Non-Suicidal Self-Injury, Attachment, Emotion Regulation and Childhood Trauma in University Students
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Abstract

The current study examined risk factors associated with non-suicidal self-injury (NSSI), by comparing university students who self-injure with a control group on measures of attachment, emotion regulation, and childhood trauma. The sample consisted of 1400 university students (74% female; \( M = 19.76 \)), who completed a screening questionnaire examining coping strategies. Those identified as self-injurers and who were willing to complete a follow-up (\( N = 55; 6 \) male, 49 female) along with a matched control group completed a follow-up study examining risk factors of NSSI. MANOVAs were employed and significant multivariate effects were found on attachment subscales (NSSI showing more negative attachment) and emotion regulation subscales (NSSI having fewer emotion regulation skills), but not for childhood trauma. Univariate effects were examined for attachment and emotion regulation revealing significant differences between groups on all subscales, with the exceptions of the “Secure” subscale for attachment and the “Emotional Awareness” subscale for emotion regulation.
Resume

Cette étude examinera les risques d'être auto-blessant en comparant un groupe d'étudiant universitaire qui exerce cette pratique contre un groupe contrôle sous les paramètres de l’attachement, du contrôle de ses émotions et le traumatisme d'enfance. L'échantillon fut composé de 1400 étudiants universitaires (364 mâles, 1036 femelles; $M = 19.76$), qui ont rempli un questionnaire préliminaire dans le cadre d'un projet plus général qui vise les stratégies d'ajustement. Ceux qui furent identifiés en tant qu'auto-blessant et qui étaient intéressés à poursuivre cette étude ($N = 55$; 6 mâles, 49 femelles) ont reçu un suivi, avec un groupe contrôle, examinant les facteurs risques d'être auto-blessant. Trois MANOVA furent utilisés et plusieurs effets multivariables ont été trouvés pour l'attachement et le contrôle d'émotion mais aucune pour les traumatismes d'enfance. Des effets univariables furent examinés pour l'attachement et le contrôle d'émotion démontrant d'importantes différences d'un groupe à l'autre, avec l'exception des facteurs de sécurité pour l'attachement et des facteurs de consciences émotionnelles pour le contrôle d'émotion.
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Chapter I: Introduction

In the past, research in the field of non-suicidal self-injury (NSSI) has focused on clinical populations, however, current findings are indicating that there is a clear delineation between those who engage in NSSI as a symptom of underlying psychological difficulties and those who do not possess the traditional risk factors associated with NSSI and are functioning adaptively in other areas (Heath, Toste, Nedeccheva, & Charlebois, 2006). With the new research looking at NSSI in communities it appears that this behaviour may be different in these samples. This along with current prevalence estimates which indicate that the occurrence of non-suicidal self-injurious behaviours is on the rise (Derouin & Bravender, 2004; White Kress, 2003) has created a growing interest in studying NSSI in the community.

Statement of Problem

Current estimates of prevalence of NSSI range from 11% (Heath et al., 2006) to 35% (Gratz, 2001) in samples of university undergraduate students, indicating a clear need for research to further understand this behaviour in community samples in order to aid those working with individuals who NSSI. Although there are increasing numbers of studies of NSSI in the community, certain comma methodological flaws remain. Many studies have failed to use control groups (Favazza & Conterio, 1989; Gratz et al., 2002), while others have used self-selected samples of those individuals interested in participating in a study on NSSI (Favazza & Conterio, 1989; Gratz, 2006; Gratz et al., 2002). Of those that used control groups, most were not matched for key variables such as gender and age (Gratz, 2006; Laye-Gindhu & Schonert-Reichl, 2005). The current study
seeks to address these methodological shortcomings by utilizing a matched control group. Also, the current study avoids selection bias by telling the participants that the study is looking at how young adults deal with stress. With the rising percentages of young adults who NSSI, it is imperative that we better understand this behavior and what precipitates it. It is believed that the examination of risk factors of NSSI in the present study will further our understanding of this behavior.

**Definition of Non-Suicide Self-Injury**

The major issue in this area of research is the lack of a common definition which can make comparisons between studies a difficult task. In the literature the term non-suicidal self-injury is used interchangeably with the terms deliberate self-harm, self-mutilation, parasuicide, and self-wounding. Further, there is an ongoing debate on how NSSI should be defined. Different researchers use different inclusion and exclusion criteria (Best, 2005), so the definitions in the literature vary in the behaviours and intents included. Some are over-inclusive and include behaviours such as suicidal acts and different types of NSSI such as poisoning and others are under-inclusive and only include one type of NSSI such as cutting or burning (Walsh & Rosen, 1985). Many definitions exclude behaviours with conscious suicidal intent, however, it has been argued that suicidal intent may not always be reliably measured (Fliege et al., 2006). Further, due to the finding that NSSI increases the risk of suicide, it has been agreed that it is important to assess for suicidal behaviours when looking at NSSI. Yet it has been argued that distinctions in the etiology and functions that have been found between suicidal acts and NSSI (Favazza, 1989; Gratz, 2001; Pattison & Kahan 1983; Walsh, 2006) make it important to distinguish between them in the definition. It has been stated that while suicide is used as to destroy one’s life, NSSI is viewed as a way to improve it (Bennun,
1984). So although it is a maladaptive coping mechanism it is nevertheless an effective coping mechanism, because those who are suicidal often have feelings of helplessness and hopelessness while those who self-injure often feel more in control as a result of their NSSI behaviour (Walsh, 2006).

Historically, the definition created by Favazza (1989) was the most widely used. Favazza used the term self-injury (SI) and defined it as “deliberate destruction or alteration of body tissue without conscious suicidal intent” (Favazza, 1989, p. 137). Later researchers began to add to this definition by specifying that the harm must be direct and the behavior is seen as not socially acceptable (Suyemoto, 1998). This definition is still used by some researchers in the area (e.g., Gratz, 2006). Other researchers, particularly the Child and Adolescent Self-harm in Europe (CASE) group, use the term deliberate self-harm (DSH). CASE defines DSH as “an act with a non-fatal outcome in which an individual deliberately did one or more of the following: Initiated behaviour (for example, self-cutting, jumping from a height), which they intended to cause self-harm; Ingested a substance in excess of the prescribed or generally recognized therapeutic dose; Ingested a recreational or illicit drug that was an act that the person regarded as self-harm; Ingested a non-ingestible substance or object.” (Hawton, Rodham, Evans, & Weatherall, 2002). Although this definition includes self-cutting or burning it goes far beyond the construct of non-suicidal self-injury. This difference results in very different prevalence and gender findings.

The present study focuses on NSSI which has been defined as “The deliberate, self-inflicted destruction of body tissue resulting in immediate damage, without suicidal intent and for purposes not socially sanctioned. As such, this behavior is distinguished from: suicidal behaviors involving an intent to die, drug overdoses, and
other forms of self-injurious behaviors, including culturally-sanctioned behaviors performed for display or aesthetic purposes; repetitive, stereotypical forms found among individuals with developmental disorders and cognitive disabilities; and severe forms (e.g., self-immolation and auto-castration) found among individuals with psychosis (INSPIRE, 2006).” For the purposes of this paper the term NSSI will refer to behaviours included in the above definition, while the term DSH will be used in accordance with the CASE definition.

Therefore the present study focuses on the relationships between NSSI (as defined above), attachment, emotion regulation and childhood trauma in a sample of university students. With the use of subscales different aspects of attachment, emotion regulation and childhood trauma will be explored in relation to non-suicidal self-injurious behaviours. The relationship between frequency of NSSI and attachment, emotion regulation and childhood trauma in university students will also be explored.
Chapter II: Review of Literature

Brief History of Non-Suicidal Self-Injury Research

Non-suicidal self-injury (NSSI) is not a new phenomenon; it has been practiced for varying reasons in different cultures for hundreds of years. References to non-suicidal self-injurious behaviors have been found in many historical texts including the bible (Favazza, 1998). Researchers began to write about NSSI as early as the 1930’s, however, it was only in the 1980’s and early 1990’s that research in this area became more common. In the past, the majority of research conducted on NSSI was completed in clinical samples. This is because NSSI behaviors had been thought to be restricted to clinical samples as associated features of some psychiatric disorders such as Borderline Personality Disorder (Dulit, Fyer, Leon, Brodsky, & Frances, 1994) and problems like intellectual disabilities (Griffin, Williams, & Stark, 1985). However, in recent years people have become more aware of NSSI in the general population (Fazazza, 1998). This is evident in the media, through the reports of celebrities such as Johnny Depp and Diana Princess of Wales engaging in NSSI as well displays NSSI in movies such as Girl, Interrupted, Manic, and Thirteen. This along with the publication of some influential papers on the topic (Favazza, 1996; Favazza & Conterio, 1988) suggesting that NSSI occurs in community populations, have led to an increase in the study of NSSI in community populations. This newly emerging research has shown that this behaviour does exist outside of clinical samples (Gratz, 2003).

Background of Non-Suicidal Self-Injury

In 1988 Favazza reported that occasional NSSI may develop into a chronic condition and that typically non-suicidal self-injurers become heavy users of the mental health system. This has been supported by the findings of Evans, Platts, and Liebenau
(1996), who found that 20% of those who are admitted to the hospital for DSH repeat DSH behaviours within 1 year, and approximately 50% have a history of DSH. However, as discussed above, DSH includes suicide attempts, therefore may not be totally reflective of NSSI. Further, these figures are exclusive to the clinical population so this may not generalize to community samples of non-suicidal self-injurers. In fact, in 2007, Heath and Holly found that only 14% of their sample of university students who reported NSSI had ever self-injured with suicidal intent. They also found that only 28% had talked to a counsellor or psychologist and 14% had talked to a medical doctor (these groups were not mutually exclusive) regarding their NSSI. This indicates a distinct difference between community and clinical samples with most individuals who NSSI in community samples never having used the mental health system and not reporting suicidal intent.

**Age Differences**

It is fairly common for some forms of non-suicidal self-injury, such as mild head banging, to be present in normal young children. It is found in about 10 to 15% of children aged 9-18 months old. However, this behaviour usually decreases significantly by age 3 years, and eventually disappears by age 5 years (Pattison & Kahan, 1983). If NSSI continues beyond this time, the behaviours may be more problematic. Among non-suicidal self-injurers in both clinical and community settings, the typical age of onset is generally in young adolescence (Fliege et al., 2006; Guertin, Lloyd-Richardson, Spirito, Donaldson, & Boergers, 2001; Muehlenkamp & Gutierrez, 2004; Pattison & Kahan, 1983). In fact, Sourander, et al. (2006) found in their prospective study that from age 3 to 15 there was a significant increase in NSSI behaviors from ages 12 to 15 years, especially among girls (from 3% to 13%). Further, Muehlenkamp and Gutierrez (2004) in their retrospective study of high school students found that age of onset ranged from 5 to 17
years of age, but that 58% of their sample first began to NSSI between 13 to 15 years of age. No gender differences were found in age of onset (Muehlenkamp & Gutierrez, 2004).

With the age of onset and peak of NSSI behaviours appearing to occur in adolescence and young adulthood most literature focuses on NSSI in these age groups. However, one study by Lamprecht, Pakrasi, Gash, and Swann (2005) examined DSH among a clinical sample of people 65 years of age and older and found an increase over one year in the number of people presenting to the emergency department for DSH. Unlike the findings in younger populations, amongst those presenting with DSH over the year there were only a few repeat self-injurers (Lamprecht et al., 2005).

**Gender Differences**

It has been debated whether or not females are more likely to engage in NSSI than males. There are current reports of gender differences in rates of DSH, with higher rates of DSH found in females, particularly in hospital settings (Brakoulias, Ryan, & Byth, 2006; Hawton, Fagg, Simkin, Bale, & Bond, 2000; Hawton et al., 2003). In the community setting Whitlock, Eckenrode and Silverman (2006) found that in their sample of college students non-suicidal self-injurers were significantly more likely to be female, but these gender effects were only for repeat self-injury and were not strong. Some studies have failed to detect any gender differences. In community and a few clinical samples it has been found that there are no gender differences in rates of NSSI (Briere & Gil, 1998; Gratz, 2001; Jacobson, Muehlenkamp, & Miller, 2006; Klonsky, Oltmanns, & Turkheimer, 2003; Muehlenkamp & Gutierrez, 2004). Studies reporting gender difference tend to be in clinical samples and many include suicide attempts and overdoses.
(Brakoulias et al., 2006; Hawton et al., 2000; Hawton et al., 2003), while those who do not find gender differences are community samples which do not include suicide (Gratz, 2001; Heath & Holly, 2007; Jacobson et al., 2006; Klonsky et al., 2003; Muehlenkamp & Gutierrez, 2004). Since clinical samples tend to be made up of the more severe non-suicidal self-injurers (Suyemoto, 1998) and very few non-suicidal self-injurers seek medical or professional help for their behaviours (Rodham, Hawton & Evans, 2004; Whitlock et al., 2006) data gathered from clinical settings is likely not representative of all those who NSSI. Also gender differences have been found in help seeking behaviours (Whitlock et al., 2006), which could lead to the lower prevalence rates for males in clinical samples. Furthermore, as Whitlock et al., notes many individuals assume non-suicidal self-injury refers to cutting which is more prevalent in females, thus possibly leading males to respond in the negative to an open ended questions concerning non-suicidal self-injury. Therefore, it appears that when suicide attempts are excluded, the majority of studies find no gender differences in rates of rate among community samples.

**Prevalence of Non-Suicidal Self-Injury**

With the heightened awareness of non-suicidal self-injury, Favazza (1988) predicted that rates would likely increase over time. This prediction may be accurate as an increase has also been noted in community settings where Whitlock, Eells, Cummings, and Purington, (2006) found that over the past five years the majority of respondents from college and university counseling centers reported increases in overall prevalence of mental health disorders among youth, specifically for NSSI behaviours. It has also been argued that the increase in rates of NSSI in younger generations indicates that the prevalence of NSSI behaviours is increasing (Klonsky et al., 2003). Hawton and colleagues (2003) found an overall increase in the number of emergency department
presentations of DSH, per year as well as the number of episodes per year during the study period of 1990 to 2000. However, despite the increase of DSH presentations at emergency departments this increase was not found to be significant. A rise in the number of referrals for DSH from 2001 to 2003 was observed but again this change was not found to be significant (Brakoulias et al., 2006). It has been suggested that the trend of increasing percentages of young people who DSH and those who NSSI may be due to an increased likelihood of help-seeking behaviours in youth, or the increased ability of those who work with youth to identify both DSH and NSSI, therefore, it may not be an actual increase in the behaviour (Purington & Whitlock, 2004). However, others have suggested that changing societal attitudes towards non-suicidal self-injury (Zinck, Toste, Schaub, & Heath, 2006) may result in more youth engaging in NSSI as a potential coping strategy, or perhaps allowing non-suicidal self-injurers to feel comfortable about disclosing their behaviours. Further, social contagion factors may play a role in the spread of these behaviours with the growing media coverage of NSSI (Hodgson, 2004). Therefore, it is likely that these behaviours are on the increase due to the increasing awareness of NSSI and the associated contagion effect.

When examining prevalence rates there are a few factors that must be considered. First, as discussed above, definition is a large issue. When comparing prevalence rates what behaviours were included and excluded in each study should be taken into consideration. Therefore, as mentioned previously the terms NSSI and DSH will be used to distinguish between those including and excluding suicidal behaviour and overdoses. Another important factor to consider is over what period of time is the study looking at NSSI. Some researchers look at lifetime rates while others restrict the time period to the past six months or a year. Since the typical age of onset is generally in young adolescence
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(Fliege et al., 2006; Guertin et al., 2001; Muehlenkamp & Gutierrez, 2004; Pattison & Kahan, 1983) lifetime prevalence rates may be misleading in older populations. Therefore, it follows that the age group of the sample should also be considered. Gender is another factor that should be examined. Though the evidence is not clear whether or not there are actual gender differences in the rates of NSSI some studies have reported that females are more likely to engage in non-suicidal self-injury than males (Boudewyn & Liem; 1995; Suyemoto, 1998). As stated above clinical and community populations of non-suicidal self-injurers have been found to differ in many aspects including prevalence rates, function, and etiological factors (Heath et al., 2006), therefore the setting is another factor that should be noted. Lastly the source of the data should be taken into account. Medical records tend to represent only the most severe cases (Suyemoto, 1998) and since very few non-suicidal self-injurers seek medical or professional help for their behaviours (Rodham et al., 2004; Whitlock et al., 2006) data gathered from hospital records is most likely an under-estimate of the true prevalence rates of NSSI. It has also been noted that certain practices such as convenience sampling, self-referred and self-motivated sampling (Favazza & Conterio, 1989). The current study addresses the issues of convenience sampling, self-referred and self-motivated sampling by presenting the study as one on coping strategies rather than as one on NSSI.

Within the clinical population lifetime prevalence rates have been reported ranging from 20% to 61% (Deiter, Nicholls & Pearlman, 2000; DiClemente et al., 1991; Fliege et al., 2006). These samples consisted of older adults and contained more females than males, for example in the study completed by Deiter and colleagues (2000) the mean age was 38 and the sample was 75% female. In terms of those currently engaging in DSH, Fortune (2006), found that in a random sample of 100 children and adolescents (61
females, 39 males) from a Mental Health Clinic in New Zealand, 48% were engaging in DSH at the time of assessment. The mean age of those who DSH in this sample was 14.44 years of age. In another study looking at adolescents aged 12 to 19 in an outpatient, hospital based adolescent depression program (66.7% female), it was found that 44.9% engaged in some DSH while 12% engaged in NSSI (Jacobson et al., 2006). No ethnic difference were found in the number of participants engaging in DSH and the most commonly endorsed methods were cutting, followed by overdose, burning, and strangling self (Jacobson et al., 2006).

Certain clinical diagnoses tend to be associated with NSSI. For example, those with Borderline Personality Disorder have been found to have prevalence rates of NSSI ranging from 70 to 80% (Dulit et al., 1994; Gratz & Gunderson, 2006). Other disorders found to have high prevalence rates are those with eating disorders ranging from 32 to 64.9% (Claes, Vandereycken, & Vertommen, 2005; Solano, Fernandez-Aranda, Aiken, Lopez, & Vallejo, 2005), populations of individuals with intellectual disabilities ranging from 3.5 to 40% (Winchel & Stanley, 1991) and those with substance abuse problems, 33% (Evren, Kural, & Cakmak, 2006).

Prevalence rates in community populations have been found to be lower than those in clinical populations. Lifetime prevalence rates reported from community samples have ranged from 4 to 38% (Gratz, Conrad, & Roemer, 2002; Klonsky et al, 2003). Prevalence rates in the community can be split into those from the general population, college students, and high school students. In the general population Martin, Bergen, Richardson, Roeger and Allison, (2004) reported that 18.4% of their sample of 14 year olds ($N = 2485$, 55.5% male) engaged in NSSI at some point in their lifetime. This was said not to include suicide attempts, however, the two items used to determine NSSI and suicide
attempts were “hurt myself on purpose” and “tried to kill myself” and it was assumed participants would distinguish between the two. Therefore, it was not specified that “hurt myself on purpose” was to be in regards to incidents without suicidal intent.

In a sample of 1986 military recruits (62% male), Klonsky et al. (2003), found that approximately 4% indicated they had engaged in NSSI either currently or in the past. It can be argued that this sample may not be representative of the general population as those who enter the military tend to be primarily male and those who enter the military (male and female) tend not to be representative of the general population.

Briere and Gil (1998) in their study of 927 adults (mean age = 46, 50% male) in a stratified sample of the U.S. found a 4% prevalence rate of having engaged in NSSI in the last six months. They found no gender differences, however they did find that NSSI was associated with younger age. Although this study used a stratified sample, it was based on those who owned automobiles or had list phone numbers, therefore anyone without an automobile or listed phone number was automatically excluded. Therefore, this may not be completely representative of the general population. Further, the return rate was only 64%, meaning that 36% of the sample never responded and it is unknown whether there were distinct differences between those who returned the surveys and those who did not.

In their study of 440 high school students (50% female), Ross and Heath (2002) found a lifetime prevalence rate of 13.9% for NSSI. Other researchers have reported similar lifetime prevalence rates with reported rates ranging from 15 to 21% of NSSI in high school students (Laye-Gindhu & Schonert-Reichl, 2005; Muehlenkamp & Gutierrez, 2004; Zoroglu et al., 2003). Hawton et al., (2002) found that 9% of high school students of which 90% were 15 or 16 years of age (N = 6020, 52.9% males, 46.7 females, 0.4% unknown sex) in a study in England reported DSH in the previous 12 months, only 12.6
per cent went to hospital following engaging in DSH. This one year prevalence rate was similar to what De Leo and Heller (2004) found in Australia with 6.3% school students who reported DSH in last 12 months.

Lifetime prevalence rates of NSSI reported from samples of university or college samples have found much higher rates than in high school students; with percentages ranging from 11% to 38% of students indicating some form of engagement in NSSI (Gratz, 2006; Gratz et al., 2002; Gratz, 2001; Heath et al., 2006; Whitlock et al., 2006).

Gratz (2001), in her first study, reported that 35% of psychology undergraduate students ($N = 150$, 68% female, mean age = 23.19) reported engagement in NSSI at some time in their life. Within this sample, 18% of non-suicidal self-injurers reporting engaging in NSSI more than 10 times, and 10% of non-suicidal self-injurers engaging in NSSI more than 100 times. In her latest study Gratz (2006) has again shown a similar prevalence rate of 37% reporting a history of NSSI in a sample of female undergraduate psychology students ($N = 249$, mean age = 23.29). This time with 72% reporting engaging in NSSI more than one time, 55% reporting using more than one method of NSSI, and 29% reporting using more than 4 methods of NSSI.

Others studies have found more modest prevalence rates, for example Whitlock and colleagues (2006) who found a 17% lifetime prevalence rate of NSSI in a random sample of college students ($N = 2875$, 56.3% female, 73.8% between the ages of 18 and 24). A large majority of non-suicidal self-injurers (75%) indicated engaging in NSSI more than once, which is similar to Gratz’s findings. In their study of first year undergraduate university students from varied disciplines, Heath et al., (2006), found a lifetime prevalence rate of 11% for NSSI behaviours ($N = 745$, 79% female, mean age = 20.71). The discrepancy between the findings of Gratz and those of Whitlock et al. (2006)
and Heath et al., (2006) may be explained by the fact that the samples used by Gratz were self-selected samples of students who responded to an advertisement for a study on NSSI, while, Heath et al., (2006) and Whitlock et al. (2006) presented their studies as ones about coping strategies and mental health respectively.

*Functions of Non-Suicidal Self-Injury*

Many theories have been proposed as to why individuals NSSI. Some researches have proposed social explanations as to why people NSSI. These include engaging in non-suicidal self-injury to elicit a particular emotional response from others, as well as non-suicidal self-injury as a social epidemic (Favazza, 1989) spread through contagion (Feldman, 1988). Six functional models were proposed by Suyemoto (1998) based on past literature and hypotheses. These models were environmental, antisuicide, sexual models, affect regulation, dissociation and interpersonal boundaries. Researchers have also offered cultural explanation where NSSI behaviours are viewed as normative expressions or coping strategies (Favazza, 1989), or that describe them as rituals or acts of symbolism, and even religious customs or conventions (Feldman, 1988) in which case they would not be considered NSSI as defined for this study.

In his empirical review of functions literature, Klonsky (2007) identified seven functions that were repeatedly examined and that garnered some empirical support. These seven functions are affect-regulation, anti-dissociation, antisuicide, interpersonal boundaries, interpersonal-influence, self-punishment and sensations seeking. The affect regulation model, which he noted had the greatest support, suggests that NSSI is used to reduce affect feelings or affective arousal. It states that those who are less able to manage their affect are more likely to use NSSI as a coping strategy. The mechanisms by which NSSI diminishes negative affect is unknown, however, both psychological and biological
mechanisms have been proposed. The anti-dissociation model suggests that NSSI is a response to periods of dissociation. It is suggested that those who self-injure experience periods of dissociation and the NSSI causes a shock to the system, possibly through the sight of the blood or the physical sensation, allowing them to stop the dissociative state and regain their sense of self.

The antisuicide model views NSSI as a coping mechanism used to resist urges to kill oneself. Through this model NSSI is thought of as a way to express suicidal thoughts without the risk of death. The interpersonal-influence model views NSSI as a behaviour used to influence or manipulate others. In this model NSSI is seen as a cry for help, a way to avoid abandonment or a way to be taken more seriously. In this model the non-suicidal self-injurer tends to receive reinforcement for the behaviour from other’s reactions, therefore making it more likely for them to continue the behaviour. The interpersonal boundaries model states that NSSI is a method of affirming boundaries of the self. This model is based on the objects-relations theory, whereby those who NSSI are believed to have insecure maternal attachment which leads to a lack of a normal sense of self and an inability to individuate from their mother. Engaging in NSSI then allows the individual to separate themselves from the environment and other people and allow them to assert their own identity.

The self-punishment model holds that NSSI is an expression of anger towards oneself. It is believed that those who NSSI have learned to punish themselves from their environment. Lastly, the sensation seeking model is seen as a way to create excitement or exhilaration. It has been compared to thrill seeking activities like sky-diving or bungee jumping. These functional models are not considered to be mutually exclusive as NSSI may serve more than one function in an individual. It was found that the majority of the
literature strongly supports the affect regulation model, with some support, although more
limited, for the other 6 models (Klonsky, 2007).

Risk Factors of Non-Suicidal Self-Injury

It has been stated that non-suicidal self-injurers are made up of such a diverse
group that it is unlikely that they all have the same etiological formation (Favazza &
Conterio, 1988). However, in order to understand the behavior of NSSI, the pathway in
which it develops needs to be explored. This has been done through risk factor research
which has uncovered certain factors that are associated with the development of NSSI.
One factor that has been researched extensively is childhood trauma. Many studies have
shown a link between childhood abuse, especially sexual abuse and NSSI. Most of the
research has been based on clinical populations, however, there is some evidence of this
association in the general population. In a review study by Gratz (2003) it was concluded
that in both clinical and general populations childhood sexual abuse was associated with
NSSI. However, there were discrepancies in the extent to which other variables were
controlled for making it unknown to what extent this factor has a unique relationship with
NSSI and few used control groups for comparison.

Whitlock et al. (2006) reported that in their sample of college students (N = 2875,
56.3% female, 73.8% between the ages of 18 and 24 repeat non-suicidal self-injurers
(those who self-injured two or more times) were more likely to report a history of sexual
abuse, even when demographic variables were controlled for. Gender differences have
also been reported in a sample of undergraduate students (N = 133, 67% female, mean
age = 22.73) with sexual abuse being a significant predictor of NSSI in women but not in
men (Gratz et. al., 2002). Others have failed to detect an association between NSSI and
childhood sexual abuse. In their 2006 study looking at first year undergraduate students
(N = 745, 79% female, mean age = 20.71), Heath et al., found that those who NSSI did not differ from those who did not NSSI on reported measures of childhood sexual abuse. This discrepancy may be due to the sample compositions. As mentioned earlier, Gratz et al., (2002) used a self-selected sample of those willing to participate in a study on NSSI while Heath et al. (2006) presented their study as one on coping strategies. However, it is unclear as to why the results of Whitlock et al.(2006) differs from those of Heath et al. (2006) as they both presented their studies as mental health/coping studies rather than studies of NSSI and appear to be looking at a similar population of young adults in university. However, there are some notable differences in the samples. These differences are that of ethic background where the sample of Heath et al. consisted mainly of individuals of Caucasian descent (approximately 90%) while Whitlock et al. had 45.3% of their sample who where not Caucasian, gender where Heath et al. had more females then males while Whitlock et al. had almost equal numbers of both, and Whitlock et al. had a larger sample size. These differences may have had an effect on the results found. Therefore it is unclear whether childhood sexual abuse is a risk factor in all populations of self-injurers or just some select samples. It should also be noted that Heath et al. did not look at the relation of abuse to repeat NSSI, as some of their sample would not be classified as repeat non-suicidal self-injurers, it may be that these results are not contradicting.

Results of studies in both the clinical and general populations examining the association between childhood physical abuse and NSSI are mixed. In a sample of 862 high school students (61.1% female), Zoroglu et al. (2003), reported that those who NSSI more frequently reported physical and emotional abuse compared to those who did not NSSI. A study looking at NSSI in 249 female college students found that childhood
maltreatment reliably distinguishes those with frequent NSSI from those with no history of NSSI (Gratz, 2006). Zweig-Frank, Paris and Guzder (1994) found no relationship between physical abuse and NSSI in their sample of female outpatients. In the community setting, Heath et al. (2006), found no difference between those who NSSI and those who did not in terms of reported childhood physical abuse in their sample of 745 undergraduate students. These differences may be due to the sample compositions, as mentioned previously. Also, Zoroglu et al. conducted their study in high school, therefore, the age range was different and it was also conducted in Istanbul so it is possible that the results may not be generalizable to individuals from other countries. As with childhood sexual abuse it is unclear whether childhood physical abuse is a risk factor for NSSI in all groups or if it is just for a few select samples.

Neglect has not been studied as systematically as the other forms of abuse. Those who have studied neglect have found inconsistent results (Gratz, 2003). The most pertinent factor in these inconsistent results is the lack of a common definition of neglect. Some authors combined physical and emotional neglect under the overarching construct of neglect where others examined physical neglect and emotional neglect separately. When examined separately emotional neglect was shown to be the strongest predictor of NSSI (in comparison to childhood sexual and physical abuse) and physical neglect was not a significant predictor of NSSI (Gratz, 2003). Gratz et al. (2002) reported gender differences in the relationship between emotional neglect and NSSI. They reported that neither maternal nor paternal emotional neglect were predictors of NSSI in males, however, both were significant predictors in females. Further, maternal emotional neglect was a positive predictor of NSSI, while paternal emotional neglect was a negative predictor. The mixed results regarding neglect in the literature suggest that further
Non-Suicidal Self-Injury

Investigation is needed in order to determine the exact relationship. However, it appears that emotional neglect especially for females may be a risk factor for NSSI. Investigation of this factor is warranted as there is evidence that emotional and physical neglect can have negative effects on impulse control, affect expression, and emotion regulation (Crittenden, 1992) all of which have been identified as possible risks for NSSI (Zlotnick, Mattia, & Zimmerman, 1999).

Limited evidence is available for the relationship between childhood separation or loss and NSSI, however, preliminary evidence supports this relationship. Childhood separation was found to be the most significant predictor for NSSI in males in one study of undergraduate students (Gratz et al., 2002). More evidence is available on the relationship between insecure attachment and NSSI, however, it is still fairly limited. Insecure attachment, the lack of a secure, healthy relationship with the caregiver, has been reported as a risk factor in undergraduate students even when abuse, neglect and separation are controlled for (Gratz, 2003). This relationship is not unique to NSSI though, relationships between insecure attachment and a variety of pathologies have been found (Ogawa, Sroufe, Weinfield, Carlson, & Egeland, 1997). Gender may play a role in this relationship as it has been reported that insecure maternal and paternal attachment are predictors for NSSI in female but not male college students (Gratz et al., 2002). This along with the finding that the most significant factor for NSSI in males is separation suggests that it is the presence of a relationship rather than the quality of that relationship that is an important factor for males. In their follow-up study van der Kolk et al. (1991) suggested that childhood trauma may be a strong predictor in the initiation of NSSI but lack of secure attachments maintains the behavior.
The most extensive support for a possible relationship between NSSI and insecure attachment comes from research on attachment in general. Secure attachment to a caregiver can act as a protective factor against the negative consequences of childhood separation or loss (Hetherington, 1989). On the contrary, insecure attachment can compound the effect of childhood abuse, leading to more negative outcomes (Beeghly & Cicchetti, 1994). Researchers have suggested a relationship between NSSI and attachment and preliminary evidence has confirmed this relationship.

Emotional reactivity (both from biological or environmental perspectives) has been suggested as a possible risk factor but has yet to be proven empirically (Gratz, 2003). Empirical studies have supported several other individual factors. Individuals that engage in NSSI are more likely to be younger (Briere & Gil, 1998), report having tattoos, and to engage in other risky behaviors (i.e., substance abuse, recklessness) compared to those who do not engage in NSSI. Females who engage in NSSI are more likely to report smoking (Laye-Gindhu & Schonert-Reichl, 2005). Impulsiveness has been found to be associated with NSSI in clinical populations (Herpetz, Sass, & Favazza, 1997), more specifically, repeat non-suicidal self-injurers tend to be higher in impulsiveness than first timers and those who do not NSSI (Evans, Platts, & Liebenau, 1996). In the general population, those who NSSI have been found to have significantly higher means on measures of psychological maladjustment including depression and anxiety compared to those who do not engage in NSSI (Laye-Gindhu & Schonert-Reichl, 2005; Ross & Heath, 2002). This indicates that although individuals who NSSI may not always have clinical levels of anxiety or depression they still tend to have difficulties in these areas. Further, it has been found that those who engage in NSSI report self-directed anger and self-derogation (Klonsky, 2007)
Researchers have suggested that NSSI may be a maladaptive coping mechanism used to manage a problem with emotion regulation. Support for this theory has been found in research that shows that those who NSSI use fewer adaptive and more impulsive coping mechanisms compared to their peers (Haines & Williams, 2003). In addition, those who self-injure often report feelings of anxiety, tension, anger and depression prior to engaging in the behavior (Briere & Gil, 1998; Favazza & Conterio, 1989; Ross & Heath, 2002; Suyemoto, 1998). These feelings sometimes become overwhelming which may lead to feelings of disassociation, then it is at this point that that the self-injury occurs (Suyemoto, 1998). After they have injured themselves they often feel a sense of relief, calm, release, and a sense of control (Briere & Gil, 1998; Suyemoto, 1998).

Thus, it is believed that self-injurious acts are used to regulate overwhelming emotions (Suyemoto, 1998). So a lack of adaptive coping mechanisms compounded by the fact that engaging in NSSI may be effective in regulating overwhelming emotions may explain why those who NSSI often turn to this strategy during times of stress, because it has been shown that most people who self-injure do it more than once (Ross & Heath, 2002). Further, Gratz (2006) reported in a sample of female college students that emotional inexpressivity can reliably distinguish between those who NSSI and those who do not, with those who NSSI rating themselves higher on measures of emotional inexpressivity. This inability to express emotions may lead to the use of NSSI as a coping strategy when faced with overwhelming emotions. In their paper looking at the experiential avoidance model, Chapman, Gratz and Brown (2006), conducted an extensive literature review which found that NSSI is used to help escape from unwanted emotional experiences. Finally, in 2007 Klonsky, reviewed all the functions literature and as noted above he concluded that the most support was for the affect regulation model.
He also reported that research indicates that NSSI is often preceded by a negative affect, this negative affect is decreased after NSSI and NSSI is performed with the intention of relieving the negative affect. It would seem to follow that those who would use NSSI as a coping strategy to manage negative affect would most likely have difficulties with emotion regulation. Therefore, emotion regulation difficulties appear to play a role as both a risk factor and a function for NSSI behaviour.

Environmental factors have also been found to be associated with NSSI. Those who NSSI are more likely to come from single-parent homes, to report having a parent with a serious illness or disability (Laye-Gindhu & Schonert-Reichl, 2005) and are associated with the absence of a family confidant (Tulloch, Blizzard, & Pinkus, 1997). NSSI has also been associated with socio-economic deprivation (Ayton, Rasool, & Cottrell, 2003). Another environmental risk factor is being exposed to another individual that self-injures (Hodgson, 2004).

Several mental health disorders have been linked with NSSI (Krysinska, Heller, & De Loe, 2006; Welch, 2001). NSSI has been linked specifically with eating disorders (Claes, Vandereychen, & Vertommen, 2005; Solano, Fernandez-Aranda, Aitken, Lopez & Vallejo, 2005; Stein, Lilenfeld, Wildman, & Marcus, 2004), Borderline Personality Disorder (Walsh & Rosen, 1985), and substance abuse (Evren et al., 2006). Although they are not always at clinical levels those who NSSI also tend to show more anxiety and depressive symptomology (Haavisto, et al., 2005; Ross & Heath, 2002).

In small summary, it has been found that there are distinct differences between clinical and community samples in terms of prevalence and risk factors (Heath et al., 2006). Although there has been an increase in the study of NSSI in community samples there are still some common methodological flaws in the research, including the use of
self-selected samples and failing to use controls groups. Within university samples prevalence rates have been found ranging from 11% to 38% illustrating a need to further understand this behaviour within this population (Gratz, 2006; Gratz et al., 2002; Gratz, 2001; Heath et al., 2006; Whitlock et al., 2006). Methods of sampling appear to be the cause of the difference in rates of NSSI within university samples. Research conducted on samples who are not recruited specifically for a study on NSSI may provide more accurate prevalence rates as those who volunteer to participate in a study of NSSI may be qualitatively difference than those who do not. Also, with age of onset being adolescence through young adulthood it is important to conduct research with the older age group to include all self-injurers.

Currently it is unclear whether sexual and physical abuse is a risk factor in all populations, with the research in those areas showing mixed results (Gratz, 2003; Heath et al., 2006). Both areas require more investigation to discover the relationship between NSSI and physical and sexual abuse. There is limited evidence for both neglect and attachment difficulties as risk factors for NSSI in community samples (Gratz, 2003).

Finally, research has shown support for emotion regulation as both a risk factor and a function of NSSI (Klonsky, 2007). Further research is required to determine exactly what aspects of emotion regulation are involved in this behaviour.

Objectives

The current study will explore the relationship of NSSI with emotion regulation, attachment and childhood trauma in a sample of undergraduate students in a large Canadian city. The objective is to explore the relationship between attachment, emotion regulation and childhood trauma and NSSI in this sample. Within this objective the goal will be to investigate whether those who NSSI differ from controls in terms of
attachment, emotion regulation and childhood trauma. Finally, the relationship between NSSI severity, as measured by lifetime frequency of NSSI events, and attachment, emotion regulation and childhood trauma will be explored.

Four hypotheses were posited; first that those who NSSI will report more negative attachment than those who do not report NSSI. This is in accordance with the research that has shown that those who NSSI are more likely to report insecure attachment (Gratz, 2003; Gratz et. al., 2002). Second that compared to controls non-suicidal self-injurers will report more difficulties with awareness, interpretation and regulation of emotions. This is based on the findings of Klonksy (2007) and Chapman, Gratz and Brown (2006). Both conducted extensive literature reviews and found that the majority of the literature in this area supports the role of emotion regulation difficulties in those who NSSI. Third, self-injurers will not differ from controls in regards to reported incidences of childhood trauma. Although the findings are mixed in this area, the composition of the current sample is most likely that of Heath et al. (2006) so it is likely that the results will be similar to those of that study which found no difference between those who NSSI and those who do not in terms of childhood trauma. No hypothesis was posited for the relationship between NSSI severity and emotion regulation, attachment and childhood trauma as this analysis is exploratory.
Chapter III: Methodology

Participants

Participants in this study were all undergraduate university students at a large Canadian University. They were recruited in first year undergraduate courses as a part of a larger study being conducted by Dr. Heath and her research team on non-suicidal self-injury in adolescence and young adulthood, with a total of 1400 students (364 male and 1036 females) who filled out the initial screening questionnaire. This screening questionnaire collected basic demographic information, such as gender, age, native language and country of residence as well as select information regarding engagement in risky behaviors and non-suicidal self-injury. The participants were 18 to 25 years of age with a mean age of 19.76 (SD = 1.47). The majority of the participants spoke English only at home (53.8%), with 8.8% speaking French only at home, 7.2% speaking another language only at home and 30.1% spoke more than one language at home. The top six faculties represented in the sample were Arts (49.8%), Science (27.3%), Education (12.7%), Management (3.1%), Arts and Science (2.4%), and Engineering (1.4%). Other faculties represented included Agriculture, Social Work, Medicine, Education and Sciences, and Dentistry, with percentages of .9%, .4%, .1%, .1%, and .1% respectively. Within these faculties, the programs of study included Political Science (7.9%), Psychology (7.6%), Elementary Education (7.0%), Biology (5.1%), International Development Studies (4.9%), Pre-Med (4.3%), Physiology (4.1%), Freshman or undecided major (4.1%), History (3.4%), Sociology (3.2%), Chemistry (3.0%), Anthropology (2.1%), Environmental Studies (2.1%), Economics (2.0%), Biochemistry (2.0%), English (1.9%), Secondary Education (1.7%), Microbiology (1.6%), Anatomy (1.1%), Communication (1.0%), Social Work (1.0%), and Others (17.6%). Of the sample
80.6% listed Canada as their country of residence, 14.4% the USA, and the remaining 5% citing other countries as their place of residence. The most frequently endorsed country of birth was Canada (67.5%), followed by the USA (14.4%), Other (10.3%), as well as China (3.3%), France (1.1%), England (0.7%), Romania (0.6%), Iran (0.6%), Russia (0.6%), Korea (0.5%), and Germany (0.4%).

Informed consent for the inclusion of their data in the research program was obtained by having the participants sign the informed consent sheet attached to the screening questionnaire. Participants were given the option to participate in follow up questionnaires by providing their contact information on a form attached to the screening questionnaire. An overall 52.5% consent rate was obtained to be contacted for follow up questionnaires from screening participants. Of the 1400 (364 male and 1036 females) who filled out the screening questionnaire 114 (28 male and 86 females; 8.2%) indicated that they were non-suicidal self injurers (determined by the endorsement of the item “I hurt myself on purpose” on a screening questionnaire) and 71 (62.3%) of these participants indicated that they were willing to participate further in the study. Participants who were non-suicidal self-injurers and indicated their willingness to participate in the follow up questionnaires were contacted ($N=68$; due to missing information 3 could not be sent). Of the 68 contacted 56 (78.9%; 7 males and 49 females) completed the follow up questionnaire. The remaining 12 participants did not return the completed measures. Of these 56 participants matches were found for 55 (6 males, 49 females, drawn from the screening sample). The control group was matched on age in years (within 12 months) and gender. Additionally, faculty was matched wherever possible (85.5% of time faculty was matched).
Procedure

Data collection was completed in two phases. Phase I was completed in first year undergraduate classes at a large Canadian University. Instructors from various faculties were contacted via email to solicit their participation. Participation involved allowing members of the research team to enter their classrooms to administer a screening questionnaire. The following options were given to the instructors, allowing students a set amount of time (approximately 15 minutes) to complete the screening questionnaire during class time or the research team could distribute the screening questionnaire to each student at the beginning or end of a class and allow students to take it home and return the completed screening questionnaires the following class for collection. Once permission was obtained from instructors the research team went into classes and read a description of the study (See Appendix A) which informed the students that the study was on how young people deal with stress. Deception was used to avoid selection bias and the possible risk of contagion which has been found when individuals are given the opportunity to openly discuss their non-suicidal self-injurious behavior (Hodgeson, 2004). In addition, potential participants were read a statement that informed them that their participation was completely voluntary, they could stop at any time, and their results would be kept confidential.

Participants were given the option of providing their contact information on a form attached at the end of each questionnaire, to indicate their willingness to be contacted for further participation in the follow up questionnaire. Students were informed that those who provided such contact information were entered into a draw to win several gift certificates (one $200 gift certificate for a shopping mall, two $50.00 gift certificates for HMV). Once completed questionnaires were returned, the participants were given an
information sheet (see Appendix B) this provided a debriefing of the study and provided the contact information for any participant who would like to further participate, or obtain resources.

Of the 732 participants who provided their contact information for follow up, 9.7% that indicated a history of NSSI behaviours (based on their endorsement of NSSI on items from the screening measures administered). Those 9.7% (71) were selected as the NSSI participants. These selected participants (68; 3 excluded due to missing information) were sent the follow-up questionnaires including the Adolescent Attachment Inventory (Weber, 2005), the Childhood Trauma Questionnaire (Bernstein et. al., 2003), and the Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004) via email. Participants were asked to read and sign the consent form with an electronic signature before completing the measures electronically. The completed measures (56, 7 males and 49 females) were returned via e-mail to the research team. Controls (non-self-injurers) who provided their contact information were matched to the non suicidal self-injurers on age, sex and university program. The controls were sent the same follow up questionnaires as the NSSI group via email. Control participants were contacted in order to obtain 55 matched controls (6 males, 49 females). Due to the lack of the availability of a matched control one male NSSI participant was dropped, leaving the final sample of 110 participants (55 NSSI, 6 male and 49 female; 55 control, 6 male and 49 female). Once the completed questionnaires were received, the participants were sent another email providing the necessary debriefing information (see Appendix C) which included a link to access resources should they require additional support. The data was coded and entered into a database with no identifiable information available through database access alone.
**Screening Measure**

*How I deal with Stress Questionnaire* (HIDS; Ross & Heath, 2002)

This questionnaire was used to screen for non-suicidal self-injury and was developed by Ross and Heath (2002) for use in their study on NSSI in adolescents. It provides 24 statements regarding different adaptive and maladaptive coping mechanisms and participants are asked to rate them on a four point Likert scale, “0” being never and “3” being frequently. The coping strategies listed include such activities as reading, crying, listening to music, smoking, doing risky things, or physically hurting themselves on purpose. This questionnaire contains additional information sections for those who endorse the items when they feel stress they, “talk to someone”, “do risky things”, or “physically hurt myself on purpose”. In the follow-up section for “talk to someone” the participant is asked to indicate who it is they usually talk to (a list of options are provided as well as an option to fill in another not listed) and how well they feel this strategy works for them in stressful situations. The additional information section risky behaviors contains questions pertaining to their preferred behavior from a list of several options (reckless driving, promiscuity, alcohol or drug abuse, and others) and how they feel after doing any of these activities. The final additional information section is for those who indicated that they physically hurt themselves on purpose when dealing with stressful situations. Those who endorse this statement are considered to be non-suicidal self-injurers. The additional information follow-up section on the survey for self-injury includes questions on the method (ie. cut, burn, scratch etc.), frequency (how many times), duration (when did they start, how long did they continue), severity (was medical attention required) and intention of the behavior (whether they had suicidal intent). This
section was based on the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001), a
behaviorally-based measure of non-suicidal self-injury.

**Follow-up Measures**

*Adolescent Attachment Inventory (AAI; Weber, 2005)*

The AAI evaluates adolescent attachment. It has 46 items that are rated on a four point Likert scale ranging from “never” to “almost always”. The AAI has 4 subscales or factors; secure (perceived level of responsiveness and availability of their attachment figure, as well as feelings of safety and security in the presence of their attachment figure), avoidant (feelings of rejection or possible abandonment from their attachment figure), ambivalent (feelings of anxiousness, guilt, worthlessness, inefficacy in regards to their relationship with their attachment figure) and peer attachment (feelings of inefficacy involving peers and peer settings). For reliability alpha coefficients for all scales were found to be .87 or above. Relatively moderate correlations were found between the AAI and the constructs related to attachment on the Behavior Assessment System for Children (BASC) and low correlations were found with other BASC constructs demonstrating convergent and divergent validity (Weber, 2005).

*Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)*

The DERS is a 36 item questionnaire used to assess emotion regulation. It looks at six dimensions of emotion regulation: Non-Acceptance (the person’s acceptance or denial of emotions), Goals (the person’s ability to function when overwhelmed with emotion), Impulse (the person’s ability to control emotions and reactions), Awareness (the person’s ability to acknowledge their emotions), Strategies (the person’s possessive ability to use different methods to regulate emotions), and Clarity (the person’s ability to understand their emotions). Items are rated on a five point Likert scale ranging from “almost never”
to “almost always”. This measure has been shown to have good internal consistency (α = .93), high test-retest reliability (pI = .88, p < .01) and adequate construct validity (r = .60) when correlated with Negative Mood Regulation Scale, a commonly used emotion regulation measure (Gratz & Roemer, 2004).

*Childhood Trauma Questionnaire- Short Form* (CTQ-SF; Bernstein et. al., 2003)

The CTQ-SF is a 28 item questionnaire used to assess childhood trauma retrospectively. The CTQ-SF looks at five dimensions of traumatic childhood experiences: emotional abuse (e.g., “People in my family said hurtful and insulting things to me”), physical abuse (e.g., “I was punished with a belt, board, cord, or some other hard object”), and sexual abuse (e.g., “Someone tried to touch me in a sexual way or make me touch them”), as well as emotional and physical neglect (e.g., ”People in my family didn’t seem to know or care what I was doing” and “There was enough food in the house for everyone”). This measure was created from the larger 70 item CTQ which has been demonstrated to have good internal consistency (Cronbach’s α between .79 and .94) and high test-retest reliability (interclass correlation = .88). Criterion validity was demonstrated on a variety of samples with the questionnaire scores significantly predicting the observational scores of therapists (regression coefficients between .24 and .27; Bernstein et al., 2003).
Chapter IV: Results

Data Analysis

Frequencies were run to determine the prevalence of NSSI and sample demographics. In terms of the objectives three MANOVAs were conducted comparing NSSI and non-NSSI participants on the subscale scores of the AAI, DERS and CTQ-SF. Correlations were conducted based on the results of the MANOVAs to determine if severity was related to the total scores of the variables that are found to be related to NSSI.

Sample Demographics

Of the 1400 (364 male and 1036 females) who filled out the screening questionnaire 114 (28 male and 86 females; 8.2%) indicated that they were non-suicidal self injurers and 71 (62.3%) of these participants indicated that they were willing to participate further in the study. Of the 71 participants who agreed to further contact, 13 were male (46.0% of the male non-suicidal self-injurers) and 58 were female (67.0% of female non-suicidal self-injurers). It was found that females were significantly more likely to give consent to contact for follow-up ($\chi^2 (1) = 11.31$, $p < .001$) and females were also significantly more likely to complete the follow-up when contacted ($\chi^2 (1) = 7.02$, $p < .01$). Of the 71 who had provided their information, 68 (3 dropped due to missing information) were contacted and 56 (78.9%) chose to participate in the follow up study (7 males and 49 females). Of these 56 participants 55 (6 males and 49 females) were found matches with 55 controls (those who did not engage in NSSI). Follow up participants ranged in age from 18 to 24, with a mean of 20.02 (SD = 1.68) for the NSSI group and 20.04 (SD = 1.62) for the control group. Participants were in the faculties of Arts (53%), Science (31%) and Education (15%). In the NSSI group the majority spoke English at
home (91%) and were permanent residents of Canada or the U.S. (67% and 26% respectively). For the Control group 76% spoke English at home and the majority were permanent residents of Canada or the U.S. (85% and 10% respectively).

Prevalence

It was found that 8.2% of the Phase I sample had self-injured at least once in their lifetime. When split by gender it was found that 7.7% of the males and 8.3% of the females in the sample endorsed NSSI as a coping mechanism which was not a significant difference \( \chi^2 (3) = .63, p = \text{ns} \). For further gender differences in this sample refer to Heath and Holly (2007). Although NSSI generally excludes those behaviours done with suicidal intent, the present study found that 14.0% of young adults who NSSI stated that they had also self-injured with suicidal intent at least once.

Risk Factors – Follow-up

In regards to the first hypothesis stating that those who NSSI would report higher levels of negative attachment compared to controls, a MANOVA was conducted on the AAI subscales. Means for the AAI subscales and totals for NSSI participants and controls can be seen in Table 1. Significant differences were found across all the AAI subscales between the groups, \( \Lambda = .8, F = (4, 105) = 6.16, p < .001 \). Univariate follow up revealed significant univariate differences for all of the AAI subscales except for the secure subscale (see Table 2). All effect sizes were medium to large according to the conventions proposed by Cohen (1977). This means that a substantial proportion (8-15% for significant results) of the variance was accounted for by each separate variable.

In terms of the second hypothesis, stating that those who NSSI would report more emotion regulation difficulties compared to controls, a MANOVA was conducted on the DERS subscales. Means for the DERS subscales and totals for NSSI participants and
controls can also be seen in Table 1. Significant differences were also found across all the DERS subscales between the groups, $\Lambda = .72$, $F (6, 103) = 373.83$, $p < .001$. Univariate follow up revealed significant univariate differences for all of the DERS subscales except for the Emotional Awareness subscale (see Table 2). All effect sizes were medium to large according to the conventions proposed by Cohen (1977). This means that a large proportion (12-26% for significant results) of the variance was accounted for by each separate variable.

For the third hypothesis that there would be no difference between those who NSSI and controls in terms of childhood trauma, a MANOVA was conducted on the CTQ subscales. Means for the CTQ subscales and totals for NSSI participants and controls can be seen in Table 1. No significant differences were found across all the CTQ subscales between groups, $\Lambda = .93$, $F (6,102) = 1.40$, $p = ns$.

*Attachment, Emotion Regulation, Childhood Trauma and Self-Injury Frequency*

Correlations were conducted between the AAI, DERS, and CTQ totals and the lifetime frequency of NSSI for the 55 NSSI follow up participants. A significant correlation was found between lifetime frequency and the AAI Total ($r = .34$, $p < .05$) scale. Therefore, as frequency of NSSI went up so did the level of negative attachment. There was no significant correlation between the lifetime frequency and the DERS and CTQ totals.
Table 1.

*Means (SD) for Self-Injurious and Control Groups on Phase II Measures.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Self-Injurious ((n = 55))</th>
<th>Control ((n = 55))</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAI Total Scale</td>
<td>81.59 (18.22)</td>
<td>68.95 (14.19)</td>
</tr>
<tr>
<td>AAI Secure Subscale</td>
<td>23.45 (8.40)</td>
<td>20.51 (7.77)</td>
</tr>
<tr>
<td>AAI Peer Subscale</td>
<td>16.64 (5.67)</td>
<td>13.85 (3.62)</td>
</tr>
<tr>
<td>AAI Avoidance Subscale</td>
<td>15.80 (3.98)</td>
<td>13.95 (2.19)</td>
</tr>
<tr>
<td>AAI Ambivalent Subscale</td>
<td>25.70 (6.93)</td>
<td>20.64 (4.85)</td>
</tr>
<tr>
<td>DERS Total Scale</td>
<td>99.14 (21.24)</td>
<td>75.64 (19.89)</td>
</tr>
<tr>
<td>DERS Nonacceptance Subscale</td>
<td>16.13 (5.86)</td>
<td>11.49 (4.55)</td>
</tr>
<tr>
<td>DERS Goal Directed Subscale</td>
<td>17.46 (4.44)</td>
<td>14.11 (4.80)</td>
</tr>
<tr>
<td>DERS Impulse Subscale</td>
<td>14.36 (5.05)</td>
<td>10.23 (4.32)</td>
</tr>
<tr>
<td>DERS Emotional Awareness Subscale</td>
<td>14.93 (4.45)</td>
<td>13.16 (4.58)</td>
</tr>
<tr>
<td>DERS Limited Access Subscale</td>
<td>22.75 (6.63)</td>
<td>15.58 (5.36)</td>
</tr>
<tr>
<td>DERS Clarity Subscale</td>
<td>13.51 (3.56)</td>
<td>11.05 (2.86)</td>
</tr>
<tr>
<td>CTQ Total Scale</td>
<td>35.25 (7.58)</td>
<td>32.89 (7.81)</td>
</tr>
<tr>
<td>CTQ Physical Neglect Subscale</td>
<td>6.07 (1.56)</td>
<td>5.83 (2.02)</td>
</tr>
<tr>
<td>CTQ Emotional Abuse Subscale</td>
<td>8.21 (3.02)</td>
<td>7.24 (2.72)</td>
</tr>
<tr>
<td>CTQ Emotional Neglect Subscale</td>
<td>9.71 (3.90)</td>
<td>8.74 (3.73)</td>
</tr>
<tr>
<td>CTQ Physical Abuse Subscale</td>
<td>5.89 (1.46)</td>
<td>5.57 (1.38)</td>
</tr>
<tr>
<td>CTQ Sexual Abuse Subscale</td>
<td>5.36 (1.14)</td>
<td>5.06 (0.23)</td>
</tr>
</tbody>
</table>

*Note.* AAI stands for Adolescent Attachment Inventory, DERS stands for Difficulties in Emotion Regulation Scale and CTQ stands for the Childhood Trauma Questionnaire.

High scores are negative for all three scales.
Table 2.

*Univariate Results for the AAI and DERS*

<table>
<thead>
<tr>
<th>Scale</th>
<th>Df</th>
<th>F</th>
<th>$\eta^2$</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAI – Secure</td>
<td>109</td>
<td>3.82</td>
<td>.03</td>
<td>.059</td>
</tr>
<tr>
<td>AAI - Peer</td>
<td>109</td>
<td>10.32</td>
<td>.08</td>
<td>.003</td>
</tr>
<tr>
<td>AAI - Ambivalent</td>
<td>109</td>
<td>19.31</td>
<td>.08</td>
<td>.003</td>
</tr>
<tr>
<td>AAI - Avoidant</td>
<td>109</td>
<td>9.24</td>
<td>.15</td>
<td>.000</td>
</tr>
<tr>
<td>DERS – Nonacceptance</td>
<td>109</td>
<td>19.17</td>
<td>.17</td>
<td>.000</td>
</tr>
<tr>
<td>DERS – Goal Directed</td>
<td>109</td>
<td>14.48</td>
<td>.12</td>
<td>.000</td>
</tr>
<tr>
<td>DERS – Impulse</td>
<td>109</td>
<td>20.92</td>
<td>.16</td>
<td>.000</td>
</tr>
<tr>
<td>DERS – Emotional Awareness</td>
<td>109</td>
<td>4.24</td>
<td>.37</td>
<td>.042</td>
</tr>
<tr>
<td>DERS – Limited Access</td>
<td>109</td>
<td>37.34</td>
<td>.26</td>
<td>.000</td>
</tr>
<tr>
<td>DERS – Clarity</td>
<td>109</td>
<td>16.89</td>
<td>.13</td>
<td>.000</td>
</tr>
</tbody>
</table>

*Note.* AAI stands for Adolescent Attachment Inventory and DERS stands for Difficulties in Emotion Regulation Scale.
Chapter V: Discussion

Summary

The current study found an NSSI rate of 8.2% in a sample of university students. No gender differences were found in the rate of NSSI, however there were gender differences in terms of consent to participate in follow-up and actual participation in the follow-up, with males being less likely to consent to follow-up and complete follow-up. Only 14% of the non-suicidal self-injurers said they had ever self-injured with suicidal intent. Those who engage in NSSI differed from a control group on measures of attachment and emotion regulation, but not childhood trauma. Also attachment but not emotion regulation was related to severity based on frequency of NSSI.

The prevalence rate found in the present study (8.2%) was similar to those found in other studies (Heath et al., 2006; Whitlock, Eckenrode, & Silverman, 2006). However, it was found to be considerably lower than those found by Gratz (2001; 2002; 2006). As mention previously, Gratz’s samples were self-selected and therefore they may not represent accurately the university population. Further, there are differences in the ethnic backgrounds of the samples, where the current sample consisted mainly of individuals of Caucasian descent (approximately 90%) while Gratz (2006) had 34% of their sample who where not Caucasian. No gender differences were found in the prevalence of NSSI, which has also been the case for several other studies (Briere & Gil, 1998; Gratz, 2001; Jacobson, Muehlenkamp, & Miller, 2006; Klonsky et al., 2003; Muehlenkamp & Gutierrez, 2004). It is important to note that 14% of those who reported self-injuring said that they had self-injured with suicidal intent at least once. This highlights the importance of completing risk assessments with all who NSSI to ensure that they do not have suicidal ideation. This is supported by the findings of Nock, Joiner, Gordon, Lloyd-Richardson
and Prinstein (2006) who found that 70% of their sample of adolescents in an inpatient psychiatric unit who NSSI have attempted suicide at least once in their lifetime and 55% reported multiple attempts. When the characteristics of NSSI associated with making a suicide attempt were examined it was found that making a suicide attempt was associated with a longer history of NSSI, use of a greater number of methods of NSSI, and absence of physical pain during NSSI. This may indicate that there are differences between those who engage only in NSSI and those who engage in NSSI and attempt suicide. However, these finding are from a clinical setting and further research needs to be completed to explore this in community settings.

The first hypothesis was supported as those who NSSI were found to show higher levels of negative attachment in terms of avoidant, ambivalent and peer but not secure attachment compared to the control group. In terms of attachment, although self-injurers may experience positive attachment, they seem to be more likely to experience difficulties in their attachment as compared to their peers who do not engage in NSSI. Those who NSSI have the same level of secure attachment as controls, which means that they all viewed their attachment figures as having the same level of responsiveness and availability and felt the same level of safety and security in the presence of their attachment figure. However, those who engaged in NSSI showed higher levels of negative attachment in terms of avoidant, ambivalent and peer attachment. This means that they were more likely to endorse items relating to feelings rejection or possible abandonment from their attachment figure and being compulsively self-reliant (avoidant), also to endorse items about experiencing feelings of anxiousness, guilt, worthlessness, inefficacy in combination with a resistance to seeking comfort (ambivalent) and items relating to inefficacy involving peers and peer settings, for example feeling like you are
unable to work well with or relate with your peers (peer). This indicates that although all subjects experienced some positive interactions with their attachment figure and can sometimes feel safe in relationships, those who NSSI are more likely to also have feelings of rejection, worthlessness in regards to their attachment figure and inefficacy in terms of peer relationships.

Researchers have shown that difficulties in attachment can lead to adjustment problems (Bowlby, 1969), thus problematic attachment may be associated with maladaptive emotion regulation skills. However, it remains unclear as to which factor plays a causal role. Due to the fact that those who engaged in NSSI had the same level of secure attachment as those who did not self-injure, it appears that those who self-injure may have felt that their caregivers were available to them but they themselves had difficulty reaching out to them. Attachment was also found to be associated with severity of NSSI, as the frequency of NSSI went up so did the levels of negative attachment. Therefore, it appears that attachment not only plays a role in the initiation of the behaviour, but also possibly in the severity or maintenance of it as well. In relation to the suggestion made by van der Kolk et. al. (1991), which said that lack of a secure attachment maintains the behaviour of NSSI, it in fact may not be that those who engage in NSSI have insecure attachment but have difficulties in other areas of attachment. The use of attachment subscales in this study provides a critical insight into the type of attachment difficulties that may lead to NSSI. Previous literature has found that insecure attachment has been found to be a predictor of NSSI in female but not male college students (Gratz et al., 2002). Although the current study found that there was no relation between secure attachment and NSSI, those who self-injured showed higher levels of avoidant and ambivalent attachment which are related to insecure attachment. Due to the
small number of males who participated in the follow-up gender comparisons could not
be made and therefore it is unknown if there are gender differences in this sample or if
these results are applicable to males who engage in NSSI.

Regarding the second hypothesis, in terms of emotion regulation those who NSSI
showed more negative scores on Non-Acceptance (the person’s acceptance or denial of
emotions), Goals (the person’s ability to function when overwhelmed with emotion),
Impulse (the person’s ability to control emotions and reactions), Strategies (the person’s
ability to use different methods to regulate emotions), and Clarity (the person’s ability to
understand their emotions) but not on Awareness (the person’s ability to acknowledge
their emotions) compared to those who do not NSSI, which was in accordance with the
predicted difference.

The current findings depict a more detailed picture of the differences in emotion
regulation between non-suicidal self-injurers and non-self-injurers. While both the NSSI
group and the control group reported an awareness of their emotions, non-suicidal self-
injurers were more likely to report that they deny their emotions, have difficulty
functioning when overwhelmed with emotion, and that they are less capable of
moderating their emotions and reactions. Individuals who engage in NSSI also reported
having fewer strategies to regulate emotions, and having a harder time understanding
their emotions. This is similar to the findings of Gratz (2006), who found that those who
NSSI rate themselves higher on measures of emotional inexpressivity. Further, it is
consistent with the findings showing affect regulation as critical function of NSSI
(Klonsky, 2007).

The fact that those who NSSI reported having fewer strategies to regulate
emotions supports the finding that those who NSSI use fewer adaptive coping
mechanisms (Haines & Williams, 2003). It also follows with the theory that NSSI is used as a coping mechanism to deal with overwhelming emotions (Suyemoto, 1998). Since non-suicidal self-injurers reported difficulties functioning when overwhelmed with emotion, moderating their emotions and reactions and have fewer strategies to deal with their emotions and past research has shown that those who NSSI tend to feel a sense of relief after they self-injure (Briere & Gil, 1998; Suyemoto, 1998) it would seem to explain why many non-suicidal self-injurers continue with this destructive behaviour.

However, the current study found that emotion regulation difficulties were characteristic of those who NSSI but were not related to lifetime frequency, indicating that emotion regulation difficulties are related to trying NSSI but not necessarily to the continuing of this behaviour. It is also indicating that emotion regulation difficulties are characteristic of even mild NSSI as even those with mild NSSI, were shown to have difficulties with emotion regulation. Frequency in fact was related only to attachment, indicating that it is attachment that plays a role in the continuation of this behaviour.

As predicted in the third hypothesis, non-suicidal self-injurers did not report higher levels of childhood abuse or trauma in this community sample. This finding differs from the results obtained by Gratz et al. (2002), but is consistent with Heath et al. (2006). The lack of association found between NSSI and childhood trauma may be due in part to the nature of the current sample. Historically, reports of non-suicidal self-injurers being at risk for childhood trauma have come from clinical settings (Favazza, 1989). In the present sample 70% have never sought help from a medical or mental health professional (Heath & Holly, 2007). Thus, the current sample, is similar to Heath et al. (2006), are a high functioning community sample. Furthermore, the present sample differs from the Gratz et al. (2002) study as participants were recruited blind to the NSSI focus of the study and the
ethnic backgrounds of the samples were different. Gratz had a lower percentage of
Caucasian participants compared to the current study. It may be that those who volunteer
to participate in a study regarding NSSI may be more open to a more severe group of
non-suicidal self-injurers, a qualitatively different sample.

Conclusions

The present study is a valuable contribution to research as it improved on past
research due to the sample type and design used. The sample used was a more
achievement oriented sample of university undergraduates who were blind to the focus of
NSSI in the study and the use of a matched control sample allowed for a more accurate
description of non-suicidal self-injury in young adults and a clearer comparison between
those who self-injure and those who do not self-injure.

Further, the overall the findings support the evidence for emotion regulation and
attachment difficulties as risk factors for NSSI in young adults, however, the risk factor of
childhood trauma was not found in this sample. This suggests that results regarding
childhood trauma obtained in studies on risk factors in university students (i.e., Gratz,
2006) may not necessarily represent all university populations. Therefore it is believed
that in high functioning young adults who NSSI, childhood trauma is not at the root of the
difficulty, although attachment and emotion regulation difficulties are central.

This study was the first to provide a more detailed look at the aspects of
attachment and emotion regulation that are related to NSSI. This provides critical
knowledge about which aspects of attachment and emotion regulation are associated with
higher risk for engaging in NSSI. It also indicates areas in which those who are already
engaging in NSSI behaviours could be experiencing difficulties and this may be helpful to
professionals who work with those who self-injure. Lastly, the increasing evidence that
emotion regulation difficulties are central to the occurrence of NSSI in both clinical and community samples and are frequently reported as the main reason for engaging in NSSI points to a clear direction in treatment of NSSI in the community.

**Limitations**

Despite the fact that the findings of the present study represent a valuable addition to the previous literature, they do have some limitations. First of all the use of self-report measures presents some potential problems such as social desirability. Although most researchers investigating non-suicidal self-injurious behavior use self-report measures (Favazza & Conterio, 1988; Favazza & Conterio, 1989; Gratz, 2002; Gratz, 2001; Ross & Heath, 2002), social desirability could lead to underreporting of this behaviour. Efforts to reduce this effect were made by not revealing that the actual focus of the study was non-suicidal self-injury, in an attempt to increase participants’ comfort in disclosing their experiences. Secondly these results may not accurately represent male non-suicidal self-injurers in the community as very few males participated in the follow-up. In fact males were significantly less likely to give consent to follow-up and to complete the follow-up when contacted. So although there was no significant gender differences found in the rate of NSSI, males were under represented in the follow-up information gathered. Also, due to this under representation of males in the follow-up we were unable examine gender differences in risk factors.

**Implications and Future Directions**

The findings of this study further the knowledge of the risk factors of NSSI in community samples by looking at the specific components of emotion regulation and attachment which are associated with NSSI. These findings can be used to guide treatment and aid clinicians and practitioners in their understanding of these behaviours.
Further research should also be completed in samples of high achieving young adults so that the risk factors can be investigated in more detail in this population. This will allow clinicians and practitioners to have a clearer picture of what precipitates and maintains these behaviours in young adults. More complex models should also be tested since several researchers have suggested that it is likely a combination of factors that lead to non-suicidal self-injurious behaviors (Gratz et al, 2002). Also, in the future efforts should be made to obtain larger samples of self-injurers in hopes of obtaining a large enough sample of males who NSSI in order to complete gender comparisons.
References


Social Sciences Congress – Canadian Society for the Study of Education, CSSE, Toronto, ON.


Appendix A. Description of Study for Screening Participants

**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.

*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 B. Information/Debriefing Sheet for Screening Participants

Thank you for participating in our survey on coping strategies! The information you provided will help us to understand how young adults cope with stress.

If you are interested in knowing more about this study or the research conducted by the Research Team of Dr. Nancy Heath, please visit our website:

www.education.mcgill.ca/heathresearchteam

Are you interested in participating in further projects on stress and coping in young adults?

We invite you to contact us if you would like to participate. Participants will complete a survey through e-mail or over the phone. Like the study you’ve just participated in, all the information provided in the second study is confidential.

All participants in the second study will be automatically entered in a draw to win one of three gift certificates ($200 certificate from the Eaton Center, or two $50 certificates from HMV).

PLEASE CONTACT DR. HEATH’S RESEARCH TEAM

McGill University, Faculty of Education
Tel.: (514) 398-1232
heathresearchteam@hotmail.com

WE WILL PAY $20 FOR SELECTED PARTICIPANTS TO FILL GROUPS IN THE FOLLOW-UP PROJECT
Appendix C. Debriefing Email for Follow-up Participants

Dear participant,

Thank you for taking part in our survey. Your participation will help us to better understand the risky behaviours that young adults engage in. You will be entered in our draw and we will contact you via email if you win.

Please provide us with a date and time (preferably in the afternoon) when you can come to the lab to pick up your $20. Our lab is located in the basement (B1) of the Education building. From the elevators, turn left, then left immediately, then right immediately. Our lab is B114.

We are planning to conduct an additional study in this area in the coming months. Please let us know if you are interested in participating for monetary compensation.

We are providing all of our participants with a list of resources for their own use. Although we do not endorse all of the information on these websites, we think they may be of interest to some of our participants.

Thank you,
The research team of Dr. Nancy Heath

Addiction Websites
Addiction information: http://www.addictionrecovery.org/addict.htm
Addiction information: http://www.addictions.co.uk/index.asp
Alcoholics Anonymous: http://www.alcoholics-anonymous.org/
Gamblers Anonymous: http://www.gamblersanonymous.org/index.html
Narcotics Anonymous: http://www.na.org/

Self-Injury Websites
The S.A.F.E. program : http://selfinjury.com/index.html
Self-injury and related issues: http://www.siari.co.uk
Young people and self-harm: http://www.selfharm.org.uk

McGill Services
McGill Mental Health Service: 398-6019
McGill Nightline (6pm to 3am, daily): 398-6246
Sexual Assault Centre of McGill Students’ Society: 398-8500
Appendix D. Ethics Approval Form

McGill University – Faculty of Education
ETHICS REVIEW
RENEWAL REQUEST/FINAL REPORT

Continuing review of human subjects research requires, at a minimum, the submission of an annual status report to the REB. This form must be completed to request renewal of ethics approval. If a renewal is not received before the expiry date, the project is considered no longer approved and no further research activity may be conducted. When a project has been completed, this form can also be used as a Final Report, which is required to properly close a file. To avoid expired approvals and, in the case of funded projects, the freezing of funds, this form should be returned 3-4 weeks before the current approval expires.

REB File #: __469-1004_

Project Title: Risk Factors, Correlates, and Social Influences in Self-Injurious Behaviour Among Late Adolescents

Principal Investigator: Nancy L. Heath

Department/Phone/Email: Educational & Counselling Psych/388-3439 nancy.heath@mcgill.ca

Faculty Supervisor (for student PI):

1. Were there any significant changes made to this research project that have any ethical implications? Yes ___ No
   If yes, describe these changes and append any relevant documents that have been revised.
   Change of measures being used in Phase II of the project.
   See attached explanations.

2. Are there any ethical concerns that arose during the course of this research? Yes ___ No. If yes, please describe.

3. Have any subjects experienced any adverse events in connection with this research project? Yes ___ No
   If yes, please describe.

4. Yes ___ This is a request for renewal of ethics approval. Application should be renewed under Nancy Heath's name only.

5. ___ This project is no longer active and ethics approval is no longer required.

6. List all current funding sources for this project and the corresponding project titles if not exactly the same as the project title above. Indicate the Principal Investigator of the award if not yourself.

   William Dawson Scholar Award (Nancy Heath)

Principal Investigator Signature: Nancy Heath Date: September 21, 2005

Faculty Supervisor Signature: __________________________ Date: __________________________

The closing report of this terminated project has been reviewed and accepted

Expeditied Review Full Review
Signature of REB Chair or designate: __________ Date: __________

Approval Period: __________ to __________


9/26/05