Non-Suicidal Self-Injury and Gender: Patterns of Prevalence, Methods, and Locations Among Female and Male Adolescents and Young Adults

Michael Jonathan Sornberger

Department of Educational and Counselling Psychology

McGill University, Montreal

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Non-suicidal self-injury (NSSI) is the deliberate, self-inflicted destruction of body tissue without conscious suicidal intent, for purposes not socially sanctioned. Community-based research estimates that 13 to 23% of adolescents and 4 to 47% of young adults have engaged in NSSI at least once. Little is known about gender's role in this behaviour. The current study investigated gender differences in prevalence, method, and location of NSSI in two samples: adolescents and young adults. Results indicate a pattern of differences between females and males which was only partially consistent across two age samples, which suggests possible developmental differences. Implications for researchers studying NSSI and school psychologists working with clients at risk for NSSI are discussed.
Résumé

L’automutilation non suicidaire (AMNS) est la destruction délibéré et immédiate du tissu corporel sans intention suicidaire, et pour des raisons non sanctionnée par la société. La recherche indique qu’entre 13 et 23% des adolescents et entre 4 et 47% des jeunes adultes ont pratiqué l’AMNS au moins une fois dans leur vie, mais le rôle du sexe dans ce comportement continue d’être incertain. Cette étude a évalué les différences dans la prévalence, les méthodes, et les lieux de mutilation entre les sexes dans deux échantillons: des adolescents et de jeunes adultes. Les résultats indiquent un schéma de différences entre les femelles et mâles qui n’est que partiellement constant entre les deux échantillons. Ceci pourrait suggérer des différences de développement. Des implications pour la recherche dans le domaine de l’AMNS, de même que pour les psychologues scolaires travaillant avec des clients à risque d’AMNS sont discutées.
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Statement of Authorship

The project described in this thesis is co-authored by Dr. Nancy Heath, Rusty McLouth, and I. Dr. Nancy Heath collaborated with Rusty McLouth, who organized and oversaw the data collection for Study 1; Dr. Heath also oversaw the data collection for Study 2. The data for Study 2 were collected collaboratively by members of Dr. Heath’s research team and I. Dr. Heath also aided me in developing the research questions and design. I was responsible for data analysis and writing for the present thesis. Dr. Nancy Heath served in an advisory capacity throughout these steps as well. Co-authorship on this thesis is in accordance with McGill’s Graduate and Postdoctoral Studies Thesis Guidelines, which state that original scholarship is not required for a Master’s thesis. This thesis has not yet been submitted to journals for publication.
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Chapter 1

Introduction

Non-suicidal self-injury (NSSI) is the “deliberate, self-inflicted destruction of body tissue resulting in immediate damage, without suicidal intent and for purposes not culturally sanctioned” (Nixon & Heath, 2008). Our current understanding of NSSI has evolved from the work of researchers including Pattison and Kahan (1983), Walsh and Rosen (1988), and Favazza and Conterio (1989). The earliest studies of NSSI developed from clinical observations and case reports of psychiatric inpatients (e.g., Pattison & Kahan, 1983); later studies began to make similar observations in community samples (e.g., Favazza & Conterio, 1989). As research in this field advanced, authors began to distinguish specific patterns of self-injury that seemed to be unrelated to existing psychological disorders; in a review on the topic, Favazza (1998) outlined three specific categories of "self-mutilation" (SM), including "major", "stereotypic", and "superficial/moderate." The latter category is the closest to our current definition of NSSI, and was divided by Favazza into three types:

Superficial/moderate SM refers to acts such as trichotillomania, nail biting, and skin picking and scratching, which comprise the compulsive type, and to skin cutting, carving, and burning, needle sticking, bone breaking, and interference with wound healing, which comprise the episodic and repetitive types. Superficial/moderate is the most common form of SM with a prevalence of at least 1,000 per 100,000 population per year. (Favazza, 1998)

Our current understanding of NSSI is closely related to episodic and repetitive types of superficial/moderate SM. However, compulsive forms of this behaviour, such as skin picking and scratching, are not included in the modern definition of NSSI. These behaviours tend to be automatic; they are not carried
out with conscious intent, unlike the episodic and repetitive types of SM (Favazza, 1998).

Prevalence estimates of NSSI are concerning. Most community-based studies of adolescent samples have yielded rates ranging from approximately 13 to 23% (Laye-Gindhu & Schonert-Reichl, 2005; Muelenkamp & Gutierrez, 2004; Nixon, Cloutier, & Jansson, 2008; Plener, Libal, Keller, Fegert, & Muehlenkamp, 2009; Ross & Heath, 2002; Zoroglu et al., 2003) but prevalence estimates in his age group can range as high as 47% (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007). Community-based studies of young adult samples have yielded prevalence rates ranging from 4 to 38% (Briere & Gil, 1998; Gratz, 2001; Gratz, 2006; Gratz, Conrad, & Roemer, 2002; Heath, Toste, Nedecheva, & Charlebois, 2008). There appears to be a vast range of prevalence estimates within both age groups. This may be due to different methods of recruitment, definitions of NSSI, and measures of data collection (Heath, Schaub, Holly, & Nixon, 2008). Despite these prevalence rates, there are still many gaps and debates within the research literature on NSSI.

Several of these gaps and conflicts in the NSSI literature fall under the domain of gender differences. In the earliest studies, researchers concluded that NSSI was a primarily female behaviour; Favazza and Conterio (1989) described the "typical subject" as a 28-year-old female. The theory that NSSI was predominantly an issue affecting females may have evolved from NSSI research's origins in clinical samples. According to a review by Heath, Schaub, Holly and Nixon (2008), clinical samples tend to inherently yield higher rates of NSSI among females than among males. This is likely due to females' higher likelihood
of seeking clinical help, and because many clinical studies include behaviours that are not typically considered NSSI (e.g., self-poisoning) but that typically affect females more than males (Heath, Schaub, et al., 2008).

The question of gender and prevalence of NSSI remains to this day. Several recent studies assert that more females self-injure than males (Laye-Gindhu & Schonert-Reichl, 2005; Muehlenkamp & Gutierrez, 2007; Muehlenkamp, Williams, Gutierrez, & Claes, 2009; Nixon et al., 2008; Plener et al., 2009; Ross & Heath, 2002; Yates, Tracy, & Luthar, 2008). Others conclude that there are no such differences (Andover, Primack, Gibb, & Pepper, 2010; Gratz, 2001; Gratz et al., 2002; Heath, Toste, et al., 2008; Klonsky, Oltmanns, & Turkheimer; Williams & Hasking, 2009). However, upon reviewing the literature for this thesis, a trend appears to emerge; studies that find significant gender differences tend to observe adolescent samples, and studies that fail to find such differences tend to involve samples of young adults.

Although there is a great deal of research on gender and prevalence, there is very little information on gender differences in methods and locations of NSSI. The few studies that examine these variables seem to provide evidence for potential gender differences in both domains (e.g., Yates et al., 2008; Whitlock, Eckenrode, & Silverman, 2006). However, little is known about specific gender differences. Two studies of gender and method of NSSI found that females who engage in the behaviour were more likely than males to report scratching and cutting, and that males were more likely than females to bang their head and burn themselves (Andover et al., 2010; Whitlock et al., 2006). In terms of location, Whitlock and colleagues (2006) found that females were more likely than males
to injure the wrists and thighs, whereas males were more likely to injure the hands. However, the few specific details that are known about the role of gender in methods and locations of NSSI come mainly from college samples of young adults (Andover et al., 2010; Whitlock et al., 2006). There is still much to be learned about how female and male adolescents differ in method and location of NSSI.

The current thesis is made up of two studies. Each study investigates prevalence, method, and location of NSSI; Study 1 investigates a high school adolescent sample, and Study 2 includes a sample of young adults within a university. Each of the two studies has three main objectives: to compare high school aged females and males on (a) their reported prevalence rates of NSSI, (b) their endorsed methods of self-injury, and (c) the injured locations on the body. The two studies were conducted as part of ongoing research into coping, stress, and health. Both studies used measures that were as similar to each other as possible, so as to minimize any confounding effects of the measure used.

The current research project contributes to the body of literature on NSSI in two important ways: to resolve the debate over gender and prevalence, and to address the gaps in the literature regarding gender and its relation to method and location of NSSI, as well as how these features differ in two distinct age groups. It is proposed that developmentally, NSSI occurs and presents differently in females and males.

No research study to date has attempted to investigate the apparent importance of age on the relationship between gender and prevalence of NSSI; depending on the results, such a study could lend support to the apparent trend
observed in the literature, and could reconcile existing contradictory results.
Likewise, no study to date has explored gender differences in method and location
of NSSI across two different age groups; this thesis will therefore not only
contribute to the very limited knowledge of these domains, it will also shed light
on whether or not age plays an important role in prevalence, method and location
of NSSI.
Chapter 2

Review of Literature

This chapter reviews existing research on non-suicidal self-injury (NSSI) in community samples, including an operational definition for the behaviour; it also distinguishes NSSI from similar concepts, including self-injury in clinical populations, deliberate self-harm (DSH) and suicide. After establishing a conceptual framework for examining gender and age as they relate to NSSI, this review will present empirical research on gender differences in prevalence rates, methods, and locations of NSSI. In its conclusion, the chapter will identify the existing gaps in the literature on gender and NSSI in community samples, and will outline the research objectives and corresponding hypotheses of the current study.

Gender, age, and NSSI: A conceptual framework

Non-suicidal self-injury (NSSI) is currently defined as “the deliberate, self-inflicted destruction of body tissue resulting in immediate damage, without suicidal intent and for purposes not culturally sanctioned” (Nixon & Heath, 2008). Research into the functions behind this behaviour has suggested that individuals self-injure as a means to regulate emotion (e.g., Heath, Toste, Nedeccheva, & Charlebois, 2008; Nock & Prinstein, 2004).

Much research has been done on emotion regulation and gender, suggesting that the development of emotion regulation is different for females and males (e.g., Underwood, 1997). Research into the specific behaviours associated with emotion regulation suggest that females with emotion regulation difficulties tend to internalize problems, whereas males tend to use externalized behaviours to regulate their emotions (Conway, 2005; Offer & Schonert-Reichl, 1992).
Research on emotion regulation and age has found that different age
groups use different strategies to regulate emotion (e.g. Blanchard-Fields, 2007;
Blanchard-Fields, Stein, & Watson, 2004). Studies examining the outcomes of
emotion regulation difficulties among adolescents has suggested that such
difficulties can lead to risk taking and other problem behaviour (Silk, Steinberg,
& Morris, 2003). Although the number of studies comparing adolescents and
young adults is limited, trends in the research suggest that older groups tend to
manage emotions more adaptively than younger groups (e.g. Blanchard-Fields,
2007; Blanchard-Fields, Stein, & Watson, 2004).

Despite a body of research that shows a link between emotion regulation
difficulties and NSSI, and further research that shows there are age and gender
differences in emotion regulation, there is limited research into age and gender
differences in NSSI. Logically, if females struggle with emotion regulation, they
should be more likely than males to self-injure. Likewise, if males regulate their
emotions using more externalizing methods than females, the methods and
locations of NSSI that males use would logically reflect more externalizing
patterns. Additionally, if young adults are less adept at managing emotions than
young adults, it would follow that their patterns of NSSI prevalence, methods and
locations would be more elevated than those for young adults. These conclusions
are theoretical in nature, but address the gap in the NSSI literature, and the need to
examine age and gender as they relate to NSSI.

**Early Definitions of NSSI in Research Literature**

Some context is required to understand the evolution of NSSI research,
and the impact that these studies have had, and continue to have, on the current
understanding of NSSI. Early studies have historically been inconsistent when assessing behaviours considered to be NSSI, which poses challenges for current NSSI research (Nock & Favazza, 2009). In early research, the term NSSI is not even used – some studies refer to such phenomena as self-mutilation and self-injurious behaviours (SIB), among others. Of particular interest to the present study is the impact that past definitions have had on gender differences in features of NSSI; particularly, the trend of inflated prevalence rates among female participants (Heath, Schaub, Holly, & Nixon, 2008).

In 1983, Pattison and Kahan outlined a phenomenon that they called the “Deliberate Self-Harm Syndrome.” In a review of 33 research papers consisting of a total of 56 case reports ranging from the years 1960 to 1980, they identified a particular subset of self-destructive behaviours as standing out from any established clinical diagnosis. The authors described the clinical diagnostic features of such self-harm as a variety of self-destructive behaviours, including “skin carving, wrist cutting, biting, burning, eye enucleation, amputation of tongue or ear, skin ulceration, and genital mutilation” (Pattison & Kahan, 1983).

The authors made a number of important points that continue to inform the literature on NSSI to this day. Firstly, Pattison and Kahan observed that this self-harming behaviour is independent from suicide attempts, or even suicide ideation. In fact, their review described many of the typical behaviours that are currently understood as NSSI, including skin cutting, self-biting, and burning. In selecting cases for review, Pattison and Kahan made important exclusions; they exclude indirect self-harming behaviours such as chronic alcoholism, as well as cases with apparent lethal intent, such as self-inflicted gunshot wounds. This study found no
significant gender differences; the authors made the point that this distinguishes self-harm from suicide, where the gender ratio of males to females is 3:1. Pattison and Kahan’s sample and definition may not have been accurate by today’s standards, but their study demonstrated an early understanding of self-injury as behaviour with its own distinct characteristics.

However, Pattison and Kahan included a wide variety of samples for whom the functions and features of self-harm may be different. For example, 41% (n=23) of the sample was made up of participants described as “psychotic persons” (Pattison & Kahan, 1983). Their study also included extreme methods such as eye enucleation and amputations. These issues are particularly salient for the current study, since past research sometimes clearly includes populations and methods which would no longer be considered NSSI; this affects the external validity of some past research on prevalence and methods of NSSI.

The concept of self-harm continued to be associated with existing psychological disorders through the early years of study. In 1988, Walsh and Rosen published a book on the topic of self-mutilation. The authors maintained that NSSI was distinct from suicide and suicide attempts. This book also described the contagion effect; NSSI tends to present in “clusters” of individuals. However, Walsh and Rosen continued to focus on clinical populations, including self-injury in individuals with borderline personality disorder (BPD), forms of psychosis, mental retardation, and autism. While self-injurious behaviours are observed in all of the aforementioned populations, such behaviours may have different functions from NSSI in community samples. The authors suggest that adolescents who self-mutilate have childhoods that are “replete with dysfunction
Self-injury research began to develop a more concrete definition in the late 1980s. Favazza and Conterio (1989) attempted to understand the behaviour, and to develop a profile of a “habitual self-mutilator”. At this point, the authors had developed a more evolved definition of self-injury; labeling it self-mutilation, the authors defined it as a “complex behaviour in which people deliberately alter or destroy their body tissue without conscious suicidal intent, or willingly allow others to alter or destroy their body tissue” (Favazza & Conterio, 1989). In addition to excluding suicide and suicide attempts from the definition, the authors made an additional exclusion; self-mutilation may not include scientific medical treatment, such as deceiving physicians and convincing them to perform unnecessary surgical procedures. However, their definition also explicitly allowed for the possibility that self-mutilation may include socially sanctioned behaviours, such as social initiation rites.

In order to develop their profile of the typical self-mutilator, Favazza and Conterio conducted a study using a self-report questionnaire given to a community sample. This sample is particularly important to the current study, as it is a very early example of a distinction being made between self-injury in clinical and community samples. Until this point, the vast majority of studies recruited participants from clinical environments, such as mental health inpatient services (e.g., Pattison & Kahan, 1983). By examining a community sample, Favazza and Conterio were able to observe features of the behaviour in a manner more independent from other confounding factors such as the presence of
psychological disorders. Additionally, the results of the study showed that self-injury does occur within the community, and not simply in clinical populations. This suggests that the distinction between clinical and community samples is a salient one.

Based on the results of the study, Favazza and Conterio outlined a profile of typical self-mutilators. The authors suggest that self-mutilators were typically female adults, who primarily used cutting as a method of self-injury, but also used burning and self-battery:

The typical subject is a 28-year-old Caucasian who first deliberately harmed herself at age 14. Skin cutting is her usual practice, but she has used other methods such as skin burning and self-hitting, and she has injured herself on at least 50 occasions. Her decision to self-mutilate is impulsive and results in temporary relief from symptoms such as racing thoughts, depersonalization, and marked anxiety. (1989, p. 283)

Despite the conclusion that typical self-mutilators were female, Favazza also conducted research into males and self-mutilation. In a 1989 review of case studies that investigated the reasons behind self-mutilation, Favazza noted a number of cases of male self-mutilators. In this article, Favazza distinguished between major self-mutilation, such as amputations or eye enucleation, and moderate self-mutilation, such as skin-cutting and self-hitting. A pattern for male self-mutilators emerges from the case studies in Favazza's review; males appear to mutilate their genitals, and for reasons pertaining to sexuality. These reasons include the desire to be female, a fear of homosexuality, control of hypersexuality, repudiation of one's own sexual organs, and a sexual obsession with amputation. Although this appears to be a trend, this pertains only to major forms of self-mutilation, which are well beyond the scope of NSSI. However, this does point to
gender specific trends within the domain of general self-injury, at least in clinical samples.

Suyemoto and MacDonald (1995) developed an early review of the functional models of NSSI; the authors proposed that different types of NSSI could be explained by eight separate models: behavioural, systemic, suicidal, expression, control, boundaries, sexual, and depersonalization. The behavioural model suggests that NSSI is a behaviour that is learned through earlier external influences. A systemic model, on the other hand, proposes that NSSI is a symptom of a dysfunctional environmental system, such as a family. The suicide model describes NSSI as a type of adaptive coping mechanism; individuals who engage in NSSI do so as a means to avoid more drastic, suicidal actions. Within the sexual model, NSSI is associated with sexual ideation and development. The expression model suggests that NSSI comes from an overwhelming need to express intense negative emotion, such as anger, sadness, or abandonment. Conversely, the control method focuses on the individual’s need to regulate otherwise uncontrollable emotion. The boundaries model describes individuals as engaging in NSSI in order to distinguish one's own identity from others and the environment. Finally, the depersonalization model refers to dissociative behaviours and feelings that have been observed in early research literature on NSSI. These models are historically important for two reasons. Suyemoto and MacDonald were among the earliest researchers to contextualize NSSI as a behaviour separate from other psychological pathology. Additionally, these models are important because many of these perspectives are still reflected in current NSSI literature.
Favazza’s research continued through the 1990s. In a 1998 review on the topic, Favazza retained his 1989 definition of self-mutilation, still including socially sanctioned practices such as tattooing; major acts of self-mutilation, such as eye enucleation and castration were also retained in the definition. However, in this 1998 review, Favazza suggested that socially sanctioned and non-socially sanctioned acts of self-injury were in fact distinct from one another. Similarly, the author made more detailed distinctions between types of the behaviour. Favazza divided self-mutilation into three categories: self-mutilation (head-banging and self-biting acts typically associated with Tourette’s syndrome), major self-mutilation (eye enucleation and amputation typically associated with psychosis and intoxication) and superficial/moderate self-mutilation (compulsive behaviours such as trichotillomania and skin-picking; repetitive and episodic behaviours such as skin cutting and burning; Favazza, 1989). Favazza additionally reiterated that self-mutilation is not an indicator of suicide ideation. The authors report very little on the topic of gender differences; they simply assert that repetitive self-mutilation, where the behaviour becomes an overwhelming preoccupation, is more common in females than in males.

From Pattison and Kahan’s review of studies from 1960 to 1980, to Favazza’s description of self-mutilation in 1998, the definition of self-injury changed from pure self-destructive behaviour regardless of age, intent, function, or psychological disorder, to one of conscious self-destructive behaviour without suicidal intent. Researchers in the field began to understand that self-injury in clinical samples, although similar in some ways, was distinct from NSSI in the
community. Likewise, they were beginning to observe a difference between socially sanctioned self-injury, and acts that were not socially sanctioned.

In the 2000s, many researchers began to explore the topic of NSSI. Coming out of its earliest period, researchers within the field began to exclude Favazza’s stereotypic and major acts of self-mutilation, and began to focus on a definition of NSSI similar to the episodic and repetitive types of superficial/moderate self-mutilation, including non-compulsive, consciously-intended cutting, scratching, and burning (Rodham & Hawton, 2009). This movement within the research has helped to define key characteristics of NSSI: direct and deliberate self-inflicted damage to body tissue; absence of suicidal intent underlying the destructive act; the exclusion of behaviours that are socially sanctioned (Nixon & Heath, 2008; Nock & Favazza, 2009).

This early research on NSSI outlines several points that are critical to the current study. The earliest literature did not make many distinctions in NSSI between clinical and community samples; it also tended to include more severe methods of self-injury, which are now understood to be indicative of a separate underlying pathology (Favazza, 1998). Additionally, recent reviews have shown that studies of clinical samples tend to overinflate prevalence estimates of NSSI among females (Heath, Schaub, Holly, & Nixon, 2008).

The field of NSSI research is a nascent one, and these early studies continue to affect the understanding of NSSI. Specifically, early research on self-injury tended to focus on broad definitions of self-harm that included actions such as amputations, overdose, and reckless behaviours. The similarities between different forms of self-harm can lead to confusion about the distinct behaviours
that are, specifically, NSSI. For the purpose of clarity within this study, it is important to outline the characteristics of these more broad forms of self-harm, and highlight how they are different from NSSI. Additionally, much of the early research on NSSI has focused on clinical samples, which means that information that has been collected may not be representative of the general community. However, such research can offer some insight that can be used as a starting point for hypotheses about NSSI in community samples. Therefore, for the purpose of this study, it is critical to review the literature on broader constructs of self-harm and on NSSI within clinical samples.

**NSSI versus Deliberate Self-Harm**

One issue that clouds understanding of NSSI is the existence of research literature on Deliberate Self-Harm (DSH). DSH is a broad construct of which NSSI is but one specific part. That is, NSSI focuses on deliberate and immediate tissue damage without suicidal intent, whereas DSH can include a wide variety of self-destructive behaviours with or without suicidal intent. Many studies broadly define DSH as self-injury and self-poisoning (Haavisto et al., 2005; Hawton, Hall, Simkin, et al., 2003; Hawton & Harriss, 2008; Hawton, Rodham, Evans, & Weatherall, 2002). The difference between DSH and NSSI may stem from regional trends in research: Hawton, Rodham and Evans define DSH, and the difference between this behaviour, attempted suicide, and NSSI:

In the UK the term "deliberate self-harm" (DSH) has been used to encompass all acts of intentional self-poising and self-injury, whereas in North America researchers often divide such behaviour into "attempted suicide", where death is at least part of the intended outcome, and "non-suicidal self-injury", where death is definitely not the intended outcome (2010).
There are many actions and behaviours that fall under the construct of DSH, which do not meet the criteria for specific NSSI. The motivations for NSSI are, by definition, non-suicidal; DSH can include a clear intention to die (Hawton et al., 2003). Some studies include suicide within the definition of DSH, which is irreconcilable with the non-suicidal definition of NSSI (Jacobson, Muehlenkamp, Miller, & Turner, 2008). Additionally, motivation to injure oneself does not necessarily play as crucial a role in defining DSH; Hawton and colleagues (2003) include in their definition of self-poisoning “the intentional self-administration of more than the prescribed dose of any drug, whether or not there is evidence that the act was intended to cause self-harm”. In some more abstract interpretations, DSH can include such behaviours as: excessive risk taking, drinking, smoking or eating; starvation; risky sexual behaviour; reckless driving; neglect for hygiene; and provocation of violence (McAllister, 2003).

The discrepancies between the definitions of DSH and NSSI can cause issues in interpreting the literature. Information about the prevalence, functions, or other elements of DSH is not necessarily applicable to the study of NSSI. For example, in a ten-year clinical, longitudinal study of adolescents admitted to hospital for DSH, Hawton and colleagues documented the prevalence and methods of this behaviour (2003). However, of the cases that presented in that time period, 86.0% were isolated cases of self-poisoning, while only 8.9% were self-injury incidents that would meet the criteria for NSSI. This is important to note, as adolescents who present to the hospital with overdoses are significantly more likely to have done so out of suicidal ideation than those who present with self-cutting injuries (Rodham, Hawton, & Evans, 2004). Upon analyzing gender
differences, the authors found that among younger adolescents, females reported more DSH than males. However, the gender difference decreased with age.

As evidenced by the DSH research, it is necessary to differentiate NSSI from DSH. While NSSI can be considered a specific type of DSH behaviour, it is not necessarily related to the other behaviours that fall under the DSH heading. Findings on gender, prevalence, methods, and locations from DSH studies likely do not, therefore, accurately reflect the respective features of NSSI.

**Self-Injury Within Clinical Samples**

Insight can be gained from studies of NSSI in clinical samples. However, this research is not necessarily generalizable to studies of community samples. For example, in clinical samples, general prevalence rates of NSSI are more likely to be higher than community samples; additionally, clinical samples are likely to show an over-representation of females (Heath, Schaub, et al., 2008; Heath, Toste, et al., 2008). Additionally, the study of clinical samples can inflate estimated correlations between NSSI and mental disorders (Klonsky, Oltmanns, & Turkheimer, 2003). Despite this, clinical samples can offer some insight into the methods and locations of NSSI, and should therefore be considered when researching the behaviour.

An early clinical study of a female sample was conducted by Himber (1994), to determine the etiology of self-cutting. Himber observed eight women from age 18 to 54, who were admitted into a locked psychiatric unit for dissociative disorders. Himber defined self-injury as the act of non-lethal cutting. In this study, the author draws attention to the careful wording that must be used when addressing the topic of self-injury. Specifically, Himber recounts an excerpt
from a case interview, where one participant described the language of self-injurers to be vastly different from clinicians; asking patients if they were not self-injuring, hospital workers would use the phrase: “Are you safe?” Patients would answer that they were safe, and would even describe to other patients that they felt safe, despite continuing to self-injure (Himber, 1994). One important implication from this study is the conclusion that the type of question asked of participants may generate misleading answers; in this case, the experimenters assumed that they were asking about NSSI, but the participants did not make the same assumption.

A 2001 study involving clinical interviews with three self-injuring female adolescents suggests that the behaviour was used to communicate intense negative emotions (Machoian, 2001). The three participants were inpatients at a voluntary private psychiatric facility, and in their interviews described multiple episodes of self-cutting.

One of the common themes in recent NSSI research in clinical settings is Borderline Personality Disorder (BPD). The Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR) lists self-injurious behaviours as a symptom of BPD (American Psychiatric Association, 2000). Studies on BPD may overinflate estimates of prevalence of NSSI, but can offer insight into the methods and locations. For example, Brown, Comtois and Linehan (2002), conducted a study of 75 women with BPD who all shared a history of self-injury and suicide attempts. Through the use of self-report questionnaires, the authors were able to determine methods of NSSI endorsed by this sample; these methods included cutting, burning, and stabbing. Other self-injurious behaviours such as
drug overdose were observed, but are not representative examples of NSSI (Rodham & Hawton, 2009).

Research in clinical settings also tends to focus on NSSI among patients who have been hospitalized for eating disorders. In one study of NSSI among a sample of 101 female adolescents with eating disorders, Claes, Vandereycken and Vertommen (2005) examined the methods and functions of NSSI behaviours. The authors found that the patients were most likely to injure the arms and the legs, and were most likely to cut or to scratch themselves.

Some researchers working in clinical settings do not actively choose female-only samples, but rather acquire them by chance. Nixon, Cloutier and Aggarwal (2002) conducted a study to determine rates of repetitive self-injury among adolescents who had been admitted to the inpatient and partial hospitalization programs at the Children’s Hospital of Eastern Ontario. The majority of participants were admitted to the hospital for suicide ideation; other reasons for admission included depression and overdose. All incoming patients were screened for self-injury upon admittance to the hospital. Out of 130 admitted patients, 50 agreed to complete the questionnaire; 8 participants were excluded because their self-injury was not frequent enough; two had not self-injured in the past 6 months, and six had injured only once or twice in that time. This sample (n=42; 36 female, 6 male) was analyzed using a cross-tabulation of gender by self-injury; the sample from the partial hospitalization program yielded significantly more females than males, while the sample from the inpatient program yielded no significant gender difference. The analyses for the study were made using one aggregated sample, and no cross-tabulation is provided to
determine whether the final sample has a representative gender distribution, or a significantly different number of females and males. Recent research has determined that males are less likely than females to seek help or to self-report, which may explain the low number of male participants (Heath, Toste, et al., 2008); this study relied on participants who sought help from a hospital.

Nixon and colleagues observed gender trends in methods and locations of NSSI (2002). Specifically, they found that all participants, regardless of gender, endorsed cutting and scratching. Hitting, head-banging and burning were also endorsed by females and males. However, females endorsed hair-pulling (66.7%), using needles (30.6%), and trying to break bones (16.7%) as methods of self-injury, while males did not. Both genders reported injuring their upper arms, lower arms, and/or hands; only females reported injuring their upper leg, lower leg, and/or abdomen. While these results indicate clear gender differences in method and location of self-injury, it is important to note the small number of male participants.

In 2004, Nock and Prinstein conducted clinical interviews with adolescents admitted to a psychiatric inpatient unit in the United States. Specific reason for admission was not a critical variable of this study; the participants were recruited from chronologically consecutive admissions to the psychiatric unit. Out of a sample of 108 participants (70% female) ranging in age from 12 to 17 years ($M = 14.8, SD = 1.4$). Results indicated that 74.2% of self-mutilators were female; however, a Chi-square analysis indicated that there was no significant gender difference for the presence of "self-mutilative behaviour" (SMB). This is an
important consideration; although the overall sample was primarily female, the authors failed to find a significant gender difference in prevalence.

Not all clinical studies focus primarily on females; some research focuses on males in clinical populations. For example, Evren, Kural and Cakmak (2006) conducted a study of 112 males admitted to an inpatient program for substance dependence. This study found a prevalence of 33% of men engaging in NSSI, with drug dependence a much stronger predictor for NSSI than alcohol dependence. The authors found that NSSI was positively correlated with high scores for depression and anxiety, and that childhood abuse was a risk factor for NSSI. However, the authors found that within this sample, individuals who self-injured were also significantly more likely to have a personality disorder. This may confound the findings, and may mean that the observed rate of prevalence for men may not be necessarily generalizable to males in community samples.

To further explore gender differences in clinical settings, Claes, Vandereycken and Vertommen (2007) carried out a study of adult patients, with a mean age of 30.8 years ($SD = 12.2$) admitted to a psychiatric inpatient ward for a number of reasons, including eating disorders (49.6%), substance use disorders (27.0%), anxiety or mood disorders (11.4%), personality disorders (7.6%), and psychotic disorders (4.4%). This sample included a large number of both genders (n = 399; 265 female, 134 male). The authors investigated gender differences in methods and functions of NSSI; the results indicated that females were more likely than males to report engaging in NSSI. Females were also more likely than males to endorse cutting, scratching, and bruising. Males were more likely than
females to report burning. Additionally, males were less likely than females to
conceal or take care of NSSI wounds.

The results from clinical samples are not necessarily generalizable to
community samples; this is important to consider when conducting a study on the
latter type of sample. For example, males are less likely than females to seek help
or to self-report, and may therefore be under-represented in clinical samples
(Heath, Toste, et al., 2008). However, there is important information about NSSI
prevalence, methods and locations to be gleaned from these studies. With regard
to prevalence, Claes and colleagues (2007) report significant gender differences,
with females reporting more NSSI than males. Nonetheless, studies of only male
participants can also yield high rates of NSSI (Evren et al., 2006). These studies
also produce a great deal of information about methods of NSSI. The vast
majority of literature suggests that cutting and scratching are the most common
methods. Some studies also indicate specific gender differences in methods; Claes
and colleagues (2007) found that females tend to endorse cutting, scratching, and
head-banging more than males. However, other studies find no such differences
(Nixon et al., 2002). This conflict in the literature suggests that more information
about methods is needed in general. Finally, studies of clinical populations show
that females are likely to injure their arms, hands, legs, and abdomen, while males
are likely to only report injuring their arms (Nixon et al., 2002).

These clinical results offer some insight into NSSI that may be otherwise
unavailable. In particular, based on these results, it is likely that there are gender
differences in methods and locations of NSSI among clinical samples. However, it
remains to be seen whether these differences are consistently observed in the
general population; research on gender differences in methods and locations of NSSI in community samples is currently limited.

**NSSI in community samples**

Research on NSSI in community samples has focused on either adolescent samples or on young adult samples. For the purpose of the current research, which will observe two independent community samples, one of adolescents and one of young adults, the existing literature on NSSI in community samples will be reviewed by age group.

**NSSI in community samples of adolescents.** For the purpose of this review, findings of each study of NSSI in community samples of adolescents will be reviewed. This will be followed by a collective analysis of the limitations of the studies and the trends that emerge from the data.

A study by Ross and Heath (2002) involved an analysis of data on NSSI prevalence within a community sample of adolescents. In order to measure prevalence of NSSI, the authors distributed the How I Deal With Stress questionnaire (HIDS; Ross & Heath, 2002) to a Canadian sample of 440 students in grades 7 to 11 (50.3% female). This questionnaire is a measure assessing adaptive and maladaptive coping strategies employed by the participants, with questions about NSSI behaviours, methods and locations embedded within the overall framework. The authors found that 13.9% of all participants reported engaging in NSSI sometime in their lifetime. When analyzing for gender, the authors determined that 17.6% of females reported NSSI, compared to 10.0% of males; this gender difference was statistically significant. The most popular method of NSSI was skin cutting (41%), followed by self-hitting (32.8%). No
analyses were carried out within this study to determine whether there were any
gender differences in method, and no data were presented on location.

Zoroglu and colleagues (2003) conducted a study of adolescents in
Istanbul; the purpose of their study was to examine the relationship between NSSI
and suicide attempts and abuse, neglect and dissociation. These authors designed
their own questionnaire to collect data on NSSI. Their sample consisted of 839
adolescents (61.1% female) ranging in age from 14 to 17 years, with a mean age
of 15.9 ($SD = 1.8$). This study found an overall prevalence rate of 21.4%; no
gender differences were observed, as 21.5% of females and 21.3% of males
reported engaging in NSSI in their lifetime. Both genders reported head-banging
and cutting as the two most commonly-used methods; females reported a
significantly higher prevalence of hair-pulling than males. No data were presented
on location in this study.

In a study comparing NSSI and suicide attempts, Muehlenkamp and
Gutierrez (2004) collected data from an American sample of 390 adolescents
(54.9% female) with a mean age of 16.27 ($SD = 1.37$). The authors employed the
Suicidal Ideation Questionnaire (SIQ; Reynolds, 1988) and the Multi-Attitude
Suicide Tendency Scale (MAST; Orbach et al., 1991) to measure features of the
participants’ ideations and attitudes toward suicide, and the Self-Harm Behaviour
Scale (SHB; Gutierrez, 1998) to assess the degree of NSSI among participants.
This scale consists of five questions to measure features of NSSI, and follow-up
questions to describe features of the behaviour in greater detail. The Reynolds
Adolescent Depression Scale (RADS; Reynolds, 1987) was also administered to
measure depression. The authors found that 15.9% of adolescents endorsed NSSI.
Of the female participants, 13.1% reported engaging in NSSI in the last twelve months, compared to 19.3% of the male participants; this difference was not significant. Cutting and scratching were the most commonly reported methods of self-injury, but no data were reported on gender differences in methods used. There were also no data reported on location.

Laye-Gindhu and Schonert-Reichl (2005) also conducted a study to determine prevalence rates and methods of self-harm among adolescents in Canada. Their sample consisted of 424 adolescents (56% female) with an age range of 13-18 ($M = 15.34; SD = 1.06$). The authors developed their own questionnaires for this study: the Self-Harm Survey, a self-report questionnaire to investigate descriptive features of the NSSI behaviour, and the Motivations Underlying Self-Harm Questionnaire, a self-report questionnaire which focuses on the reasons underlying the behaviour. The initial question assessing self-harm was "Have you ever done anything on purpose to injure, hurt, or harm yourself or your body (but you weren't trying to kill yourself?)". Further questions about the nature of participants' self-harm determined whether or not they belonged in the self-harm group. This study yielded an overall prevalence rate of 13.2%, with 16.9% of females and 8.5% of males reporting NSSI in their lifetime. This difference was found to be statistically significant. Cutting and hitting were the most commonly endorsed methods of NSSI, with almost one half of females and one third of males reporting that they had cut themselves. No mention was made of whether or not this difference was significant (p. 451). No information was reported on location of NSSI.
In 2007, Lloyd-Richardson, Perrine, Dierker and Kelley collected data from an American sample of 633 adolescents (57% female) with a mean age of 15.5 (SD = 1.18). Using the Functional Assessment of Self-Mutilation (FASM; Lloyd, Kelley, & Hope, 1997), the authors gathered information on the prevalence and methods of NSSI. This measure asks participants whether or not they have engaged in one of many different NSSI behaviours. The authors found high prevalence rates relative to other studies (46.5%), and concluded that it was logical to separate the different NSSI behaviours into two groups: Moderate/severe NSSI (cutting/carving on skin; burning skin; giving self a tattoo; scraping skin; and erasing skin) and Minor NSSI (hitting self on purpose; pulling hair out; inserting objects under nails or skin; and picking at skin or wounds to draw blood). The authors found that 26.3% of females and 29.3% of males reported engaging in Moderate/severe NSSI within the last 12 months. The gender difference was not significant. The authors also reported that there were no gender differences between Moderate/severe and Minor NSSI. No information was available on locations.

Muehlenkamp and Gutierrez (2007) adapted their 2004 study in order to examine the risk for suicide attempts among adolescents engaging in NSSI. Although the explicit purpose of the study was about suicide attempts, this study yielded information on prevalence of NSSI. In a sample of 540 adolescents (62.3% female) with a mean age of 15.53 (SD = 1.42), the authors administered the Self-Harm Behaviour Scale (SHB; Gutierrez, 1998), the Suicidal Ideation Questionnaire (SIQ; Reynolds, 1988), the Reynolds Adolescent Depression Scale (RADS; Reynolds, 1987), and the Multi-Attitude Suicide Tendency Scale.
When analyzing the results, the authors grouped the participants into four groups: no self-harm whatsoever (NoSH); NSSI only (NSSI); NSSI and suicide attempts (NSSI + SA), and suicide attempts only (SA). 16.1% of participants fell into the NSSI only group, and 7.0% fell into the NSSI + SA group. For females, these figures were 15.5% and 8.6%, respectively; for males, the rates were 17.1% and 4.1%, respectively. The only significant gender difference was in the NSSI + SA group, with females more likely to report NSSI and suicide attempts. No analysis was conducted to determine gender differences in a single group that would combine the NSSI and NSSI + SA participants. Additionally, no data were presented on methods or locations.

Nixon, Cloutier and Jansson (2008) also conducted an examination of NSSI in a community sample of adolescents. Using one year of an ongoing longitudinal population-based study, the authors gathered information on self-harm from a Canadian sample of 568 adolescents (53.7% female). The age of the participants ranged from 14-21. Mean age and standard deviation for this study were not reported. However, more specific details were given on age ranges: 136 were between 14 and 15 years of age, 173 were between 16 and 17, 186 were between 186, and were between 20-21. This study consisted of a face-to-face interview conducted in the youth’s home or other agreed-upon locations. The authors found an overall prevalence rate of 16.9%; 24.2% of females reported engaging in NSSI in their lifetime, compared with 8.4% of males. This gender difference was statistically significant. Cutting, scratching and self-hitting were the most commonly reported methods of NSSI; however, the definition of self-
harm also included overdoses. No information was reported on gender differences in methods, or on location.

Yates, Tracy and Luthar (2008) investigated NSSI within a sample of “privileged” youths; their sample consisted of a cross-sectional sample of 1036 adolescents (51.9% female) from suburban, upper-middle-class families on the West Coast of the United States, and a sample from a longitudinal study of 245 youths from suburban, upper-middle-class backgrounds (53.1% female) on the East Coast of the United States. Both samples were in grades 9 to 12 at the time of observation. Using the Functional Assessment of Self-Mutilation (FASM; Lloyd et al., 1997), this study collected data on prevalence and methods of NSSI within the last 12 months. In the overall combined sample (n = 1281), the authors found that 7.7% of participants had engaged in NSSI once, and 29.5% had done so more than once. Of the female participants, 8.8% reported one incident of NSSI, and 30.5% indicated that they had self-injured more than once. For males, these figures were 7.5% and 22.8%, respectively. Statistical analyses indicated significant gender differences, with females more likely to engage in NSSI than males. The method “picked at a wound” produced disproportionately high rates of endorsement, and so was excluded from analyses. The most common methods of NSSI were cutting and self-hitting. The authors describe gender as a “salient influence” on endorsed methods, but do not report specific statistical analyses of gender differences in methods. No information on location was reported.

In 2009, Plener, Libal, Keller, Fegert and Muehlenkamp carried out a comparison of adolescent NSSI and suicide attempts between the United States and Germany. This study included a sample of 665 adolescents (57.1% female)
between the ages of 14 and 17 ($M = 14.8$; $SD = 0.66$). The authors employed the Ottawa Self-Harm Inventory (OSI; Nixon et al., 2002), a 21-item questionnaire covering descriptive features of NSSI, and the SHB. The results were presented in the same manner used by Muehlenkamp and Gutierrez (2007), with the NoSH, NSSI, NSSI + SA, and SA groups. 20.6% of participants met the criteria for the NSSI group, and 5.0% met NSSI + SA criteria. For females, these figures were 25.5% and 6.1%, respectively; for males, the rates were 14.1% and 3.5%, respectively. The differences between female and male prevalence in both the NSSI and the NSSI + SA groups were statistically significant. No data were presented on methods or locations.

Claes, Houben, Vandereycken, Bijettebier, and Muehlenkamp (2009) investigated NSSI within a sample of 150 high school students (60% female) in Belgium. The mean age of the sample was 15.56 years ($SD = 2.00$). Using an adapted version of the Self-Harm Inventory, a questionnaire of 22 yes/no items, the authors found an overall prevalence of 30.7%. A chi-square analysis failed to find a significant difference between females and males, even though the prevalence for each gender was 43.4% and 25%, respectively. No data were presented for methods or locations.

Using a sample of 1,393 adolescents, Muehlenkamp, Williams, Gutierrez, and Claes (2009) conducted a study of adolescents over the course of five years. Each year, students were recruited from required Health and Government classes. Recruitment for the first three years was carried out by way of a letter sent home to parents, requesting active consent; participant assent was also required. In the fourth and fifth years of the study, recruitment changed to a passive consent
method, where parents were informed of the study, and could refuse consent, if they so chose. Across all years, parents were informed that the study was investigating a variety of mental health issues, including stress, feelings and attitudes. The authors controlled recruitment to ensure that no participant answered the questionnaires more than once.

For their study, Muehlenkamp and colleagues measured NSSI with the Self-Harm Behaviour Questionnaire, which contains items on incidence and frequency of the behaviour. The sample was made up of 56% females, with a mean age of 15.48 years ($SD = 1.38$). Overall prevalence of NSSI within the sample was 21.4%; 69.6% of the NSSI group were female. Analyses of prevalence and frequency showed that there were no significant differences in the frequency of the behaviour. A significant difference was observed between females and males for lifetime prevalence of NSSI; females reported a higher prevalence of NSSI than males in years 4 and 5 of the study. This is interesting, as these are the years where recruitment changed to a passive method, rather than an active method. The passive method of recruitment tends to lead to higher rates of consent, and more representative inclusion of minorities, struggling students, and students at risk for problem behaviours (Tigges, 2003). It is therefore likely that the results of years 4 and 5 of the study are more representative of the actual patterns of NSSI. No data on methods and locations were presented.

Four studies show no significant gender differences for prevalence (Claes et al., 2009; Lloyd-Richardson et al., 2007; Muehlenkamp & Gutierrez, 2004; Zoroglu et al., 2003). Muehlenkamp and Gutierrez (2004) found significant gender differences in prevalence within the NSSI + SA groups, but did not
calculate differences in a combined NSSI and NSSI + SA group. Such a calculation would be more representative of the samples seen in other studies; additionally, later studies using similar measures found significant gender differences within the NSSI groups as well (Muehlenkamp & Gutierrez, 2007; Plener et al., 2009). Lloyd-Richardson and colleagues (2007) found no significant gender differences in prevalence of NSSI. However, the measure that was used, the Functional Assessment of Self-Mutilation (FASM; Lloyd et al., 1997) is a checklist of a wide variety of behaviours, some of which are at a low level of severity. Other studies of NSSI using the FASM found inflated prevalence when all checklist variables (such as "picking at a wound") were used. This may explain the much higher prevalence rate observed in Lloyd-Richardson and colleagues' study. Additionally, when other researchers corrected for this inflation by removing the "picking at a wound" variable, they did find significant gender differences (Yates et al., 2008). Considering the fact that the overall prevalence rates appear to be over-inflated in Lloyd-Richardson and colleagues’ study, it is possible that the inclusion of this variable may have affected the gender distribution of NSSI prevalence. Finally, despite the fact that Claes and colleagues (2009) did not find significant patterns for gender, the difference between females and males in prevalence was great (43.4% and 25%, respectively). It is surprising that there was no statistical significance. This surprising finding was not expanded upon in the study; however, despite the lack of statistical significance, it would still appear that more female adolescents seem to report NSSI than their male counterparts.
Seven studies found gender differences in NSSI among adolescents; in each case, females were more likely to report engaging in NSSI than males (Laye-Gindhu & Schonert-Reichl, 2005; Muehlenkamp & Gutierrez, 2007; Muehlenkamp et al., 2009; Nixon et al., 2008; Plener et al., 2009; Ross & Heath, 2002; Yates et al., 2008). Ross and Heath (2002) relied on semi-structured interviews; research has shown that males are less likely to report self-injury, so the interview format may have affected the gender breakdown. Laye-Gindhu and Schonert-Reichl (2005) also found gender differences. However, the significance of the gender differences included behaviours that do not lead to immediate injury, such as eating disorders, which would inflate the female prevalence for their estimate. Muehlenkamp and Gutierrez (2007) found gender differences only in the group whose participants reported both NSSI and suicide attempts; they did not find significant gender differences in the NSSI only group. This could be a misleading difference, as research into suicide has shown that female adolescents are at a significantly higher risk than their male counterparts (Lewinsohn, Rohde, Seeley, & Baldwin, 2001). Nixon and colleagues (2008) also found significant gender differences; however, their operational definition of NSSI included such behaviours as overdoses; this behaviour falls outside the scope of NSSI (Hawton et al., 2010), but is also observed in more females than males (Rodham et al., 2004). Yates and colleagues (2008) used an operational definition that included pulling one's own hair, which does not fall under the general definition of NSSI. Other studies have shown that females are more likely than males to pull their own hair (Zoroglu et al., 2003). This may have inflated the prevalence for females in the study by Yates and colleagues. Plener and colleagues (2009) recruited
participants by asking for active consent from parents, and by advertising their research as focusing on self-injury, suicidal behaviour, and depressive symptoms. These factors may have limited the representativeness of the sample in two ways. Active consent tends to decrease participation of at-risk youth (Tigges, 2003). Additionally, self-injuring males may have avoided participating in the study, as males are less likely than females to report or seek help for these behaviours (Heath, Schaub, et al., 2008). Finally, Muehlenkamp and colleagues (2009) conducted a five-year study and found that females reported significantly higher prevalence of NSSI. The authors only found significant gender differences in prevalence for 2 out of the 5 years; however, these results came from years of passive instead of active consent for the study. Although the results from the various years of this study conflict with one another, it is likely that the results that show a gender difference are the most representative of the true population.

Overall, patterns have emerged from the literature on NSSI within community samples of adolescents. In terms of prevalence, seven of eleven studies reviewed here suggest that females are significantly more likely than males to report engaging in NSSI (Laye-Gindhu & Schonert-Reichl, 2005; Muehlenkamp & Gutierrez, 2007; Muehlenkamp et al., 2009; Nixon et al., 2008; Plener et al., 2009; Ross & Heath, 2002; Yates et al., 2008).

Few studies indicated whether or not there were gender differences for methods of NSSI. In terms of the broad categories of minor and moderate/severe methods of NSSI, there were no gender differences (Lloyd-Richardson et al., 2007). Zoroglu and colleagues (2003) reported that females were more likely than males to pull their own hair. Other studies reported that gender had a salient effect
on individual methods of NSSI, but did not specify which methods, and in which direction (Yates et al., 2008). Clearly, more information is needed about gender differences for methods of NSSI among adolescents.

Finally, no community-based study of adolescents indicated location of NSSI. This is an area that needs to be explored, both to describe locations in general, and to determine whether or not there exist gender differences in the location being injured. Such information would help to inform clinicians working with adolescents who self-injure; being able to recognize warning signs and risk factors for self-injury can help inform earlier and more appropriate intervention.

**NSSI in community samples of adults.** For the purpose of this review, a number of studies of NSSI within community samples of adults will be analyzed. The section begins with an outline of the findings of each study, and concludes with an analysis of the collective conclusions and limitations, as well as the trends that emerge from the data.

Briere and Gil (1998) conducted a study to compare clinical and community samples on NSSI prevalence rates. Using a national sampling service, the authors mailed out the Trauma Symptom Inventory (TSI) and Traumatic Events Survey (TES), two questionnaires that collected data on traumatic experiences and coping behaviours, including self-injury. Of 1442 mailed data packages, 927 participants (50% female) returned substantially completed questionnaires. This sample, made up of adults aged 18 to 90 (\( M = 46, SD = 17 \)) yielded an overall prevalence rate of 4% for participants who had reported "self-mutilation" as defined on the TSI. Of the female participants, 4% reported engaging in NSSI; of male participants, the prevalence of NSSI was 3%.
Significance of this difference was not reported. This study did not collect data regarding methods or locations of NSSI.

Although using the label of Deliberate Self-Harm (DSH), Gratz (2001) conducted a study of self-injury that focused on immediate tissue damage, and not risky behaviours or self-poisoning. Using the Deliberate Self-Harm Inventory, a questionnaire that asks participants whether or not they had intentionally harmed themselves, Gratz collected data from a sample of 150 undergraduate psychology students (68% female) at an American university. The mean age of the sample was 23.19 (SD = 7.13), and the ages of the participants ranged from 18-64 years. Of all the participants, 35% reported engaging in NSSI in their lifetime; 34% of females and 38% of males reported at least one past episode of NSSI. No significant gender difference for prevalence was found. The most common methods endorsed were cutting, sticking objects into skin, and severe scratching. The only gender difference was observed for carving words into skin; females were more likely than males to do so. No data on location were presented.

The prevalence rate found by Gratz (2001) is striking when compared with the findings of Briere and Gil (1998). However, this difference is not surprising, considering the methods of data collection between the study. A detailed analysis of the wide range of prevalence rates is included at the end of the current section.

Gratz, Conrad and Roemer conducted a similar study in 2002. Using the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001), the authors collected data from a sample of 159 undergraduate psychology students (67% female) at an American university. The participants ranged in age from 18 to 49 years (M = 22.73; SD = 6.17). This study yielded similar results to Gratz’s 2001 study; 38%
of participants reported engaging in NSSI. Within female participants, prevalence of NSSI was 36%, and within the male participants, this rate was 41%. The difference between female and male prevalence was not significant. As in Gratz’s study (2001), the most common methods were sticking objects under the skin, cutting, and severe scratching. However, this study found no gender differences in methods. There were no available data on location.

Klonsky, Oltmanns and Turkheimer (2003) investigated NSSI within a sample of military recruits (n = 1986; 38% female). These participants had a mean age of 20 (SD = 5), and were participating in a larger study on personality traits and pathology. This study consisted of the Schedule for Nonadaptive and Adaptive Personality, a self-report, true-false questionnaire that assesses elements of personality pathology. Within this questionnaire were two embedded questions on NSSI: 1) “When I get very tense, hurting myself physically somehow calms me down” and 2) “I have hurt myself on purpose several times” (Klonsky et al., 2003). On item 1, 2.4% of females and 2.5% of males answered true; on item 2, 2.5% of females and 2.5% of males answered true. Four percent of all participants answered true for at least one item. There was no significant difference between genders. This study did not collect data on methods or locations.

In 2006, Gratz adapted previous studies (Gratz, 2001; Gratz et al., 2002) to assess risk factors for NSSI in female college students. Participants were made aware of the specific purpose of the study during the recruitment phase. Using the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001), the author collected data on NSSI from a sample of 249 female undergraduate psychology students aged 18 to 55 years (M = 23.29; SD = 5.96). While this study cannot reflect any gender
differences, the authors found a prevalence rate of 37%, consistent with Gratz (2001) and Gratz, Conrad and Roemer (2002). The most common methods of NSSI in this sample were skin-cutting (46%), severe scratching (34%), and carving words into the skin (32%). No data were collected on location.

Whitlock, Eckenrode and Silverman (2006) conducted a study to investigate the prevalence, methods and locations of NSSI. Their sample of 2875 undergraduate students (56.3% female) fell mostly into the age range of 18 to 24 years. Data on NSSI were collected using a screening question “Have you ever done any of the following with the intention of hurting yourself?” (Whitlock et al., 2006). The question was followed by a list of 16 NSSI methods; the list was developed based on a review of past literature, surveys, and interviews with mental health providers and self-injurers. A follow-up question asked whether or not the behaviour was carried out to commit suicide, in order to glean results truly representative of NSSI. Further follow-up questions addressed lifetime frequency, age of onset, current self-injuring, perceived severity of the NSSI, locations on the body, and help-seeking. The prevalence rate for the sample was 17%, with no gender prevalence reported. The most common methods of NSSI were scratching, banging, cutting, and self-hitting. Females were significantly more likely than males to scratch or pinch, and males were significantly more likely to punch an object. Overall, the most common locations of NSSI were the arms (47.3%), hands (38.0%), and wrists (29.0). Females were more likely than males to injure their wrists and thighs; males were more likely than females to injure their hands.

In an examination of NSSI among young adults, Heath, Toste, and colleagues (2008) recruited a sample of 728 undergraduate university students...
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(78% female). Ages of the participants ranged from 18 to 55 years, with a mean of 20.64 (SD = 3.46). Participants were recruited as part of a larger study on adaptive and maladaptive coping strategies of young adults, and were asked to complete the How I Deal with Stress questionnaire (HIDS; Ross & Heath, 2002). This questionnaire presents participants with a list of coping strategies, and asks respondents to mark, on a scale from 0 to 3, how frequently they engage in each strategy. Questions on specific features of NSSI are embedded in a follow-up section of the questionnaire. This sample yielded a NSSI prevalence rate of 11.68% overall; 12.3% of females and 9.4% of males reported engaging in NSSI. Statistical analyses of gender differences in prevalence showed no significance. The most common methods of NSSI were cutting, scratching, self-punching, and burning. No analyses were made for gender differences in method, and no information on location was presented.

A study was conducted by Williams and Hasking (2009) using a sample of 289 young adults in Australia. The age of the participants ranged from 18 to 30 years (M = 22.52; SD = 3.92), and 73% of the participants were female. The authors recruited participants by placing flyers and posters on university notice boards, advertising that the study was specifically about NSSI. These authors found an overall NSSI prevalence of 47.4%, with no significant gender differences. No data were analyzed for methods or locations.

In a study looking specifically at gender differences and similarities in NSSI, Andover, Primack, Gibb and Pepper (2010) investigated NSSI in a sample of 103 young adults. This study was the second phase of a larger study of NSSI in an undergraduate sample; the sample was made up of those both with and without
NSSI who agreed to participate in a further stage of the study. The sample had a mean age of 18.49 years ($SD = 1.03$); 54.4% of the sample was female. The participants were interviewed using the Self-Mutilative Behaviours Interview; they were asked to answer questions assessing history of NSSI behaviours. Overall, the authors found a prevalence of 46.6%, with 60.4% of females engaging in NSSI. An analysis of gender and prevalence failed to find significant differences between females and males. However, significant differences were found for methods used; males were more likely than females to burn themselves, and females were more likely to cut and/or scratch themselves. There was no significant gender difference for number of methods used. Location on the body was not a variable explored by Andover and colleagues.

Upon reviewing the studies of NSSI in adult samples in community settings, a notable range of prevalence estimates emerges. Some studies indicate low rates around 4% (Briere & Gil, 1998; Klonsky et al., 2003); other studies produced slightly higher rates between 11 and 17% (Heath, Toste, et al., 2008; Whitlock et al., 2006). Many of the studies produced much higher results, ranging from 35 to 47.4% (Andover et al., 2010; Gratz, 2001, 2006; Gratz et al., 2002; Williams & Hasking, 2009). A closer examination of each study indicates that these differences may be attributable to the method of data collection as well as the size of the sample. The studies in the lower range of prevalence rates used very few questions to assess NSSI; Briere and Gil (1998) used very few questions to assess NSSI, with little to no follow-up. Indeed, it can be speculated that the nature of the questions in these studies could have led some participants to report not engaging in NSSI, when in fact, they do.
Studies with prevalence rates below 20% also consistently involved larger sample sizes than studies with prevalence rates above 30%. Additionally, studies where the prevalence rates were estimated above 30% frequently used checklist-style measures and method of recruitment that advertised explicitly that NSSI was the purpose of the study. These factors may inflate the proportion of consenting participants who report NSSI.

An additional factor in the wide range of prevalence rates may be the type of setting. The two studies that found low prevalence rates examined samples from the general population (Briere & Gil, 1998) and from a millitary environment (Klonsky et al., 2003). On the other hand, the remainder of the studies drew from university samples (e.g., Heath, Toste, et al., 2008). It is possible that NSSI is more prevalent among university samples than within the general population.

Beyond the wide range in estimates of NSSI prevalence, different trends emerge from the literature on young adult samples from the research on adolescents. Although the majority of adolescent samples yielded significant gender differences in prevalence, no study of young adults showed such differences. Research into gender differences in methods of NSSI is limited, but all three studies that measured such differences showed significance. Based on this research, females are more likely than males to carve words into their skin, scratch, or pinch; males are more likely than females to punch an object (Gratz, 2001; Whitlock et al., 2006) or burn themselves (Andover et al., 2010). Finally, one study offered insight into gender differences in locations of NSSI. Females
are more likely than males to injure the wrists and thighs; males are more likely than females to injure the hands.

Although this research indicates clear trends for gender differences, the research is very limited. Three of the studies use very similar methodologies, measures and samples (Gratz, 2001; Gratz, 2006; Gratz et al., 2002). When the body of literature is made up of seven studies, this may overinflate the observed trend. Additionally, there are only two studies that measure gender difference in methods (Gratz, 2001; Whitlock et al., 2006), and only one that measures such differences in location (Whitlock et al., 2006).

Overall, the literature does suggest consistent trends, but more research is needed into prevalence, methods and location of NSSI in order to better understand and describe this behaviour.

**Summary and rationale**

A review of the literature on NSSI within clinical and community samples has yielded a number of emerging trends for gender differences in prevalence, methods and location. Studies of clinical samples have shown several interesting findings that help to inform the current study. For example, males are less likely than females to self-report NSSI; therefore any measure investigating NSSI should minimize the likelihood that males will not report their NSSI accurately (Heath, Toste, et al., 2008). Additionally, clinical samples parallel, in some ways, the divide in the community literature regarding gender and prevalence; clinical samples tend to over-inflate female prevalence, but studies of only male participants can yield very high rates of NSSI as well, suggesting that the behaviour may not necessarily be an issue mainly for females (Evren et al., 2006).
Finally, specific information on gender, methods, and locations is helpful in forming hypotheses for the current study, as little is yet known about gender differences in these domains. For example, clinical findings suggest that cutting and scratching are the most common methods of NSSI; this is consistent with the community-based literature. Additionally, some clinical studies have generated preliminary information on gender differences in methods and locations. Females tend to endorse cutting, scratching, and head-banging more than males (Claes et al., 2007); females are also more likely than males to injure the arms, hands, legs, and abdomen, while males are more likely than females to only report injuring their arms (Nixon et al., 2002).

Within community studies of adolescent samples, there is support for gender differences in prevalence (Laye-Gindhu & Schonert-Reichl, 2005; Muehlenkamp & Gutierrez, 2007; Muehlenkamp et al., 2009; Nixon et al., 2008; Plener et al., 2009; Ross & Heath, 2002; Yates et al., 2008). This is not a perfect pattern; some studies of adolescents fail to find significant differences between females and males (Claes et al., 2009; Lloyd-Richardson et al., 2007; Muehlenkamp & Gutierrez, 2004; Zoroglu et al., 2003). Analyses of these studies suggest that the gender differences observed in most community studies of adolescents are accurate, but this is not entirely certain. Conversely, all studies of young adults indicate that within that age group, there are no such gender differences (Andover et al., 2010; Gratz, 2001; Gratz et al., 2002; Heath, Toste, et al., 2008; Klonsky et al., 2003; Williams & Hasking, 2009). This suggests that there is no difference in prevalence of NSSI between females and males in young adulthood.
By dividing the review of the literature by age group, it is possible to observe a trend that could resolve what would otherwise be a source of great conflict in the body of literature. It is possible that the conflict in the literature reflects a difference in the features of NSSI at two different developmental stages. However, in order to test this theory, it is first necessary to establish that the differences are not due to other factors, such as method of measurement. This underscores the need to measure gender difference in prevalence, using the same type of measurement, in two independent age groups: adolescents and young adults.

Secondly, research is limited on gender differences in methods of NSSI in both adolescent and young adult samples. Community-based studies of adolescent samples have suggested that gender has a salient influence on methods of NSSI (Yates et al., 2008; Zoroglu et al., 2003). This research is limited in its descriptions of the specific ways in which both genders differ with respect to gender. Conversely, one study of adolescents suggests that there are no gender differences in individual methods (Lloyd-Richardson et al., 2007). However, this study includes a wide variety of methods that are not necessarily under the scope of NSSI, which may confound this finding. Clearly, more information is needed on whether there are, in fact, gender differences in specific endorsed methods of NSSI; if there are, it would be beneficial for this study to determine what the specific gender differences are.

In young adult samples, gender differences in methods of NSSI have been observed, with females more likely than males to carve words into their skin, scratch, or pinch, and males more likely than females to punch an object (Gratz,
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2001; Whitlock et al., 2006). However, these results are based on only two studies. The current study will add to the body of literature on gender differences in methods within this age group.

Finally, there is a dearth of information on location of NSSI. Studies of NSSI in clinical populations show that female adolescents tend to injure their arms, hands, legs, and abdomen; male adolescents tend to only report injuring their arms (Nixon et al., 2002). This suggests observable gender differences; however, such differences have not been explored in a study of adolescents. Only one study of community samples explores the topic, and this study of young adults indicates that there are observable gender differences; females were more likely than males to injure wrists and thighs; males were more likely than females to injure hands (Whitlock et al., 2006). Clearly, research needs to explore this topic much further before salient trends can even begin to emerge.

Upon reviewing the literature on gender and the prevalence, methods, and location of NSSI, there is much left to understand. There appears to be a trend, wherein adolescent samples yield gender differences in prevalence, while young adult samples do not. Prevalence rates also appear to be affected by the measure used (Heath, Schaub, et al., 2008). The gaps in the literature would be best addressed by two independent community-based studies, each using an identical measure, and each addressing one of the two age groups. The purpose of each of the two studies would be to determine gender differences in prevalence, methods, and locations of NSSI, while minimizing confounding effects of other variables, such as measures and method of data collection. Addressing the gaps in the literature for both of these age groups would not only provide an important
contribution to the body of research on NSSI, it would provide important
descriptive information for mental health professionals working with adolescents
and young adults who self-injure.

**Research objectives and hypotheses**

The goal of the present study is to understand the ways in which males and
females differ with regard to NSSI at different developmental periods.
Specifically, this study will investigate gender differences in prevalence rates,
methods, and locations of NSSI. Much of the recent literature suggests different
patterns of such differences based on age group. For example, studies of high
school samples tend to suggest that females report higher rates of NSSI than
males (Laye-Gindhu & Schonert-Reichl, 2005; Muehlenkamp & Gutierrez, 2007;
Nixon et al., 2008; Plener et al., 2009; Ross & Heath, 2002; Yates et al., 2008),
although this is not a perfect pattern, as some studies fail to find significant
differences between adolescent females and males (Claes et al., 2009; Lloyd-
Richardson et al., 2007; Muehlenkamp & Gutierrez, 2004; Zoroglu et al., 2003).

Studies of young adult samples consistently yield no gender differences
(Gratz, 2001; Gratz et al., 2002; Heath, Toste, et al., 2008; Klonsky et al., 2003).
To avoid a possible confounding effect of age groups, this research will consist of
two similar studies. The first study is with a high school age sample, and the
second with a sample of young adults.

**Study 1.** The objective of Study 1 is to compare high school aged females
and males on their reported prevalence rates of NSSI, their endorsed methods of
self-injury, and the injured locations on the body. In order to investigate these
features of NSSI, participants will be asked questions about NSSI embedded in a
large, online study on health-related behaviours. Specifically, participants will be asked the question “When you have had problems to deal with, have you ever physically hurt yourself on purpose?” Participants’ responses to this question will yield the overall prevalence rate. To determine endorsed methods, follow-up questions will ask self-injuring participants whether they had cut, burned, scratched, banged, and/or punched themselves, and/or whether or not they had used any other method. For location, participants will be asked whether they injured their arms, legs, stomach, chest, genitals, face, and/or any other body part.

**Objective 1.** To determine and compare the percentage of females and males who report engaging in NSSI within a sample of high school students. Within this analysis, this study will also look at the proportion of female and male adolescents who self-injure at different levels of frequency.

It is anticipated that a significantly higher percentage of females will report engaging in NSSI than males. This hypothesis is based on the body of literature on high school samples, which has predominantly found that females of this age report higher prevalence rates than their male counterparts (Laye-Gindhu & Schonert-Reichl, 2005; Muehlenkamp & Gutierrez, 2007; Nixon et al., 2008; Plener et al., 2009; Ross & Heath, 2002; Yates et al., 2008).

**Objective 2.** To determine and compare the methods of NSSI endorsed by females and males in a high school sample. It is anticipated that overall, cutting, scratching and hitting oneself will be the methods endorsed by the most participants (Laye-Gindhu & Schonert-Reichl, 2005, Nixon et al., 2008; Yates et al., 2008). It is also hypothesized that males and females will differ significantly on certain methods; there will likely be an overall effect of gender on methods.
used, although no specific methods can be hypothesized. This hypothesis is based on the work of Yates, Tracy and Luthar (2008), who found that gender had a salient effect on methods of NSSI.

**Objective 3.** To determine and compare the specific locations where female and male adolescents injure themselves. It is hypothesized that females will be more likely than males to report injuring their arms and legs. This hypothesis is based on the assumption that findings observed in the young adult literature can be generalized to an adolescent sample; it is unknown whether this assumption is valid. Whitlock, Eckenrode and Silverman (2006) found that female young adults were more likely than males to injure their own wrists and thighs, while males were more likely than females to injure their own hands.

**Study 2.** The objective of Study 2 is to compare males and females from a young adult sample on their respective prevalence rates of NSSI, endorsed methods of self-injury, and the injured locations on the body. To investigate these three features in this sample, participants will be recruited in undergraduate classes at an urban university in Canada. Questions about NSSI will be embedded in a survey about young adults and their adaptive and maladaptive coping strategies. Specifically, participants will be asked to indicate whether they have used a list of 21 coping strategies; participants will respond whether they have used each strategy never, once, a few times, or frequently. The item “physically hurt myself on purpose” will be embedded within this list of coping strategies. The next section will ask follow-up questions on three of the strategies, including NSSI; the NSSI questions will focus on methods and locations.
**Objective 1.** To determine and compare the percentage of females and males who report engaging in NSSI within a sample of young adults. Within this analysis, this study will also look at the proportion of female and male young adults who self-injure at different levels of frequency.

It is anticipated that the study will fail to find a difference between males and females in NSSI prevalence rates. This hypothesis is based on the body of literature on young adult samples, which has predominantly failed to find gender difference in prevalence within this age group (Gratz, 2001; Gratz et al., 2002; Heath, Schaub, et al., 2008; Klonsky et al., 2003).

**Objective 2.** To determine and compare the methods of NSSI endorsed by females and males in a sample of young adults. It is anticipated that overall, cutting, scratching and hitting oneself will be the methods endorsed by the most participants. It is also hypothesized that females will be more likely than males to endorse scratching and cutting, and that males will be more likely than females to bang their head and burn. This hypothesis is based on the work of Whitlock, Eckenrode and Silverman (2006), and Andover and colleagues (2010), who found similar patterns of gender differences in NSSI methods among young adults.

**Objective 3.** To determine and compare the specific locations where female and male young adults injure themselves. It is hypothesized that females will be more likely than males to report injuring their legs. Although Whitlock and colleagues reported that females report more injury to their wrists, and males to their hands, it is impossible to translate these findings into a hypothesis for the current study. The measures used in this project use the variable "arms" instead of
wrist and/or hands; it is unclear based on the literature whether there will likely be gender differences for the more general variable.
Chapter 3

Method

Study 1: Adolescent Sample

Participants. Data were collected from a sample of 7,126 high school students, who were recruited to complete a survey on health-related behaviours. The sample consisted of 3,623 females (50.8%) and 3,503 males (49.2%). The sample's age range was from 11 to 19 years ($M = 14.92; SD = 1.61$); participants were recruited from classes in grades 6 through 12. The majority of participants reported their ethnicity as White (67.0%), followed by Black (14.5%), Spanish/Hispanic (5.7%), Multi-ethnic (4.7%), Asian/Pacific Islander (2.1%), Native Alaskan/Native American (1.6%), and Other (4.5%).

Participants were recruited from 11 school districts in the Greater Kansas City metropolitan area. Between one and eight schools per district agreed to participate in the study; the total number of participating schools included 13 high schools and 18 middle schools. Entire classes were selected at random to participate; these classes represented fifteen percent of each grade at each school. The survey was part of an ongoing initiative within these school districts; the sample for the current study was recruited in early 2007.

Within the overall sample, 1,859 participants (26.1%) indicated that they had ever physically hurt themselves on purpose. Follow-up questions indicated that of this sub-group, 1,128 participants had never hurt themselves with the intent to die; these participants comprise the NSSI group for this study. The age range of the NSSI group was 11 to 19 years ($M = 14.76; SD = 1.54$). This group was comprised of 696 females (61.7%) and 432 males (38.3%). Reported ethnicity
within the NSSI group was White (69.2%), Black (11.3%), Spanish/Hispanic (5.7%), Multi-ethnic (5.0%), Asian/Pacific Islander (2.0%), Native Alaskan/Native American (2.6%), and Other (4.3%).

Measures. Participants in this study completed the Kaufman Teen Survey (KTS), an online survey made up of 125 questions, and programmed and administered using SurveyPro 3.0 software. The presentation of the survey is computer-adaptive; participants’ responses to some questions affect the presence or absence of some follow-up questions. For example, if participants indicate that they have physically hurt themselves on purpose, they will then be presented with more questions to explore the behaviour in greater detail. If they indicate that they have never physically hurt themselves, no follow-up questions are asked. The majority of questions are closed-ended, formatted either as multiple choice or checklist items. Some questions allow participants to enter information in an open-ended manner.

The KTS was developed by the Ewing Marion Kauffman foundation, and was first used during the 1984-1985 school year. The purpose of the KTS is to investigate various teen health behaviours, including, but not limited to, alcohol and drug use, violence-related behaviours, and television use. The data collected from the KTS have been used to determine short- and long-term trends in adolescent well-being, and have also informed adolescent prevention and treatment programs. The KTS has been used in the greater Kansas City metropolitan area since its creation, and has been adapted to include new behaviours as new trends and behaviours develop.
The 2007 iteration of the KTS collected data from a number of different domains, including (a) demographic information, (b) family characteristics, (c) school functioning, (d) neighbourhood characteristics, (e) alcohol and drug use, (f) safety and violence-related behaviours, (g) nutrition, and (h) television and internet use.

In 2007 for the first time, questions assessing NSSI were included. These questions were embedded midway within the KTS. The first of these questions asked: “When you have had problems to deal with, have you ever physically hurt yourself on purpose?” Participants who indicated that they had engaged in self-injury were then asked a series of follow-up questions. First, they were asked whether or not they had hurt themselves with the intent to die. Further follow-up questions focused on age of onset, reasons for self-injury, frequency, methods, locations, and whether or not other people know about their self-injury.

In order to determine whether or not a participant self-injures, regardless of intent, each participant was asked whether or not they had ever physically hurt themselves on purpose. Participants could select either "yes" or "no" as an answer; those who selected "yes" were presented with follow-up questions related to self-injury. The first follow-up question addressed suicidal intent underlying self-injury: "Did you ever hurt yourself because you wanted to die?" The second question addressed the role of stress in self-injury: "Did you physically hurt yourself to deal with problems or stress (e.g., cutting/burning your skin) without wanting to die?" A computer error eliminated participants who indicated that they had hurt themselves on purpose, but had not done so to deal with stress; therefore, the two variables used to determine membership in the NSSI group were (a)
having physically hurt oneself, and (b) having never hurt oneself with the intent to
die.

Methods of NSSI were assessed by asking participants to select whether or
not they had engaged in a number of predetermined behaviours, including (a)
cutting (b) burning, (c) scratching, (d) banging one’s head, and/or (e) punching
oneself. Participants were also able to report any additional methods of NSSI in
an open-ended question.

Participants were also asked to report locations on the body that they had
injured, including (a) arms, (b) legs, (c) stomach, (d) chest, (e) genitals, and/or (f)
face. Participants were given the option of reporting additional locations with
another open-ended question.

**Procedure.** Students in this sample were asked to complete a
questionnaire exploring issues related to teen health. Before data collection began,
parents of all children in grades 6 through 12 at all participating schools were
informed about the nature of the survey through a letter sent home with the child.
Parents were able to refuse consent; a total of 6 students withdrew for this reason.
Those students whose parents did not refuse consent were asked to complete the
KTS. This survey has been conducted regularly within these school boards, so
most students were familiar with the procedure. Students were informed that no
individual results would be examined.

The students completed the survey on classroom computers during class
time. Each student completed the survey independently on their own computer; no
discussion was permitted for the duration of the survey, and dividers between
desks were used. Students were given between 40 and 115 minutes to complete the survey.

**Study 2: Young Adult Sample**

**Participants.** Data were collected from a sample of 3,565 students at an urban university in Montreal, Canada. The students were recruited to complete a survey on adaptive and maladaptive coping strategies among young adults. The overall sample consisted of 2,149 females (60.3%) and 1,408 males (39.5%), with 8 participants (0.2%) missing data for gender. Age of participants in the overall sample ranged from 17 to 60 years ($M = 19.78; SD = 2.34$). Specific demographic information on ethnicity was not collected; the majority of participants reported their place of birth as Canada (58.8%), followed by the United States (11.2%), East Asia (9.5%), and Europe (4.6%).

This study focused on NSSI within a young adult sample; therefore, exclusions based on age were made. Consistent with the age group of emerging adulthood (Berk, 2007), this study included participants who fall in the age range of 18 to 25 years. Twenty-three participants fall below this age range, and 73 participants fell above it; additionally, 15 participants were missing values for the age variable. A total of 111 participants were excluded based on age. Within the remaining sample ($n = 3,454$), 26 participants had missing values for the item "Physically hurt myself on purpose." These participants were also excluded from the sample.

From the remaining sample ($n = 3,428$), 279 participants (8.1%) indicated that they had ever physically hurt themselves on purpose. On the follow-up question "Have you ever hurt yourself with the intent to die/kill yourself?", 223 of
the 279 participants who had reported self-injuring answered no. These 223 participants had therefore physically hurt themselves on purpose without the intent to die; as such, these participants comprise the NSSI-only group for this study.

The NSSI-only group was made up of 147 females (65.9%) and 76 males (34.1%), and ranged in age from 18 to 25 years ($M = 19.64; SD = 1.51$). Place of birth within the NSSI-only group was as follows: Canada (54.7%), the United States (16.1%), East Asia (11.7%), and Europe (4.9%).

**Measures.** The How I Deal with Stress Questionnaire (HIDS; Heath & Ross, 2007) was used to collect data from the participants (See Appendix A). This survey was developed to investigate a number of adaptive and maladaptive coping strategies employed by young adults. Psychometric analyses conducted for previous use of the HIDS have indicated a Cronbach's alpha of .78, suggesting that the items on the questionnaire form a scale with reasonable internal consistency reliability (Heath, Ross, Toste, Charlebois, & Nedacheva, 2009); additionally, construct validity of this measure has been supported through multidimensional scaling analysis (Toste, Grouzet, Heath, & Naeem, 2006).

The first section of the HIDS collects demographic information from participants, including (a) age, (b) sex, (c) faculty, (d) major, (e) sexual orientation, (f) languages spoken within the home, (g) place of permanent residence, and (h) place of birth.

The next section lists 29 specific coping strategies, and asks participants to rate how frequently they use each one. NSSI is embedded within the list of coping strategies as the item "Physically hurt myself on purpose". For each item,
participants are asked to choose from four options: never, once, few times, and frequently. Participants are able to report any additional coping strategies on an open-ended question marked "Other".

Finally, three of the coping strategies, including the NSSI variable, are further investigated with the use of follow-up questions. The first two variables explored are "Talk to someone" and "Do risky things". In the follow-up questions on NSSI, participants are asked to report the methods and body locations of the NSSI. They are also asked (a) how they felt when engaging in NSSI; (b) how old they were when they first hurt themselves; (c) when the last time they hurt themselves was; (d) whether or not the self-injury had been severe enough to result in hospitalization or medical treatment; (e) whether or not they had hurt themselves with the intent to die or kill themselves; and (f) how many times they had injured themselves in their lifetime.

NSSI among participants was determined by the responses to the coping item "Physically hurt myself on purpose" and to the follow-up question about suicidal intent. Those participants who reported injuring themselves, but who did not report doing so with the intent to die or to kill oneself, were included in the NSSI-only group.

Methods of NSSI were assessed by the participants' responses to closed-ended follow-up questions. Participants were able to select from a number of predetermined behaviours, including (a) cutting wrists, arms, or other areas of the body; (b) burning oneself; (c) scratching oneself to the extent that scarring or bleeding occurred; (d) banging one's head against something, to the extent that a bruise appeared; and/or (e) punching oneself, to the extent that a bruise appeared.
Participants were also able to report any additional methods of NSSI in an open-ended question.

Participants were also asked to report locations on the body that they had injured, including (a) arms, (b) legs, (c) stomach, (d) thighs, (e) chest, (f) face, and/or (f) genitals. Again, participants were able to report additional locations through an open-ended question.

**Procedure.** To recruit participants for this study, professors at a large Canadian university were contacted by email; the classes spanned a variety of different faculties at the undergraduate level. The purpose and procedure of the study was explained, and professors could volunteer their classes for the study. Participants were recruited during the first or last 15 minutes of class time. Questionnaires were passed out to all students within the class. Using a standard protocol (See Appendix B), a research assistant explained the purpose of the study. Students were directed to the first page of the questionnaire, which was an informed consent form (See Appendix C). Any students who were willing to participate were asked to fill out the informed consent form. Students were asked not to participate if they were under the age of 18, or if they had ever completed the survey in the past. Students were also asked to refrain from talking for the duration of the survey, whether or not they were participating in the study. Participants were then given the opportunity to complete the HIDS during class time. Once completed, the surveys were immediately collected, and a debrief sheet was given to all participants. This sheet contained information about various coping strategies, as well as contact information for the research team and for various local mental health resources.
Chapter 4

Results

For the current thesis, results are divided into the three main variables: Prevalence, Methods of NSSI, and Location of NSSI. Within each variable, results are displayed for each study, and then the studies are compared. It is important to note that true mathematical comparisons are not possible, considering slight differences in measurements. However, the two measures are similar enough that preliminary, theoretical comparisons can be made. Therefore, all following comparisons are observational, and not statistical, in nature.

Prevalence

Study 1. Within the entire adolescent sample of 3,623 females and 3,503 males, 32.1% of females and 16.6% of males reported having engaged in NSSI at least once in their lifetime. A chi-square analysis showed that females reported a

Table 1

*Frequency of NSSI Reported by Female and Male Adolescents*

<table>
<thead>
<tr>
<th>Response</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>percentage</td>
</tr>
<tr>
<td>Did this only once</td>
<td>332</td>
<td>28.5</td>
</tr>
<tr>
<td>Did this a few times</td>
<td>563</td>
<td>48.4</td>
</tr>
<tr>
<td>Frequently did this</td>
<td>268</td>
<td>23.0</td>
</tr>
<tr>
<td>Total</td>
<td>1163</td>
<td>100</td>
</tr>
</tbody>
</table>
significantly higher rate of NSSI than males, $\chi^2(1) = 231.926, p = .000, \Phi = .094$. Consistent with Blaikie (2003, p. 101), phi (Φ) was used as a measure of effect size for all 2 x 2 chi-squares, and Cramér's V was used for larger chi-squares.

An overall significant difference between males and females in frequency was found, $\chi^2(2) = 6.256, p = .044, V = .060$; these results are summarized in Table 1. Individual chi-squares for each level of frequency revealed that the difference for "did this frequently" was significant with a moderate effect size, $\chi^2(1) = 55.34, p < .05, \Phi = .059$. For number of times engaging in NSSI in one's lifetime, there was no difference between females ($M = 21.56; SD = 53.094$) and males ($M = 19.47; SD = 52.348$), $t(1015) = .545, p = n.s.$

Table 2

*Frequency of NSSI Reported by Female and Male Young Adults*

<table>
<thead>
<tr>
<th>Response</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$N$</td>
<td>percentage</td>
</tr>
<tr>
<td>Once</td>
<td>79</td>
<td>47.6</td>
</tr>
<tr>
<td>Few times</td>
<td>71</td>
<td>42.8</td>
</tr>
<tr>
<td>Frequently</td>
<td>16</td>
<td>9.6</td>
</tr>
<tr>
<td>Total</td>
<td>166</td>
<td>100</td>
</tr>
</tbody>
</table>

**Study 2.** In the sample of young adults, 166 of the 2,036 female participants (8.2%) and 86 of 1,327 male participants (6.5%) reported having
engaged in NSSI at least once in their lifetime. No significant gender differences were found for prevalence of NSSI, \( \chi^2(1) = 3.24, p = \text{n.s.} \).

There was no overall significant difference for frequency of NSSI, \( \chi^2(2) = 1.48, p = \text{n.s.} \). These results are summarized in Table 2. Table 3 outlines the number of times engaging in NSSI in one's lifetime. There was no significant difference between females and males for this variable, \( \chi^2(5) = 3.70, p = \text{n.s.} \); 9 females and 7 males in the NSSI group did not answer this question on the questionnaire.

Table 3

| Number of Times Engaging in NSSI Reported by Female and Male Young Adults |
|-------------------------------------------------|-----------------|-----------------|
| Response                                        | Females         | Males           |
|                                                 | N   | percentage | n    | percentage |
| One time                                        | 25  | 15.1       | 15   | 17.4        |
| 2 to 4 times                                    | 44  | 26.5       | 25   | 29.1        |
| 5 to 10 times                                   | 32  | 19.3       | 17   | 19.8        |
| 11 to 50 times                                  | 33  | 19.9       | 14   | 16.3        |
| 51 to 100 times                                 | 13  | 7.8        | 2    | 2.3         |
| More than 100 times                             | 10  | 6.0        | 6    | 7.0         |
| Missing                                         | 9   | 5.4        | 7    | 8.1         |
| Total                                           | 157 | 100        | 79   | 100         |
**Comparison.** In terms of frequency of NSSI, neither sample showed significant gender differences for the "once" or "few times" variables. Female adolescents were more likely than male adolescents to engage in NSSI frequently; such a difference was not observed in the young adult sample. Interestingly, most adolescents (48.4% of females; 52.5% of males) selected the "few times" variable, while most young adults (47.6% of females; 54.7% of males) selected the variable "once." Figure 1 is a graphical representation of the percentage of females and males in each study's NSSI group who reported each level of frequency.

![Figure 1. Percentage of females and males from the NSSI group of each sample who endorse three separate categories of NSSI frequency. Statistical significance of \( p < .05 \) is represented by an asterisk (*).](image)

**Methods of NSSI.**

**Study 1.** For method of NSSI, 269 females and 302 males were missing data. As outlined in Table 4, results within the adolescent sample indicated that females were significantly more likely than males to report cutting (\( \chi^2(1) = 55.34, \)
Non-Suicidal Self-Injury and Gender  

$p = .000, \Phi = .217$) and scratching ($\chi^2(1) = 18.49, p = .000, \Phi = .126$). Males were more likely than females to endorse burning ($\chi^2(1) = 7.91, p = .006, \Phi = -.082$), banging head ($\chi^2(1) = 23.93, p = .000, \Phi = -.143$), and punching ($\chi^2(1) = 19.60, p = .000, \Phi = -.129$). The chi-square evaluating the variable "other" did not yield significant results, ($\chi^2(1) = 1.373, p = \text{n.s.}$). The percentage of females and males within the NSSI group endorsing each method is displayed in Table 4. For number of methods used, females ($M = 2.16; SD = 1.29$) and males ($M = 2.18; SD = 1.41$) did not differ significantly, $t(1171) = .238, p = \text{n.s.}$

Table 4

Methods of NSSI Endorsed by Female and Male Adolescents

<table>
<thead>
<tr>
<th>Response</th>
<th>Females</th>
<th>Males</th>
<th>$p &lt; .05$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>percentage</td>
<td>$N$</td>
</tr>
<tr>
<td>Cutting</td>
<td>702</td>
<td>78.6</td>
<td>156</td>
</tr>
<tr>
<td>Scratching</td>
<td>465</td>
<td>52.0</td>
<td>104</td>
</tr>
<tr>
<td>Burning</td>
<td>190</td>
<td>21.3</td>
<td>82</td>
</tr>
<tr>
<td>Banging Head</td>
<td>207</td>
<td>23.2</td>
<td>106</td>
</tr>
<tr>
<td>Punching</td>
<td>210</td>
<td>23.5</td>
<td>103</td>
</tr>
<tr>
<td>Other</td>
<td>155</td>
<td>17.3</td>
<td>57</td>
</tr>
<tr>
<td>Total NSSI group</td>
<td>894</td>
<td>100</td>
<td>279</td>
</tr>
</tbody>
</table>
Study 2. Table 5 displays the percentage of female and male young adults' use of various methods of NSSI; females were significantly more likely than males to endorse cutting ($\chi^2(1) = 25.53, p = .000, \Phi = .318$) and scratching ($\chi^2(1) = 16.61, p = .000, \Phi = .257$). Males were more likely than females to report punching, ($\chi^2(1) = 8.50, p < 0.05, \Phi = -.184$). No significant gender differences were found for burning ($\chi^2(1) = .272, p = \text{n.s.}$) or banging head ($\chi^2(1) = 2.97, p = \text{n.s.}$). The chi-square measuring the variable "other" also yielded no significant
gender differences, $\chi^2(1) = 3.10, p = \text{n.s.}$ However, the variable "other" was the third most commonly reported method, behind cutting and scratching. Responses for other included a variety of behaviours, including wrist banging, applying keys to hand, and punching walls or objects. For number of methods used, females ($M = 1.50; SD = .93$) reported a significantly higher mean number than males ($M = 1.23; SD = .95$), $t(168.705) = -2.126, p = .035$.

**Comparison.** Consistent patterns for methods of NSSI were observed across adolescents and young adults. Both samples yielded significant gender differences; females in both samples were significantly more likely to report cutting and scratching, and males were significantly more likely to report punching. Figure 2 represents each NSSI group's proportion of females and males who use each method.

*Figure 2. Percentage of females and males from the NSSI group of each sample who endorse each measured variable for method of NSSI. Statistical significance of $p < .05$ is represented by an asterisk (*).*
Table 6

*Locations of NSSI Endorsed by Female and Male Adolescents*

<table>
<thead>
<tr>
<th>Response</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>percentage</td>
</tr>
<tr>
<td>Arms</td>
<td>764</td>
<td>85.5</td>
</tr>
<tr>
<td>Legs</td>
<td>424</td>
<td>47.4</td>
</tr>
<tr>
<td>Chest</td>
<td>56</td>
<td>6.3</td>
</tr>
<tr>
<td>Genitals</td>
<td>7</td>
<td>0.8</td>
</tr>
<tr>
<td>Face</td>
<td>96</td>
<td>10.7</td>
</tr>
<tr>
<td>Stomach</td>
<td>179</td>
<td>20.0</td>
</tr>
<tr>
<td>Other</td>
<td>116</td>
<td>13.0</td>
</tr>
<tr>
<td>Total NSSI group</td>
<td>894</td>
<td>100</td>
</tr>
</tbody>
</table>

**Location of NSSI.**

**Study 1.** Table 6 outlines the results regarding gender differences in location of NSSI; 269 females and 302 males were missing data for location. Female adolescents were significantly more likely than their male counterparts to injure the arms ($\chi^2(1) = 11.76, p = .001, \Phi = .100$) and legs ($\chi^2(1) = 25.98, p = .000, \Phi = .149$). On the other hand, male adolescents were more likely to injure
Table 7

Locations of NSSI Endorsed by Female and Male Young Adults

<table>
<thead>
<tr>
<th>Response</th>
<th>Females</th>
<th></th>
<th>Males</th>
<th></th>
<th>p &lt; .05</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>percentage</td>
<td>n</td>
<td>percentage</td>
<td></td>
</tr>
<tr>
<td>Arms</td>
<td>123</td>
<td>74.1</td>
<td>41</td>
<td>47.7</td>
<td>*</td>
</tr>
<tr>
<td>Legs</td>
<td>44</td>
<td>26.5</td>
<td>9</td>
<td>10.5</td>
<td>*</td>
</tr>
<tr>
<td>Stomach</td>
<td>31</td>
<td>18.7</td>
<td>7</td>
<td>8.1</td>
<td>*</td>
</tr>
<tr>
<td>Thighs</td>
<td>42</td>
<td>25.3</td>
<td>16</td>
<td>18.6</td>
<td></td>
</tr>
<tr>
<td>Chest</td>
<td>8</td>
<td>4.8</td>
<td>12</td>
<td>14.0</td>
<td>*</td>
</tr>
<tr>
<td>Face</td>
<td>17</td>
<td>10.2</td>
<td>18</td>
<td>20.9</td>
<td>*</td>
</tr>
<tr>
<td>Genitals</td>
<td>1</td>
<td>0.6</td>
<td>2</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>21</td>
<td>12.7</td>
<td>15</td>
<td>17.4</td>
<td></td>
</tr>
<tr>
<td>Total NSSI</td>
<td>166</td>
<td>100</td>
<td>86</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

their chest ($\chi^2(1) = 37.03, p = .000, \Phi = -.178$), genitals ($\chi^2(1) = 14.06, p = .000, \Phi = -.109$), and face ($\chi^2(1) = 36.05, p = .000, \Phi = -.175$). There was no significant gender difference for stomach ($\chi^2(1) = .013, p = 1.000$), nor for the variable "other" ($\chi^2(1) = 3.162, p = n.s.$). There were no differences for number of
locations endorsed between females ($M = 1.84; SD = 1.03$) and males ($M = 1.91; SD = 1.36$), $t(381.9) = .834, p = n.s.$

**Study 2.** The percentage of female and male young adults who reported each specific location is outlined in Table 7. Results from the young adult sample indicated that females were significantly more likely than males to injure the arms ($\chi^2(1) = 17.40, p = .000, \Phi = .263$), legs ($\chi^2(1) = 8.77, p = .003, \Phi = .187$), and stomach ($\chi^2(1) = 4.91, p < .05, \Phi = .140$). Males were significantly more likely than females to injure the chest ($\chi^2(1) = 6.47, p < .05, \Phi = -.160$), and face ($\chi^2(1) = 5.41, p < .05, \Phi = -.147$). No differences were found for thighs ($\chi^2(1) = 1.43, p = n.s$) or genitals ($\chi^2(1) = 1.43, p = n.s$). The chi-square measuring the location "other" yielded no significant gender differences, $\chi^2(1) = 1.06, p = n.s$. The percentage of females and males endorsing each location is displayed in Table 6. Females ($M = 1.73; SD = 1.24$) reported injuring more locations than males ($M = 1.41; SD = .89$), $t(225.717) = -2.371, p = .019$.

![Figure 3. Percentage of females and males from the NSSI group of each sample who endorse each measured variable for location of NSSI. Statistical significance of $p < .05$ is represented by an asterisk (*)](image_url)
Comparison. Consistencies were observed between the two samples for location of NSSI. Females from both samples were significantly more likely than their male counterparts to report injuring their arms and legs. Conversely, males in both samples were significantly more likely to have injured the chest and face. Figure 3 represents the proportion of males and females who endorsed each of the location variables. It is important to note that any comparison of the two studies is observational in nature, as it is impossible to statistically compare the two studies.
Chapter 5

Discussion

The purpose of the present thesis was to address gaps and conflicts within the existing literature on NSSI. Specifically, the current study aimed to resolve the debate on gender differences and prevalence of NSSI; additionally, this thesis intended to contribute to the knowledge of gender differences in methods and locations of NSSI, as empirical knowledge about gender differences in these domains is scarce. The approach taken in this thesis was to investigate NSSI as it relates to both age and gender; that is, it is proposed that NSSI occurs and presents in females and males in changing ways across different developmental stages. This framework was based on research linking NSSI to emotion regulation, and emotion regulation to age and gender differences.

Much research has already been conducted into gender differences in the prevalence of NSSI. However, previous studies have yielded contradictory results; some studies suggest that females are more likely than males to engage in NSSI (Laye-Gindhu & Schonert-Reichl, 2005; Muehlenkamp & Gutierrez, 2007; Muehlenkamp et al., 2009; Nixon et al., 2008; Plener et al., 2009; Ross & Heath, 2002; Yates et al., 2008), while other studies suggest that both genders are equally likely to self-injure (Andover et al., 2010; Gratz, 2001; Gratz et al., 2002; Heath, Toste, et al., 2008; Klonsky et al., 2003; Williams & Hasking, 2009). The current study revealed a pattern in the existing literature: high school samples tend to yield gender differences while young adult samples do not. By encompassing two separate studies using largely the same method, one involving high school students and the other recruiting a college age sample, this thesis was able to
explore the hypothesis that gender differences in NSSI prevalence are observable in high school samples, but not among young adults; additionally, this design allowed the current thesis to investigate gender differences in methods and locations of NSSI in two distinct age groups. This is the first study to comprehensively examine all of these variables in this context. Consistent with the conceptual framework suggesting effects of age and gender on patterns of NSSI, these two factors both appear to generate differences in the prevalence, frequency, methods, and locations of NSSI were observed.

**Prevalence**

**Study 1.** With regard to the first research question, results supported the hypothesis that female adolescents reported significantly more NSSI than their male counterparts. This gender difference is consistent with previous research in adolescent samples. For frequency, significant gender differences were also found; females reported more frequent use of NSSI more than males. It is important to note that within the high school NSSI group, nearly one quarter of self-injuring females indicated that they frequently engaged in this behaviour. This suggests that not only are adolescent females more likely than their male counterparts to engage in NSSI, but that they are also likely to be engaging in the behaviour regularly. Curiously, despite females indicating that they engage in NSSI more frequently than males, there was no gender difference for lifetime frequency; females and males had similar means for the open-ended question: "How many times have you hurt yourself?" This could be due to a number of different reasons. For example, participants were asked to distinguish between whether or not they had engaged in the behaviour a few times or frequently. This
is a subjective decision, and it is possible that different participants defined these terms differently. Alternatively, when asked to report their lifetime frequency of NSSI, participants were asked to recall and report a specific number of NSSI episodes, rather than choosing between different categories. Taken together, these two possible explanations for this curious finding could suggest that this variable was not defined thoroughly enough for the participants. This suggests that future research is needed to determine if there is in fact a difference in the frequency of NSSI between females and males, or whether this finding is an artifact of how individuals report their own level of frequency.

Prior to data analysis, it was hypothesized that female adolescents would report high rates of NSSI than males. The findings on prevalence and frequency are consistent with the hypothesis; these results support previous literature on high school samples, which tends to observe that females in this age group report higher prevalence rates than their male counterparts (e.g., Laye-Gindhu & Schonert-Reichl, 2005; Muehlenkamp & Gutierrez, 2007; Nixon et al., 2008). In addition to supporting the existing literature on prevalence, the current study contributes to knowledge of the frequency of NSSI. Although much is known about prevalence rates, there is much less information in the literature on gender differences in frequency of the behaviour.

**Study 2.** In the young adult sample, the results supported the hypothesis that no gender differences would be found for lifetime prevalence of NSSI. There were also no gender differences for frequency. These results are consistent with other studies of young adult samples (e.g., Gratz, 2001; Gratz et al., 2002; Klonsky et al., 2003); these results are also consistent with the initial hypothesis
for this research question. As with the study of adolescents, the findings for frequency address a gap in the existing literature; by looking at the behaviour in such detail, this study extends knowledge on prevalence to a more detailed observation of specific details of the behaviour.

**Comparison.** Previous research on NSSI has been split on the issue of whether NSSI is primarily carried out by females, or whether there is no gender difference in prevalence; studies have provided evidence to support both assertions. However, upon reviewing the literature, a pattern appeared to emerge; studies of high school samples tended to yield significant gender differences and studies of young adults tended not to find such differences. This pattern was not perfect; some studies of adolescent samples did not find a gender difference (Claes et al., 2009; Lloyd-Richardson et al., 2007; Muehlenkamp & Gutierrez, 2004; Zoroglu et al., 2003). Some of the variability seems to arise from method of data collection, and definition of what constitutes NSSI. Additionally, some studies with smaller sample sizes may have yielded different results with more power (Claes et al., 2009).

The results of the current study seem to support the pattern whereby gender differences are observed in high school samples, but not in university samples. One particular strength of this thesis is the use of the KTS and HIDS measures across both studies. By using very similar measures across both studies, the current thesis aimed to minimize potential confounds.

There are a number of possible reasons for this pattern. Much of the literature on NSSI in young adulthood uses university samples; these studies tend to find much higher rates of NSSI than is observed in more general samples (e.g.,
Andover et al., 2010; Gratz, 2001, 2006; Gratz et al., 2002; Williams & Hasking, 2009). It is possible that individuals who attend university are also at a higher risk than others to engage in NSSI. Perhaps the males who go to university are also more likely to self-injure than males who do not, thereby skewing the representativeness of the sample.

Additionally, research has indicated that male adolescents are less likely than their female peers to self-report NSSI (Heath, Schaub, et al., 2008). Although research in this field has improved the measures used to investigate NSSI, it is possible that a large enough group of self-injuring male adolescents consciously or unconsciously did not report their self-injury on the survey.

It is also possible that within adolescent samples, females truly are at a higher risk for NSSI than males, while within young adult samples, the two genders are at equal risk. If this is the case, it has implications for clinicians working with both age groups; these implications are discussed in a later section.

The current thesis additionally extends the body of knowledge on NSSI by comparing two age groups on frequency of the behaviour; this is the first study to do so. Interestingly, although more adolescent females than males reported engaging in NSSI frequently, such a difference was not observed in university. Based on the literature that suggests that males are less likely to report NSSI, this could suggest that male adolescents attempt to minimize the behaviour when they do report it; perhaps males are admitting to the behaviour, but reporting that it does not happen as frequently as it actually does. Alternatively, the measure of frequency was a subjective one; participants were asked to judge whether they engaged in NSSI once, a few times, or frequently. No guidelines were given for
what "a few times" and "frequently" mean. These differences could therefore be an artifact of the design of the measure.

Methods of NSSI

Study 1. It was hypothesized that cutting, scratching and hitting oneself would be the most frequently endorsed method, as consistent with previous literature (Laye-Gindhu & Schonert-Reichl, 2005, Nixon et al., 2008; Yates et al., 2008). The results of the current study support the hypothesis; although the current study did not have a specific "hitting oneself" variable, the four most common methods were indeed cutting, scratching, punching self, and banging one's head. These results are consistent with past literature; however, more detailed information on methods has helped the current study to add to the existing body of research on NSSI.

Yates and colleagues (2008) found that there were overall effects of gender on methods of NSSI, but did not report any specific differences. Other researchers have investigated methods of NSSI, but only within young adult samples (Andover et al., 2010; Whitlock et al., 2006). This study is the first to extend an investigation into gender and specific methods within an adolescent sample. Previous studies in young adult samples suggest that females are more likely to cut and scratch themselves, and males are more likely to bang their head and burn. In the current study, gender differences were observed in many of the variables relating to method of NSSI. Females were significantly more likely than males to cut and scratch themselves; on the other hand, males were more likely than females to burn themselves, bang head, and punch themselves. The results of the current study suggest that similar patterns are observed in adolescence;
additionally, male participants reported higher use of punching themselves. Thus, the present results are the first to explore these variables across two separate age groups.

Despite differences in individual methods, there was no gender difference on number of methods endorsed. The finding that females and males endorsed an average of slightly more than two methods indicates that adolescents of both genders who self-injure are likely to have tried multiple methods of NSSI. This finding is of particular concern to those working with adolescents who self-injure for two reasons. First, an adolescent being seen by a clinician or counsellor for NSSI may be engaging in more than one form of NSSI; clinicians should be aware of this so that they focus on the causes of the behaviour and not extinguishing the specific behaviour itself. Additionally, it is important for clinicians to recognize the variety of methods being used by females and males alike; if clinicians conceptualize NSSI as simply "cutting", they may miss the behaviour in clients who burn, scratch, or punches themselves.

**Study 2.** Based on existing research into methods of NSSI, the hypothesis that cutting, scratching and hitting oneself would be the methods endorsed by the most participants was supported. The most commonly endorsed methods were cutting and scratching, with the "other" variable as the third most common. Additionally, it was hypothesized that females would be more likely than males to endorse scratching and cutting, and that males would be more likely than females to bang their head. This hypothesis was only partially supported; females did report significantly higher use of cutting and scratching than males. On the other hand, males reported higher use of punching, rather than banging the head. This is
not consistent with previous literature, which suggests that males report higher levels than females of banging the head, and burning themselves (Andover et al., 2010; Whitlock et al., 2006). Although not statistically significant, males did report higher use of punching than females. The fact that males reported higher use of banging their head is an interesting finding; this was not found in previous literature. This may be because studies that found gender differences in methods of NSSI within young adult samples did not include head-banging as a specific method (e.g., Whitlock et al., 2006).

In addition, females endorsed a significantly higher mean number of methods used than males. This is a particularly interesting finding, as it addresses a gap in the literature; although some studies have examined gender and specific methods, there is very little information available on gender and mean number of methods endorsed. This has important implications for clinicians; young adult clients, particularly females, may be using multiple methods of NSSI. This highlights the need for clinicians working with clients who self-injure to focus on the underlying reasons for self-injury, and not simply the behaviour itself. For example, if a client comes to a clinician because of cutting, she or he may also be scratching or burning; if the clinician simply works to extinguish the behaviour, the NSSI will remain. These results indicate that this is particularly true for females.

Comparison. Across both age groups, cutting and scratching are consistently higher for females than for males, and banging the head is higher for males than for females. This supports much of the past literature on methods of NSSI. On the other hand, two methods that were more common for adolescent
males than adolescent females (burning and punching) became equally common across genders in young adulthood. Comparing both samples for these variables raises an interesting pattern. The proportion of each NSSI group seems to be lower for burning and punching in young adulthood than for adolescence; this is particularly true for burning. In fact, even across the methods where both samples show significant gender differences, the proportion of participants who use each method appears to be lower in young adulthood than in adolescence.

The most likely explanation for this pattern is that the young adult group engages in less severe NSSI; although it is impossible to compare statistically, participants in the adolescent sample appear to endorse higher numbers of methods than the participants in the young adult sample. This highlights the need for future research to explore the two different age groups longitudinally; this will determine more accurately whether NSSI is different across both age groups.

**Location of NSSI**

**Study 1.** Results on the individual locations of NSSI indicated specific gender differences, and the hypothesis that females would be more likely than males to injure the legs was supported; however, additional differences were also found. Results from the current study showed that females were significantly more likely than males to injure the arms and legs; males were more likely than females to injure the chest, genitals, and face. Although this is consistent with the literature on gender differences in location of NSSI, such literature is very limited. In fact, only one study to date has investigated gender differences in location of NSSI in a community sample (Whitlock et al., 2006). The current is the first to extend these findings from a sample of young adults to one of adolescents. It also
Non-Suicidal Self-Injury and Gender

adds to the specific locations that yielded gender differences; Whitlock and colleagues only found differences in the arms and legs, but the current study found additional differences in the chest, genitals and face. This is especially important, particularly for adolescent samples; the results highlight the fact that NSSI has many different forms, and can present very differently from person to person. Considering much of the established, historical literature on NSSI assumes that typical individuals who self-injure are females who cut their arms, it could be easy for a male injures his chest to be overlooked, particularly because the locations that males injure (e.g., chest, genitals, face) tend to be more easily concealed than the locations injured by more females (e.g., arms, legs).

**Study 2.** It was hypothesized that females would be more likely than males to injure their legs (Whitlock et al., 2006); this hypothesis was supported by the results; additional gender differences were also observed. Within the sample of young adults, females were more likely than males to injure their arms, legs, and stomach. On the other hand, males were more likely than females to injure the chest and face. As with methods, females reported a significantly higher mean number of locations injured, which suggests that females tend to injure more places than males. These results address a gap in the literature on gender and location of NSSI. To date, there has only been one study to investigate this relationship; the current study has found results that were not observed in the existing literature (Whitlock et al., 2006). This highlights the need for more research into this domain of NSSI. As with the adolescent sample, these results are important for clinicians working with young adults who self-injure. NSSI is not merely limited to injuring the arms and legs, and in fact males may be likely
to injure their chest and face. It is important for clinicians and researchers alike to be aware of these patterns of the behaviour, in order to accurately assess and treat NSSI, and to not overlook clients who may not exhibit the most "typical" forms of the behaviour.

**Comparison.** Several locations of NSSI remained consistent across both age groups. Both adolescent and young adult females were more likely than their male peers to injure the arms and legs; likewise, both adolescent and young adult males were more likely to injure the chest and face. Despite the young adult sample having one more location to choose from than the adolescent sample, the mean number of locations was lower for both females and males in Study 2 than for Study 1. Additionally, adolescent females and males were not different on number of locations used, but young adult females used significantly more methods than males. Taken out of context, this last finding would seem to suggest that females begin to experiment with more locations as they get older. However, in the context of the finding that young adults reported lower means for number of locations, it would seem that that is not the case.

A more logical alternative may be that individuals who being self-injuring at a younger age may also be more likely to self-injure more severely. This would explain the pattern wherein the adolescent sample scored higher on most variables than the young adult sample. A longitudinal study would be able to accurately explore this explanation.

**Conclusions**

The current thesis revealed a pattern whereby female and male self-injurers differed across a number of variables. Females were more likely than
males to report cutting and scratching, and injuring the arms and legs. Males, on the other hand, were more likely than females to punch themselves, and to injure the chest and face. These differences were consistent across age groups.

However, some inconsistencies across age groups suggest that age may play a role in the relationship between gender and various domains of NSSI. For example, in the adolescent sample, females reported a higher prevalence of NSSI than males; no such gender differences were found in the sample of young adults. Additionally, within the adolescent sample, more females than males reported "frequently" engaging in NSSI, whereas no such differences were found for young adults. However, this finding may have been an artifact of the question design; although more adolescent females than males selected this level of frequency, there were no gender differences for number of times engaging in NSSI in one's lifetime. Adolescent males reported higher use of burning and head-banging than their female peers, but such differences were not observed in young adulthood. Trends were also inconsistent for the locations of stomach and genitals. Such inconsistencies highlight a need for longitudinal research into these features of NSSI.

There are alternative explanations to this developmental perspective. It is possible that the sample of university students is not necessarily representative of the general population. Many adolescents, who would have been recruited for the adolescent study, may not have gone on to university. Without future research using a more representative community sample of young adults, it is impossible to determine what factors are actually responsible for the observed patterns. The
pattern observed in the results emphasize the need for future research on NSSI from a developmental perspective.

Individually, each of the two studies addresses a number of gaps in the literature on NSSI. Comparing the two studies continues to address these issues, such as supporting the hypothesis that gender differences in prevalence exist in adolescent but not young adult samples. The contribution of the current thesis is therefore twofold: the results on prevalence reconcile existing contradictory findings, and the results on methods and locations add findings to the body of knowledge by exploring previously unexplored variables, and/or extending analyses to new age groups.

**Future directions**

The comparison of the two studies raises a number of inconsistencies; for example, it is illogical for more people to try NSSI once as they get older (as the frequency distributions would suggest) but for overall lifetime prevalence of NSSI to also be lower for young adults than for adolescents. Additionally, the mean number of methods and locations used should be higher for young adults than for adolescents, as this number cannot decrease over time. These inconsistencies could be a result of those who begin to self-injure in adolescence engaging in more severe NSSI; however, this is unclear without future research.

Future studies should take a longitudinal approach, recruiting a sample of adolescents and gathering information on their use of NSSI through adolescence and young adulthood. Such a study would be able to reconcile some of the inconsistencies observed in the present thesis, and could probe further into the gender differences in prevalence. Additionally, such a study could track the level
of severity of the behaviour across ages, which would help answer many of the existing questions raised in the current study on methods and locations of NSSI. Finally, such research would follow adolescents into young adulthood regardless of whether they go to university or not; this would allow for a young adult sample that is more representative of the community at large.

However, longitudinal studies, particularly ones spanning multiple developmental stages, are challenging to carry out. It may not be realistic to propose such a study. A more realistic alternative would be to carry out a similar study to the current thesis, using instead a community sample that is more generally representative. Such a study could help to further explore the results found in the current thesis.

Additionally, the current thesis should be used to inform future approaches to NSSI research; specifically, the results of the current study highlight the importance of recognizing diverse methods and possible locations of NSSI. For example, a study that asks participants solely about cutting and scratching is likely to find a gender difference, due to the fact that females consistently use these methods more than males. Some previous studies have presented limited definitions of NSSI to their participants, which may have an effect on the validity of the findings.

Limitations

One limitation for the overall comparisons made within this study is the age range of both samples. The adolescent sample ranged in age from 11 to 19 years, and the young adult sample from 18 to 25 years. These ranges overlap at the ages of 18 and 19 years; this was chosen a priori due to the fact that 18-
19-year-olds in high school experience different environmental, social and academic stimuli than their college-enrolled counterparts. The age range of young adulthood was also chosen to be consistent with the age group of emerging adulthood (Berk, 2007). However, the number of participants aged 18 and 19 in the college study reflected 22.6% and 35.2% of that sample, respectively. Further research comparing these age groups should be adapted to ensure no overlap between the two samples.

Comparisons made between the two studies must be interpreted carefully; it is important to note that such comparisons are limited in their validity, due to the fact that each study used distinct, unrelated samples. Although the intention of the current thesis was to examine NSSI from a developmental framework perspective, the design limits the ability to generate a true developmental profile of NSSI across different age groups based on this thesis. However, because the two studies involved many variables that were very similar, important information can be gleaned from comparing the two studies.

Both studies involved in this thesis relied on anonymous self-report questionnaires. The accuracy of participants' responses relies therefore on the assumption that participants were forthcoming and honest about their behaviour.

One limitation in Study 1 was the occurrence of a computer error; participants who indicated that they had engaged in NSSI, but not for reasons of stress, were not given follow-up questions about the behaviour. An analysis of these participants indicates that the self-injurers who were not given follow-up questions were typically male and African-American. The exclusion of these self-injurers, who do engage in self-injury for reasons other than stress, could bias
some of the other gender-related information on prevalence, methods and location.

**Implications**

In addition to research-based benefits, the current thesis has important implications for school psychologists. Historically, NSSI has been portrayed as an issue that primarily affects females. Compounding this understanding is the fact that males are less likely than females to seek help for this behaviour. However, even though female adolescents appear to engage in NSSI more than their male peers, the males do engage in the behaviour. School psychologists must be aware of the various forms that NSSI can take; these clinicians should obtain information on the various methods and locations of NSSI, and the types of adolescents who are at risk for different NSSI behaviours. Otherwise, adolescents at risk and in need of help may become overlooked. For example, although most research shows that cutting and scratching are the two most common forms of NSSI, adolescent males are roughly as likely to punch themselves or bang their head as they are to scratch themselves. Finally, although school psychologists tend to work more with adolescents than with young adults, the comparison between the two age groups generates important findings; for example, the pattern of results seems to indicate that those who begin to self-injure in adolescence also do so to a more severe level. It is critically important for school psychologists to be aware and prepared to aid clients who are struggling with this issue.

The results of this thesis have important implications for researchers working in the field of NSSI, as well. First, the results help to reconcile the prevalence debate within the literature; in adolescent samples, females are more
likely than males to engage in NSSI, but in young adult samples no such gender difference is observed. However, future research must be carried out in order to ensure that the results from the young adult sample are not a product of selection bias.

Additionally, previous literature has been very limited in its understanding of gender differences in NSSI methods and locations. The results of this study show specific, salient differences and similarities on a number of these variables. Additionally, the fact that different trends come out of each study highlights the importance of age in considering NSSI. Age clearly plays a role in gender and prevalence; it also plays a role in methods used and locations injured.

In conclusion, this thesis demonstrates overall the importance of age and development in NSSI; future research of more representative young adult samples will help to determine how salient the role of age is. Based on the current thesis, variables that yield gender differences in adolescence, such as prevalence, may be equally observed across genders in young adulthood. Similarly, variables that are consistent for females and males in adolescence, such as number of methods endorsed, may show gender differences in later years. These results emphasize the need to consider the role of age in understanding NSSI; the behaviour shows different trends at different points in development. This information is invaluable for future research and clinical understanding alike.
Chapter 6

References


prevalence rates. Poster session presented at the annual meeting of the Society for Behavioral Medicine, New Orleans, LA.


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and Adolescent Psychiatry, 31(1), 1003-1014. doi:10.1097/00004583-199211000-00001


Appendix A: How I Deal With Stress Questionnaire (HIDS)

HOW I DEAL WITH STRESS
(© Heath & Ross, 2007)

Please begin by completing the following information:

Age: ______ Sex: □ Male  □ Female  Faculty: ____________________________
□ Female  Major: ____________________________

Sexual orientation: □ Heterosexual  □ Gay/Lesbian  □ Bisexual  □ Questioning

What languages do you speak at home?  □ English  □ French  □ Other (please specify): ____________________________

Country of permanent residence □ Canada  □ USA  □ Other (please specify): ____________________________

Country of birth □ Canada  □ USA  □ Other (please specify): ____________________________

Young adults have to deal with a lot of stress. In a recent survey, young adults said they used the following list of strategies to help them deal with problems. We are interested in knowing if you have also used any of these strategies to help you deal with stress.

Please read each item and indicate whether you:

never used this strategy (0)
used this strategy only once (1)
used this strategy a few times to cope with stress (2)
frequently used this strategy to cope with stress (3)

Please note that some items are printed in bold. If you answer that you have used a bolded strategy (once, a couple of times, or frequently), please fill out the follow-up questions at the end of the survey.

<table>
<thead>
<tr>
<th>Coping strategies</th>
<th>Never</th>
<th>Once</th>
<th>Few times</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Try not to think about it</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Spend time alone</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Go out</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Talk to someone</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Try to solve the problem</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Do something to keep myself busy</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Say to myself it doesn’t matter</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Listen to music</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>9. Exercise</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. Play sports</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. Read</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
### Coping strategies

<table>
<thead>
<tr>
<th>Coping strategies</th>
<th>Never</th>
<th>Once</th>
<th>Few times</th>
<th>Frequently</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. Go shopping</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>13. Eat</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>14. Stop eating</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>15. Drink alcohol</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>16. Hit someone</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>17. Get into an argument with someone</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>18. Do drugs</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>19. Smoke</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>20. Do risky things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>21. Physically hurt myself on purpose</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>22. Cry</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>23. Sleep</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>24. Pray or engage in religious activities</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>25. Interactive online gaming (e.g., WoW)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>26. Video games (e.g., PlayStation, Xbox)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>27. Chat online (e.g., MSN)</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>28. General computer/internet use</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>29. Watch television</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>30. Other:</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

On a scale of 1 to 10, where 1 is no stress at all and 10 is the most stressed you have ever felt, **how stressed have you been over the past two weeks?** (circle one)

1 2 3 4 5 6 7 8 9 10

**“Talk to someone”**

Please fill out this section if you answered that you indicated that you have used this strategy.

**Who do you talk to?** (check all that apply)
- [ ] Parents
- [ ] Romantic partner
- [ ] Other family members
- [ ] Teachers
- [ ] Friends
- [ ] Other (specify): ____________

**When you talked to someone to deal with stress, how did this make you feel?** (check all that apply)
- [ ] Calm
- [ ] Tense
- [ ] Angry
- [ ] Sad
- [ ] Happy
- [ ] Nervous
- [ ] Overwhelmed
- [ ] Anxious
- [ ] Excited
- [ ] Scared
- [ ] Ashamed
- [ ] Energetic
- [ ] Confident
- [ ] Guilty
- [ ] Other (specify): ____________

**“Do risky things”**

Please fill out this section if you answered that you indicated that you have used this strategy.

**What kind of risky activities have you engaged in?** (check all that apply)
- [ ] Reckless driving
- [ ] Theft
- [ ] Excessive gambling
- [ ] Uncontrolled drug abuse
- [ ] Vandalism
- [ ] Promiscuous/unprotected sex
- [ ] Other (specify): ____________
When you engaged in risky activities, how did you feel? (check all that apply)

- Calm
- Tense
- Angry
- Sad
- Happy
- Nervous
- Overwhelmed
- Anxious
- Excited
- Scared
- Ashamed
- Energetic
- Confident
- Guilty
- Other (specify): __________

"Physically hurt myself on purpose"
Please fill out this section if you answered that you indicated that you have used this strategy.

Please circle any way that you have intentionally hurt yourself without suicidal intent:

1. Cut your wrists, arms, or other areas of your body
2. Burned yourself
3. Scratched yourself, to the extent that scarring or bleeding occurred
4. Banged your head against something, to the extent that you caused a bruise to appear
5. Punched yourself, to the extent that you caused a bruise to appear
6. Other (please specify): __________

What parts of your body have you hurt? (check all that apply)

- Arms
- Stomach
- Chest
- Genitals
- Legs
- Thighs
- Face
- Other (specify): __________

When you hurt yourself on purpose without suicidal intent, how did you feel? (check all that apply)

- Calm
- Tense
- Angry
- Sad
- Happy
- Nervous
- Overwhelmed
- Anxious
- Excited
- Scared
- Ashamed
- Energetic
- Confident
- Guilty
- Other (specify): __________

How old were you when you first hurt yourself on purpose? ____________

When was the last time you hurt yourself on purpose? (circle one)

- past week
- past month
- past six months
- past year
- within the past two years
- more than two years ago

Has this ever resulted in hospitalization or injury severe enough to require medical treatment?

- Yes
- No

Have you ever hurt yourself with the intent to die/kill yourself?

- Yes
- No

How many times have you hurt yourself on purpose throughout your life? (circle one)

- One time
- 2 to 4 times
- 5 to 10 times
- 11 to 50 times
- 51 to 100 times
- More than 100 times
Appendix B: Standard Protocol for HIDS

**SPEECH FOR UNIVERSITY CLASSES**

(questionnaires being completed during class time)

Hello. My name is _____________ and I’m from the research team of Dr. Nancy Heath in the Faculty of Education. We are conducting a study on adaptive and maladaptive coping strategies employed by young adults and we would very much appreciate your participation. It will help us to better understand how university students cope with stress. Our questionnaire takes about 15 minutes to complete and it is completely confidential. If you have completed this in another class please do not complete it again.

*Other lab members can begin to pass out the questionnaires while delivering speech.*

Your names and consent forms will be stored separately from your responses and only the primary researchers will have access to this confidential information. Your participation is completely optional and it will have no impact on your grade in this class. You may choose not to answer a question if it makes you uncomfortable and you are also free to withdraw from the study at any time, without penalty or prejudice. If you have questions raise your hand and a research assistant will come to you. You must be at least 18 years old to participate. The research assistants will give every student a copy of the questionnaire. If you choose not to participate, just hold on to it until everyone is done and then hand it in blank.

The first page is a consent form. Please read it carefully and sign it if you agree to participate. Then, please fill out the questionnaire silently and turn it over when you have finished. It is very important that there be no talking and that the questions be filled out individually. Otherwise our results will not be valid.

Thank you very much for your time. We invite you to participate in further studies that our lab is conducting, with the possibility of remuneration. Participants in our future studies will be automatically entered into a draw to win one of three gift certificates (one for $200 and two for $50). If you are interested please provide your contact information on the page following the questionnaire. Your contact information will be stored separately from your questionnaire. When you hand back your papers, you will be given a sheet with our contact information. Please feel free to contact us at the e-mail we’ve provided if you have any questions about our studies. Thanks again.

*Lab members can be waiting to collect the questionnaires and pass out the additional information sheet.*
Appendix C: Consent Form for HIDS

HOW YOUNG ADULTS DEAL WITH STRESS
CONSENT TO PARTICIPATE IN RESEARCH

This is to state that I agree to participate in the research project investigating stress coping mechanisms conducted by the research team of Dr. Nancy Heath at McGill University. The purpose of this project is to examine the prevalence and type of specific coping strategies used by young adults in times of stress.

All of the information provided is kept completely confidential. The questionnaires will be kept entirely confidential, and consent forms will be stored separately, in a locked cabinet accessible only to the primary researcher. I understand that this will maintain my confidentiality and anonymity in this study. I fully understand that participation in this research is voluntary and will not, in any way, affect my grades or evaluation of my course work. Participation in this study will provide the participant access to resource information as well as help to develop our knowledge about behaviours related to stress and coping for young adults.

The questionnaire I am being asked to complete will take approximately fifteen minutes. While there are no risks involved in participation in this research project, some participants might be sensitive to, or uncomfortable with, some of the questions. Should this issue arise, I am free to withdraw from the study, at any time, without penalty or prejudice. I am also free to not answer any item that makes me uncomfortable.

I understand the purpose of the study and know the risks, benefits, and inconveniences that are involved in this research project. I realize that the data will be used for the above stated research purposes and that I am invited to visit a study outcome website which will be shared with me upon completion of the study. If you have any questions or concerns about your rights as a research subject in this study, please contact the McGill Research Ethics Officer at 514-398-6831.

I have read the above and I understand all of the conditions. I freely consent and voluntarily agree to participate in this study.

Name (please print): ____________________________
Signature: ____________________________ Date: ____________________________

Shareen Holly, M.A. McGill University, Project Coordinator
McGill University, Faculty of Education
Doctoral Candidate James McGill Professor
(514) 398-1232 (514) 398-3439
shareen.holly@mcgill.ca nancy.heath@mcgill.ca

If you have already completed this questionnaire, please do not continue.