April 2014

Childhood Abuse and Neglect: A Profile of Associated Risk Factors for Non-Suicidal Self-Injury

Jennifer P. Gomez
The University of Western Ontario

Supervisor
Dr. Alan Leschied
The University of Western Ontario

Graduate Program in Education

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

Childhood Abuse and Neglect: A Profile of Associated Risk Factors for Non-Suicidal Self-Injury

by

Jennifer Gomez

Graduate Program in Education

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

The School of Graduate and Postdoctoral Studies
The University of Western Ontario
London, Ontario, Canada

Abstract

Non-suicidal self-injury (NSSI) is the intentional destruction of body tissue without suicidal intent and for purposes not socially sanctioned. Approximately 14 to 17% of nonclinical adolescent populations and over 40% of clinical adolescent populations use NSSI to cope. NSSI is consistently related to childhood maltreatment and the objective of this study was to examine differences among maltreated individuals who do and do not self-injure. Groups were compared on risk factors of childhood maltreatment and self-injury with the intent of creating a risk profile for NSSI. Participants who had experienced abuse/neglect scored higher on depression than a contrast group, regardless of NSSI status. In addition, individuals who experienced abuse/neglect and self-injured scored significantly higher on anxiety than the contrast group. Future research should continue to explore risk factors and pathways to NSSI in order for the etiology of this complex and addicting method of coping to be better understood.

Keywords

Non-suicidal self-injury, self-injure, NSSI, maltreatment, abuse, neglect, depression, anxiety, emotion regulation, emotion dysregulation, self-criticism, impulsivity, ChYMH

Acknowledgements

I would like to extend my deepest gratitude to the following individuals who have made this thesis possible. First and foremost, I would like to thank my wonderful supervisor Dr. Alan Leschied who continued to support and uplift me throughout this entire process. Dr. Leschied has been a constant source of positivity, guidance, and motivation and I am incredibly grateful for his unwavering belief in me and in this project. I would also like to thank the University of Western Ontario Counselling Psychology Faculty members: Dr. Jason Brown and Dr. Susan Rodger. I am exceptionally grateful to Dr. Brown and Dr. Rodger for sharing their infinite wisdom and knowledge and for creating such a warm and supportive learning environment.

I also wish to extend my appreciation to the Child and Parent Resource Institute, particularly to Dr. Shannon Stewart, Kim Arbeau, and Melissa Currie for allowing me access to their data in order to complete this project. Finally, I am thankful for the support, encouragement, and love provided by my wonderful family and friends during the process of writing this thesis. To the people in my life who have constantly encouraged personal growth, academic success, and always believing in yourself – I thank you with all of my heart.

Table of Contents

List of Tables

Childhood Abuse and Neglect: A Profile of Associated Risk Factors for Non-Suicidal Self-Injury

Chapter 1

The following is an overview of relevant literature and research on non-suicidal self-injury, childhood maltreatment and associated risk factors.

1 Introduction

The act of non-suicidal self-injury [NSSI] is defined as: the intentional destruction of one's body tissue without suicidal intent and for purposes not socially sanctioned (Klonsky, Muehlenkamp, Lewis, & Walsh, 2011, p. 6). According to reports of prevalence, non-suicidal self-injury is a behaviour that affects approximately 14 to 17% of nonclinical adolescent/young adult populations and over 40% of clinical adolescent populations (Heath, Toste, Nedecheva, & Charlebois, 2008; Klonsky, May, & Glenn, 2013). It is important to note that prevalence rates often vary by study and occurrence rates of NSSI are based on documented cases. In reality, prevalence may be much higher than reported. The age of onset for NSSI is approximately 12–16 years of age; however, both earlier and later ages of onset have been documented (Klonsky et al., 2011).

In the majority of cases, non-suicidal self-injurious behaviour peaks during mid-adolescence and begins to decline as individuals move into adulthood. Although this is the most commonly reported trajectory of NSSI, recent research has indicated that NSSI can begin in the late teenage years or in early adulthood (Klonsky et al., 2011). For example, a study by Heath and colleagues (2008) examining NSSI in college students found that nearly 12% of participants engaged in self-injury. Other studies have also found a substantial percentage of individuals

reporting onset ages after 17 and between the ages of 17 and 24 (as reviewed in Heath et al., 2008). Based on the spread of reported onset ages for NSSI, it is wise to consider individuals ranging from early adolescence to college/university age as at risk for self-injury.

Historically, non-suicidal self-injury was viewed as a rare act that occurred in populations with severe mental illness, namely those with borderline personality disorder (BPD) (Klonsky, 2007; Klonsky, 2011; Shaffer & Jacobson, 2009). However, it has become clear that NSSI occurs frequently in community populations as well as in clinical populations and is associated with high levels of distress, regardless of any co-occurring diagnoses (Klonsky et al., 2013, p. 231). As a result of the above factors, NSSI is no longer considered simply a clinical symptom of severe mental illness (Klonsky, 2007; Klonsky et al., 2011) and Non-Suicidal Self Injury Disorder is now a separate clinical diagnosis in the new edition of the Diagnostic and Statistical Manual of Mental Disorders-V (DSM-V).

By including NSSI as a distinct diagnosis, it is posited that unnecessary diagnoses of BPD can be avoided and more innovative research will emerge surrounding the understanding of NSSI. In addition, it is hoped that a clearer distinction will be created between NSSI and suicidal behaviour (Shaffer & Jacobson, 2009). Studies have indicated there is agreement among professionals that the criteria for Non-Suicidal Self-Injury Disorder represent those who engage in the behaviour. At this time, the validity and clinical utility of this new diagnosis remains to be seen (Lengel & Mullins-Sweatt, 2013).

1.1 Non-Suicidal Self-Injury Versus Suicidal Behaviour

Non-suicidal self-injury is frequently misunderstood as possessing suicide related motivations. Previous research often includes NSSI and suicidal behaviour together and instances of NSSI can be misinterpreted as failed suicide attempts within healthcare settings (Shaffer & Jacobson,

2009). Both non-suicidal self-injury and suicidal behaviours fall under the category of self-injurious behaviours (SIB) (Hamza, Stewart, & Willoughby, 2012). According to a review of NSSI and suicidal behaviour, self injurious behaviours can be defined as behaviours that cause direct and deliberate harm to oneself and suicidal behaviour can be defined as self-injurious behaviours that possess the intention to end one's life (Hamza et al., 2012). Despite the fact that both fall under the umbrella of SIB, the two behaviours are quite different and it is essential to understand there is a distinct difference between NSSI and suicidal behaviour (Hamza et al., 2012; Walsh, 2007).

NSSI and suicidal behaviour differ in intention, lethality, and frequency (Hamza et al., 2012). Specifically, motivations of NSSI generally encompass a manner of coping and suicide involves the motivation to end one's life. Individuals who engage in non-suicidal self-injury do not wish to die and do not expect that their injuries will lead to death (Hamza et al., 2012). Walsh (2012) provides an excellent statement highlighting the contrast between NSSI and suicide. In his book, Treating Self Injury, Second Edition: A Practical Guide, Walsh states, "the intent of the self-injuring person is not to terminate consciousness, but to modify it" (p. 8). Even though individuals who engage in suicidal behaviours may use methods that appear similar to NSSI (e.g., cutting), these behaviours are motivated by the desire to die, and NSSI is not (Hamza et al., 2012). In terms of frequency and intensity, suicidal behaviours often encompass more lethal methods of harm than NSSI (e.g., hanging) and tend to occur less frequently (Hamza et al., 2012).

Although it is critical to understand the difference between NSSI and suicide, it is also important to realize that both behaviours can co-occur within the same individual in both clinical and community populations (Hamza et al., 2012). That is, individuals who self-injure can move

from maladaptive coping to suicide attempts and those who are suicidal can be concurrently utilizing non-suicidal self-injury (Walsh, 2007). Researchers have suggested that NSSI is an important risk factor for suicide (Klonsky et al., 2013) and past literature has indicated a history of NSSI is one of the strongest predictors of suicide attempts both cross-sectionally and longitudinally (Hamza et al., 2012, p. 484). Suicide is the second most common cause of death in young people worldwide (Hawton, Saunders, O'Connor, 2012, p. 2373) and NSSI has high rates of prevalence both in the community and in psychiatric settings. Therefore, a solid understand of both behaviors and how they relate to, and differentiate from, one another is essential.

1.2 Types of Non-Suicidal Self-Injury

Non-suicidal self-injury can take many forms and ranges in intensity from minor to severe. Forms of NSSI can include: cutting, scraping, carving, banging, bruising, self-hitting, burning, scratching, biting, skin picking, hair pulling and wound excoriation (among others) (Klonsky & Muehlenkamp, 2007; Klonsky, et al., 2011). According to reviews, cutting/scraping/carving of the skin are the most commonly reported methods of NSSI followed by banging, bruising, and self-hitting (Klonsky et al., 2011).

Although the official definition of non-suicidal self-injury relates predominantly to injury of the skin, less direct forms of self-injurious behaviour can be closely connected to NSSI (St. Germain & Hooley, 2012). Indirect forms of self-injurious behaviour can be understood as behaviour that is destructive but does not entail immediate and purposeful damage to the body tissue (St. Germain & Hooley, 2012, p. 78). These forms of self-injury often include risky/reckless behaviour, eating disorders, substance abuse, and involvement in abusive relationships (St. Germain & Hooley, 2012). Available literature, although limited, has indicated

that those who engage in NSSI are also likely to engage in more indirect forms of self-injury as well (e.g., eating disorders and risky sexual behaviour) (St. Germain & Hooley, 2012).

Although direct and indirect self-injurers appear to have several characteristics in common (i.e., impulsivity, heightened negative emotions and more dissociative experiences), important distinctions such as higher levels of self-criticism and potential for suicide exist between direct and indirect forms (St. Germain & Hooley, 2012). At this time, researchers have concluded that although commonalities exist between NSSI and general self-injurious behaviour, the two are quite different and direct/indirect self-injurious behaviour should continue to be conceptualized differently (St. Germain & Hooley, 2012).

1.3 Sex Differences

Non-suicidal self-injury is often associated with adolescent females who engage in cutting behaviours. This is a common misconception and in reality NSSI is a behaviour that can take many forms and affect both genders (Hamza et al., 2012; Klonsky et al., 2011). Reviews of sex differences in NSSI behaviour has yielded mixed reviews, with some studies finding that the behaviour primarily affects females while others indicate there are no gender differences in terms of prevalence (Heath et al., 2008; Klonsky et al., 2011; Whitlock et al., 2011). Regardless of whether males or females have greater prevalence of the behaviour, NSSI does affect both sexes with notable differences occurring in type and location of the injuries (Whitlock, Eckenrode, & Silverman, 2006). Specifically, research has indicated that females are more likely to cut and scratch their skin and males are more likely to burn, bang, or punch themselves (Sornberger, Heath, Toste, & McLouth, 2012). In terms of location, females tend to injure their arms and legs and males tend to harm their face, chest and genitals (Sornberger et al., 2012).

In addition to sex differences, research has indicated possible differences relating to sexual orientation. Whitlock and colleagues (2011) examined sex differences of NSSI in a university population and found that the behaviour varied significantly by sex and sexual orientation (p. 691). Specifically, nonheterosexual women were at greater risk than heterosexual women for NSSI. This suggests that not only is more research needed on sex differences, more research is needed on differences relating to sexual orientation.

Although it is often found that females self-injure more than males, research has indicated that males are less likely than females to report their self-injurious behaviour (Ross & Heath, 2002; Sornberger et al., 2012; Whitlock et al., 2011). In addition, some research has shown an earlier onset age of NSSI for females versus males, which may account for the prevalence discrepancies (Hamza et al., 2012). NSSI is also often associated with cutting and it is possible that other forms of self-injury more often endorsed by males are not viewed as NSSI behaviours. Also noteworthy is that the majority of gender differences found are in adolescent populations, with studies examining NSSI in early and late adulthood yielding no differences (Hamza et al., 2012). Furthermore, gender differences may be more likely found in clinical populations than in community ones (Heath et al., 2008).

1.4 Why Do People Self-Injure?

Self-injurious behaviour can be difficult to understand because people usually go to great lengths to avoid pain, and those who engage in NSSI inflict pain purposefully on themselves (Klonsky & Muehlenkamp, 2007). NSSI is often used to relieve painful emotions and unpleasant thoughts/feelings such as anxiety/loneliness and those who self-injure often report that doing so provides a feeling of control (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007). Additional reported reasons for engaging in self-injurious behaviour include: tension reduction, to end

feelings of depersonalization, self-punishment, interpersonal influence, antidissociation, antisuicide, sensation seeking, and reinforcing interpersonal boundaries (Klonsky & Muehlenkamp, 2007; Lloyd-Richardson et al., 2007). Overall, self-injury can be thought of as a maladaptive coping mechanism used to face a variety of issues and may serve both intrapersonal and interpersonal functions (Lloyd-Richardson et al., 2007).

As of late, there has been significant movement towards treating NSSI as a coping mechanism and as a distinct clinical diagnosis. As a result of this movement, greater attention has been paid to the formation of NSSI behaviour and current NSSI research focuses on systematically describing the form and function of the behaviour. Despite the increase in attention to non-suicidal self-injury, the complex formation of potential pathways leading to NSSI is not entirely understood (Glassman, Weierich, Hooley, Deliberato, & Nock, 2007; Klonsky, 2011). Although exact pathways leading to non-suicidal self-injury remain unclear, one consistently reported relation is between childhood maltreatment and NSSI (Briere & Gil, 1998; Gladstone et al., 2004; Glassman et al., 2007; Lang & Sharma-Patel, 2011; Madge et al., 2011; Maniglio, 2010b; Swannell et al., 2012).

1.5 Childhood Maltreatment

Child maltreatment encompasses different types of abuse and neglect such as physical abuse/neglect, emotional and psychological abuse/neglect, and sexual abuse. Defining each of these types of maltreatment can be difficult, as a multitude of definitions exist and these definitions vary by setting (Timmer & Urquiza, 2014). According to the American Child Abuse Prevention and Treatment Act, child maltreatment can be defined as "any recent act or failure to act on the part of a parent or caretaker, which results in death, serious physical or emotional harm, sexual abuse or exploitation, or an act or failure to act which presents an imminent risk of

serious harm" (Timmer & Urquiza, 2014, p. 8). It is estimated that approximately 1 in 7 children between the ages of 2 and 17 have experienced some form of, or combination of, physical and/or sexual abuse (Muehlenkamp, Kerr, Bradley, & Adams Larson, 2010). In Canada alone, there were 235,842 child maltreatment investigations conducted in 2008, 74% of which concerned abuse or neglect (Trocmé et al., 2010).

Despite the commonly found relation between childhood maltreatment and non-suicidal self-injury, the mechanisms through which this relationship occurs are not completely clear. Although there is a reported relation between childhood abuse/neglect and NSSI, research has indicated that a direct and specific pathway between these two factors likely does not exist. For example, in a meta-analysis conducted by Klonsky and Moyer (2008) on the relationship between childhood sexual abuse and NSSI, results yielded a relatively small relationship between the two factors. Muehlenkamp and colleagues (2010) suggested abuse may be a distal risk factor of NSSI and that other risk factors resulting from abuse may be more relevant to the actual formation of the behaviour. Thus, the literature suggests that childhood maltreatment is not directly and non-specifically related to NSSI – there are other factors at play.

A non-direct relationship between childhood maltreatment and NSSI is further evidenced by the fact that not all those who experience childhood abuse or neglect engage in NSSI. Therefore, the question of differences between those who have experienced abuse/neglect and do/do not go on to self-injure remains. Recently, researchers have begun examining the relationship between childhood maltreatment and NSSI in more depth and investigating factors that could potentially explain the connection between the two. Research has indicated several risk factors associated with childhood abuse/neglect and non-suicidal self-injury. Some of the most commonly reported factors associated with the childhood maltreatment and NSSI

relationship are: difficulty with emotion regulation, anxiety/depression, self-criticism, and impulsivity.

1.6 Emotion Regulation/Dysregulation

One of the primary theories of non-suicidal self-injury is that it assists in affect regulation. The affect regulation theory posits that individuals who self-injure experience more frequent/intense/negative emotions, have difficulty regulating their emotions and use NSSI as a way to quickly alleviate negative affect intensity (Klonsky et al., 2011). There is increasing evidence for the postulation that negative emotionality, trouble managing negative emotions, and affect dysregulation are key components of NSSI (Klonsky et al., 2011). In connection with childhood maltreatment, research also indicates individuals who experience maltreatment and difficulties within the home tend to develop impairments in emotion regulation (Muehlenkamp et al., 2010; Tresno, Ito, & Mearns 2012; Yates, 2004). Connections among childhood maltreatment, difficulty regulating emotions and NSSI have been consistently reported in the literature.

Tresno and colleagues (2012) examined differences between a NSSI group of college students and a non-NSSI group of college students on history of child maltreatment and negative mood regulation expectancies (NMRE). Results of this study indicated that NSSI correlated positively with childhood maltreatment and correlated negatively with mood regulation expectancies. Individuals who self-injured reported more severe childhood maltreatment and poorer mood regulation expectancies than those who did not self-injure and more maltreatment was associated with more self-injury, particularly among those with weaker expectancies. Interestingly, in individuals who reported higher expectancies for mood regulation, higher levels of childhood maltreatment did not result in more NSSI (contrary to the low NMRE group). In

addition, child maltreatment and low mood regulation expectancies were two of the variables that predicted self-injury (Tresno et al., 2012).

Claes, Houben, Vandereycken, Bijttebier, and Muehlenkamp (2010) examined emotion regulation (among other variables) in a group of 150 high school students with 46 of those 150 reporting instances of self-injury. The researchers looked specifically at the association between self-concept and NSSI and found that the participants who engaged in NSSI were more likely to rate themselves lower on emotional stability than their non-NSSI peers. Furthermore, Wilcox and colleagues (2011) investigated longitudinal predictors/motives for NSSI among college students and found that affect dysregulation was one of the independent predictors of NSSI within the past year.

Baetens, Claes, Willem, Muehlenkamp, and Bijttebier (2011) provide further evidence that affect regulation is a key aspect of NSSI. These authors investigated some differences in temperament dimensions between community adolescents who did and did not self-injure. Results indicated that adolescents who engaged in NSSI showed significantly higher scores on negative affectivity and lower scores on effortful control (the ability to regulate attention and behaviour) than adolescents who did not self-injure. In addition, the absence of effortful control and negative affectivity were the strongest predictors of non-suicidal self-injury.

There are a number of psychological responses and negative effects of childhood abuse, with one of the most common being difficulties regulating emotion (Muehlenkamp et al., 2010). In addition to the previously discussed findings, research has indicated that family relationships characterized by conflict and deficient support for emotion management are related to difficulty regulating emotions and these environments may be a risk factor for NSSI. Specifically, Adrian, Zeman, Erdley, Lisa, and Sim (2011) found that in a group of psychiatrically hospitalized

females, family relationship issues had negative effects on ability to regulate emotions and that dysregulated emotional states had a significant effect on NSSI.

Research also suggests that NSSI can be a reinforcing and addictive behaviour. Studies indicate an increase in negative affect/decrease in positive affect prior to NSSI and a raise in positive affect (calmness/relief) following non-suicidal injurious behaviour (Armey, Crowther, & Miller, 2011; Klonsky, 2009; Muehlenkamp et al., 2009). The raise in positive affect following self-injury is associated with more lifetime instances of NSSI and makes NSSI a reinforcing behaviour (Jenkins & Schmitz, 2012).

In sum, childhood maltreatment is associated with difficulties in emotion regulation that is in turn associated with non-suicidal self-injury. The above research indicates an association between childhood maltreatment and difficulty regulating emotion, as well as a relationship between difficulty with emotion regulation and non-suicidal self-injury.

1.7 Depression and Anxiety

NSSI has been consistently related to a number of clinical factors, often including depression and anxiety. The relation between NSSI and mood/anxiety disorders can be closely connected to the emotion regulation theory, such that NSSI may function to relieve depressive/anxious feelings. Both depression/anxiety and NSSI are associated with negative emotional states and as previously discussed, NSSI can involve difficulty regulating emotion (Klonsky & Muehlenkamp, 2007).

In addition to an association with NSSI, depression and anxiety are two of the many symptoms often associated with childhood maltreatment (Brown, Cohen, Johnson, & Smailes 1999; Kaufman & Charney, 2001; Maniglio, 2010a; Muelenkamp et al., 2010; Taliaferro, Muehlenkamp, Borowsky, McMorris, & Kugler, 2012. A wealth of literature has focused on the

idea that early life experiences can predispose individuals to anxiety and depression related disorders, along with other mental illnesses, later in life (Heim & Nemeroff, 1999; 2001). For example, negative life events (such as childhood maltreatment) can often precede depression (Heim & Nemeroff, 1999). In terms of negative early life experiences, attachment, anxiety, and NSSI – research indicates there is a relationship between NSSI and greater attachment anxiety, anxiety over abandonment, and anxiety within adult romantic attachments (Bolen, Winter, & Hodges, 2013, p. 207).

Research shows that females with a history of childhood sexual or physical abuse exhibit more anxiety/depressive symptoms than women who have not experienced maltreatment (Heim & Nemeroff, 1999). Brown and colleagues (1999) examined the effects of childhood abuse/neglect on adolescent and adult depression and found that both Dysthymia and MDD (Major Depressive Disorder) were increased in individuals who had experienced abuse and neglect. In addition, the odds of having a depressive disorder were increased 3.4 to 4.5 times for those who had been maltreated (Brown et al., 1999).

In a 2002 study, Ross and Heath assessed the relationship among self-injury, depression, and anxiety. The study yielded results indicating that students who self-injured reported a greater number depressive/anxious symptoms than those who did not self-injure. Taliaferro and colleagues (2012) identified depressive symptoms and hopelessness as two of eight factors distinguishing individuals who engaged in self-harm from those who did not. Similarly, in a longitudinal study assessing rates and risk factors (proximal and distal) of NSSI, Hankin and Abela (2011) found that depressive symptoms were one of the factors differentiating youth who engaged in NSSI from those who did not. Hoff and Muehlenkamp (2009) sought to clarify the contribution of depression and anxiety (among other factors not relevant to the current study) to

non-suicidal self-injury. Results of Hoff's and Muehlenkamp's study showed that individuals with a history of NSSI endorsed a significantly greater number of depressive and anxious symptoms than their non self-injuring counterparts.

In terms of the directional relationship between NSSI and depression, studies have indicated that there is a consistent positive relationship between the two variables. Marshall, Tilton-Weaver, and Stattin, 2013 attempted to determine the specific pattern of the relationship between depression and NSSI using a community sample of adolescents. The authors used a three wave design to examine NSSI/depression patterns and found that depressive symptoms predicted NSSI from wave one to wave two, but between time two and time three there was a concurrent relationship between the two variables. Examining the relationship among childhood maltreatment, depressive symptoms and NSSI, it is possible that NSSI is a method of coping with the depression associated with childhood maltreatment. Specifically, NSSI may be used as a method to cope with the negative emotions associated with depression, or with the feelings of numbness or emptiness (Marshall et al., 2013).

1.8 Self-Criticism

A second theory regarding the function of NSSI is the self-punishment/self-derogation theory. This model suggests that those who engage in NSSI do so as a way to punish themselves (Klonsky & Muehlenkamp, 2007). In support of this model, research has indicated that individuals who self-injure consistently report higher levels of self-derogation, self-criticism, and low self-esteem (Klonsky et al, 2011). A second factor often associated with the childhood maltreatment and NSSI relationship is self-criticism, or self-blame. This association is not surprising, as those who have been exposed to abuse often grow up in an environment of excessive criticism (Glassman et al., 2007).

Glassman and colleagues (2007) examined the mediating role of self-criticism in the childhood maltreatment/NSSI relationship. Participants were 86 adolescents who completed measures on childhood maltreatment, self-criticism, and non-suicidal self-injury. Results indicated that self-criticism mediated the relationship between childhood emotional abuse and engagement in NSSI. In additional support of the self-criticism/self-blame role in NSSI, Swannell and colleagues (2012) investigated the mediating role of self-blame, dissociation, and alexithymia in the childhood maltreatment/NSSI relationship and found self-blame played a key role in this relationship. Specifically, self-blame had the greatest effect on the maltreatment/NSSI relationship for females and the second greatest effect on the relationship for males. In contrast to the above findings, Weismoore and Esposito-Smythers, (2010) examined the relationship between childhood abuse, assault, cognitive distortions, and NSSI and found a history of assault (but not childhood abuse) was associated with more negative self-views.

1.9 Impulsivity

Research has indicated behavioural impulsivity may be a factor in the development of non-suicidal self-injury (You & Leung, 2012). Glenn & Klonsky (2010) examined the relationship between impulsivity and self-harm and established that self-injurers were best distinguished by urgency (committing rash decision when faced with negative emotions), a type of impulsivity. Impulsivity has also been shown to mediate the relationship between childhood maltreatment and self-harm. Arens, Gaher, and Simons (2012) examined the relationship between child maltreatment, impulsivity, and self-harm in a group of college students and results

indicated that participants who reported childhood maltreatment also reported higher levels of impulsivity, specifically negative urgency. Further, those who indicated maltreatment were more likely to self-harm as an adult. In support of the results found by Glenn and Klonsky (2010),

urgency (but not other types of impulsivity – e.g., sensation seeking) mediated the relationship between childhood maltreatment and self-harm (Arens et al., 2012).

1.10 The Present Study

As indicated by the above research, there is a relationship between childhood maltreatment and non-suicidal self-injury, albeit not a direct one. As mentioned previously, not all children who experience abuse or neglect go on to self-injure. Therefore, the purpose of the current study was to compare a group of individuals who have experienced childhood abuse/neglect and examine how those who self-injure differ from those who do not on emotion regulation, depression/anxiety, self-criticism, and impulsivity. Specifically, the proposed study investigated what differences might exist between individuals who have experienced abuse/neglect and do or do not go on to self-injure.

1.11 Hypotheses

The following hypotheses are advanced for the current study:

1. Individuals who have experienced abuse/neglect and engage in self-injury would differ significantly from individuals who have experienced abuse/neglect and do not engage in self-injury on variables related to emotion dysregulation.

2. Individuals who have experienced abuse/neglect and engage in self-injury would differ significantly from individuals who have experienced abuse/neglect and do not engage in self-injury on variables related to self-criticism.

3. Individuals who have experienced abuse/neglect and engage in self-injury would differ significantly from individuals who have experienced abuse/neglect and do not engage in self-injury on impulsivity.

4. Individuals who have experienced abuse/neglect and engage in self-injury would differ significantly from individuals who have experienced abuse/neglect and do not engage in self-injury on measures of depression.

5. Individuals who have experienced abuse/neglect and engage in self-injury would differ significantly from individuals who have experienced abuse/neglect and do not engage in self-injury on measures of anxiety.

Chapter 2

This section of the paper describes the methodology utilized in the current study including participants, measures and research design.

2 Method

2.1 Participants

Participant data for the current study was drawn from existing information collected on individuals at the Child and Parent Resource Institute (CPRI). CPRI is a tertiary care centre in London, Ontario that provides care and services to children and youth with complex and severe behavioural disturbances and/or developmental challenges (Child and Parent Resource Institute, 2010). These are children who have exhausted, or previously accessed, primary and secondary services available to them, such as local children's mental health agencies and community psychiatrists (Child and Parent Resource Institute, 2010). Children receiving treatment at CPRI are within the highest margin of those experiencing complex disturbances and challenges (Child and Parent Resource Institute, 2010).

Data collected for the present study consisted of children and youth aged 4 – 18 who were accepted for either inpatient or outpatient treatment at CPRI. Inpatient (residential) referrals to CPRI are processed through single access point mechanisms following consultation with a community case manager and guardian (St Pierre, Leschied, Stewart, & Cullion, 2008). Community mental health agencies serve as these single access points for referrals and are present across CPRI's 17 county catchment area (Child and Parent Resource Institute, 2010; St Pierre et al., 2008). Outpatient referrals to CPRI are managed directly through the organization's intake office and come from a variety of sources (e.g., parents, teachers, service agencies) with a letter of support from a physician (Child and Parent Resource Institute, 2010).

For the present study, 146 participants were selected from a larger group of 265 participants with existing available data. These participants were selected based on their responses to items relating to history of self-injury and history of trauma on the interRAI Child and Youth Mental Health (ChYMH). Specifically, only individuals who answered the trauma and self-injury variables in combinations of interest were included in the analysis. From the final group of 146 participants, 107 (73.3%) were male and 39 (26.7%) were female.

2.2 Measures

InterRAI Child and Youth Mental Health. The interRAI ChYMH is a comprehensive mental health assessment designed for children and youth who are referred to community/residential services and provides an extensive amount of information on factors affecting child and youth mental health (The Child and Parent Resource Institute, n. d). The ChYMH is one assessment of many that comprise the interRAI Child and Youth Suite of instruments. In addition to the Child and Youth Suite, there are a number of other instruments under the interRAI umbrella designed for individuals with a chronic illness or disability (InterRAI, 2014a). The design of the interRAI

suites is such that there are a core set of 70 items common to all interRAI instruments (with a few exceptions), over 100 optional items that appear in many instruments, and a set of specialized items appearing only on specific instruments (Hirdes et al., 2008).

The broader interRAI network consists of researchers from a number of different countries working together to improve care for individulas who are disabled or medically complex (InterRAI, 2014b). Specifially, the interRAI initiative seeks to improve quality of life for vulnerable individuals through a comprehensive assessment system and to uphold evidence based clinical practice through the collection and interpretation of first-rate and reliable data (InterRAI, 2014b).

Relevant to the current study, the interRAI ChYMH contains domains assessing intake and initial history, mental state indicators, harm to self and others, and stress/trauma.
The data utilized for the current study included only initial assessments conducted on individuals at CPRI and was gathered from both the inpatient and outpatient versions of the ChYMH. The assessment time period for the ChYMH is three days and when possible the child/youth is the primary source of information. In addition to this, communication with the primary support individual and other members of the clinical team, as well as observation of the child/youth and review of applicable documents, is necessary for the assessment process (Stewart et al., 2014).

Considerable research and testing has been conducted on the broader suite of interRAI instruments and these studies have indicated the suite possesses strong psychometric properties (The Child and Parent Resource Institute, n. d). The items and scales specific to the instrument for children and youth were developed based on current literature and consultation with experts within the field of child and youth mental health (The Child and Parent Resource Institute, n. d).

An anlysis of the psychometric properties specific to the Child and Youth Mental Health suite is currently being conducted (The Child and Parent Resource Institute, n. d).

2.3 Research Design

Participant data was divided based on endorsement of items relating to a history of self-injury and history of abuse and/or neglect. The data was divided into three different groups: abuse and/or neglect and indication of NSSI (group one), abuse and/or neglect and no indication of NSSI (group two), and no reported abuse and/or neglect and no indication of NSSI (group three). The third group was comprised of participants indicating no abuse and/or neglect and no history of NSSI. This latter group served as a contrast group for comparative analysis. Final group sizes are as follows: group one = 67 participants; group two = 26 participants; and group three = 53 participants.

Abuse/Neglect. An indication of abuse/neglect was defined by endorsement of one or more of the items: history of care includes severe failure to provide for basic needs (emotional neglect, physical needs, safety needs); victim of physical assault or abuse; victim of sexual assault or abuse; victim of emotional abuse or physical punishment in last 6 months either by parents/primary caregiver or other caregiver. The neglect variable can be found under the *Intake and Initial History* section of the ChYMH. Abuse/assault and punishment variable(s) can be found under the *Stress and Trauma* section of the ChYMH.

Non-Suicidal Self-Injury. A history of self-injury was assessed by endorsement type of the item 'intent of any self-injurious attempt was to kill him/herself' within the *Harm to Self and Others* section. An indication of 'no' placed participants within the self-injury group, an indication of 'yes' removed participant from the analyses (as it indicates a suicide attempt as

opposed to non-suicidal self-injury) and 'no attempt' placed participants within one of the no history of self-injury groups (dependent on abuse status).

Mental State Indicators. Emotion dysregulation, impulsivity and self-criticism variables were drawn from the *Mental State Indicators* section of the ChYMH and scored based on frequency. Specifically, 0 = not present, 1 = present but not exhibited in the last 3 days, 2 = exhibited on 1-2 of last 3 days, 3 = exhibited daily in the last 3 days (1-2 episodes) and 4 = exhibited daily in the last 3 days (3 or more episodes or continuously). Depression and anxiety variables were also drawn from the *Mental State Indicators* section and were scored on a continuous scale.

***Emotion dysregulation*.** The following items defined emotion dysregulation: sad, pained, worried facial expression; crying, tearfulness; decreased energy; expressions of hopelessness; inflated self-worth; irritability; pressured speech or racing thoughts; labile affect and flat or blunted affect. The above items are found within the 'Mood Disturbance' subsection of *Mental State Indicators*.

***Impulsivity*.** The 'impulsive' item located within the 'Distraction and Hyperactivity' subsection of *Mental State Indicators* defined the impulsivity variable.

***Self-criticism*.** The following items defined the risk factor of self-criticism: made negative statements; guilt/shame; self-depreciation. These items are located within the 'Mood Disturbance' subsection of *Mental State Indicators*

Depression. Participant's level of depression was assessed using scores on the Depression Severity Index (DSI) imbedded within the ChYMH. The DSI scale is based on the following items: sad, pained facial expression; negative statements; self-depreciation; guilt/shame; and hopelessness. These items can be found under the 'Mood Disturbances'

subsection of *Mental State Indicators.* Scores on the DSI range from 0–36 with a higher score indicating more depressive symptoms.

Anxiety. Participant's level of anxiety was assessed using scores on the Anxiety scale imbedded within the ChYMH. The Anxiety scale is composed of the following items from the 'Anxiety' subsection of *Mental State Indicators*: repetitive anxious complaints/concerns (non-health-related) - e.g., persistently seeks attention/reassurance regarding schedules, school, sports, clothing, relationships; expressions, including non-verbal, of what appear to be unrealistic fears – e.g., fear of being abandoned or left alone; of being with others; intense fear of specific objects or situations; obsessive thoughts - unwanted ideas or thoughts that cannot be eliminated; compulsive behaviour - e.g., hand washing, repetitive checking of room, counting, hoarding; intrusive thoughts or flashbacks - disturbing memories or images that intrude into thoughts, unexpected recall of adverse events; re-enactment through play of traumatic life events; episodes of panic - cascade of symptoms of fear, anxiety, loss of control; nightmares - e.g., reports frightening dreams, wakes from sleep with expressions of fear (including non-verbal).

The risk factors chosen for the current study were based on previously conducted research. That is, past literature has indicated that issues with emotion regulation, impulsivity, high levels of self-criticism, depression, and anxiety are associated with childhood abuse and neglect, as well as non-suicidal self-injury (as per literature review above). Specific items relating to these risk factors were identified within the ChYMH and used to define the risk factors being examined.

Due to restrictions with the data pertaining to confidentiality and sample size, no analyses were conducted using the emotion dysregulation, impulsivity, or self-criticism variables. A

multivariate analysis of variance (MANOVA) was used to compare scores on the DSI and Anxiety scale between groups one, two and three - allowing for concurrent comparisons of all groups on the two dependent variables. In addition, the use of a MANOVA controls against the possibility of a Type I error and increases chances of detecting a true multivariate effect, should one be present. Following significant results from the MANOVA, post hoc tests were conducted to determine exact differences between groups.

Chapter 3

The following is a comprehensive overview of results obtained from the analysis conducted on the relevant data.

3 Results

The purpose of this analysis was to determine the nature of differences among the three groups on the included risk factors. Recall, group one = abuse/neglect and NSSI, group two = abuse/neglect and no NSSI, and group three = contrast group. Based on previous literature, it was expected that all three groups would differ significantly from one another on the risk factors of depression and anxiety. Specifically, it was expected that group one and two would differ significantly, with group one scoring higher on both depression and anxiety. It was also expected that both group one and group two would differ significantly from group three, such that scores on depression and anxiety would be higher than for participants within the contrast group.

To address the proposed hypotheses, a one-way MANOVA was conducted to determine if there were statistically significant mean differences among the three groups. This analysis was focused on determining whether individuals who have experienced abuse/neglect and utilize self-

injury differ from those who have experienced abuse/neglect and do not self-injure on a measure of anxiety and depression. Results also aimed to determine if the two maltreatment differed significantly from the contrast group on the included risk factors. As indicated previously, analyses were conducted using only the depression and anxiety variables due to restrictions with the data that were outlined in the Method section.

3.1 Primary Analysis

A one-way MANOVA revealed a significant multivariate main effect for abuse/neglect and NSSI status groups (i.e., group one, two, and three), Wilks' $\lambda = .896$, $F\ (4, 284) = 4$, $p < .005$. A non-significant Box's M test ($p = .599$) indicated homogeneity of covariance matrices of the dependent variables across the risk factors and the two dependent variables were moderately correlated at .465. Power to obtain the observed result was .907. Given the significant multivariate main effect, the thought that groups would differ significantly on the risk factors of depression and anxiety was confirmed.

Given that the overall multivariate test was significant, the univariate main effects were then examined. Examination of these effects revealed significant main effects for both depression $F\ (2, 7558.66) = 6.98$, $p = .001$ and anxiety $F\ (2, 4492.99) = 4.315$, $p < .02$. Following examination of the main effects, post hoc tests were conducted to determine specific differences among groups.

Depression. A Tukey HSD test indicated that group one ($M = 14.07$, $SD = 6.89$) differed significantly from group three ($M = 9.36$, $SD = 7.02$) on the Depression Severity Index and that group two ($M = 13.92$, $SD = 8.65$) differed significantly from group three on the Depression Severity Index (see Tables 1 & 2). No significant results were found for group two in comparison to group one. The lack of significant results for this particular group in comparison

to group one was likely due to the small sample size of individuals who have experienced abuse/neglect but do not self-injure (N = 26). The overall mean and standard deviation for the Depression Severity Index was (*M* = 12.34, *SD* = 7.56).

Table 1.

Descriptive Statistics for Depression Severity Index

Group	*M*	*SD*
Group 1	14.07	6.89
Group 2	13.92	8.65
Group 3	9.36	7.02

Table 2.

Summary of Post Hoc Results for Depression Severity Index

Group	Std. Error	Sig.
Group 1 vs. Group 3	1.34	.002
Group 2 vs. Group 3	1.74	.029

Anxiety. A Tukey HSD test indicated that group one (*M* = 10.01, *SD* = 5.68) differed significantly from group three (*M* = 7, *SD* = 5.70) on the anxiety scale (see Tables 3 & 4). No significant results were found for group two and as mentioned previously, this was likely due to small sample size. The overall mean and standard deviation for the Anxiety scale was (*M* = 8.74, *SD* = 5.73).

Table 3.

Descriptive Statistics for Anxiety Scale

Group	*M*	*SD*
Group 1	10.01	5.68
Group 2	9.00	5.19
Group 3	7.00	5.70

Table 4.

Summary of Post Hoc Results for Anxiety Scale

Group	Std. Error	Sig.
Group 1 vs. Group 3	1.03	.011

3.2 Summary

Results of the one-way MANOVA indicated that individuals who had experienced abuse and/or neglect and reported instances of NSSI differed significantly from those who had not experienced abuse/neglect and did not engage in NSSI in terms of depression and anxiety. Specifically, individuals who had experienced abuse/neglect and engaged in NSSI scored higher on both depression and anxiety than those who had experienced no abuse/neglect and did not engage in self-injury. In addition, individuals who had experienced abuse/neglect and did not self-injure scored higher on depression than those with no history of abuse/neglect or NSSI. The analyses yielded no significant differences between the abuse/neglect/NSSI group and the abuse/neglect/no NSSI group.

Chapter 4

The following is a discussion of the various aspects of the current study including relevance to current literature, applications to counselling practice, limitations, and relevance to future research.

4 Discussion

Non-suicidal self-injury in individuals who have experienced childhood abuse and/or neglect is a challenging fact of life for too many of our young people. The fact that not all individuals who have been maltreated go on to self-injure suggests that there are vital individual differences between those who do and do not go on to engage in NSSI, regardless of similar childhood experiences. Childhood maltreatment may be an associated risk factor of NSSI, but what differentiates children who opt for more positive coping methods from those who utilize purposeful self-injury remains of critical importance.

The objective of the current study was to examine differences between individuals who have experienced abuse/neglect and engage in NSSI and those with maltreatment backgrounds who do not utilize self-injury. The aforementioned groups were compared on two factors commonly associated with childhood maltreatment and non-suicidal self-injury: depression and anxiety. Additionally, both maltreatment groups were compared to a contrast group consisting of individuals with no history of abuse/neglect and who did not report a history of NSSI.

Analyses yielded significant differences across groups. Specifically, group one and group two differed significantly from group three on measures of depression and group one differed significantly from group three on measures of anxiety. Both participants who had experienced abuse/neglect and engaged in NSSI and participants who had experienced abuse/neglect and did not engage in NSSI scored higher on depression than the contrast group.

That is, regardless of NSSI status, individuals who had experienced abuse or neglect endorsed higher depression scores than individuals who had not been maltreated. Likewise, individuals who experienced abuse/neglect and self-injured (but not those who did not self-injure) scored significantly higher on anxiety than participants in the contrast group.

4.1 Relevance to Current Research

The current study speaks strongly to the effects that childhood abuse and neglect can have on the mental health status of children and adolescents. The negative effects of childhood abuse and neglect are evident through the resulting differences between children who have experienced maltreatment and those who have not. Additionally, this research speaks to the connection between maltreatment and NSSI in what was a predominantly male, complex clinical population.

The literature indicates that childhood maltreatment is related to distress and mental disorders later in life (Brown et al., 1999). Given the established relationship between childhood maltreatment and NSSI, health professionals need to consider that when an individual presents with a history of abuse/neglect, he/she may be at risk for NSSI. The same can be said for clients presenting with NSSI; these individuals may have a history of abuse or neglect that clinicians need to assess for. In addition to understanding the relation between NSSI and maltreatment, mental health professionals need to have knowledge of risk factors often associated with the formation and development of potential self-injurious behaviour.

Depression

Results of the current study suggest that individuals who have experienced abuse/neglect are at risk for increased levels of depression. Specifically, these individuals differ significantly from their non-maltreated counterparts on scores of depression. These results are consistent with past reviews and results concerning the maltreatment/depression association. In a meta-analysis

by Nanni, Uher, and Danese (2012) reviewing the relationship between childhood maltreatment and depression, it was reported that maltreated individuals (i.e., physical abuse, sexual abuse, neglect, or family conflict/violence) were two times more likely as individuals who had not been maltreated to develop both recurrent and depressive episodes (p.148).

Within the current study, no significant differences on depression scores were found between self-injuring and non-self injuring maltreated participants. Based on previous literature indicating that depression can be a key factor differentiating self-injurers from non-self-injurers (e.g., Ross & Heath, 2002), it is suggested that these results are not due to a lack of differences between groups. Instead, it is posited that the absence of significant differences is due to the small sample size of the maltreated/no NSSI group and lack of power to detect existing significant results.

Anxiety

Results from this study indicate that children/youth who have experienced abuse/neglect and report a history of NSSI score significantly higher on a measure of anxiety than children/youth who have no history of maltreatment or self-injury. Although past literature has linked anxiety symptoms with a history of maltreatment and highlighted it as risk factor for NSSI (Heim & Nemeroff, 1999; Hoff & Muehlenkamp, 2009; Ross & Heath, 2002), there exist far fewer studies, and less consistent results, for the role of anxiety symptoms as a risk factor for NSSI in comparison to depression. For example, Taliaferro and colleagues (2012) identified depressive symptoms, but not anxiety, as distinguishing individuals who engaged in self-harm from those who did not. By contrast, Ross and Heath (2002) reported that individuals who engaged in self-harming behaviours reported significantly more anxious symptoms than those who did not self-harm.

Within the current study, maltreated individuals who engaged in NSSI, but not those who did not engage NSSI, differed significantly from contrasts on a measure of anxiety. These results indicate that anxiety symptoms may have a unique and different relationship with NSSI than depression does. This is consistent with a suggestion by Klonsky and Muehlenkamp (2007) that anxiety may be more strongly related to non-suicidal self-injury than depression is.

The current study replicated the commonly reported relationship between childhood maltreatment and anxiety. It also contributed to the current literature on NSSI and maltreatment, such that the maltreatment/NSSI group differed significantly from controls on scores of anxiety, while the maltreatment/no NSSI group did not. As with analyses conducted on depression, lack of significant results between the maltreatment/NSSI group and maltreatment/no NSSI group may be due to a lack of statistical power as opposed to a lack of statistically relevant differences. Further studies should be conducted to clarify the results found in the present study.

In a review of the role of trauma symptoms in self-injury, Smith, Kouros, and Meuret (2014) explored the idea that trauma symptoms, as opposed to traumatic events, underlie the relation between childhood trauma and subsequent NSSI. According to this review, previous literature suggests that NSSI forms as means to cope with the symptoms of a childhood trauma. Thus, as discussed earlier, childhood maltreatment may not be a direct risk factor for NSSI in contrast to what the meaning is of the presence of a traumatic symptom. Relevant to the current study, it is possible that children who are abused/neglected develop depression/anxiety as symptoms of their maltreatment and subsequently engage in NSSI to cope with those unpleasant experiences. This explanation is consistent with the highly reported 'emotion-regulation theory' of NSSI. It is possible, and likely, that children/adolescents develop the use of NSSI through multiple risk factors. That is, childhood abuse/neglect may lead to negative cognitive styles,

self-depreciation, and difficulty regulating emotions, which may in turn be associated with depression and NSSI.

Emotion Dysregulation and Self-Criticism

Due to the limitations related to confidentiality and not reporting data where sample sizes were below 25 participants, there were no analyses conducted on items encompassing the 'emotion dysregulation' and 'self-criticism' variables. However, these factors can still be discussed in relation to the Depression Severity Index results. Recall that the DSI was composed of the mental state indicators, specifically: sad, pained facial expression; negative statements; self-depreciation; guilt/shame; and hopelessness. Results indicating that individuals who have experienced abuse/neglect score higher on depression than those have not may also indicate that that those groups differ significantly on emotion regulation and self-criticism as well. This is of course speculation, as again no analyses were conducted using the emotion regulation and self-criticism variables.

Abuse Type

One difficulty plaguing research on the childhood maltreatment/NSSI relationship is that research indicates inconsistent results in terms of abuse/neglect type and relationship to NSSI. In addition, studies often examine one type of abuse/neglect, or another, making it difficult to compare results across different studies and across varying types of abuse (Glassman et al., 2007). According to a review of the literature by Lang and Sharma-Patel (2011), the most robust findings for the self-injury/maltreatment relationship are with childhood sexual abuse. According to the same review, fewer studies have examined physical abuse and there have been mixed results for childhood neglect. The current study used a combination variable inclusive of any reported sexual assault/abuse, physical assault/abuse, emotional abuse, neglect, and physical

punishment. Consistent with previous studies, examination of the maltreatment/NSSI relationship suggested that contrast group participants differed from abused/neglected individuals on measures of depression and anxiety. Again, due to limitations with sample size, analyses by abuse type were not feasible.

Sex Differences

As mentioned previously, NSSI is an act that is often attributed to females. The current study speaks to the utilization of NSSI among males, as 73% of the participant sample was male in the present study. Due to restrictions with confidentiality, the exact gender breakdown in each status group could not be reported. However, with the majority of participants being male, this study does indicate that clinically relevant differences can be seen in predominantly male samples when examining risk factors of NSSI and effects of childhood maltreatment.

NSSI in Clinical Populations

Non-suicidal self-injury can be seen in a number of psychological disorders (Smith et al., 2014). This fact should not be considered as a sign that NSSI is a symptom of severe psychopathology, but perhaps does suggest that those who experience mental health difficulties are more at risk for the behaviour than community samples. The data for the current study was gathered from a tertiary care centre, meaning that individuals within the sample consisted of those who were in the top margin of challenging behavioural and mental health difficulties and this fact is relevant in interpreting the findings within this context.

4.2 Implications for Counselling

The onset age of NSSI can range from pre-adolescence into adulthood and the prevalence rates are high relative to other serious disorders. Therefore it can be expected that counsellors and other mental health professionals will work with self-injuring clients many times throughout

their careers. The literature suggests that NSSI rates have increased, and although it is possible that the increase is due to more understanding of the behaviour and greater attention given in the media, clinical, and research sectors, the result is that clinicians are likely to come across cases of NSSI (Klonsky et al., 2011). As counsellors, it is crucial to understand both the effects of childhood maltreatment on mental health and how maltreatment is related to non-suicidal self-injury.

Results of a study by Wester and Trepal (2010) examining the differences among college students who did not self-injure, had self-injured in the past, and were currently self-injuring suggested that students who reported current self-injury were more likely to be in counselling than the other two groups. These results suggest that a counsellor might expect to see individuals who are currently self-injuring and need help overcoming and coping with this behaviour, as opposed to those who have never self-injured or are not currently self-injuring.

In addition to understanding implications of the relationship between childhood maltreatment and NSSI, is the importance of understanding how to react to a disclosure of self-injury. This type of disclosure carries with it a multitude of factors and considerations. A review of attitudes towards disclosures of NSSI suggests that clients are often unhappy with the responses received by mental health professionals after a disclosure of self-injury (Walsh, 2007). With an increased knowledge of the risk factors and associated experiences of NSSI, mental health professionals can be better equipped to respond effectively to disclosures of the behaviour.

4.3 Limitations of the Current Study

Results of the current study need to be understood within the context of its limitations. One of the primary limitations of this study was the inability to analyze the mental state indicators (i.e., emotion regulation, self-criticism, and impulsivity) as risk factors. Therefore, this study is unable to speak to the differences between groups on these variables. As a result, interpretation of the results and discussion regarding risk factors of NSSI was limited to participant's scores on the depression and anxiety scales.

In addition to limitations with analyses, a small sample size may explain a lack of significant results between group one and group two (i.e., maltreated self-injurers versus maltreated non self-injurers). While group sizes for one and three were 67 and 53, respectively, group two had only 26 participants. Given the previously reported connections between depression/anxiety and NSSI, it is quite possible that maltreated individuals who do not self-injure differed significantly from self-injurers, but this was not detected due to lack of statistical power.

In terms of the variables classifying individuals as maltreated, some limitations exist. First, with any assessment of current/past abuse and neglect, it is possible that within the sample there are unreported or unrecognized cases of maltreatment. Second, past research has indicated that different types of abuse/neglect are more highly associated with non-suicidal self-injury than others (e.g., Lang & Sharma-Patel, 2011). Third, there is evidence that more severe and persistent abuse/neglect is related more strongly to NSSI (Tresno et al., 2012). It should also be noted that some research has indicated different pathways and relationships between NSSI and different types of abuse (Muehlenkamp et al., 2010). For example, physical abuse has been found as a better predicator of irregular self-injury and sexual abuse has been found as a better

predictor for re-occurring self-injury (as reviewed in Muehlenkamp et al., 2010). Within the current study, participants were included in the abuse/neglect category based on endorsement of any failure to provide for basic needs, physical punishment, sexual assault/abuse, physical assault/abuse, or emotional abuse. As such, this study did not differentiate the effects of different types of abuse/neglect or scale/time length of maltreatment.

The age of participants in the current study is also a limitation, as participants in this study ranged in age from 4–18. According to a comprehensive review of NSSI by Klonsky and colleagues (2011), some research has shown that non-self suicidal self-injury may begin as young as four years of age and it should not be assumed that NSSI does not occur in young children. That being said, based on reports of the common onset age of NSSI, some participants may have been too young to begin engaging in self-injurious behaviour, regardless of maltreatment status. In addition, some participants may not have experienced the onset of NSSI yet, as the behaviour can onset in late adolescence and early adulthood (Heath et al., 2008). It is also important to note that this study was conducted on a clinically complex population of children and youth that are not representative of the average clinical or community sample. Thus, the results of this study must be interpreted with the context of the current population and generalized with caution.

4.4 Relevance to Future Research

The current study replicated and confirmed the relationship between childhood maltreatment and depression/anxiety within a highly clinically complex population of children and youth. Although the current study provided support and clarification for pre-existing literature on the potential effects of childhood maltreatment, some relevant analyses could not be conducted. Future studies, especially those using the ChYMH data, should endeavor to include the mental

state indicators as potential risk factors for NSSI in order to add to the current results on depression and anxiety. Further, as the ChYMH database continues to grow, the current study should be replicated using larger sample sizes and analyses on abuse type and gender effects should be conducted.

Also noteworthy is that within the sample from CPRI, a fourth group of individuals who reported no abuse/neglect and who engaged in NSSI was present. This group was comprised of approximately 120 individuals, minus any respondents whose reported self-injury was fueled by the urge to die. Thus, separate from childhood maltreatment, there are clearly other risk factors associated with non-suicidal self-injury. Future research comparing this group on the suggested risk factors, and possibly protective factors as well, may be of interest.

4.5 Summary

Non-suicidal self-injury is a complex behaviour with high prevalence rates and occurrence across a number of disorders and populations. This behaviour is linked with a number of risk factors including childhood maltreatment, difficulties with emotion regulation, high levels of self-criticism and impulsivity, depression, and anxiety. The purpose of the current study was to examine differences between self-injuring/non self-injuring maltreated individuals and to differentiate factors that might influence their use of NSSI as a coping mechanism. It was expected that significant differences would exist between individuals who had experienced abuse/neglect and did/did not self-injure in terms of emotion regulation, depression, anxiety, self-criticism, and impulsivity. These expectations were partially supported by results of the current study.

Notwithstanding the limitations to the current research, this study provided support for the further negative effects of childhood abuse and neglect and spoke to the unique relationship

that anxiety may have with non-suicidal self-injury. In addition, the current study was one of the first to use the relatively new ChYMH dataset in an examination of childhood maltreatment and non-suicidal self-injury. Despite the wealth of current research on NSSI, the etiology of the behaviour remains complex, requiring further study. Ideally, future research will continue to explore potential risk factors and pathways to NSSI and the clinical and research community will gain a greater understanding of this complex, common, and addicting method of coping.

References

Adrian, M., Zeman, J., Erdley, C., Lisa, L., & Sim, L. (2011). Emotional dysregulation and interpersonal difficulties as risk factors for nonsuicidal self-injury in adolescent girls. *Journal of Abnormal Child Psychology*, *39*(3), 389-400. doi: 10.1007/s10802-010-9465-3

Arens, A. M., Gaher, R. M., & Simons, J. S. (2012). Child maltreatment and deliberate self-harm among college students: Testing mediation and moderation models for impulsivity. *American Journal of Orthopsychiatry*, *82*, 328-337. doi: 10.1111/j.1939-0025.2012.01165.x

Armey, M. F., Crowther, J. H., & Miller, I. W. (2011). Changes in ecological momentary assessment reported affect associated with episodes of nonsuicidal self-injury. *Behaviour Therapy*, *42*, 579-588. http://dx.doi.org/10.1016/j.beth.2011.01.002

Baetens, I., Claes, L., Willem, L., Muehlenkamp, J., & Bijttebier, P. (2011). The relationship between non-suicidal self-injury and temperament in male and female adolescents based on child-and parent-report. *Personality and Individual Differences*, *50*(4), 527-530. http://dx.doi.org/10.1016/j.paid.2010.11.015

Bolen, R. M., Winter, V. R., & Hodges, L. (2013). Affect and state dysregulation as moderators of the relationship between childhood sexual abuse and nonsuicidal self-injury. *Journal of interpersonal violence*, *28(*1*),* 201-228. doi:10.1177/0886260512448844

Briere, J., & Gil, E. (1998). Self-mutilation in clinical and general population samples: Prevalence, correlates, and functions. *American Journal of Orthopsychiatry, 68*, 609-620. doi: 10.1037/h0080369

Brown, J., Cohen, P., Johnson, J. G., & Smailes, E. M. (1999). Childhood abuse and neglect: Specificity of effects on adolescent and young adult depression and suicidality. *Journal of the American Academy of Child & Adolescent Psychiatry*, *38*(12), 1490-1496. http://dx.doi.org/10.1097/00004583-199912000-00009

Child and Parent Resource Institute. (2010). Specialized Services. Retrieved from http://www.cpri.ca/content/page.aspx?section=19

Claes, L., Houben, A., Vandereycken, W., Bijttebier, P., & Muehlenkamp, J. (2010). Brief report: The association between non-suicidal self-injury, self-concept and acquaintance with self-injurious peers in a sample of adolescents. *Journal of Adolescence, 33*, 775-778. http://dx.doi.org/10.1016/j.adolescence.2009.10.012

Gladstone, G. L., Parker, G. B., Mitchell, P. B., Malhi, G. S., Wilhelm, K., & Austin, M. P. (2004). Implications of childhood trauma for depressed women: An analysis of pathways from childhood sexual abuse to deliberate self-harm and revictimization. *The American Journal of Psychiatry, 161,* 1417-1425. doi: 10.1176/appi.ajp.161.8.1417

Glassman L. H., Weierich, M. R., Hooley, J. M., Deliberato, T. L., & Nock, M. K. (2007). Child maltreatment, non-suicidal self-injury, and the mediating role of self-criticism. *Behaviour and Research Therapy, 45,* 2483–2490. http://dx.doi.org/10.1016/j.brat.2007.04.002

Glenn, C. R., & Klonsky, D. E. (2010). A multimethod analysis of impulsivity in nonsuicidal self-injury. *Personality Disorders: Research and Treatment*, *1*, 67-75. http://dx.doi.org/10.1037/a0017427

Hamza, C. A., Stewart, S. L., & Willoughby, T. (2012). Examining the link between nonsuicidal self-injury and suicidal behavior: A review of the literature and an integrated model.

Clinical Psychology Review, *32*, 482–49. http://dx.doi.org/10.1016/j.cpr.2012.05.003

Hankin, B. L., & Abela, J. R. Z. (2011). Nonsuicidal self-injury in adolescence: Prospective rates and risk factors in a 2 ½year longitudinal study. *Psychiatry research*, *186*(1), 65-70. http://dx.doi.org/10.1016/j.psychres.2010.07.056

Hawton, K., Saunders, K. E., & O'Connor, R. C. (2012). Self-harm and suicide in adolescents. *The Lancet*, *379*(9834), 2373-2382. http://dx.doi.org/10.1016/S0140-6736(12)60322-5

Heath, N. L., Toste, J. R., Nedecheva, T., & Charlebois, A. (2008). An examination of nonsuicidal self-injury among college students. *Journal of Mental Health Counselling, 30(2)*, 137-156

Heim, C., & Nemeroff, C. B. (1999). The impact of early adverse experiences on brain systems Involved in the pathophysiology of anxiety and affective disorders. *Biological psychiatry*, *46*(11), 1509-1522. http://dx.doi.org/10.1016/S0006-3223(99)00224-3

Heim, C., & Nemeroff, C. B. (2001). The role of childhood trauma in the neurobiology of mood and anxiety disorders: Preclinical and clinical studies. *Biological psychiatry*, *49*(12), 1023-1039. http://dx.doi.org/10.1016/S0006-3223(01)01157-X

Hirdes, J. P, Ljunggren, G., Morris, J. N., Frijters, D. H., Soveri, H. F., Gray, L., Björkgren . . . Gilgen, R. (2008). Reliability of the interRAI suite of assessment instruments: A 12-country study of an integrated health information system. *BMC Health Services Research, 8,* 277-287. doi:10.1186/1472-6963-8-277

Hoff, E. R., & Muehlenkamp, J. J. (2009). Nonsuicidal self-injury in college students: The role of perfectionism and rumination. *Suicide and Life-Threatening Behavior*, *39*(6), 576-587. doi: 10.1521/suli.2009.39.6.576

InterRAI. (2014a). An overview of the interRAI instruments. Retrieved from http://www.interrai.org/instruments.html

InterRAI. (2014b). Who we are. Retrieved from http://www.interrai.org/organization.html

Jenkins, A. L., & Schmitz, M. F. (2012). The roles of affect dysregulation and positive affect in non-suicidal self-injury. *Archives of Suicide Research*, *16,* 212-225. doi: 10.1080/13811118.2012.695270

Kaufman, J., & Charney, D. (2001). Effects of early stress on brain structure and function: Implications for understanding the relationship between child maltreatment and depression. *Development and Psychopathology*, *13*(03), 451-471. doi: 10.1017/S0954579401003030

Klonsky, E. D. (2007). Non‐suicidal self‐injury: An introduction. *Journal of clinical psychology*, *63*(11), 1039-1043. dio: 10.1002/jclp.20411

Klonsky, E. D. (2009). The functions of self-injury in young adults who cut themselves: Clarifying the evidence for affect-regulation, *Psychiatry Research*, *166*. 260-268. http://dx.doi.org/10.1016/j.psychres.2008.02.008

Klonsky, E. D. (2011). Non-suicidal self-injury in United States adults: Prevalence, sociodemographics, topography and functions. *Psychological medicine*, *41*(9), 1981-6. doi:10.1017/S0033291710002497

Klonsky, E. D., May, A. M., & Glenn, C. R. (2013). The relationship between nonsuicidal self-injury and attempted suicide: Converging evidence from four samples. *Journal of abnormal psychology*, *122*(1), 231. doi: 10.1037/a0030278

Klonsky, E. D., & Moyer, A. (2008). Childhood sexual abuse and non-suicidal self-injury: Meta-analysis. *The British Journal of Psychiatry*, *192*(3), 166-170. doi:10.1192/bjp.bp.106.030650

Klonsky, E. D., & Muehlenkamp, J. J. (2007) Self-injury: A review for the practitioner. *Journal of Clinical Psychology: In Session*, *63*, 1045-1056. doi: 10.1002/jclp.20412

Klonsky, E. D., Muelenkamp, J. J., Lewis, S. P., & Walsh, B. (2011). *Non-Suicidal Self-Injury*. Toronto: Hogrefe Publishing.

Lang, C. M., & Sharma-Patel, K. (2011). The relation between childhood maltreatment and self-injury: A review of the literature on conceptualization and intervention. *Trauma, Violence, & Abuse*, *12,* 23-37. doi: 10.1177/1524838010386975

Lengel, G. J., & Mullins-Sweatt, S. N. (2013). Nonsuicidal self-injury disorder: Clinician and expert ratings. *Psychiatry research*, *210*(3), 940-944. doi:10.1016/j.psychres.2013.08.047

Lloyd-Richardson, E. E., Perrine, N., Dierker, L., & Kelley, M. L. (2007). Characteristics and functions of non-suicidal self-injury in a community sample of adolescents. *Psychological Medicine, 37*, 1183. doi: 10.1017/S003329170700027X

Madge, N., Hawton, K., McMahon, E. M., Corcoran, P., De Leo, D., De Wilde, E. J., . . . Arensman, E. (2011). Psychological characteristics, stressful life events, and deliberate self-harm: Findings from the child & adolescent self-harm in Europe (CASE) Study. *European Child & Adolescent Psychiatry*, *10*, 499-508. http://dx.doi.org/10.1007/s00787-011-0210-4

Maniglio, R. (2010a). Child sexual abuse in the etiology of depression: A systematic review of reviews. *Depression and anxiety*, *27*(7), 631-642. doi: 10.1002/da.20687

Maniglio, R. (2010b). The role of sexual abuse in the etiology of suicide and non-suicidal self-injury. *Acta Psychiatrica Scandinavica*, *124,* 30 – 4. doi: 10.1111/j.1600-0447.2010.01612.x

Marshall, S. K., Tilton-Weaver, L. C., & Stattin, H. (2013). Non-suicidal self-injury and depressive symptoms during middle adolescence: A longitudinal analysis. *Journal of youth and adolescence*, *42*(8), 1234-1242. doi: 10.1007/s10964-013-9919-3

Muehlenkamp, J. J., Engel, S. G., Wadeson, A., Crosby, R. D., Wonderlich, S. A. Simonich, H., & Mitchell, J. E. (2009). Emotional states preceding and following acts of non-suicidal self-injury in bulimia nervosa patients. *Behaviour Research and Therapy*, *47,* 83-87. http://dx.doi.org/10.1016/j.brat.2008.10.011

Muehlenkamp, J. J., Kerr, P. L., Bradley, A. R., & Adams Larson, M. (2010). Abuse subtypes and nonsuicidal self-injury: Preliminary evidence of complex emotion regulation patterns *The Journal of Nervous and Mental Disease, 198(4)*, 258-263. doi: 10.1097/NMD.0b013e3181d612ab

Nanni, V., Uher, R., & Danese, A. (2012). Childhood maltreatment predicts unfavorable course of illness and treatment outcome in depression: A meta-analysis. *American Journal of Psychiatry*, *169*(2), 141-151. doi:10.1176/appi.ajp.2011.11020335

Ross, S., & Heath, N. (2002). A study of the frequency of self-mutilation in a community sample of adolescents. *Journal of Youth and Adolescence, 31*, 67-77. doi: 10.1023/A:1014089117419

Shaffer, D., & Jacobson, C. (2009). Proposal to the DSM-V childhood disorder and mood disorder work groups to include non-suicidal self-Injury (NSSI) as a DSM-V disorder. Retrieved from

http://www.dsm5.org/Proposed%20Revision%20Attachments/APA%20DSM-5%20NSSI%20Proposal.pdf

Smith, N. B., Kouros, C. D., & Meuret, A. E. (2014). The role of trauma symptoms in nonsuicidal self-injury. *Trauma, Violence, & Abuse*, *15*(1), 41-56. doi: 10.1177/1524838013496332

Sornberger, M. J., Heath, N. L., Toste, J. R., & McLouth, R. (2012). Nonsuicidal self–injury and gender: Patterns of prevalence, methods, and locations among adolescents. *Suicide and Life-Threatening Behavior*, *42*, 266-278. doi: 10.1111/j.1943-278X.2012.0088.x

Stewart S. L., Hirdes, J. P., Curtin-Telegdi, N., Perlman, C., MacLeod, K., Ninan, A., Hall, M., Currie, M., Carson, S., Morris, J. N., Berg, K., Björkgren, M., Frijters, D., Fries, B. E., Gray, L., Henrard, J-C., Ljunggren, G., Smith, T., & Steel, K.. (2014). interRAI Child and Youth Mental Health (ChYMH) Assessment Form and User's Manual. Version 1. Washington, DC: interRAI.

St. Germain, S. A., & Hooley, J. M. (2012). Direct and indirect forms of non-suicidal self-injury: Evidence for a distinction. *Psychiatry Research*, *197*, 78-84. doi:10.1016/j.psychres.2011.12.050

St Pierre, J., Leschied, A. W., Stewart, S. L., & Cullion, C. M. (2008). Differentiating three-year outcomes following tertiary child and youth inpatient psychiatric treatment. *Final report to the Centre of Excellence for Child and Youth Mental Health at the Children's Hospital of Eastern Ontario*.

Swannell, S., Martin, G., Page, A., Hasking, P., Hazell, P., Taylor, A., & Protani, M. (2012). Child maltreatment, subsequent non-suicidal self-injury and the mediating roles of

dissociation, alexithymia, and self-blame. *Child Abuse and Neglect, 36,* 672-584. http://dx.doi.org/10.1016/j.chiabu.2012.05.005

Taliaferro, L. A., Muehlenkamp, J. J., Borowsky, I. W., McMorris, B. J., & Kugler, K. C. (2012). Factors distinguishing youth who report self-injurious behavior: A population-based sample. *Academic pediatrics*, *12*(3), 205-213. http://dx.doi.org/10.1016/j.acap.2012.01.008

The Child and Parent Resource Institute. (n. d). The interRAI child and youth mental health (ChYMH) [fact sheet].

Timmer, S., & Urquiza, A. (Eds.) (2014). *Evidence-based approaches for the treatment of maltreated children*. Dordrecht, Heidelberg, New York, London: Springer.

Tresno, F., Ito, Y., & Mearns, J. (2012). Risk factors for nonsuicidal self-injury in Japanese college students: The moderating role of mood regulation expectancies. *International Journal of Psychology*, (ahead-of-print), 1-9. doi: 10.1080/00207594.2012.733399

Trocmé, N., Fallon, B., MacLaurin B., Sinha, V., Black T., Fast, E., Felstiner, C., . . .Holroyd, J. *Canadian incidence study of reported child abuse and neglect 2008*. Public Health Agency of Canada.

Walsh, B. (2007). Clinical assessment of self-injury: A practical guide. *Journal of Clinical Psychology*, *63,* 1057-1068. doi: 10.1002/jclp.20413

Walsh, B. W. (2012). *Treating self-injury, second edition: A practical guide*. New York, New York: The Guildford Press.

Weismoore, J. T., & Esposito-Smythers, C. (2010). The role of cognitive distortion in the relationship between abuse, assault, and non-suicidal self-injury. *Journal of Youth and Adolescence*, *39*, 281-290. http://dx.doi.org/10.1007/s10964-009-9452-6

Wester, K. L., & Trepal, H. C. (2010). Coping behaviors, abuse history, and counseling: Differentiating college students who self–injure. *Journal of College Counseling*, *13*(2), 141-154. doi: 10.1002/j.2161-1882.2010.tb00055.x

Whitlock, J., Eckenrode., J, & Silverman, D. (2006). Self-injurious behaviors in a college population. *Pediatrics*, *117,* 1939–48. doi: 10.1542/peds.2005-2543

Whitlock, J., Muehlenkamp, J., Purington, A., Eckenrode, J., Barreira, P., Baral Abrams, G., ... & Knox, K. (2011). Nonsuicidal self-injury in a college population: General trends and sex differences. *Journal of American College Health*, *59*(8), 691-698. 10.1080/07448481.2010.529626

Wilcox, H. C., Arria, A. M., Caldeira, K. B., Vincent, K. B., Pinchevsky, G. M., & O'Grady, K. E. (2012). Longitudinal predictors of past-year non-suicidal self-injury and motives among college students. *Psychological Medicine, 42,* 717-726. http://dx.doi.org/10.1017/S0033291711001814

Yates, T. M. (2012). The developmental psychopathology of self-injurious behavior: Compensatory regulation in posttraumatic adaption. *Clinical Psychology Review, 24*, 35-74. http://dx.doi.org/10.1016/j.cpr.2003.10.001

You, J., & Leung, F. (2012). The role of depressive symptoms, family invalidation, and behavioural impulsivity in the occurrence and repetition of non-suicidal self-injury in Chinese adolescents: A 2-year follow-up study. *Journal of Adolescence, 35,* 289-395. http://dx.doi.org/10.1016/j.adolescence.2011.07.020

Curriculum Vitae

Name:	Jennifer Gomez
Post-secondary	University of Western Ontario
Education and	London, Ontario, Canada
Degrees:	2005-2011 B.A.
	The University of Western Ontario
	London, Ontario, Canada
	2012-2014 M.A.
Honours and	Western Graduate Research Scholarship
Awards:	2012
Related Work	Community Mental Health Worker
Experience	WOTCH
	2011-2013
	Research Assistant
	The University of Western Ontario
	2012-2013
	Research Assistant
	The Hospital for Sick Children
	2013-Present