviour, thereby, aiding in supportive and effective responses rather than simply reacting to NSSI behaviours. This approach may be especially beneficial to adolescents. Bowlby (1988) believed that adolescence is a developmental period where change in internal working models of attachment may occur. Attachment work during this developmental stage is also critical as adolescence is a period of increased risk of NSSI behaviours (Nock & Prinstein, 2005). Several previous studies have suggested that a function of NSSI is to regulate affect (Haines, et al., 1995; Nock & Prinstein, 2004; Kumar, et al., 2004). Attachment has been shown to be integral to emotion regulation and securely attached children are able to internalize effective ways of coping and more resilient when coping with stress or problems (Cassidy & Shaver, 2008). Additionally, studies have found that among high needs

adolescence that require residential treatment, there is a high prevalence of insecure-unresolved attachment. This attachment status has been linked to internalizing problems (Cassidy & Shaver, 2008). This is noteworthy, as the literature suggests that internalizing problems such as dissociation, self-criticism, and depression, are potential functions of NSSI (Laye-Gindhut & Schonert Reichl 2005; Nixon, et al., 2002; Nock and Prinstein 2004). Primary attachment relationships have been reported to have significant healing power as they can protect against feelings of helplessness and meaninglessness (Cassidy & Shaver, 2008). Strengthening the relationship between a child or adolescent and their primary caregiver requires a relational and systemic approach. Children, as well as their primary caregiver, are influenced by many larger systems in which they are embedded, including their family, community, school, and culture (Smith-Acuna, 2011) suggesting that a systemic approach may be essential. Attachment-oriented interventions have been used successfully to address clinical issues including, depression and defiant behaviours in adolescents (Cassidy & Shaver, 2008). Based on the literature, it may be expected that attachment-oriented interventions would also lead to positive outcome for girls in tertiary care facilities who are engaging in NSSI behaviours.

As previously discussed, there were no significant differences among groups with respect to internalizing behaviours, externalizing behaviours, maltreatment, and family disruptions. However, all girls, whether they were identified in the high, moderate, or low risk group, showed relatively high levels of internalizing behaviours. This stresses the importance of treatment for internalizing behaviours, whether there is the presence of NSSI among the girls in tertiary care. Mindfulness-Based Stress Reduction (MBSR) has been shown to have positive effects on psychological well being with a reduction in symptoms of anxiety and depression. MBSR involves developing an awareness of the present moment with a non-judgemental stance (Holzel,

et al., 2011). A recent study by Holzel, et al., (2011), found that following eight sessions (2.5 hours each) and a full day (6.5 hours) of mindfulness training exercises, magnetic resonance imaging (MRI) revealed an increase in gray matter concentration within the left hippocampus. The hippocampus contributes to emotion regulation and the structural changes in this area following mindfulness practise may reflect improved emotional regulation. Incorporating mindfulness exercises into the treatment that girls receive in tertiary care may aid in improving affect-regulation and reducing their internalizing behaviour. Furthermore, a common treatment approach for NSSI is DBT. This intervention focuses on developing coping skills including mindfulness and has been shown to decrease NSSI behaviours (Gratz & Chapman, 2009; James, et al., 2008). Based on the literature on DBT and current studies on MBSR, therapeutic interventions that incorporate mindfulness may also have positive outcomes for girls who engage in NSSI behaviours. Improvements in emotion regulation resulting from mindfulness practise may reduce the frequency of NSSI behaviours because a potential function of NSSI is affect regulation (Nock & Prinstein, 2004).

#### *Relevance for Current Research*

The results of the current study further the knowledge and understanding of NSSI behaviours among girls in a tertiary care facility. Previous research has indicated a higher prevalence rate of NSSI among adolescence (Nock & Prinstein, 2005), girls (De Kloet, et al., 2011; Nixon, et al., 2008), and clinical populations (Bresin, & Gordon, 2013). Girls residing in tertiary care facilities are characterized by each of the aforementioned categories; therefore, it may be expected that they are at an increased risk of engaging in NSSI behaviours. Although the hypotheses of the current study were not supported, this suggests that more needs to be understood about what differentiates girls in residential treatment programs who engage in NSSI

from girls that do not. As previously discussed, although this sample appears to be an extreme population and may not generalize to children and adolescents not in care, it is important to study this population as they are highly involved with a variety of mental health services (St. Pierre, et al., 2009).

Previous research has typically focused on potential risk factors for NSSI including sexual abuse (Nixon, et al., 2002), physical abuse (Low, et al., 2000), physical neglect (Glassman, et al., 2007), and living with a step-parent (De Kloet, et al., 2011). Few studies have examined potential protective factors against NSSI. The current findings that girls who enjoy themselves are less likely to engage in NSSI behaviours may indicate that being able to enjoy oneself is a protective factor against NSSI behaviours.

#### *Recommendations for Future Research*

Despite the many studies that have examined NSSI behaviours, several unanswered questions remain. When examining the possible functions of NSSI, most studies employ questionnaires such as the Self-Injury Motivation Scale II, the Functional Assessment of Self-Mutilation (FASM), and the Deliberate Self-Harm Inventory (DSHI-9r) (Kumar, et al., 2004; Lundh, et al., 2011; Nock & Prinstein, 2004). The limitation with using questionnaires is participants' responses are restricted to the available responses and important information may be missed. In addition to quantitative studies, it would be beneficial for future studies to also use a qualitative approach and gather the participants' narratives using focus groups and/ or in depth interviews. This process may result in a more comprehensive understanding of the functions of NSSI behaviours.

Previous research has focused on the possible functions of NSSI, with affect regulation being the proposed function that has received the most empirical attention. However, little is known about the neurobiological mechanisms that cause NSSI to lead to reduced feelings of negative affect. A recent study by Bresin and Gordon (2013) examined endogenous opioids and NSSI. It is proposed that the endogenous opioid system is a mechanism that mediates affect regulation related to NSSI because this system is involved in the modulation of reward, pain, and emotion. Specifically,  $\beta$ -endorphin/ $\mu$ -receptors and enkephalins/ $\delta$ -receptors appear to be involved in NSSI. Individuals who engage in NSSI behaviours may have lower resting levels of  $\beta$ -endorphin and enkephalins, resulting in an increase of the rewards value of  $\mu$ - and  $\delta$ -receptors activity; thereby, making NSSI more rewarding. Lower levels of  $\beta$ -endorphin and enkephalins and relatively normal levels of dynorphins may create an imbalance of the opioid system, leading to dissociative feelings (Bresin & Gordon, 2013). This is noteworthy because anti-dissociation is a proposed function of NSSI (Nock & Prinstein, 2004). The opioid system may also be involved because NSSI may release  $\beta$ -endorphin and enkephalins which could result in a decrease of negative affect and an increase in positive affect (Bresin & Gordon, 2013). More research is needed to fully understand the endogenous opioid system and its role in reward value and emotion regulation. Interestingly, results of a case study suggested that regular exercise may be an effective treatment for NSSI possibly due to the release of  $\beta$ -endorphin (Bresin & Gordon, 2013). Similarly, Holzel, et al., (2011) suggested that exercise increases neurogenesis in the hippocampus and this has been linked to improved function in regulating emotions. These studies suggest that exercise and its effects on the brain may reduce the desire or need to engage in NSSI behaviours. Prospective studies should continue to examine the neurobiological



mechanisms and effects of NSSI in order to gain a better understanding of the etiology and maintenance of these behaviours, as well as potential implications for treatment.

Future research could also continue to investigate the social contagion of NSSI. Research has identified residential treatment facilities as environments that are at high risk for NSSI contagion. The definition of NSSI contagion includes (a) acts of NSSI that occur in two or more individuals with the same group within 24 hours (b) acts of NSSI that occur with a group of statistically significant clusters (Richardson, Surmitis, & Hyldahl, 2012). During adolescence, behaviour is often shaped by peer influence. As previously discussed Nock and Prinstein (2005), found that 82.1% of adolescents reported SMB among at least one of their friends in the previous year; thus, suggesting that social modeling may be involved in SMB. Populations in residential treatment facilities likely have a higher risk of contagion because of peer influence and the prevalence of more severe psychopathology, such as affective regulation issues (Richardson, et al., 2012). The literature suggests a need for further research into the residential contagion effect; however, to date, few studies have been published.

A final recommendation for future research is to include both clinical and non-clinical samples when examining NSSI behaviours among adolescent girls. As previously discussed, research has indicated a higher prevalence rate of NSSI among adolescence (Nock & Prinstein, 2005), particularly among girls (De Kloet, et al., 2011; Nixon, et al., 2008). The prevalence of NSSI among adolescents has been rising significantly (Richardson, et al., 2012). This may potentially be linked to the increase in number of websites for people who engage in NSSI. A high portion of adolescents use networking sites and such sites are highly populated by adolescent females (Richardson, et al., 2012). Prospective studies should continue to explore

NSSI behaviours among adolescent girls, specifically examining clinical and non-clinical populations to compare frequencies and potential functions of NSSI.

### *Limitations*

There are several limitations that should be considered when interpreting the results of this study. One of the key limitations of this study relates to the sole use of questionnaires completed by the primary caregiver for data collection, and not the child or adolescent. This may result in the underreporting of NSSI because the primary caregiver may not be aware that the child is engaging in NSSI behaviours. Furthermore, they may not be aware of all of the behaviours that are classified under NSSI. This understanding of what NSSI includes may also result in an underreporting of incidents and it is possible that some participants may have been grouped inappropriately. Mojtabai and Olfson (2008) examined 7,036 parent-child dyads to determine the accuracy of parental detection of youth NSSI behaviour. The child version of the Development and Well-Being Assessment (DAWBA) structured interview was used to assess NSSI in the children and adolescents. The parents were assessed with a parallel version of the DAWBA. The results found that 6.6% children and adolescents reported NSSI; however, these behaviours were only reported by 2.7% of the parents. The researchers suggested that due to the stigma of mental illness and NSSI, some parents may be reluctant to disclose their child's NSSI behaviours. Additionally, some parents may blame themselves for the child's behaviour, especially if the parent has a personal history of NSSI. This self-blame may also limit the parents' willingness to report their child's NSSI (Mojtabai & Olfson, 2008). Another limitation to using self-report questionnaires completed by the primary care-giver is the potential underreporting of abuse. The BCFPI inquires about physical and sexual abuse, physical neglect, and whether the child or adolescent has witnessed verbal or physical violence between the adults

who have been involved in parenting him/her. Primary caregivers may feel uncomfortable responding to these items due to feelings of shame or guilt.

A second limitation is that significant differences may not have been observed due to the extreme clinical sample studied. This study examined a homogeneous group with respect to their high clinical needs and hence with limited variability within the sample it was difficult to find within group differences. Furthermore, given the specific sample used in this study, an interactive effect of selection bias may exist. As previously mentioned, this sample may not generalize to children and youth not in residential treatment; however, as previously stated, this sample is important because of the high incidence of involvement with a variety of mental health services. Additionally, results from this study may not generalize to other residential treatment populations because residential centres vary with respect to many variables such as services offered, children served, size, and structure.

Another limitation was the use of retrospective data as this study was limited to the variables included in the BCFPI. Having access to additional information may have led to further findings. For example, assessing the hypothesis that girls who engage in NSSI behaviours would have a higher frequency of family disruptions reflected in higher rates of living with a step parent, was limited to demographic data describing whether the primary caregiver responding was a single parent or lives with a partner. Additional information on the family composition would result in a more comprehensive analysis.

A final limitation is the small sample size. The small sample size of the current study may have limited the power to detect statistically significant differences between the high,

moderate and low risk groups. Another issue regarding the small sample size is this may limit the generalizability of the findings.

### Summary

Notwithstanding the limitations of the current research, this study is an important addition to the literature. The results indicated no significant differences among the low, moderate, and high risk group with respect to internalizing and externalizing behaviours, histories of maltreatment, and family disruptions. However, the results found that according to the primary caregivers' reports, girls who appear to enjoy themselves are less likely to engage in NSSI behaviours. This finding may indicate that being able to enjoy oneself is a protective factor against NSSI behaviours. More research is necessary in this area to further assess possible explanations for the differences in NSSI behaviours among girls in tertiary treatment facilities. Broadening the scope of knowledge and understanding in the area of NSSI would assist in effective therapeutic interventions for this population.

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## Appendix A

**Brief Child and Family Phone Interview (BCFPI) Items Used in Thesis Data Analysis**

\*Please see page 65 on the BCFPI Manual

**SECTION 2: Basic demographic (questions #1 to #5)**

1. Are you a single parent, or do you live with a spouse or partner?
2. What language is most often used in your home?
3. What is the highest level of education you've completed
4. What is the highest level of education your spouse or partner has completed?
5. Could you tell me which of the following describes your total family income over the past year?

**SECTION 3: Behaviour and Emotional Adjustment A: Regulation of Attention, Impulsivity & Activity (questions #1 to #6)**

1. Distractible, has trouble sticking to an activity
2. Fails to finish things he/she starts
3. Has difficulty following directions or instructions
4. Impulsive, acts without stopping to think
5. Jumps from one activity to another
6. Fidgets

**SECTION 3: Behaviour and Emotional Adjustment D: Conduct (questions #1 to #6)**

1. Steals things at home
2. Destroys things belonging to others
3. Engages in vandalism
4. Has broken into a house, building, or car
5. Physically attacks people
6. Uses weapons when fighting

**SECTION 3: Behaviour and Emotional Adjustment F: Managing Anxiety (questions #1 to #6)**

1. Worries about doing better at things
2. Worries about past behaviour
3. Worries about doing the wrong thing
4. Worries about things in the future
5. Is afraid of making mistakes
6. Is overly anxious to please people

**SECTION 3: Behaviour and Emotional Adjustment G: Managing Mood (questions #1 to #9)**

1. No interest in usual activities
2. Gets no pleasure from usual activities
3. Has trouble enjoying self
4. Not as happy as other children
5. Feels hopeless
6. Unhappy, sad, or depressed
7. Has lost weight without trying
8. Talks about killing himself/herself
9. Deliberately harms self or attempts suicide

**SECTION 7: Risk Factors G: Abuse (questions #1 to #4)**

1. To your knowledge, has xx ever been physically abused?
2. To your knowledge, has xx ever been sexually abused?
3. To your knowledge, has xx ever been neglected to that extent that seemed to impair his/ her emotional or physical well-being
4. To your knowledge, has xx ever witnessed verbal or physical violence amongst the adults who have been involved in parenting him/ her?

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