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Self-Injury as Experiential Avoidance

by

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## **Abstract**

Self-injury as defined in this study is the deliberate infliction of harm to ones' body (often cutting or burning) without suicidal intent. The increase in self-injurious behaviour in North American society is puzzling to understand and difficult to treat. In several explanatory models, self-injury is conceptualized as a method for coping with overwhelming negative emotions. The Experiential Avoidance Model (EAM; Chapman, Gratz, & Brown, 2006) has been hypothesized to be a unifying theoretical framework offering a basis for future research. The EAM proposes that self-injury is a method used to avoid uncomfortable and unmanageable affect, which is then reinforced by escape conditioning and negative reinforcement. This study tested the EAM as well as the underlying vulnerabilities that contribute to experiential avoidance in a sample of 132 self-injurers recruited from the general population. A vulnerability that was hypothesized to contribute to experiential avoidance was insecure attachment through its impact on the other EAM components such as affect intensity, emotion valence, and affect regulation abilities. A control group consisting of 117 participants that did not have a history of self-injury or current mental health concerns were used in this study as a point of comparison on all measures. The results highlight that self-injury serves multiple functions, although emotion regulation is its predominant function. The data provided an acceptable fit to path models that tested the EAM as well as an expanded model of EAM that included anxious/ambivalent attachment. The results highlight complex models that include multiple direct and indirect relations between the variables involved in the

frequency of self-injury. Experiential avoidance had a direct effect on the frequency of self-injury. Other results indicate that avoidant attachment plays a role in self-injury as do aversive emotions, specifically guilt. Treatment of self-injury needs to address several areas of deficits, particularly those related to emotion dysregulation. The implications of the findings are discussed in relation to the existing literature, treatment, and areas for future research.

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## Chapter 1 - Introduction

A disturbing trend in our society has been the increase in individuals who purposely injure themselves to cope with various emotional stressors. This behaviour is typically most prevalent in settings such as hospitals and prisons, although recent reports suggest that it is becoming more frequent within the general population of both adults and adolescents (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007; Nixon, Cloutier, & Jansson, 2008; Walsh, 2006; Whitlock, Eckenrode, & Silverman, 2006). This deliberate self-injury has been given several names: self-mutilation, self-harm, parasuicidal behaviour, self-inflicted violence, and non-suicidal self-injury. Whatever the nomenclature, the definitions describe the same phenomenon. Self-injury will be the term used throughout this document. Self-injury is a deliberate choice to cause damage to one's body. This damage can range in severity from limb amputation to light scratching; however, superficial damage such as cutting or burning is most common and is the focus of the majority of research on self-injury. An important characteristic of self-injury is that it is done without any conscious suicidal intent, yet suicidal thoughts are common in many individuals who self-injure and over time, the behaviour can increase the risk of suicide (Favazza, 1998; Laye-Gindhu & Schonert-Reichl, 2005; Wilkinson, Kelvin, Roberts, Dubicka, & Goodyear, 2011).

Although the majority of past research has been with psychiatric in-patients, a recent shift has begun toward researching this behaviour in community adolescents and undergraduate samples. Early research consisted of case studies

of young hospitalized women who suffered from dysphoric mood, eating disorders, and reported dysfunctional family environments (e.g., Asch, 1971; Grunebaum & Klerman, 1967; Pao, 1969). Self-injury then became a diagnostic criterion for borderline personality disorder (BPD; DSM-IV-TR, 2000). As a result, several studies have used samples of individuals with BPD or have screened for the disorder (e.g., Andover, Pepper, Ryabchenko, Orrico, & Gibb, 2005; Chapman & Dixon-Gordon, 2007; Whipple & Fowler, 2011; Zanarini et al., 2006; Zweig-Frank, Paris, & Guzder, 1994). While studies such as these have highlighted the strong relationship between BPD and self-injury, the behaviour may present differently in those that do not have the diagnosis. For example, self-injury in BPD often serves to end dissociative states that are related to severe childhood trauma (Herman, & van der Kolk, 1987; Leibenluft, Gardner, & Cowdry, 1987). Research has shown that self-injury serves several other functions besides ending dissociation (Klonsky, 2007, 2011).

Other disorders may also be related to self-injury. Zlotnick, Mattia, and Zimmerman (1999) reported that self-injury was more prevalent in those with disorders characterized by impulsive aggression than those with BPD alone. Several additional studies have found a relationship between self-injury and anxiety or mood disorders (e.g., Weierich, & Nock, 2008; Wilkinson et al., 2011). Clinical studies of self-injury have provided useful information; however, they may not be representative of self-injury in individuals that are not under psychiatric or medical care.

Some recent studies have focused on examining self-injury within samples taken from the general population, as a large increase in self-injury has been observed in this group. Whether or not this is due to an increase in prevalence or an increase in reporting remains unclear. Favazza and Conterio (1988, 1989) found similarities between their general population sample and existing clinical research, supporting the findings that self-injury is associated with childhood abuse, impulsiveness, and symptoms of psychopathology. Klonsky's (2011) epidemiological study highlighted that those who self-injure were more likely than non-self-injurers to have had mental health treatment and drug and alcohol problems. In contrast, Walsh (2006) reported that many self-injurers, particularly those not in treatment, lack an abuse history. Whitlock et al. (2006) also concluded that many self-injurers in the general population are high functioning and may go undetected. This suggests that a major difference between self-injury in clinical and general population samples is symptom severity; however, more research is necessary to determine if this is the only large difference.

Taken as a whole, the research on self-injury has identified several risk factors. A well-established risk factor is childhood sexual or physical abuse (Gratz, 2003). More recent findings have also shown childhood emotional abuse to be a strong predictor of self-injury (Gratz, 2006). Emotional abuse is a broad term used to describe actions deemed as psychologically damaging. This may include acts such as verbal aggression (i.e., threats, intimidation), degradation, rejection, isolation, and ignoring (Doyle, 1997).

In a related, although not as extensively researched area, childhood attachment patterns, particularly the quality of parental bonding, have been found to be an important risk factor for the behaviour (Gratz, Conrad, & Roemer, 2002; Marchetto, 2006; Yates, Tracy & Luthar, 2008).

Another focus of the research has been to examine the potential functions of self-injury, particularly in the general population. Knowing the function or the reason why people engage in self-injury is important for planning appropriate treatment interventions. There have been several reviews of the functions of self-injury (e.g., Klonsky, 2007; Messer & Fremouw, 2008; Suyemoto, 1998). In Klonsky's literature review, he identified seven common functions of self-injury that included affect regulation, ending dissociation, anti-suicide, asserting interpersonal boundaries, interpersonal influence, self-punishment, and sensation seeking. Further research that examines these functional areas is needed in order to increase understanding and treatment efficacy related to self-injury.

This is vital, as the treatment of self-injury is difficult. Those who engage in self-injury find it an effective coping strategy that tends to have immediate results. Adding to the challenge of treatment is that self-injury is often their primary or only coping skill leaving few other options of adaptive coping skills that could serve as a replacement (Dear, Slattery & Hillan, 2001). Complicating treatment is the negative attitude of some therapists and healthcare workers toward those who self-injure; these workers often believe that self-injury is done for manipulation or attention (DeHart, Smith, & Kaminski, 2009; Jeffery & Warm, 2002). This tends to come from their poor and limited understanding of the

behaviour and more importantly, their sense that they lack the skills needed to work with someone who self-injures. This can foster feelings of disgust for the behaviour and make clinicians less inclined to work with this population (Warm, Murray, & Fox, 2003). Clinicians and mental health workers can become frustrated in trying to prevent or treat the behaviour, thereby making them prone to burnout (DeHart et al., 2009).

Adding to the complication of treatment is the effort to unravel and understand the many different reasons that people self-injure. In addition to the challenge of treatment, self-injury also takes a financial toll both in staff time and energy as well as healthcare services (Fagan, Cox, Helfand & Aufderheide, 2010; Sinclair, Gray, Rivero-Arias, Saunders & Hawton, 2011).

The concept of experiential avoidance may be important for understanding and treating self-injury. Experiential avoidance, or the unwillingness to experience emotional material, has been offered as explanation for psychological distress such as anxiety and depression (e.g., Hayes, Wilson, Gifford, Follette, & Strosahl, 1996; Krause, Mendelson, & Lynch, 2003). Chapman, Gratz, and Brown (2006) have proposed that experiential avoidance may also be applied to self-injury. The authors have put forth the Experiential Avoidance Model (EAM) as a unifying theoretical model that explains the function and controlling mechanisms involved in self-injury.

Chapman et al. (2006) propose that all the models used to explain self-injury share a common thread between them, in that this behaviour's primary goal is to somehow control emotions. Briefly, the EAM theorizes that self-injury is

maintained and strengthened through negative reinforcement. When emotions are experienced as aversive, self-injury is used to terminate them and provide short-term relief. The sequence begins with an event or stimulus that typically elicits a strong negative emotional response (i.e., high affect intensity). Poor emotion regulation skills produce an inability to tolerate the emotional state and fail to regulate the evoked distress. This results in the individual not being able to reduce the intense affect and creates a motivation to avoid or escape from the uncomfortable affect through self-injury. A consequence of affect avoidance is that the emotions will return, often with increased intensity. The result is a repetitive cycle of self-injury that is continually strengthened through reinforcement and escape conditioning.

Only a handful of studies have examined experiential avoidance in the context of self-injury. Chapman, Specht, and Cellucci (2005) report that within their sample of female inmates with a borderline personality diagnosis, higher rates of self-injury were associated with greater experiential avoidance. A similar study was conducted by Hulbert and Thomas (2010) with a sample of female psychiatric patients diagnosed with borderline personality disorder. The findings supported the EAM for predicting the frequency of self-injury but not suicidal behaviour. Furthermore, the results highlighted the use of self-injury to provide emotional relief, which is consistent with the EAM. Kingston, Clarke, and Remington (2010) used a clinical sample to examine experiential avoidance and problem behaviour, which included self-injury. They found experiential avoidance to be a mediator in the relationship between risk factors and problem

behaviour. While findings support the EAM in self-injury, further empirical work is needed to buttress the limited evidence that is so far available. It is also necessary to test this model in a general population sample to determine if this function of experiential avoidance can be applied to a non-clinical sample.

The Experiential Avoidance Model also suggests a number of conditions that may be related to the increased likelihood that someone would engage in self-injury as a way to avoid emotional experience. Chapman et al. (2006) suggest that some of these factors, such as a heightened baseline of emotion (i.e., affect intensity) may be biologically or dispositionally based. They also suggest that certain emotional experiences may be related to experiential avoidance through self-injury. In particular, there is some evidence that negative or aversive self-focused emotions such as shame may be highly related to self-injuring behaviour (Arney & Crowther, 2008; Brown, Comtois, & Linehan, 2002) though how and if these relate to experiential avoidance has not been directly tested to the author's knowledge. Finally, Chapman et al. (2006) discuss the skill deficit in regulating affect as a potential common vulnerability in those inclined to injure themselves.

Many of these variables are closely associated with attachment difficulties. These include heightened emotionality (i.e., affect intensity) and affect regulation difficulties (i.e., emotion dysregulation). Both of these have been linked to insecure styles of attachment (Siegel, 1999). That being the case, attachment could very well be one of the dispositional or environmentally based factors that are important for understanding the EAM. Insecure attachment style has been shown to be related to and predictive of self-injury (Gratz et al., 2002). It is

expected that insecure attachment styles would also be predictive of experiential avoidance tendencies through an inability to effectively regulate emotions, particularly intense negative valenced emotions.

This research project will gather information related to the forms and functions of self-injury in a non-psychiatric sample of self-injurers. Furthermore this research will explore the role of attachment and its importance in predicting self-injury. A control group will be used as a point of comparison. Following these preliminary analyses, this research will test the Experiential Avoidance Model in a non-psychiatric sample of self-injurers. Variables in the model to be tested include affect intensity, negative emotions, affect regulation, experiential avoidance, and the frequency of self-injury. As certain types of negative emotions may be more linked to self-injury, this research will attempt to identify specific types of emotions that are more likely to be experienced by those that self-injure compared to those that do not self-injure. This research will also set out to expand the EAM by including insecure attachment as a factor contributing to variables in the model such as affect intensity, affect regulation deficits, negative emotions, experiential avoidance, and self-injury.

The research that is derived from addressing these areas will have implications for theory and treatment. It may provide additional empirical evidence to support the Experiential Avoidance Model as a way to understand, and hence treat self-injury. The findings will also provide several avenues for future research particularly related to the importance of emotions, emotion regulation, and attachment. In terms of treatment, this research is expected to

highlight the importance of working through emotional material rather than keeping it suppressed or practicing avoidance techniques (e.g., thought-stopping). It will also highlight the types of emotions that are aversive for self-injurers, which could be a focus in therapy.

## Chapter 2 - Literature Review

The literature review will introduce research literature on the variables to be investigated in this study. A broad overview of self-injury will provide a basis of understanding in this area followed by a literature on experiential avoidance. The area of attachment will also be discussed along with its role in emotions and particularly how attachment has been implicated in self-injury. A brief overview of affect intensity and affect regulation, which are important components of the Experiential Avoidance Model will also be presented.

### Self-Injury

**General characteristics.** Self-injury includes a wide variety of behaviours such as cutting, burning, head-banging, wound interference, self-hitting, scratching, biting, and bone breaking. The most common forms are cutting, burning, and scratching (Briere & Gil, 1998; Klonsky, 2011; Laye-Gindhu & Schonert-Reichl, 2005). The behaviour can be further classified as being major, stereotypic, and superficial/moderate (Favazza, 1998). According to Favazza, major forms of self-injury include rare occurrences of deliberate limb amputation or eye inoculation, whereas the stereotypic form, which consists of head-banging and self-biting, is seen more often in developmental disorders (i.e., autism). The superficial/moderate type is what is commonly referred to as self-injury. This classification includes behaviours such as cutting, burning, and scratching. Superficial/moderate self-injury is also further classified by whether or not it is compulsive, episodic, or repetitive. While this taxonomy is not widely implemented within research, it highlights that not all self-injurers can be placed

into one category and that someone who self-injures once or twice (episodic type) would likely present quite differently than a repetitive self-injurer or one who engages in the behaviour impulsively.

Typically, self-injury is comorbid with other mental health issues. Self-injury is often seen in individuals with borderline personality disorder (Langbehn & Pfohl, 1993) as the behaviour is one of the diagnostic criteria for this disorder (DSM-TR-IV, 2004). This is not to say that everyone who self-injures has BPD. For this reason, there has been a proposal for self-injury to be designated as a separate disorder, as opposed to a criterion of BPD, in the release of the DSM-V (Shaffer & Jacobson, 2009). Adding to diagnostic confusion is that self-injury is also associated with several other disorders such as posttraumatic stress disorder (Zlotnick, Mattia, & Zimmerman, 1999; Wierich & Nock, 2008), dissociative disorders (Briere & Gil, 1998), depression (Nixon, Cloutier, & Aggarwal, 2002), anxiety (Favazza & Conterio, 1989), substance abuse (Zlotnick, Shea, Recupero, Bidadi, Pearlstein, & Brown, 1997) and eating disorders (Myers, Wonderlich, Norton, & Crosby, 2000). Those who engage in the behaviour also commonly report a history of suicide attempt(s) and suicidal ideation (Lloyd-Richardson et al., 2007).

Self-injury typically begins in adolescence (Pattison & Kahan, 1983). Early theorists labelled self-injury as a behaviour specifically affecting girls and young adults (e.g., Asch, 1971; Grunebaum & Klerman, 1967). Later research highlighted that there is a wide age range in self-injurers with the average age being in the late twenties to the mid-thirties (e.g., Briere & Gil, 1998; Favazza &

Conterio, 1989). Unfortunately, studies tend to employ mostly adolescent or college-age samples and this may not adequately capture older individuals who self-injure or males that self-injure.

**Prevalence of self-injury.** The majority of research has examined self-injury in psychiatric patients (e.g., Kumar, Pepe & Steer, 2004; Langbehn & Pfohl, 1992; Nijman, Dautzenberg, Merckelbach, Jung, Wessel, & à Campo, 1999). In a review of several studies, Pattison and Kahan (1983) reported the rate of self-injury to be as high as 40%, especially in the institutionalized youth population. Prevalence rates are also known to be as high as 30% in correctional settings and 52.9% in psychiatric hospitals (Brooker, Repper, Beverly, Ferriter, & Brewer, 2003; Grey, McGleish, Timmons, MacCulloch, & Snowden, 2003).

When research began to focus on self-injury in the general population, Favazza and Conterio (1988) reported a prevalence rate of 750 for every 100,000 people. Klonsky's (2011) more recent survey found rates ranging from 6% to 19%. Recent reviews of the literature have highlighted a disturbing trend: self-injurious behaviour has been increasing over the past few decades (Walsh, 2006). For example, in one study with a community sample, 46.5% of the participants reported recent self-injury (Lloyd-Richardson et al., 2007).

Gender is another factor to consider in prevalence rates. Typically, self-injury is more often seen in females than in males. An exception is with forensic samples where the behaviour is relatively equal between genders, or sometimes greater in males (e.g., Shea & Shea, 1991). Possible reasons for the female gender bias include the high rate of self-injury in borderline personality disorder, which is

typically diagnosed in females (DSM-IV-TR, 2000). Another reason is that women are more likely to seek treatment than are men (Addis & Mahalik, 2003). However, the recent research with general population samples has shown an increase in the number of males reporting self-injury, suggesting rates of the behaviour is comparable between genders (e.g., Claes, Vandereycken, & Vertommen, 2007; Gratz & Chapman, 2007; Tyler, Whitbeck, Hoyt, & Johnson, 2003). Further research that includes male self-injurers is needed in order to understand risk factors and whether or not self-injury serves similar functions in males and females.

**Risk factors.** Research studies have identified several salient risk factors for self-injury. Childhood sexual abuse has consistently been related to and predictive of the development of self-injury (e.g., Low, Jones, MacLeod, Power, & Duggan, 2000; van der Kolk, Perry, and Herman, 1991; Zlotnick et al., 1999). In the same vein, physical abuse is strongly related to self-injury (e.g., Gratz & Chapman, 2007; Simpson & Porter, 1981). Although not studied to the same extent that childhood sexual and physical abuse have been, childhood neglect as well as separation and loss during childhood is also linked to self-injury (e.g., Gratz, Conrad, & Roemer, 2002; Marchetto, 2006). Part of the long term consequences of a traumatic childhood is that it can affect an individual's ability to regulate their emotions, their behaviours, and their sense of self, thereby increasing the likelihood of engaging in self-injury as a way to regain self-regulation (Kimball, 2004; van der Kolk & Fisler, 1994).

Another risk factor that has deleterious effects on emotion regulation and can potentially increase the risk for self-injury is alexithymia. Alexithymia is the inability to put words to emotions and one way to regulate emotions is to be able to verbally express feelings. Zlotnick et al. (1999) examined the role of alexithymia and self-injury and found a significant relationship. This suggests that individuals who cannot verbally express their feelings may be at a heightened risk to find other means of expression such as self-injury.

A risk factor that often stems from an abuse history or trauma is dissociation (Low et al., 2000). Dissociation can result in a distorted sense of self or the world. An individual may feel numb or as if the world around them is not real (Bernstein & Putnam, 1986). Self-injury can be used as a way to end these uncomfortable feelings or conversely, to induce dissociation as a form of avoidance (e.g., Briere & Gil, 1998).

A poor parental attachment relationship is another risk factor that has been linked to self-injury (Fujimori, et al., 2011; Gratz, 2003; Marchetto, 2006). Poor attachment to caregivers often stems from childhood trauma. The effects can be detrimental as it is within these formative relationships that individuals learn important skills such as emotion regulation as well as a general sense of themselves and the world around them. Another risk factor for self-injury includes impulsivity. Self-injury has been at times conceptualized as a disorder of impulse control as many individuals that engage in this behaviour tend to do it without much planning (Favazza & Simeon, 1995).

Biological vulnerabilities may also constitute important distal risk factors for self-injury. This idea is based on Linehan's Biosocial Theory (1993) that frames behaviour such as self-injury as attempts to regulate emotion. The premise of the theory is that some individuals have a biological vulnerability to experience heightened emotions and to be reactive to emotional states while at the same time, not having the skills to regulate their emotions (Gratz, 2003; Linehan, 1993). Biological vulnerabilities also interact with long-term invalidating environmental situations such as abuse or neglectful parenting, making the ability to regulate and tolerate emotions even more difficult.

As can be seen, there are several risk factors for self-injury. Adding to the complicated picture is that an individual may have more than one risk factor that is related to self-injury. Research on risk factors has helped explain how the behaviour may have developed, however; in reference to treatment, it is also important to be aware of the functions that the behaviour serves.

**Functions of self-injury.** Several functions of self-injury have been argued. Early explanations of the behaviour were given from a psychoanalytic framework and typically involved case studies of young women (e.g. Siomopoulos, 1974). Menninger (1935) presented a detailed treatise on self-injury that framed the behaviour as an aggressive act of punishment toward the self. Often the behaviour was symbolic and had a sexual element to it (i.e., punishment for masturbation). Important in Menninger's work was his observation that the behaviour lacked suicidal intent. Other work identified self-injury as a way to control tension and suppress conflicts (Grunebaum & Lerman, 1967; Pao, 1969).

Early functional explanations stressed the lack of secure object relations (i.e., parent-figure) in self-injurers, which resulted in anxiety and panic triggered by perceived or real separation (Asch, 1971). Overall, early explanations of the behaviour were born out of a psychoanalytic perspective that emphasized self-injury as a way to cope with aggressive and sexual impulses as well as to cope with the anxiety and depression that was evoked from separation due to a lack of individuation from a mother-figure (e.g., Pao, 1969).

More recent reviews of the functions of self-injury go beyond psychoanalytic explanations. Summaries of the extant literature have derived six to seven main functional models of self-injury (Messer & Fremouw, 2008; Nock, 2010; Suyemoto, 1998). The first of these is an environmental model or interpersonal/systemic model that explains the behaviour as serving as an interaction between the self-injurer and the environment. The behaviour continues due to its reinforcing properties. This model describes self-injury as developing within a family system, often where there is abuse, and pain becomes paired with nurturance or the attention that is received in response to the behaviour. Overall, this model uses behavioural theory, specifically reinforcement, to explain how self-injury is acquired and reinforced. The second model is based on an analysis of drives (sexual/sadomasochism, suicide), which are based on aspects of psychoanalytic theory that were briefly discussed above. In these models, self-injury represents expression of the drives related to life, death (e.g., countering suicidal urges), and sexual urges. The third model describes self-injury as a way to regulate affect. Self-injury regulates affect by providing an outlet of expression

and a sense of control over what seems to be at first, uncontrollable emotions (Suyemoto, 1998). The fourth model describes self-injury as a mechanism to end dissociative states such as depersonalization (Messer & Fremouw, 2008). The pain and blood involved in self-injury often serves to re-unite the dissociated aspects of the self and regain a sense of integration. The interpersonal model is the fifth model that defines self-injury as a way to mark boundaries for the self, thus separating the self from others when there is fear of engulfment or a loss of sense of self (Suyemoto, 1998). Lastly, the physiological/biological model views self-injury as a response to abnormalities in serotonin transmitters or a method to reduce physiological tension (Messer & Fremouw, 2008).

Other functions that have been discussed include interpersonal influence, self-punishment, and sensation-seeking (Klonsky, 2007). As can be seen from this review, self-injury can serve a multitude of functions. A behaviour that is done for so many reasons can make treatment challenging: the function(s) need to be identified and understood and several interventions may be required, though they often initially lack the quick relief that self-injury provides.

Various researchers have moved beyond theory development and have focused on building empirical support for some of the hypothesized functions of self-injury. Nock and Prinstein (2004, 2005) tested and found support for their behavioural model of self-injury that encompasses environmental, interpersonal, and emotion regulation components. According to their model, self-injury is used for social reinforcement (e.g., to avoid doing something aversive or done for attention) and for automatic reinforcement (i.e., the removal of aversive emotions

or to feel something such as pain). Ross and Heath (2003) also tested an anxiety and hostility model of self-injury within an adolescent sample. Their results revealed that self-injury was used to cope with feelings of anxiety and hostility. Essentially these two models appear to fall under the broad umbrella of the affect regulation model of self-injury.

Indeed, numerous studies have found support for aspects of the affect regulation model of self-injury in both clinical and non-clinical samples (e.g., Briere & Gil, 1998; Brown et al., 2002; Heath, Toste, Nedcheva, & Charlebois, 2008; Klonsky, 2009; Laye-Gindhu & Schonert-Reichl, 2005; Lloyd-Richardson et al., 2007; Nixon et al., 2002). Despite the wide array of functional models that have been presented in the literature, much of the empirical results support a clear function: individuals harm themselves in order to relieve the pain associated with overwhelming, often negative, affect that may be derived from numerous sources. At the present, this appears to be the functional model that best fits the available data. A great deal of current research is aimed at developing a greater understanding and refinement of this process. Unfortunately, the research in this area requires more careful organization and until recently has lacked a unifying theory.

**Experiential avoidance model.** The Experiential Avoidance Model of self-injury (Chapman, Gratz, & Brown, 2006) acknowledges the common ground among the extant models and theories of self-injury while at the same time acting as a springboard for future research directed at the affective component of self-injury. According to Chapman et al. (2006) there is a fundamental consensus

between existing theoretical models that self-injury is used for emotional control, often in the form of regulation, escape, or management of emotions. The model is behaviourally based in that individuals will use self-injury to escape (i.e., prevent punishment) or end distressing affective states (i.e., negative reinforcement).

Chapman et al. (2006) state that after escaping aversive emotional states through the use of self-injury, the behaviour becomes negatively reinforcing and over time becomes an automatic response triggered within an individual by an event that evokes strong negative affect. Individuals engaging in self-injury as a way to avoid emotional experiences are also expected to use various other avoidance response tendencies such as non-acceptance and thought suppression (Chapman et al. 2006).

Some recent empirical research supports this claim. For example, Andover, Pepper, and Gibb (2007) found that self-injuring college students compared to a control group were more likely to use avoidant coping strategies. Cheavens and Heiy (2011) found that avoidant coping styles were related to symptoms of major depressive disorder and borderline personality disorder symptoms. Both of these symptom clusters are commonly seen in those that self-injure, suggesting that their findings could be support for experiential avoidance tendencies in self-injurers. Chapman et al. (2005) also examined experiential avoidance in a female inmate sample and reported that those with high rates of self-injury had high scores on measures of experiential avoidance. Thought suppression, a form of experiential avoidance, was strongly linked to the rate of self-injury for the inmate sample.

Experiential avoidance has been shown to be linked to a variety of problem behaviours, including self-injury (Kingston, Clarke, & Remington, 2010). Weierich and Nock (2008) examined the role of childhood abuse and posttraumatic stress symptoms in self-injury. They found that avoidance strategies in addition to difficulty feeling positive emotions mediated the relationship between childhood abuse and self-injury. Hulbert and Thomas (2010) tested the EAM model in a sample of patients with borderline personality disorder and found partial support for the model in that the frequency of self-injury was predicted by motivations to be relieved of negative emotions. Despite these promising findings, there are still few studies that have tested the EAM in individuals that self-injure. Furthermore, many of these studies have used predominantly clinical samples.

In their discussion of the Experiential Avoidance Model, Chapman, Gratz, and Brown (2006) provide a detailed review of various factors that increase the likelihood of the use of experiential avoidance tendencies. These include psychiatric disorders such as borderline personality, posttraumatic stress, dissociative disorders, and depression. All of these disorders have been linked to self-injury (Hilt, Cha, & Nolen-Hoeksema, 2008; Kemperman, Russ, & Shearin, 1997; Langbeh & Pfohl, 1992; van der Kolk, 1996; Weierich & Nock, 2008). They also suggest that individuals who experience greater emotional intensity or sensitivity likely have more difficulty controlling or regulating their emotions, therefore making the use of self-injury more likely as a way to avoid emotion and gain control over their internal state. Chapman et al. (2006) also claim that certain

situations may trigger aversive states of self-awareness and emotions (i.e., shame) that the person becomes focused on relieving. However, few studies have examined the antecedents that may be involved in creating aversive emotional states that lead to self-injury. There are some findings, primarily using adolescents, which have examined interpersonal relationships (i.e., peer and parent) as situational factors that may be related to self-injury. For example, Yates, Tracy and Luthar (2008) found that the quality of the caregiver environment, particularly the amount of perceived parental criticism was related to self-injury especially for adolescent males. Distressed peer relationships as well as parental relationships have also been demonstrated to be important situational factors in self-injury (e.g., Adrian, Zeman, Erdley, Lisa & Sim, 2011; Jutengren, Kerr & Stattin, 2011).

The Experiential Avoidance Model of self-injury suggests a number of plausible ideas that require research and a stronger empirical foundation. Most relevant to the present study is the hypothesis that self-injury is done to escape from distressing negative affect. A second area of investigation is to examine how attachment patterns may play an important role in affect intensity and affect regulation within the EAM. What follows is an overview of experiential avoidance and other important factors that may play a role in this model such as attachment, affect intensity, and affect regulation.

### **Experiential Avoidance**

**Definition.** The notion of avoiding emotion-laden material is not new. Freud introduced this idea with the concept of repression in which emotional

material is held by the unconscious and kept from conscious awareness in order to quell neurotic anxiety related to forbidden sexual and aggressive desires (Freud, 1923). While Freud offered a psychoanalytic perspective, avoiding emotional experiences is not unique to this theoretical branch. The phenomenon has sometimes been referred to as emotional avoidance or emotional inhibition (e.g., Krause et al., 2003; Salters-Pedneault, Tull, & Roemer, 2004), in which the goal is the avoidance of aversive emotions. While this may occur at unconscious level as in the case of repression, it is more often conceptualized as a conscious action, or a suppression of emotional experiences. A generally accepted definition for experiential avoidance is:

the phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences (e.g., bodily sensations, emotions, thoughts, memories, behavioural predispositions) and takes steps to alter the form or frequency of these events and the contexts that occasion them. (Hayes et al., 1996, p. 1154).

Experiential avoidance is recognized as a source of psychological difficulty by many theoretical perspectives in that unacknowledged or unprocessed emotional material continues to exert its negative effects on the individual, often with increased strength (Fosha, 2000).

**Experiential avoidance and psychopathology.** Research on experiential avoidance has focused mainly on anxiety disorders. Avoiding experiential material is common in posttraumatic stress disorder. Avoidance is also related to dissociative processes. Dissociation typically occurs during a traumatic

experience where the overwhelming elements of the trauma (e.g., fear, horror), are separated from the normal stream of consciousness. These separated aspects can return in the forms of intrusive flashbacks, nightmares, overwhelming bouts of emotions, and destructive behaviour such as self-injury (Chu, 1991). These dissociated aspects of the trauma often serve as material that individuals try to avoid through behavioural avoidance or thought suppression in order to prevent the arousal of aversive affect (Salters-Pedneault et al., 2004). Unfortunately, these coping mechanisms are counterproductive and tend to increase symptoms (Roemer & Salters, 2004).

In addition to posttraumatic stress disorder, strong support has also been found for the role of experiential avoidance in specific phobias and panic disorder. Not only is behavioural avoidance associated with these disorders but there is also evidence that emotions and bodily sensations associated with anxiety or panic attacks (i.e., fear, fear of loss of control) become feared (Williams, Chambless & Ahrens, 1997). Other studies have found support for the use of experiential avoidance tendencies in generalized anxiety disorder (e.g., Startup & Davey, 2001) and obsessive-compulsive disorder (Hayes, et al., 1996).

In addition to anxiety disorders, it has been demonstrated that experiential avoidance is related to borderline personality disorder and general indices of psychological distress such as depression and anxiety symptoms (Krause et al., 2003). According to Hayes et al., (1996), the behaviours associated with borderline personality disorder (impulsiveness, self-harming behaviour [promiscuity, drug and alcohol use], and suicide attempts) can all be viewed as

methods to avoid negative arousal. All of these areas have been associated with self-injury, for example posttraumatic stress disorder (Zlotnick et al., 1999), dissociative disorders (Coons & Milstein, 1990), borderline personality disorder (Paris, 2005), and symptoms of depression and anxiety (Nixon, Cloutier, & Aggarwal, 2002; Ross & Heath, 2003).

The development of experiential avoidance tendencies has been theorized to be behavioral in nature, taking place through learned associations and avoidance practices (e.g., Hayes, et al, 1996; Mowrer, 1960). Situations that lend to learning this behaviour seem to be rooted in childhood. Reddy, Pickett, and Orcutt (2006) found that experiential avoidance was greater in those subjects that reported a history of childhood psychological abuse than subjects that did not have an abuse history. Individuals with greater levels of experiential avoidance also showed higher levels of current mental health symptoms (i.e., depression and anxiety). Experiential avoidance has also been identified as a mediator in the relationship between childhood sexual abuse and psychological distress (Marx & Sloan, 2002). Similarly, self-injury has also been related to both childhood psychological and sexual abuse (Gratz, 2006). Considering these findings connected to detrimental childhood events, it is plausible that an underlying vulnerability to experiential avoidance in self-injurers may be caregiver attachment relationships and their impact on the development of the self, particularly with respect to affect intensity and affect regulation.

## **Attachment**

**Overview of attachment theory.** Over the past several years, attachment has gradually become more of a focal point in the self-injury literature, although greater understanding is necessary. Before delving further into this area, it is helpful to briefly review attachment theory and research. Attachment theory was introduced by John Bowlby (1969) to explain the importance of the attachment behavioural system in an individual's development. According to Bowlby, the attachment system is an innate structure that functions to ensure survival by evoking behaviours to help maintain proximity to other individuals, usually those in a care-giving role. In order to maintain proximity, there must be an attachment figure available, and a willingness of that figure to be responsive to the individual's needs (Mikulincer & Florian, 2004). For example, if a baby is crying in an attempt to seek comfort and reduce the distress of being alone, the caregiver must not only hear the cry, but also be willing to provide a soothing experience for the baby.

As summarized by Mikulincer, Shaver, and Pereg (2003), there are three functions served by an attachment figure. The first one is proximity maintenance, meaning that the figure is sought out and is available to be close to when the individual is experiencing distress. This closeness provides comfort and security. When the attachment figure is not nearby, then distress or discomfort results. The second function is for the attachment figure to provide a safe haven. This safe haven is experienced emotionally and physically. So in times of need or distress the attachment figure will be able to provide a sense of safety and dispel distress.

The final function of the attachment figure is to provide a secure base. A secure base offers an anchoring point from which the individual can feel secure venturing away from and exploring the world independently, knowing that the base is always there upon return. The ability to engage in safe exploration contributes to healthy self-development and awareness of personal abilities (Mikulincer & Shaver, 2007).

A common thread through each of the three functions is affect regulation. The attachment system provides ways for an individual to alleviate emotional distress through a relationship with another (Mikulincer & Florian, 2004). Eventually, these interactions and experiences with attachment figures become internalized and represent how we view our self, others, and the world (Bowlby, 1969). Depending on the interaction experiences that childhood has provided, an individual can either be securely or insecurely (avoidant or anxious/ambivalent) attached. According to Bowlby these attachment styles are fairly fixed throughout life and will be activated in close and romantic adult relationships.

Much of the research that supports Bowlby's attachment styles was conducted by Ainsworth with infants in what is commonly known as the Infant Strange Situation, a laboratory based experiment with infants and their caregivers (Ainsworth, Blehar, Waters, & Wall, 1978). Infants' stress reactions to the separation from their parents were coded as representing one of four attachment styles: secure, insecure avoidant, insecure anxious/ambivalent, and insecure disorganized. Securely attached infants interactively explored the laboratory while their mothers were present but ceased when the mothers left the room. Some of

the infants became distressed when they could not see their mothers and were left with a stranger in the room. However, upon the mother's return to the laboratory the securely attached infants would seek her out and be easily consoled, leading to continued exploration of the room.

The infants that were coded as insecure avoidant would explore the room but would not interact with their mother. They would sometimes interact more with the stranger than with the parent. Little, if any distress was noted when the parent left the room. Upon the return of the parent, the infants were observed to ignore the parent. As for the insecure anxious/ambivalent infant, these children tended not to want to leave the mother and therefore did not explore the room. When the mother would leave the room, these infants would show considerable distress. With the mother's return the infant would approach the parent for comfort but often displayed a conflicting pattern of wanting to be consoled while at the same time pulling away.

Finally, the classification of disorganized attachment was used when the behaviour of some infants did not fit within the other three categories. Disorganized attachment was seen less often but is marked by odd or confusing behaviour on the part of the child. In the Strange Situation sometimes a child would approach the parent, but at the same time exhibit behaviours related to emotions of fear (e.g., freezing). Disorganized attachment patterns are associated with parents that have their own unresolved trauma or attachment insecurities (Main & Hesse, 1990).

The work of Ainsworth, and later Main, resulted in comprehensive descriptions of attachment styles. Despite the many attachment styles, they are generally grouped into secure and insecure styles. Insecure includes the avoidant style and the ambivalent style, which is often labelled as anxious/ambivalent attachment.

**Attachment styles.** As previously stated, the same attachment patterns noted in infancy typically continue to have effects in adulthood. The infant attachment experience with caregivers sets the stage for how the individual interprets self and others, particularly in the context of relationships (Thompson, 1999). According to Bowlby (1980, 1988), securely attached individuals tend to seek out and maintain supportive relationships. Secure individuals are able to be more objective and coherent around issues related to relationships and tend to be more trusting of others (Main, Kaplan, & Cassidy, 1985). They are able to tolerate aversive emotions and find constructive methods to regulate their emotions (Mikulincer & Florian, 2004).

On the other hand, insecurely attached individuals tend to be dependent on others or to not seek out support as they are mistrustful of others' ability to meet their needs (Bowlby, 1980, 1988). Their relationship narratives tend to be incoherent, suggesting unresolved attachment issues from childhood (Siegel, 1999). Avoidant attached adults will behave in ways that prevent the engagement of the attachment system and reduces the experience of distress. This may include behaviour such as rejecting or distancing themselves from others along with maintaining a strong sense of autonomy and self-reliance (Mikulincer & Florian,

2004). Avoidant individuals will also suppress or disown parts of themselves that may trigger the attachment system (Mikulincer & Florian, 2004). The anxious/ambivalent attached individuals activate their attachment systems in order to elicit support or care (Mikulincer & Florian, 2004). This activation creates high levels of affect and a preoccupation with attachment relationships, which can actually reduce the likelihood of gaining support (Main, et al., 1985; Mikulincer & Florian, 2004).

It appears that the difference between the three main attachment types is that securely attached individuals, through supportive and adequate care-giving, have internalized a secure base and learned effective emotion regulation techniques, whereas the insecurely attached lack a secure safe base and often, emotion dysregulation results. In the avoidantly attached, the lack of a safe base leads to a deactivation of the attachment system, whereas in the case of anxious/ambivalent attachment, there is a hyperactivation of the system in an attempt to find a secure base.

**Attachment and emotions.** It is not surprising that insecurely attached individuals are at a greater risk for difficulties in regulating their level of negative emotion. The avoidant attached individual suppresses emotions and distances themselves from distress related cues (Mikulincer & Florian, 2004). While disengagement may provide short-term respite, it is not an effective problem-focused coping strategy. In contrast, the anxious/ambivalently attached individual in times of distress tends to focus on the distress and becomes easily overwhelmed

with emotions and lacks an effective way to return to a tolerable state (Mikulincer & Florian, 2004).

The degree to which emotional events will be accepted and tolerated is shaped by a child's attachment experience. Typically, a secure child is raised in an environment where caregivers are observed discussing feelings. The discussions between parent and child about feelings are normal and an expected part of life. Developmentally, this supports a comfort with emotional thought and expression (Fonagy, Gergely, Jurist, & Target, 2002). Those with avoidant and anxious/ambivalent attachment patterns experience a different caregiving environment. According to Goldberg (2000), avoidantly attached children are taught by their caregivers that emotion is not something openly expressed, particularly if it is a negatively valenced emotion. Displays of emotion can be downplayed by the parent to reinforce this message and in times of need and support, a child in this environment will have difficulty meeting his or her needs through the healthy experience and expression of emotions.

On the other hand, anxious/ambivalent attached children have been taught that emotional expression may or may not elicit caregiver support, although expression of intense negative emotion often does result in attention from the caregiver. Though these are examples of childhood attachment situations, attachment styles continue to exert their effects on emotions throughout the lifespan and can increase one's vulnerability to experience difficulty with emotions generally and more specifically, to have problems with emotional

expression and poor coping (Mikulincer & Shaver, 2007). This can increase the risk for developing psychopathology.

**Attachment and psychopathology.** The insecure attachment styles (avoidant and anxious/ambivalent) increase an individual's likelihood of developing psychopathology. The anxious/ambivalent individuals tend to be more anxious and emotionally reactive to stressors, which is further compounded by an inability to engage in effective coping (Bradley, 2003; Mikulincer & Shaver, 2007). Cassidy and Kobak (1988) reported that avoidant attachment is related to suppression and avoidance of distressing emotion. Furthermore avoidant individuals did not draw on social support as a way of coping but preferred to be self-reliant. This fierce independence often creates a false sense of self-efficacy and when coupled with self-criticism, can lead to depression and the maintenance of perfectionistic standards (Zuroff & Fitzpatrick, 1995). Avoidant individuals also generate strong emotions of anger that they outwardly suppress, though they continue to express physiologically (Mikulincer, 1998).

While anger seems to be the dominant emotion for the avoidantly attached, anxiety is often reported in anxious/ambivalent attached individuals (Mikulincer & Shaver, 2007). These individuals tend to experience worry and rumination, and engage in emotion-focused coping as opposed to problem-focused strategies (Mikulincer & Florian, 1998). In contrast to the avoidant attached individual who attempts to be self-reliant, the anxious/ambivalent attached individual is often excessively dependent on social support (i.e.,

relationships) and in times when this cannot be secured, depression can be experienced (Mikulincer & Shaver, 2007).

While avoidant and anxious/ambivalent attached individuals may exhibit different behavioural patterns, one being excessively independent and the other excessively dependent on social relationships, both have high levels of emotions that are difficult to regulate. To support this, research has found that both avoidant and anxious/ambivalent attached individuals have been associated with more severe forms of psychopathology such as posttraumatic stress disorder (e.g., Mikulincer, Florian, & Weller, 1993), eating disorders (e.g., Ward, Ramsay, & Treasure, 2000), and personality disorders (Nickell, Waudby, & Trull, 2002).

**Attachment and self-injury.** In addition to general indices of psychopathology, attachment is also implicated in self-injury. Attachment style, particularly as it relates to caregivers, has been identified as a predictor of self-injury. Gratz, Conrad, and Roemer (2002) used a measure of parental attachment in their study on risk factors for self-injury in college students. Their findings demonstrated a significant predictive relationship between paternal insecure attachment, paternal emotional neglect, and self-injury in their children. The findings did show a significant relationship between insecure maternal attachments and self-injury, though this had no predictive value. Attachment literature often points to the importance of maternal relationships, though these findings suggest paternal relationships are equally important in the context of self-injury. In a more recent study by Hallab and Covic (2010) the quality of attachment to both parents was found to be related to self-injury; however, as in

the Gratz et al.'s study, paternal attachment was a stronger predictor. In contrast, Fung (2007) did not find a difference between attachment to mother or father and reported that low parental care was related to anxious/ambivalent attachment in those that self-injured. Heath et al., (2008) did not find any statistically significant differences on a measure of early attachment between individuals that self-injured and those that did not.

In a similar study, Marchetto (2006) examined self-injury in participants with and without borderline personality disorder (BPD). The parental bonding instrument (Parker, Tupling, & Brown, 1979) is designed to measure participants' reports of parental overprotection and parental care, aspects of parental involvement related to attachment. Participants without BPD who self-injured reported higher scores than a non-BPD comparison group that did not self-injure on maternal and paternal overprotection, as well as reported lower maternal care. Interestingly, there were no significant differences for the self-injuring BPD group and its BPD comparison group in these areas.

Only a few studies have examined attachment from the perspective of adult attachment style and self-injury. Gormley and McNeil (2010) reported that psychiatric patients who self-injured had greater attachment anxiety than those patients without a history of self-injury. Kimball and Diddams (2007) assessed adult attachment and found that insecure attachment styles were mediated by affect regulation to predict self-injury. These studies demonstrate that adult attachment style also plays an important role in understanding self-injury.

Taken together, these studies demonstrate that attachment plays an important role in self-injury, yet there remains a dearth of research in this area within the self-injury literature. The research that exists demonstrates significant associations between insecure attachment style and self-injury (e.g., Fung, 2008; Kimball & Diddams, 2007). There are various studies on self-injury that have examined factors associated with insecure attachment styles but have not directly looked at attachment. These associated factors include early loss of a parent or disrupted parental care (Bach-y-rita, 1974; van der Kolk, Perry, & Herman, 1991), sexual, physical, and emotional abuse or neglect (Gratz, 2003; Low, Jones, MacLeod, Power, & Duggan, 2000; Simpson & Porter, 1981; Tyler, Whitbeck, Hoyt, & Johnson, 2003), poor coping response such as avoidance (Haines & Williams, 2003), and difficulties with emotional regulation and expression (van der Kolk & Fisler, 1994; Zlotnick et al., 1996). More research in this area would help to better define the role of attachment in self-injury as well as bring greater understanding to the function of the behaviour and its associated variables.

**Attachment style and experiential avoidance.** As discussed, attachment experiences influence an individual's ability to regulate emotions. These experiences in conjunction with temperament also affect the intensity and type of emotions (i.e., affect intensity). For example, anxious/ambivalent attached individuals tend to experience a high intensity of negative emotions, whereas avoidant individuals engage in deactivating strategies, such as suppression, to initially reduce affect intensity (Mikulincer, Shaver, & Pereg, 2003).

It has been found that individuals with tendencies towards experiencing high affect intensity have difficulty with emotional regulation in that they tend to engage in emotion-focused coping strategies, often focusing on the negative affect, and thus increasing distress and problems with coping (Flett, Blankstein, & Obertynski, 1996). It has also been demonstrated that deficits in emotional regulation capabilities regardless of affect intensity create difficulties in coping as well (Yen, Zlotnick, & Costello, 2002). This supports the possibility that although avoidant individuals use deactivating strategies, thus reducing outward displays of affect, they are still lacking effective emotion regulation skills to cope with their emotions and continue to be susceptible to distress when emotions re-emerge from a suppressed state.

To date, no studies have examined attachment and experiential avoidance together in those that self-injure. Gaining a better understanding of the role of attachment could add to current theoretical conceptualizations of the development of self-injury. For example, there has been much discussion of temperamental factors that influence the development of self-injurious behaviours (Chapman, Gratz, & Brown, 2006; Linehan, 1993). Attachment and affect regulating abilities may interact with other personality traits or life experiences (e.g., abuse) to create a tendency to engage in self-injury as a way of coping with overwhelming emotions when other strategies fail. In the case of anxious/ambivalent attachment, experiential avoidance would be used as a way to cope with negative affect that is high and perceived as overwhelming. Whereas those identified as having avoidant

attachment would use experiential avoidance as a way of calming themselves in times of stress.

### **Affect Intensity and Affect Regulation in Self-Injury**

It would appear that self-injury is intricately linked with affect intensity and affect regulation. Affect intensity can be defined as “stable individual differences in the strength with which individuals experience their emotions” (Larsen & Diener, 1987, p.2). Affect regulation is the ability to modulate both high and negative arousal states and is a fundamental aspect of self-organization (Siegel, 1999). As discussed earlier, both affect intensity and affect regulation are shaped by the attachment process.

Affect intensity and affect regulation have been identified as important factors in the development and maintenance of self-injury, both theoretically and empirically. Early case reports often gave descriptions of what could be interpreted as states of high affect. Grunebaum and Klerman (1967) spoke of self-injurers as being “overwhelmed by inner emotional tensions” (p. 528). In an early review of self-injury, Winchel and Stanley (1991) state that intense or mounting anxiety was a common factor in those that self-injured. Linehan’s (1993) biosocial theory clearly identifies the importance of affect intensity and affect regulation in understanding those with borderline personality disorder that engage in self-injury.

Until recently, much of what is known about affect intensity and self-injury has been theoretical or observed only in case studies. Gratz (2003, 2006) has been instrumental in empirically testing this construct in self-injury. Gratz

(2006) examined risk factors for self-injury in an all-female college sample and found that women who self-injured had lower positive affect and higher levels of intense negative affect than those who did not self-injure. The results also revealed that women who self-injured in comparison to those who did not, had higher scores on measures of emotional inexpressivity. This suggests that self-injuring women in this sample had greater levels of intense negative affect, which they may have been unable or unwilling to express, thus reducing their ability to cope effectively. Interestingly, the reverse has been found in males. Gratz and Chapman (2007) reported that affect intensity was negatively associated with self-injury in a sample of male undergraduates. This was a specific sample and unfortunately there are no other comparative studies that have separated males and females.

Having a propensity for high levels of affect intensity, particularly negative affect, would be expected to be challenging to regulate or control. Affect regulation models have been put forth as an explanation of self-injury (Messer & Fremouw, 2008; Suyemoto, 1998). Here, self-injury is seen as a way to cope with emotions that cannot otherwise be expressed or alleviated through other coping mechanisms. Various case reports and research studies support this model (e.g., Laye-Gindu & Schonert-Reichl, 2004; Lloyd-Richardson, et al., 2007; Nixon et al., 2002; Pao, 1969, Pattison & Kahan, 1983). Unfortunately, very few studies have examined affect regulation in conjunction with affect intensity or attachment, although there is strong evidence for affect regulation deficits in those that self-injure (e.g., Hulbert & Thomas, 2010; Health et al., 2008; Klonsky,

2009). Furthermore, types of affect, aside from depression, anxiety, or anger have received little attention. It is possible that self-focused emotions such as shame, hostility, guilt, and disgust may be especially aversive and difficult to regulate.

Thus far, it has been suggested that there are various factors in the possible development of experiential avoidance, resulting in the use of self-injury.

Attachment forms the foundation upon which the organization of the self and emotions are built. This includes tendencies towards experiencing heightened affect intensity and a deficit in skills that allow for successful regulation of those affects, particularly those of negative valence. Many of these topics have been covered in varying degrees in the existing research, though they have not been examined within the context of the Experiential Avoidance Model.

### **Rationale for the Proposed Study**

Despite an increase in research in the area of self-injury, there are many unanswered questions about this troubling behaviour. One of the central enduring mysteries about self-injury is the psychological function it serves. One promising model for enhancing understanding of the function this behaviour serves is the Experiential Avoidance Model (EAM; Chapman et al., 2006). Although the concept of experiential avoidance is not novel, the application of it to the area of self-injury is recent. In general, experiential avoidance has been shown to be relevant to other disorders (e.g., anxiety, depression, personality disorders) that are sometimes seen in those that self-injure. This suggests that experiential avoidance is important for understanding self-injury; however, less than a handful

of studies have tested this hypothesis. The main goal of this study was to test the Experiential Avoidance Model in a sample taken from a non-clinical population. A secondary goal included examining how specific variables, particularly adult attachment, help deepen our understanding of experiential avoidance.

This research was the first to examine experiential avoidance and attachment in self-injury within a community sample of male and female participants. The comparison between genders was an important factor, as the majority of past research has tended to focus on female inpatients. Only recently have research samples included males and this tends to be limited to undergraduate males. The information gained from this study could help to ascertain if our current knowledge about self-injury can be accurately applied to males as well as females who engage in this behaviour.

One of the tenets of the EAM is that in addition to learned behaviour (i.e., reinforcement and escape conditioning), biological and environmental underpinnings play an important role in understanding self-injury. A strong argument can be made for attachment being one of these antecedents. Several studies on self-injury have identified poor parental relationships as risk factors (e.g., Tyler, Witbeck, Hoyt & Johnson, 2003; van der Kolk, Perry, & Herman, 1991). Unfortunately, few studies on self-injury have examined insecure attachment styles that continue to exert effects beyond childhood. Understanding the role of attachment in self-injury may be useful for treatment for several reasons. Interpersonal interactions are often shaped by attachment styles and may be a source of stress that serves as an antecedent to engaging in self-injuring

behaviour. Intra and interpersonal relationship stresses in those that are insecurely attached can create emotional upheaval that for self-injurers may be difficult to regulate or verbally express. More optimistically, there is some research that suggests attachment patterns and thus emotion regulation can be changed when the necessary conditions are provided (e.g., Kirkpatrick & Hazen, 1991). The results of this study may help to clarify these possibilities.

This research also contributes to the clarification of affect intensity and affect regulation as factors related to self-injury. It has been suggested that the inability to regulate affect is the crucial element of self-injury, rather than affect intensity alone (Yen, et al., 2002). However, in addition to poor affect regulation, this research proposed that *specific types* of intense negative affect (e.g., shame, hostility, guilt) could pose a risk factor for engaging in experiential avoidance through self-injury. Knowing how these variables relate to self-injury is vital for treatment, as these are areas where interventions have been developed and could be used successfully when incorporated into treatment for self-injuring clients (e.g., Hayes & Stroschal, 2004; Linehan, 1993)

The test of the EAM and other related variables such as attachment provides greater understanding of the function and maintenance of self-injury. The findings were expected to also support the EAM as a unifying model of self-injury. This could help to focus future research on the functions of self-injury. Further, by adding to the understanding of self-injury in a non-clinical sample, better comparisons can be made to what is already known from studies with clinical samples to determine if self-injury presents differently between the two

groups. This is crucial as traditional risk factors and the clinical picture of self-injurers appears to be changing, though the reasons for this are not known (Walsh, 2006). This research also set out to provide much needed information on the gender differences in self-injury. Finally, it was expected that the results would highlight future avenues of research that could help to make self-injury more understandable and treatable.

### **Hypotheses**

In addition to information collected about the form and functions of self-injury, a number of hypotheses were tested through the use of univariate and multivariate procedures, and path analysis.

#### **Self-Injury and Group Membership**

- 1) That group membership (self-injury vs. no self-injury [i.e., control group]) would be predicted by insecure attachment styles (avoidant, anxious/ambivalent), negative affect, affect intensity, affect dysregulation, and experiential avoidance.

#### **Self-Injury and Gender**

- 2) That there would not be any statistically significant differences between male and females in frequency of self-injurious behaviour.

#### **Affect Dysegregation and Negative Emotions**

- 3) That there would be statistically significant positive associations between affect dysregulation and the negative emotions scales in those that self-injure.

- 4) That self-injurers would report experiencing more negative emotions such as fear, hostility, guilt, and sadness when compared to those that do not self-injure.

#### **Experiential Avoidance**

- 5) That as a test of the EAM, it was expected that the data would fit a path model where negative emotions, affect intensity, affect dysregulation, and experiential avoidance would be predictive of the frequency of self-injury.

#### **Experiential Avoidance and Attachment**

- 6) That the data would fit a path model where insecure attachment style predicts negative affect and affect intensity, which in turn predicts affect dysregulation that predicts experiential avoidance and thus the frequency of self-injury.

## Chapter 3 - Method

### Participants

Adult participants for both the self-injury and the control groups were recruited through locally distributed posters that advertised the research, internet message boards, and university listservs. A combined total of 368 participants gave their consent to participate; however, only two hundred and forty nine surveys were completed. The self-injury group was comprised of 132 participants and the control group totalled 117 participants. The self-injury group was open to individuals who had self-injured within the past two years. Self-injury was defined as the deliberate destruction of body tissue without suicidal intent. The self-injury could not be related to a suicide attempt. To be eligible for the control group, participants must not have self-injured or had any mental health diagnoses within the past five years. Individuals were not provided with any monetary incentive for participating in the study.

**Self-injury group.** A total of 201 participants provided electronic consent to participate in the research and were given access to the survey for the self-injury group. A total of sixty-nine participants either did not meet the study criteria or did not complete the study and were removed from subsequent analysis due to the large amount of missing data. One participant had an incomplete data set but this was completed through the use of mean substitution as less than one percent of data was missing (Hawthorne & Elliott, 2005). This resulted in a sample size of 132 participants with complete data sets.

Demographic information was collected from the participants. The mean age of the self-injury group participants was 24.70 years ( $SD = 7.09$ ). Ninety one percent of the sample was female. The ethnicities of the participants were: Caucasian (88.5%), Asian (3.1%), Hispanic (3.1%), Aboriginal (.8%), and Bi-racial (4.6%). Eighty one percent of respondents were from North America (81%), followed by international locations (19%). Participants were for the most part single (76.5%), followed by married (11.4%), common law (11.4%), divorced/separated (2.3%), and one non-response. Employment classifications were: 42% employed, 41.2% students, 11.5% unemployed and 4.6% identified as other (i.e., disability). One person did not provide employment information. The educational background of the sample was as follows: university degree (50.7%), college or technical degree (19.7%), high school (25.0%), or less than high school completion (4.5%). In terms of yearly income, 53.8% were making thirty thousand or less whereas 46.2% were above thirty thousand.

Approximately 68.2% of the sample identified as actively self-injuring, whereas 31.8% of the sample was not currently self-injuring but had done so within the past two years. When asked about the method of self-injury used, 46.2% of the sample indicated using three or more different methods. 25.8% have used two methods of self-injury. Cutting was used more often than burning, 26.5% and 1.5% respectively. The frequency of the behaviour for most participants was two to six times a week (38.3%) followed by two to three times a month (18.3%), once every two to six months (16.7%), daily (15%), once a week (6.7%) and once a month (5%). Most tried to hide their behaviour from others

(93.2%) and roughly 65% indicated that they did not have a ritual they followed prior to self-injuring. The majority of self-injurers reported that they did not require hospitalization or medical treatment for their injuries (59.1%). The mean age for starting to self-injure was 15.16 years ( $SD = 8.90$ ). Most participants reported that the longest period of abstinence from self-injurious behaviour at any given time was two to six months (33.1%). Twenty five percent of the sample had been able to stop for two years or longer. In addition to self-injuring, 80.3% of the sample reported engaging in self-destructive or risk taking behaviours. In order of frequency, these were: restricted eating, binging/purging, alcohol abuse, high-risk behaviour (unsafe sex, reckless driving), drug abuse, impulsive behaviour (i.e., hair pulling, shopping), and less frequent was self-poisoning without suicidal intent.

Information on mental health and treatment was also collected from the sample of self-injurers. Approximately 71% of the sample reported having been given a psychiatric diagnosis. It is important to recognize that the veracity of these diagnostic claims could not be determined due to the use of anonymous self-report methods. Responses were forced into categories and their frequencies summed. Comorbidity was often reported. The most common reported diagnoses were mood disorders (i.e., major depression, bi-polar), followed by borderline personality disorder, anxiety disorders (i.e., posttraumatic stress disorder, obsessive compulsive disorder, generalized anxiety disorder, social phobia), attention deficit-hyperactivity disorder, eating disorders (NOS), anorexia nervosa, bulimia nervosa, dissociative identity disorder, schizoaffective disorder, paranoid

schizophrenia, personality disorder (NOS), avoidant personality disorder, psychosis (NOS), tourettes, substance abuse, and delusional disorder (NOS). Roughly 87% of the sample indicated that they have received counselling in the past, although this was not always for the above noted diagnosis. Participants received counselling most frequently for mood disorders, self-injury, anxiety, and historical trauma. Over half of the sample (62%) indicated having a traumatic experience. The qualitative responses on the types of trauma experiences were forced into categories. Some of the participants listed multiple traumas. The most frequent trauma was physical abuse followed by a combination of physical, sexual, and emotional abuse. Several participants listed a sexual assault in conjunction with sexual, emotional, or physical abuse.

**Control Group.** One hundred sixty seven participants gave electronic consent to participate in the study and accessed the on-line survey for the control group. Eighteen participants exited the study without completing any of the survey. Thirty-three participants did not complete several of the questionnaires resulting in a large amount of missing data. Thirty-one of these cases were dropped from subsequent analysis; however, two sets of data were completed by using mean substitution, as the amount of data missing was minimal (i.e., less than 2%) This resulted in a total control group size of 117.

The mean age of the control group was 30.85 years ( $SD=10.16$ ). Eighty one percent of the control group was female. Similar to the self-injury group, the control group was predominantly Caucasian (83.2%), followed by Asian (9.7%), South Asian (3.5%) and Bi-racial (3.4%). The entire control group was from

North America. Over half of the control group was either single (38.5%) or married (38.5%). Responses indicated that 20.5% of participants were in common law relationships and 2.6% indicated they were divorced or separated. Fifty percent of the group were students, 46.6% were employed, and 3.4% were unemployed or did not report their status. The control group's educational attainment was: university degree (85.20%), college or technical school diploma (1.7%), high school (12.2%), and one person (.9%) indicated they had less than a high school education. Over half of the participants (66.9%) made over thirty thousand dollars annually. Participants were asked if they had ever in their life engaged in self-destructive or risk-taking behaviour that did not include self-injury; 17.1% indicated they had. The most frequent reported behaviours were substance abuse, followed by alcohol abuse, high-risk behaviour (i.e., reckless driving), and binge eating.

According to the responses, 31.6% of the control group indicated they had sought counselling in the past. The most frequently reported reason for seeking counselling was for relationship/family problems (58.3%), followed by stress (8.3%), anxiety (5.6%), disordered eating (5.6%), depression/mood (2.8%), historical trauma (2.85%), and other (16.7%). In contrast to the self-injury group, less than a quarter of the participants indicated they were trauma survivors (22.2%). Experiencing a physical assault or the threat of an assault (i.e., robbery) were the most frequently cited traumas (32%) followed by emotional and physical abuse (16%), sexual abuse (12%) and other (24%).

## Measures

**The attachment style questionnaire (ASQ; Feeney, Noller, & Hanrahan, 1994).** The ASQ is comprised of 40 statements that measure the adult attachment styles. The scale has both a five, and a three-factor structure. The five-factor structure is made up by the subscales: Confidence, Discomfort with Closeness, Need for Approval, Preoccupation with Relationships, and Relationships as Secondary. The three-factor structure was used for the present study. The three-factor structure consists of Security, Avoidance, and Anxiety. Security is derived from the Confidence subscale that has eight items such as, “ I am confident that other people will like and respect me”. Discomfort with Closeness (10 items) and Relationships as Secondary (7 items) make up the Avoidance subscale that includes items such as, “ I prefer to keep to myself”. The Anxiety factor is made up from the subscales of Need for Approval (7 items) and Preoccupation with Relationships (8 items). It includes items such as, “ I worry that I won’t measure up to other people”. The measure is designed to account for individual differences (i.e., no forced choice responses) and can be used with individuals who have little to no intimate relationship experience. Respondents indicate their agreement with each statement by choosing a response on a 6-point Likert scale; 1 (*totally disagree*) to 6 (*totally agree*).

The ASQ has shown convergent validity with other related attachment measures (e.g., Hazan & Shaver, 1987) and has demonstrated construct validity. Cronbach’s alpha was calculated for the three factors and ranged from .77 to .83 in the self-injury group. The control group had ranges from .81 to .86.

**Positive and negative affect schedule – expanded form (PANAS-X; Watson & Clark, 1994).** The PANAS-X is designed to measure a variety of positively and negatively valenced emotions experienced within the time frame of the past few weeks. The PANAS-X is made up of sixty items and produces two broad scales, positive and negative emotions. The Negative Affect scale is made up from ten items: afraid, scared, nervous, jittery, irritable, hostile, guilty, ashamed, upset, and distressed. The Positive Affect scale also is derived from ten items: active, alert, attentive, determined, enthusiastic, excited, inspired, interested, proud, and strong. There are 11 subscales for specific classes of emotions. Four were used in the analysis for this study: Fear, Sadness, Guilt, and Hostility. Fear is made up from the responses to afraid, scared, frightened, nervous, jittery, and shaky. Sadness has five items: sad, blue, downhearted, alone, and lonely. Guilt has six items: guilty, ashamed, blameworthy, angry at self, disgusted with self, dissatisfied with self. The Hostility subscale has six items: angry, hostile, irritable, scornful, disgusted, and loathing. Other subscales include Shyness, Fatigue, Surprise, Joviality, Self-Assurance, Attentiveness, and Serenity. Responses are along a Likert scale from 1 (*very slightly or not at all*) to 5 (*extremely*). The measure can be completed in approximately 10 minutes.

Norms were developed using both clinical and non-clinical male and female samples. The PANAS-X has been shown to be highly correlated with other measures of affect. Discriminant validity between the two general scales (i.e., positive and negative) has also been confirmed, as has the construct validity of the measure. The reliability of the two general scales are strong based on Cronbach's

coefficient, which in this study was at .88 for both groups on the positive affect and negative affect scales. The internal consistencies for the subscales completed by the self-injury group were Guilt (.91), Fear (.89), Sadness (.87), and Hostility (.84). Similar reliability was found within the control group: Guilt (.85), Fear (.86), Sadness (.89), and Hostility (.81).

**Affect intensity measure (AIM; Larsen & Diener, 1987).** The AIM is a 40-item scale designed to assess the intensity and frequency of a broad range of negative and positive emotions believed to be attributed to individual differences or temperament (Flett & Hewitt, 1995; Larsen & Diener, 1987; Tull, Jakupcak, McFadden, & Roemer, 2007). Items include, “I feel petty bad when I tell a lie”, and “When I’m happy I feel very energetic”. The response scale ranges from 1 (*never*) to 6 (*always*).

Studies on the AIM’s psychometric properties have shown stable test-retest reliabilities for 1, 2, and 3 month intervals that have been reported to be .80, .81, and .81 and have been further substantiated to be reliable in other studies (e.g., Larsen & Diener, 1987). Convergent validity has been established by comparing the relationship between the AIM and a daily affect measure in three studies. Results show moderate correlations between the two, .61, .52, and .49 (Larsen & Diener, 1987). Validity has also been established with parent and peer ratings with correlations ranging from .50 and .41 respectively. Construct validity of the measure has also been reported in several studies (e.g., Flett, Boase, McAndrews, Blankstein, Pliner, 1986; Larsen & Diener, 1987). In the present

study Cronbach's alpha was .88 for the self-injury group and .90 for the control group.

**Difficulties in emotion regulation scale (DERS; Gratz & Roemer, 2004).** The DERS is a 36-item measure designed to assess problems with emotion regulation. The choices of response range from 1 (*almost never*) to 5 (*almost always*). The DERS has six correlated factors related to areas associated with dysregulation of emotion. The six factors can be summed to give an overall continuous score on the DERS. Nonacceptance of Emotional Responses (Non-Acceptance) is a factor consisting of six items that relate to the dismissal or refusal of distressing emotions, "When I'm upset, I feel ashamed of myself for feeling that way". The factor of Goal-Directed Behaviour (Goals) has five items that relate to an individual's inability to engage in goal directed behaviour when upset, "When I'm upset, I have difficulty getting work done". The third factor, Control Difficulties (Impulse), is made up of six items that indicate problems with behavioural control when distressed, "When I'm upset, I feel out of control". The Lack of Emotional Awareness (Awareness) factor pertains to six items that measure an inability to notice or attend to emotions, "When I'm upset, I acknowledge my feelings (reverse coded)". Limited Access to Emotional Regulation Strategies (Strategies) is the fifth factor that includes eight items that assess the lack of coping resources needed to regulate emotions, "When I'm upset, it takes me longer to feel better". Lack of Emotional Clarity (Clarity) is the final factor that uses five items to tap into an individual's ability to be aware of emotional experiences, "I am confused about how I feel".

The DERS for the self-injury group had a high internal consistency with Cronbach's alpha calculated at .94. In comparison, the control group was .97. The reliability of individual scales for the self-injury group was acceptable: Strategies (.89), Goals (.87), Non-Acceptance (.93), Impulse (.88), Awareness (.77), and Clarity (.89). For the control group, the reliability for subscales was strong: Strategies (.91), Goals (.88), Non-Acceptance (.91), Impulse control (.88), Awareness (.81), and Clarity (.80). Construct validity has also been shown in past studies with correlations between the Negative Mood Regulation Scale (Catanzaro & Mearns, 1990) and with measures designed to assess emotional avoidance and emotional expressiveness (Gratz & Roemer, 2004). Gratz and Roemer have also demonstrated the predictive validity of the DERS.

### **Experiential Avoidance**

The construct of experiential avoidance was measured by combining facets of several scales. As there is no specific measure of experiential avoidance, the procedures used by Chapman, Specht, and Cellucci, (2005) were followed. Others have also used similar methods (e.g., Kingston, Clarke, & Remington, 2010; Reddy, Pickett, & Orcutt, 2006). Chapman et al., (2005) measured experiential avoidance by constructing an avoidance factor by using the Acceptance and Action Questionnaire (AAQ), the White Bear Suppression Inventory (WBSI), and avoidance coping items from the COPE. For the present study, the AAQ, WBSI, and items from the BriefCOPE were used. In total there were 52 items. The BriefCOPE contains the avoidance coping items that were similar to those used by Chapman et al. (2005). The participants used the

BriefCOPE over the full 60-item COPE to keep the number of questions in the survey to a minimum to prevent fatigue.

In the present study, the overall reliability of the experiential avoidance measure was acceptable for both the self-injury group (.87) and the control group (.91), despite only fair internal consistency within two of the scales. A more detailed description of each of these measures of experiential avoidance is provided below.

**White bear suppression inventory (WBSI; Wegner & Zanakos, 1994).**

The WBSI is a 15-item measure used to assess an individual's use of thought suppression, "There are things I prefer to not think about". The use of this strategy is thought to be a risk factor for various psychological disorders. Responses on the 15-items are arranged along a 5-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). The WBSI's internal reliability was strong for both the self-injury and control group respectively (Cronbach's alpha = .90 and .94). Divergent validity has been established by this measure's distinction from other measures of similar constructs. Convergent and predictive validity with measures related to obsession and compulsion, depression, and anxiety have also been reported.

**Acceptance and action questionnaire (AAQ; Hayes et al., 2004).** The AAQ is designed to measure the use of experiential avoidance behaviours in respondents from the general population. Items include, "If I could magically remove all the painful experiences I've had in my life, I would do so." The AAQ consists of nine items rated on 7-point scale ranging from 1 (*never true*) to 7 (*always true*). The AAQ was normed on both clinical and non-clinical samples.

For this study, the internal consistency for the self-injury and control groups was .66.

**BriefCOPE (Carver, 1997).** The BriefCOPE was derived from the larger COPE inventory measure and normed on individuals coping with the aftermath of Hurricane Andrew. The BriefCOPE contains 14 scales measured by twenty-eight items (two items for each subscale), though for the measurement of experiential avoidance, five scales were of relevance: Self-Distraction, Denial, Substance Use, Behavioral Disengagement, and Humour. Chapman, Specht, & Cellucci (2005) used the full COPE version in their study of experiential avoidance but extracted an avoidance factor that was comprised of the subscales for Denial, Mental Disengagement, Behavioural Disengagement, Substance Abuse, and Humour. The BriefCOPE has all of these subscales with the exception of Mental Disengagement; however, the Self-Distraction scale is derived from identical questions that are used in the full COPE's Mental Disengagement subscale. Overall, a total of ten items were combined for the purpose of contributing to the measure of experiential avoidance by creating an avoidance category. The internal reliability of the avoidance category was (.66) for both the self-injury and the control groups.

**Functional assessment of self-mutilation (FASM; Lloyd, Kelley, & Hope, 1997).** The FASM is a comprehensive survey measure designed to assess the frequency and function of self-injurious behaviour in the past year, though respondents are asked if they have *ever* engaged in the behaviour. To fit within

the parameters of this study, the instructions were changed so that respondents reported self-injuring behaviour that had occurred in the last two years.

The FASM contains two main areas of assessment. First reported is the frequency and type of self-injury along with a question about receiving medical treatment. This serves to measure the severity of the behaviour. Eleven types of self-injurious behaviours are listed along with an 'Other' category that allows for additional responses. Two factors have been identified from the list of self-injurious behaviours, the first of these is moderate/severe self-injury and the second is minor self-injury. The FASM also contains questions to assess suicidality, impulsivity, pain sensitivity, and onset of self-injuring behaviour. The secondary area of the FASM assesses the reasons or functions for self-injury. These reasons are drawn from the theoretical self-injury literature and interviews (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007) A list of 22 reasons and an 'Other' category are presented along with a 4 - point response scale, 0 (*never*) to 3 (*often*).

The FASM has also demonstrated concurrent validity with psychological symptoms (i.e., depression, hopelessness, suicidal ideation) that have been linked to self-injury (Guertin, Lloyd-Richardson, Nock & Prinstein, 2005).

### **Procedure**

Data collection was done primarily through the internet by way of posting on discussion boards, posting in newsletters, or posting calls for participants through listservs. Participants that met the stated criteria could contact the researcher or access a link to the on-line survey hosted by Survey Monkey. Upon

entering into the survey site, participants were provided with the description and purpose of the study, consent form, and researcher contact information. Once the participant indicated they met the research criteria and consented to participate, they were directed to complete demographic information and a set of measures. Completion time varied but it was estimated to take approximately 45 minutes. Participants were not required to provide a name or any identifying information. Participants were only able to access the survey once in order to prevent them from completing more than one set of measures. All the information kept on the survey provider's website was encrypted to provide additional security. Participants were given the option to receive a copy of the written findings once the research was complete.

### **Ethics**

The University of Alberta's ethics board approved this research. Participants were advised in the information sheet that the risks to participating in the study were minimal. It was possible that participants could experience mild discomfort while responding to questions about the nature of self-injury. Participants were encouraged to seek the services of mental health professionals or support services in their local area (i.e., hospital, doctor, crisis lines). They were also given the options to contact the researcher should they wish to debrief or ask for treatment resources. No concerns from the participants were received.

## Chapter 4 – Results

### Preliminary Data Analysis

Preliminary data analyses included ensuring the data were entered and coded correctly. This included ensuring reverse coding was completed on the data where necessary. Where possible, missing data were replaced through the use of mean substitution. The statistical software SPSS and AMOS were used for the data analyses.

The distribution of the data was assessed for normality. Outliers were addressed by assessing their impact on the data. Analyses were run with and without the outliers. The outliers' impact was negligible so they were retained in the data set. Data were further assessed for the assumptions of independence, linearity, homogeneity of variance, and multicollinearity. Multicollinearity was an issue in one statistical analysis and was addressed by removing one of the variables from the logistic regression equation. This removal was theoretically justified. A MANOVA Box's M test indicated the presence of heterogeneity. Box's M test for the homogeneity of variance is known to be unstable and  $F$  tests are typically robust with large sample sizes allowing the use of Wilks' Lambda (Field, 2005). The variance ratio of the dependent variables was also examined and was either below a 2:1 ratio or slightly over, not exceeding a 3:1 ratio. Aside from these concerns, the data met the assumptions required for data analysis.

In addition to univariate and multivariate techniques, path analysis was chosen to test and compare models as well as hypotheses. Path analysis is an extension of multiple regression. Path analysis as a statistical method can test for

multiple mediated (indirect) and direct relationships while at the same time assessing multiple dependent and independent variables (Stage & Carter, 2004).

### **Self-Injury and Gender**

There were only twelve males in the self-injury group. This number of participants did not allow for any gender comparisons, therefore gender-based hypotheses were left untested.

### **Forms and Functions of Self-Injury**

Participants from the self-injury group completed the Functional Assessment of Self-Mutilation (FASM) survey. The first group of questions in the survey assessed the frequency and type of self-injurious behaviour within the past year in addition to any medical treatment that was required due to self-injury. The majority of participants cited multiple forms of self-injury. Superficial cutting or carving the skin was the most frequent type of self-injury and was endorsed by 89.4% of the sample. Picking at wounds, re-opening wounds was the second most common form of self-injury and was endorsed by 78% of the sample. Hitting oneself on purpose (i.e., punching, slapping, banging) was endorsed by 65.2% of the sample. The forms and frequencies of self-injury are presented in Table 1. Almost all participants (96.9%) did not report any suicidal intention ever while engaging in self-injury.

Data were collected pertaining to the amount of time that passed between thinking about self-injury and engaging in the behaviour. As can be seen in Table 2, most individuals reported engaging in self-injury within an hour of first thinking about injuring although, many also reported waiting longer than an hour.

Participants often endorsed more than one response suggesting that at times individuals were impulsive, while at other times they delayed their self-injurious behaviour.

Table 1

*Type of Self-Injurious Behaviour*

Form	Percent Endorsed	<i>n</i>
Cut or carved skin	90.8%	130
Hitting one's self	66.7%	129
Pulling hair out	31.0%	129
Giving yourself a tattoo	7.8%	128
Picking at a wound	81.1%	127
Burning	44.2%	129
Inserting objects under the skin	14.0%	129
Biting yourself	58.6%	128
Picking at skin to draw blood	54.3%	129
Scraping skin	50.0%	128
"Erasing" the skin	8.7%	127

Note: N = 132

Table 2

*Amount of Elapsed Time Between Thinking and Engaging in Self-Injury*

Time Period	Percent Endorsed
None	28.8%
A few minutes	59.1%
Less than 60 minutes	44.7%
More than 60 minutes but less than 25 hours	45.5%
More than one day but less than a week	30.3%
More than a week	12.1%

Note: N = 132

Less than one third of the respondents (34.6%,  $n = 130$ ) reported they had been under the influence of drugs and alcohol at least once when self-injuring.

The FASM also assesses the perception of pain during self-injury. Of the participants that responded, 63.6% ( $n = 132$ ) reported feeling little pain, whereas 36.4% felt moderate pain and 6.1% felt severe pain.

Finally, participants were asked to identify the function(s) for self-injury in addition to its form. Participants could endorse more than one type of function. As can be seen in Table 3, the most frequently reported function of the behaviour was to stop bad feelings (64.8%). The second most common function of self-injury reported was self-punishment (58.5%). To have control over a situation was also endorsed as a common use of self-injury (48.5%). Using self-injury to relax was endorsed by 44.2% of the sample whereas using self-injury to relieve numbness or emptiness was endorsed by 42.3% of the sample. Thirty-eight percent of participants indicated that they often used self-injury in order to feel something. Overall, the frequently endorsed response choices indicate that the function of self-injurious behaviour was predominantly some form of emotion regulation.

### **Means and Correlations**

The means, standard deviations, and correlations for the variables of attachment, affect intensity, negative emotions, affect dysregulation, and experiential avoidance are presented in Table 4 for the self-injury group and Table 5 for the control group. A Bonferroni Correction was calculated based on the number of correlation analyses and  $\alpha$  was set at .001.

Table 3

*Functions and Frequency of Self-Injury*

Function	Frequency			
	Never	Rarely	Sometimes	Often
Avoid school, work, or other activities	72 %	15.5 %	11.6 %	.8 %
Relieve feeling “numb” or empty	13.1	9.2	35.4	42.3
Attention	74.2	16.4	7.0	2.3
To feel something	20.2	11.6	30.2	38.0
Avoid doing something unpleasant	74.4	15.5	7.8	2.3
To have control over a situation	14.6	5.4	31.5	48.5
Get a reaction from someone	82.3	1.08	3.8	3.1
Get attention from parents or friends	86.9	7.7	3.8	1.5
Avoid being with people	76.9	10.8	8.5	3.8
Punish yourself	10.0	11.5	20.0	58.5
Get other people to act differently	86.9	11.5	.8	.8
To be like someone you respect	95.4	3.8	.8	0
To avoid punishment or consequences	90.8	6.2	3.1	0
To stop bad feelings	4.7	3.1	27.3	64.8
To let others know how desperate you were	60.5	22.5	10.9	6.2
To feel more a part of a group	96.9	3.1	0	0
To get your parents to understand and notice	95.3	3.1	.8	.8
Something to do when alone	66.2	20	10.8	3.1
Something do when with others	97.7	2.3	0	0
To get help	71.5	16.9	8.5	3.1
Make others angry	96.9	2.3	.8	0
To feel relaxed	8.5	17.8	29.5	44.2

Note: N = 130

There were an overall greater number of statistically significant correlations between variables in the control group than in the self-injury group. The control group showed statistically significant positive relationships between all the variables, whereas this was not found in the self-injury group. Both groups showed a moderate statistically significant relationship between the measures for negative affect, affect dysregulation, and experiential avoidance. Both groups' largest correlation was between experiential avoidance and emotion regulation.

As can be seen in Table 4 and 5, despite the greater number of statistically significant relationships in the control group, the self-injury group had higher mean scores on all measures with the exception of secure attachment. The control group had a higher mean score on the measure of secure attachment when compared to the self-injury group. The differences between the two groups' means were statistically significant. The results from the t-tests are reported in Table 6.

Table 4

*Self-Injury Group Means and Correlations for all Measures*

Measure	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Attachment Secure (ASQ_Secure)	20.95	6.30	-	-.49**	-.23**	-.40**	.12	-.34**	-.41**
2. Attachment Avoidant (ASQ Avoidance)	69.30	11.22	-	-	.01	.24**	-.10	.28**	.42**
3. Attachment Anxious (ASQ Anxiety)	65.23	10.58	-	-	-	.34**	.24**	.16	.25**
4. Negative Emotions (PAN NegDimension)	32.58	8.69	-	-	-	-	.17	.49**	.52**
5. Affect Intensity (AIM Total)	153.43	20.96	-	-	-	-	-	.29**	.18
6. Difficulties in Emotion Regulation (DERS Total)	122.34	25.06	-	-	-	-	-	-	.65**
7. Experiential Avoidance (EXPER Avoid)	127.32	16.45	-	-	-	-	-	-	-

Note: N = 132

\*\* $p < .001$ .

Table 5

*Control Group Means and Correlations for all Measures*


---

Measure	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Attachment Secure (ASQ_Secure)	34.88	5.60	-	-.61**	-.53**	-.28**	.03	-.36**	-.33**
2. Attachment Avoidant (ASQ Avoidance)	49.02	10.65	-	-	.55	.22**	.24**	.41**	.50**
3. Attachment Anxious (ASQ Anxiety)	48.44	10.51	-	-	-	.46**	.25**	.57**	.54**
4. Negative Emotions (PAN NegDimension)	17.97	6.76	-	-	-	-	.48**	.53**	.47**
5. Affect Intensity (AIM Total)	140.50	21.88	-	-	-	-	-	.46**	.44**
6. Difficulties in Emotion Regulation (DERS Total)	71.75	20.32	-	-	-	-	-	-	.68**
7. Experiential Avoidance (EXPER Avoid)	86.44	18.82	-	-	-	-	-	-	-

---

Note: N = 117

\*\* $p < .001$ .

Table 6

*Means and Standard Deviations for Self-Injury and Control Group Variables*

Variable	Group		<i>t</i>	<i>df</i>
	Self-injury	Control		
Attachment Secure	20.95 (6.30)	34.88 (5.60)	-18.33	247*
Attachment Avoidance	69.30 (11.22)	49.02 (10.65)	14.59	247*
Attachment Anxious	65.23 (10.58)	48.44 (10.51)	12.52	247*
Negative Emotions	32.58 (8.69)	17.97 (6.76)	14.67	247*
Affect Intensity	153.43 (20.96)	140.50 (21.88)	4.75	247*
Difficulties in Emotion Regulation	122.34 (25.06)	71.75 (20.32)	17.36	247*
Experiential Avoidance	127.32 (16.45)	86.44 (18.82)	18.29	247*

*Note.* \* =  $p < .001$ . Standard deviations are presented in parenthesis

## **Self-Injury and Group Membership: Comparison of Self-Injury and Control Groups**

**Self-injury and attachment.** Logistic regression is a form of multiple regression analysis that predicts a dichotomous outcome. Logistic regression allows the researcher to predict group membership based on the predictors in the logistic regression model (Field, 2005). In this research, group membership refers to the self-injury group or the control group. It was hypothesized that insecure attachment styles (avoidant and anxious/ambivalent), affect intensity, negative emotions, affect dysregulation, and experiential avoidance would predict membership in the self-injury group or the control group. Prior to the analysis, the linear relationships of the predictor variables were assessed for multicollinearity by examining the correlations between predictor variables. Multicollinearity occurs when two or more variables are highly correlated and essentially become redundant and problematic in a regression model (Field, 2005). The correlations are presented in Table 7.

Table 7

Correlations Between Predictor Variables for the Logistic Regression (Self-injury and Control Group Data Combined)

Measure	1	2	3	4	5	6
1. Attachment Avoidant (ASQ Avoidance)	-	.57**	.58**	.24**	.67**	.74**
2. Attachment Anxious (ASQ Anxiety)	-	-	.65**	.36**	.63**	.67**
3. Negative Emotions (PAN NegDimension)	-	-	-	.41**	.75**	.75**
4. Affect Intensity (AIM Total)	-	-	-	-	.44**	.42**
5. Difficulties in Emotion Regulation (DERS Total)	-	-	-	-	-	.85**
6. Experiential Avoidance (EXPER Avoid)	-	-	-	-	-	-

---

*Note:* N = 249

\*\* $p < .001$ .

The correlation between affect dysregulation and experiential avoidance was high ( $r = .85$ ) resulting in one of the variables being dropped as a predictor. As self-injury can be viewed as a “behavior of emotional avoidance” (Chapman et al., 2006, p. 374), experiential avoidance was removed from this analysis. Five predictor variables (avoidant attachment, anxious/ambivalent attachment, affect intensity, negative emotions, and affect dysregulation) remained in the logistic regression. The model was statistically significant for predicting self-injury,  $\chi^2(5) = 215.83, 249, p < .001$ , Nagelkerke  $R^2 = .79$ . All the predictor variables with the exception of affect intensity and anxious/ambivalent attachment were statistically significant predictors.

The odds ratios are presented in Table 8. Predictors with odds ratios greater than one indicate that the variable of interest is more likely to occur in the self-injury group rather than the control group. In other words, being higher in avoidant attachment (OR = 1.10), having high negative affect (OR = 1.10), and having difficulties with emotion regulation (OR = 1.05) were all associated with being in the self-injury group over the comparison group.

Table 8

*Logistic Regression*

Variable	B	SE	OR	<i>p</i>
Avoidant Attachment (ASQ_Avoidance)	.09	.02	1.10	.001
Anxious Attachment (ASQ_Anxiety)	.04	.03	1.04	.116
Negative Emotions (PAN NegEmotions)	.10	.04	1.10	.008
Affect Intensity (AIM Total)	-.02	.01	.98	.126
Difficulties with Emotion Regulation (DERS Total)	.047	0.1	1.05	.001

*Note:* N = 249

**Affect dysregulation and negative emotions.** It was anticipated that affect dysregulation and negative emotions, including specific subscales of negative emotions, would have a statistically significant relationship in the self-injury group. This hypothesis was supported and the correlations are presented in Table 9. Overall, negative emotions and the specific negative emotion of guilt had the strongest relationship with affect dysregulation.

**Negative emotions and negative emotion subscales.** Additional analysis was performed to test the hypothesis that self-injurers would be more likely than the control group to endorse negative emotions overall, as well as specific emotions such as fear, hostility, guilt, and sadness. Table 10 presents the means and standard deviations for negative emotions and specific negative emotions in the control group. The results of an ANOVA show that there were statistically significant differences between the two groups for overall negative emotions,  $F(1, 247) = 215.12, p < .001$ .

Table 9

*Correlations Between Affect Dysregulation and Negative Emotions (Self-Injury Group)*

Subscale	Mean (SD)	1	2	3	4	5	6
1. DERS Total	122.34 (25.062)	--	.49**	.42**	.41**	.51**	.43**
2. Overall Negative	32.56 (8.69)		--	.90**	.73**	.78**	.69**
3. Fear	19.00 (6.34)			--	.52**	.60**	.63**
4. Hostility	16.62 (5.80)				--	.58**	.55**
5. Guilt	21.42 (6.53)					--	.66**
6. Sadness	18.19 (4.86)						--

---

\*\* $p < .001$

Table 10

*Correlations Between Negative Emotions and Specific Negative Emotion Subscales (Control Group)*

Subscale	Mean (SD)	1	2	3	4	5
1. Overall Negative	17.97 (6.75)	--	.89**	.80**	.83**	.72**
2. Fear	10.14 (4.29)		--	.59**	.70**	.59**
3. Hostility	9.49 (3.54)			--	.80**	.64**
4. Guilt	9.60 (3.85)				--	.71**
5. Sadness	9.98 (4.45)					--

---

\*\* $p < .001$

A MANOVA followed by discriminant function analysis was used to test the differences between the groups for specific types of negative emotions. The Box's M test was statistically significant,  $M = 129.59$ ,  $F = 12.73$ ,  $p < .001$ . The stability of the Box M test has been debated considerably in the literature and the test is sensitive to even slight variations of normality. Given the stringent alpha level set for the MANOVA, in addition to examination of the standard deviations of the variables as well as the large sample size, the statistically significant results of the MANOVA can be trusted and are robust. The results of the MANOVA showed that two groups (self-injury and control) can be differentiated based on negative emotion type (fear, hostility, guilt, sadness), Wilks' Lamda = .446,  $F(4, 244) = 75.83$ ,  $p < .001$ , partial eta squared = .55.

These results were followed up by discriminant function analysis to better understand the relationships between the variable and to determine which of the emotions best discriminate between the two groups. The chi-square test was statistically significant, Wilks' Lamda = .45,  $\chi^2(4) = 197.93$ , canonical correlation = .74,  $p < .001$ . Table 11 shows the standardized canonical discriminant function coefficients, functions at the group centroids, and structure coefficients. Guilt makes the most contribution to the group differences. In fact the contribution of guilt is three times that of the next greatest contributor to group differences, which is sadness, followed by fear, and hostility. It is important to note that the PANAS subscale of Guilt includes questions related to the feeling of shame, such as feeling ashamed and disgusted with self. The canonical

variables were able to correctly classify 84.7% of the cases into their correct group membership (self-injury, control [i.e., no self-injury]).

Table 11

*Discriminant Function Analysis between Groups and Emotions**Standardized Canonical Discriminant Function Coefficients*

---

Emotions	Function
Fear	.123
Hostility	.001
Guilt	.761
Sadness	.210

---

*Functions at Group Centroids*

---

Group	Function
Self-injury	1.045
Control	- 1.180

---

*Structure Coefficients*

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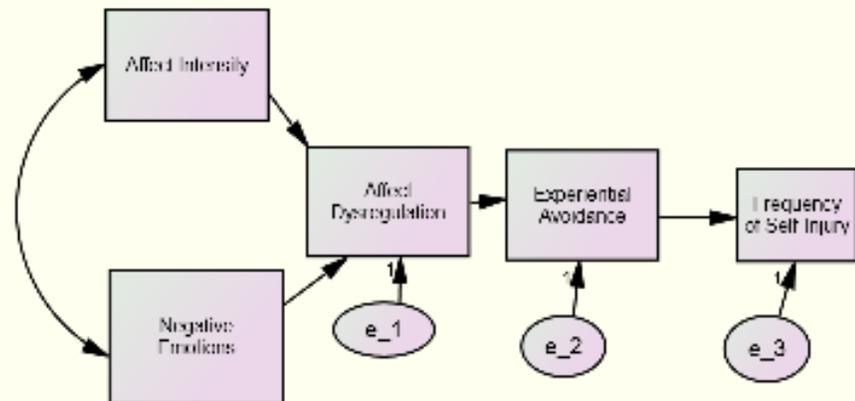
Emotions	Function
Guilt	.978
Sadness	.789
Fear	.728
Hostility	.659

## **Testing Path Models of Experiential Avoidance and Attachment in Self-Injurers**

Path analysis was used to test the model of experiential avoidance in self-injurers and expand it by subsequent analysis that incorporated the influence of attachment. AMOS 19 allows for the testing of path models. The path model diagrams depict boxes that represent observed variables, which are the measured variables of interest in this study (attachment, negative emotions, affect intensity, affect dysregulation, experiential avoidance, and the frequency of self-injury). Observed variables in the path have an error term connected to them that is depicted by an arrow and a circle with a weight of one attributed to the error term. While this weight is an arbitrary value, it restricts the path of measurement error from influencing the path model. The measurement error represents unexplained variance from variables that are not measured by the model, but that logically could factor into the phenomena of interest. The path diagrams also use arrows to depict the direction (i.e., path) of the relationships between variables.

**Model A – The experiential avoidance model.** In the sample of self-injurers, Model A tested the Experiential Avoidance Model that correlated measures of affect intensity and negative emotions to predict affect dysregulation, that in turn predicted experiential avoidance, which then predicted frequency of self-injury. While experiential avoidance was not retained as a predictor variable in the earlier logistic regression analysis, it was included in the path analysis for two reasons. First, the Experiential Avoidance Model includes an experiential avoidance pathway, which is a key variable in the model and therefore cannot be

removed, whereas the logistic regression was not testing the model. Second, the logistic regression was conducted with both the control and self-injury group, which resulted in multicollinearity between affect dysregulation and experiential avoidance. The path analysis used data only from the self-injury group and multicollinearity was not present, meaning both variables could remain in the model. Figure 1 presents the path diagram of the EAM.



*Figure 1.* Model A - The Experiential Avoidance Model

The data did not adequately fit the model according to the chi-square goodness of fit measure,  $\chi^2 (5, N = 129) = 18.43, p < .002$ . To demonstrate adequate fit, one would want the model not to be statistically significant. However, the chi-square test is sensitive to sample size. To address this issue, an alternative normed chi-square can be calculated that is less sensitive to sample size. This is calculated by dividing the chi-square statistic by the degrees of freedom,  $\chi^2/df = 3.69$ . A normed chi-square between two and five is considered an acceptable ratio (Tabachnick & Fidell, 2007; Wheaton, Muthen, Alwin, & Summers, 1977). Another measure of fit less sensitive to sample size is the Comparative Fit index (CFI), which was .91, below a conservative recommended .95 (Schreiber et al., 2006), but above .90 which is deemed an adequate fit (Hu & Bentler, 1999, Keith, 2006). Another measure of fit is the Root Means Square Error of Approximation (RMSEA), which was .15 with a confidence interval of .08 to .22. A preferred number for good fit for RMSEA is less than .08 or .05. The Normed Fit Index (NFI) was .88, reflecting a poor fit. A moderate NFI ranges between .90-.95, with fits of .95 and higher representing a good fit (Kenny, 2012). Thus model fit was judged to be acceptable. As shown in Table 12, all paths were statistically significant in the model. Affect intensity, ( $\beta = 0.22$ ) and negative emotions, ( $\beta = 0.45$ ) both predicted affect dysregulation, which in turn predicted experiential avoidance ( $\beta = 0.65$ ). Experiential avoidance predicted the frequency of self-injury ( $\beta = 0.34$ ). The correlation between affect intensity and negative emotions ( $r = .17$ ) was not statistically significant ( $p < .06$ .) Twenty-eight percent of the variance in affect dysregulation was accounted for by affect intensity and

negative emotions. Forty-two percent of the variance in experiential avoidance was accounted for by affect dysregulation, affect intensity, and negative emotions. Fifteen percent of the variance in the frequency of self-injury was accounted for by the other variables in the model.

Table 12

*Maximum Likelihood Estimates for Path Model of Self-Injury (Model A)*

Parameter	Unstandardized	SE	Standardized
Affect Dysregulation←Affect Intensity	.26	.09	.22*
Affect Dysregulation ←Negative Emotions	1.30	.22	.45**
Experiential Avoidance← Affect Dysregulation	.42	.04	.65**
Frequency of Self-Injury←Experiential Avoidance	.19	.04	.34*
Affect Intensity↔Negative Emotions	30.18	16.30	.17 <sup>a</sup>

<sup>a</sup> $p < .06$ , \*  $p < .01$ , \*\*  $p < .001$

**Model B – The experiential avoidance model including insecure attachment.** Subsequent path analysis was done to include the hypothesized role of insecure attachment in the Experiential Avoidance Model. Model B specified paths for insecure attachment to predict affect intensity and negative emotions, which in turn predicted affect dysregulation, followed by experiential avoidance, and prediction of the frequency of self-injury. The path model is presented in Figure 2.

The chi-square goodness of fit measure did not support a good fit of the data to the model  $\chi^2 (9, N=129) = 34.97, p < .001$ . The normed chi-square was more acceptable at  $3.9 \chi^2 / df = 3.9$ . Other indices of fit were less promising. The CFI was .86, failing to reach the liberal .90 mark. Examination of RMSEA showed that for this model, it was outside the recommended range and was at .15 with confidence intervals of .10 to .20. NFI was .82, below the lower limit of .90. The model fit was not acceptable.

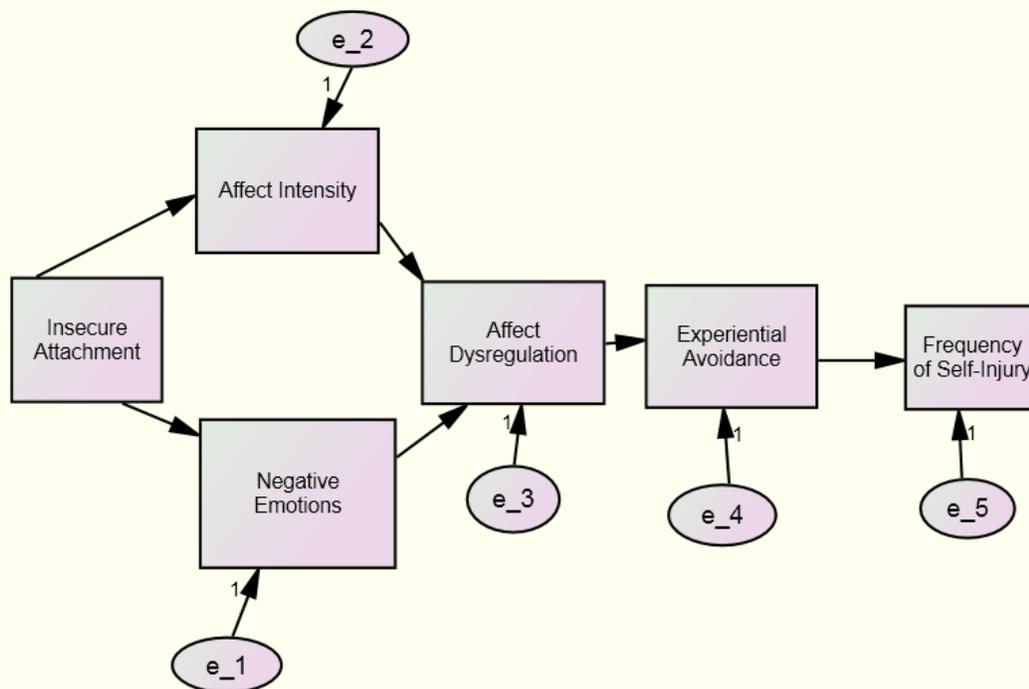


Figure 2. Model B - The Experiential Avoidance Model Including Insecure Attachment

**Model C - The experiential avoidance model including avoidant attachment.** In an attempt to improve the model for better fit of the data, the insecure attachment variable was dichotomized into avoidant and anxious/ambivalent attachment. Figure 3 shows the specified paths in the model depicting avoidant attachment.

The chi-square goodness of fit measure reflected a poor fit of the data to the model  $\chi^2(9, N = 129) = 43.83, p < .001$ ; and the normed chi-square was marginally within an acceptable ratio  $\chi^2/df = 4.87$ . Other measures of fit failed to reach the recommended ranges, CFI = .80, NFI = .77, and RMSEA = .17 (confidence interval .12 to .23). This model was deemed to be a poor fit for the data.

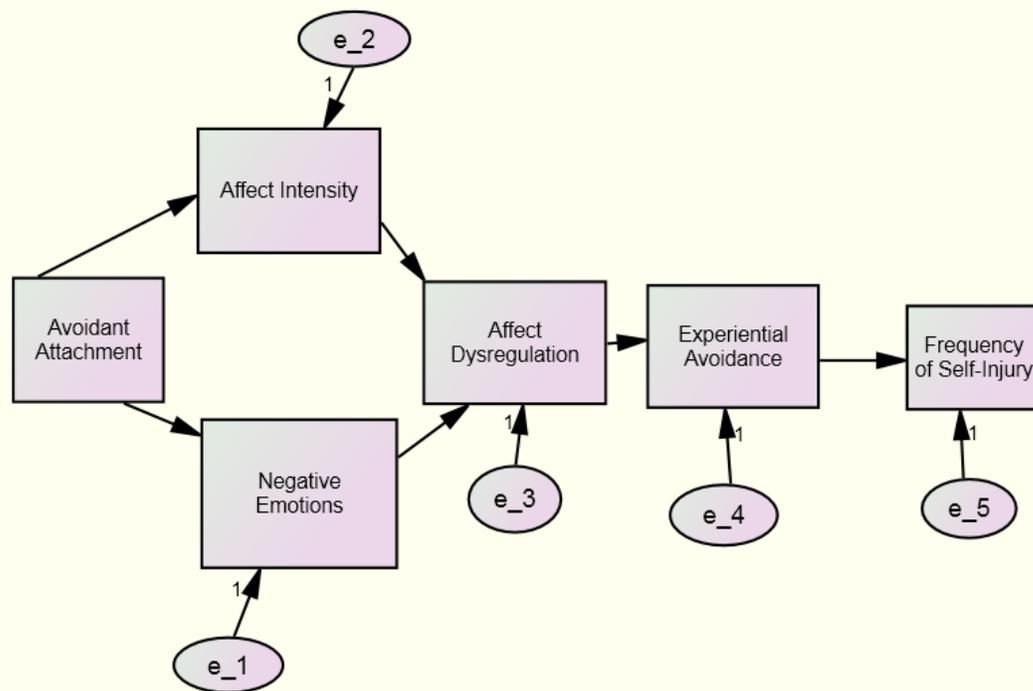


Figure 3. Model C - The Experiential Avoidance Model Including Avoidant Attachment

**Model D - The experiential avoidance model including anxious/ambivalent attachment.** Anxious/ambivalent attachment replaced avoidant attachment in the model of experiential avoidance to see if it better fit the data. Figure 4 shows specified paths for this model. This model fit the data better than the previous two models that included insecure and avoidant attachment.

The chi-square goodness of fit measure was statistically significant  $\chi^2$  (9,  $N=129$ ) = 20.97,  $p < .05$ ; however, the normed chi-square was acceptable,  $\chi^2 / df = 2.33$ . Other indices of fit were also within acceptable ranges, CFI = .93, NFI = .88, and RMSEA = .10 with a confidence interval of .05 to .16. All paths in the model were statistically significant and are presented in Table 13.

Anxious/ambivalent attachment predicted both affect intensity ( $\beta = .24$ ) and negative emotions ( $\beta = .35$ ). Affect intensity predicted emotion dysregulation ( $\beta = .22$ ), as did negative emotions ( $\beta = .45$ ). Affect dysregulation predicted experiential avoidance ( $\beta = .65$ ), which predicted the frequency of self-injury ( $\beta = .39$ ). Forty-two percent of the variance in experiential avoidance was accounted for by affect dysregulation, negative emotions, affect intensity, and anxious/ambivalent attachment. Twenty seven percent of the variance in affect dysregulation was accounted for by negative emotions, affect intensity, and anxious/ambivalent attachment. Thirteen percent of the variance in negative emotions was accounted for by anxious/ambivalent attachment. Six percent of the variance in affect intensity was accounted for by anxious/ambivalent attachment.

Fifteen percent of the variance in the frequency of self-injury was accounted for by variables in the model.

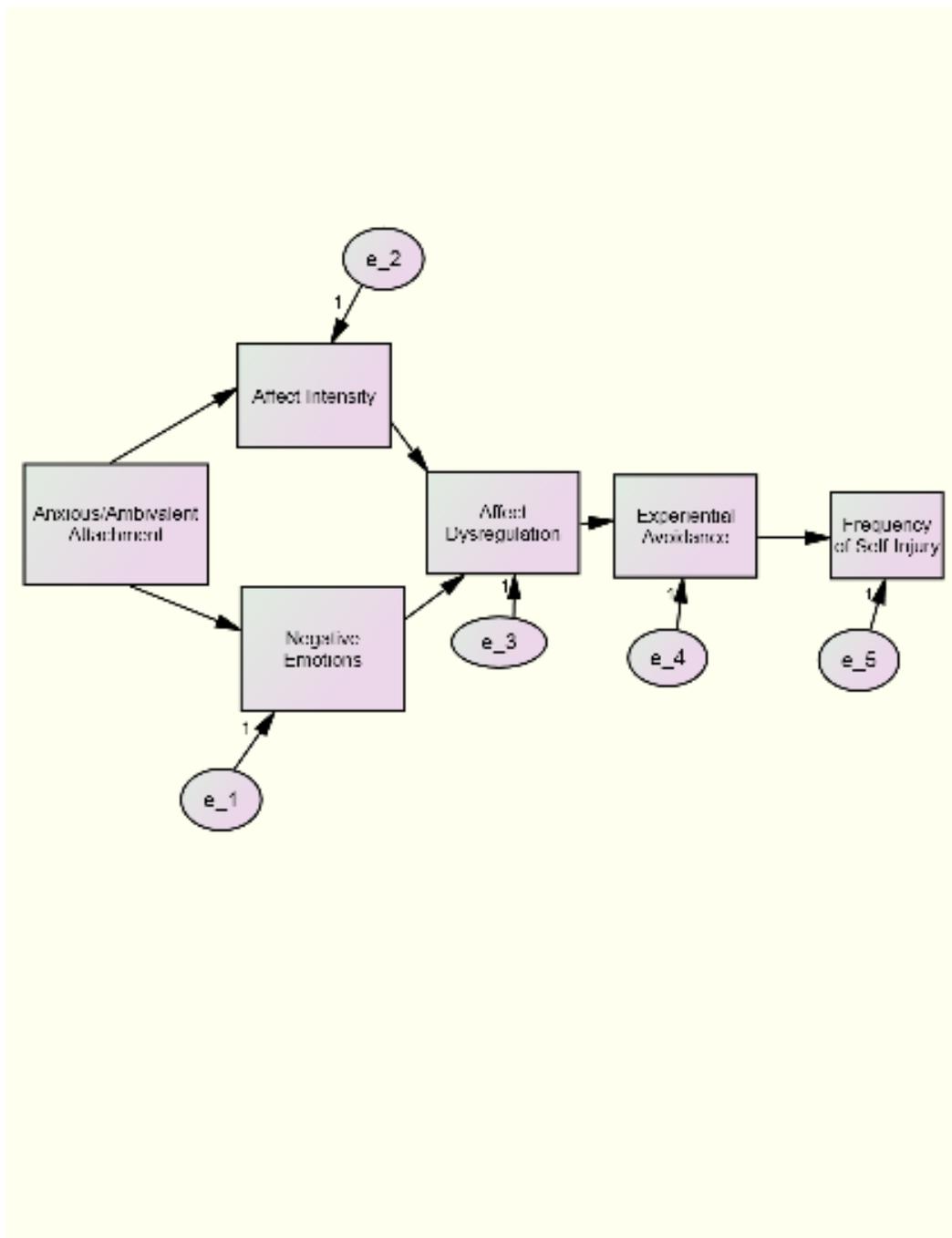


Figure 4. Model D - The Experiential Avoidance Model Including Anxious/Ambivalent Attachment

Table 13

*Maximum Likelihood Estimates for Path Model of Self-Injury (Model D)*

Parameter	Unstandardized	SE	Standardized
Negative Emotions←Anxious Attachment	.29	.07	.35**
Affect Intensity←Anxious Attachment	.47	.17	.24*
Affect Dysregulation←Affect Intensity	.26	.09	.22*
Affect Dysregulation←Negative Emotions	1.30	.22	.45**
Experiential Avoidance←Affect Dysregulation	.42	.04	.65**
Frequency of Self-Injury ←Experiential Avoidance	.19	.04	.39**

---

\*  $p < .01$ , \*\*  $p < .001$

A bootstrapping procedure was used to test the statistical significance of indirect effects in the two models that had adequate fit (Shrout & Bolger, 2002). Applying a bootstrap procedure for testing hypotheses related to mediated or indirect effects is becoming more commonly used in the literature. A mediated or indirect effect occurs when the effect of variable X on variable Y occurs because of an intervening variable between X and Y whereas a direct effect would not involve an intervening variable. Shrout and Bolger (2002) recommend the use of bootstrapping for studies that have multiple mediators, as traditional methods for assessing indirect effects fail to acknowledge the skew in the data that is often inherent when mediators are present (Preacher & Hayes, 2008, 2004). Furthermore, traditional methods for testing indirect effects often lack the power to detect mediating effects in the data (Shrout & Bolger, 2002). For testing mediation, bootstrapping is a nonparametric statistical procedure that draws numerous sub-samples (i.e., 2000) with replacement from the original data for the purpose of constructing a bootstrap distribution from the data rather than using a traditional normal distribution with symmetric confidence intervals that lack the power to detect mediated variables due to skewness (Preacher & Hayes, 2004). Bootstrapping replacement results in an empirically derived sample distribution for the indirect effects that includes asymmetric confidence intervals and an estimate of the standard error. This allows the researcher to determine the statistical significance of the indirect effects.

In Model A, which was a test of the Experiential Avoidance Model without attachment, there were several statistically significant mediators.

Negative emotions had an indirect effect on experiential avoidance through affect dysregulation ( $\beta = .29$ ). Negative emotions had an indirect effect on the frequency of self-injury through affect dysregulation and experiential avoidance ( $\beta = .12$ ). There was also an indirect effect of affect intensity on experiential avoidance through affect dysregulation ( $\beta = .14$ ) and an indirect effect of affect intensity on frequency of self-injury ( $\beta = .06$ ) through affect dysregulation and experiential avoidance ( $\beta = .06$ ). Affect dysregulation had an indirect effect on the frequency of self-injury through experiential avoidance ( $\beta = .26$ ).

In Model D, which included the components of the EAM in addition to anxious/ambivalent attachment, indirect effects were observed for anxious/ambivalent attachment onto affect dysregulation ( $\beta = .21$ ) through affect intensity and negative emotions. Anxious/ambivalent attachment had an indirect effect on experiential avoidance ( $\beta = .14$ ) through affect intensity, negative emotions, and affect dysregulation. Anxious/ambivalent attachment also had an indirect effect on the frequency of self-injury ( $\beta = .05$ ) through affect intensity, negative emotions, affect dysregulation, and experiential avoidance. Indirect effects were observed for negative emotions on experiential avoidance ( $\beta = .29$ ) through affect dysregulation. Negative emotions had an indirect effect on the frequency of self-injury ( $\beta = .12$ ) through affect dysregulation and experiential avoidance. Affect intensity had an indirect effect on experiential avoidance ( $\beta = .14$ ) through affect dysregulation. Additionally, affect intensity had an indirect effect on the frequency of self-injury  $\beta = .06, p > .001$  through affect dysregulation and experiential avoidance. Affect dysregulation had an indirect

effect on the frequency of self-injury through experiential avoidance ( $\beta = .25$ ).

The estimated direct, indirect, and total effects of the variables in the models are presented in Table 14.

Table 14

*Decomposition Effects: Direct, Indirect and Total Standardized Effects of the Models of Self-Injury*

Model	Direct effects		Indirect effects		Total effects	
	<u>A</u>	<u>D</u>	<u>A</u>	<u>D</u>	<u>A</u>	<u>D</u>
Paths:						
Insecure Attachment on:						
Negative Emotions	--	.35**	--	--	--	.35**
Affect Intensity	--	.24*	--	--	--	.24*
Affect Dysregulation	--	--	--	.21**	--	.21**
Experiential Avoidance	--	--	--	.14**	--	.14**
Frequency of self-injury	--	--	--	.05**	---	.05**
Negative Emotions on:						
Affect Dysregulation	.45**	.45**	--	--	.45**	.45**
Experiential Avoidance	--	--	.29**	.30**	.29	.30
Frequency of self-injury	--	--	.12**	.12**	.12	.12

Model	Direct effects		Indirect effects		Total effects	
	A	D	A	D	A	D
Paths:						
Affect Intensity on:						
Affect Dysregulation	.22*	.22*	--	--	.22*	.22*
Experiential Avoidance	--	--	.14*	.14*	.14	.14
Frequency of self-injury	--	--	.06**	.06**	.06	.06
Affect Dysregulation on:						
Experiential Avoidance	.65**	.65**	--	--	.65**	.65**
Frequency of self-injury	--	--	.26**	.25**	.26	.25
Experiential Avoidance on:						
Frequency of self-injury	.39**	.39**	--	--	.39**	.39**

*Note:* Model A = The Experiential Model; Model D=The Experiential Model Including Anxious/Ambivalent

Attachment

\* $p < .01$ , \*\* $p < .001$

## **Model Comparison**

The original EAM model as well as the proposed EAM model that included anxious/ambivalent attachment was shown to have good fit with the data. When there is more than one viable model, a comparison can be done using predictive fit indexes (Kline, 2011). The Aikake's Information Criterion (AIC) is based on maximum likelihood estimation that is used for parameter estimation and model comparison (Myung, 2003). The AIC can be used for both nested and non-nested model comparison as long as the same data set is used for all models. The AIC computed by AMOS is a modification of Kullback-Leibler (KL) Information, which is a measure designed to compute the distance between a proposed model and a true model based on the total reality or truth as measured by the data (Burnham & Anderson, 2002; Vrieze, 2012).

Unfortunately estimating 'true' reality and uncovering its known model parameters would be an insurmountable challenge. The AIC provides a solution to this problem by assessing the estimated distance between a model and a true, yet unknown reality, resulting in an estimated distance rather than a known distance. Ideally, in model comparison, the better model should have a small AIC number representing the closer distance to the reality model. Models that contain unnecessary parameters are penalized and result in a higher AIC (Burnham & Anderson, 2002; Kline 2011). The model with the smallest AIC number is considered to be the best fitting out of the models being compared. The AIC does tend to favour parsimonious models (Akaike, 1987; Kline, 2011). It is important

to recognize that the AIC does not test the significance of models but instead rank orders models according to their approximation of the true reality of the data.

The AIC for Model A-The Experiential Avoidance Model was 38.43. Model B-The Experiential Avoidance Model Including Insecure Attachment, had an AIC of 58.97. Model C, which was the model of experiential avoidance that included avoidant attachment was 67.83 whereas Model D that specified anxious/ambivalent attachment was 44.97. For ease of comparison, Table 15 depicts the AIC for each model as well as the other fit indices. Despite Model D having slightly better fit indices overall, the AIC suggests that the more parsimonious Model A-The Experiential Avoidance Model is the best fitting model out of the four tested; however, Model A also had the least parameters, which may have reduced the AIC.

Table 15

*Fit Indices for Models of Experiential Avoidance*

Model	A	B	C	D
<i>Fit indices</i>				
Chi-square	18.43 <sup>a</sup> , <i>df</i> =5	34.97 <sup>a</sup> <i>df</i> =9	43.83 <sup>a</sup> <i>df</i> =9	20.97 <sup>b</sup> <i>df</i> =9
Normed Chi-square	3.69	3.90	4.87	2.33
Comparative Fit Index (CFI)	.91	.86	.80	.93
Normed Fit Index (NFI)	.88	.82	.77	.88
Root Mean Square Error of Approximation (RMSEA)	.15	.15	.17	.10
Akaike's Information Criterion (AIC)	38.43*	58.97	67.83	44.97

*Note:* A = EAM Model, B = EAM including insecure attachment, C = EAM including avoidant attachment, D = EAM including anxious/ambivalent attachment

\*most parsimonious model

<sup>a</sup>=.001

<sup>b</sup>=.013

## Chapter 5 - Discussion

A brief overview of the study's results are presented and followed by a detailed discussion of these findings.

This study set out to examine a number of goals related to self-injury in a community sample. Specifically, this study set out to test and expand the Experiential Avoidance Model (EAM) by including the role of attachment. In addition to model testing, there were a number of hypotheses related to the components of the EAM that included negative emotion, affect intensity, and affect dysregulation. One hundred and thirty two adult participants were recruited through the internet to complete a set of questionnaires about self-injury and variables related to the Experiential Avoidance Model. One hundred and seventeen adult participants that do not self-injure were recruited as a control group. Demographic information was also collected.

Although it was anticipated that the self-injury group recruited from the community would have less psychopathology than clinical samples, this was not supported, as a number of participants reported psychiatric conditions, including borderline personality disorder. Other unexpected issues related to the sample included the control group having a higher mean age than the self-injury group. Nevertheless, the control group was found to be distinctly different from the self-injury group on the majority of measures and served as a basis of comparison for several of the hypotheses tested. An additional issue related to the sample was a scarcity in males participating who self-injured.

Data pertaining to the forms and functions of self-injury were analyzed. The findings indicate that the common forms of self-injury are cutting and skin picking. Despite multiple functions of the behaviour, the most common functions reflect affect regulation followed by self-punishment.

In addition to testing and expanding the EAM, a number of additional hypotheses were tested. The results revealed several interesting findings. The results demonstrated that when comparing self-injurers to the control group, insecure attachment, specifically avoidant attachment, along with negative emotions and affect dysregulation, does predict the use of self-injury. The findings also highlighted those individuals who self-injure tend to experience more negative emotions, particularly emotions such as guilt and shame, when compared to those that do not self-injure.

In the test and expansion of the EAM, anxious/ambivalent attachment proved to have greater predictive power than avoidant attachment and was directly related to affect intensity and negative emotions and indirectly related to affect dysregulation, experiential avoidance, and the frequency of self-injury, thus highlighting the fact that attachment does influence the relationship between variables in the Experiential Avoidance Model as well as the frequency of self-injury. Experiential avoidance was found to be directly related to self-injury and indirectly related to other variables in the model. This indicates that experiential avoidance plays a key role in self-injury.

There were some findings that were not supported by the data. As stated previously, the lack of males reporting self-injury represented less than five

percent of the sample, which made gender differences unable to be tested. A surprising finding was the lack of a consistent relationship between affect intensity and the other components of the EAM. Affect intensity is a key component of the EAM and has routinely been investigated in studies of self-injury and has been found to be a predictive and related factor to self-injury (e.g., Gratz, 2006); however, this was not consistently supported by the results of this study. Findings related to the role of attachment in self-injury and experiential avoidance were also inconsistent and suggest that further research in this area is warranted.

### **Self-Injury and Gender**

Although it was anticipated that there would be comparable rates of self-injury between males and females in the general population, this could not be tested. Possible explanations for the lack of males in the study could be a small sample size for a community study or that self-injurious behaviour continues to be seen primarily in females. Support for the latter explanation is that the majority of research on self-injury continues to report samples that are predominantly female. An exception to this gender difference is in studies that have used samples taken from forensic or custodial settings where gender rates tend to be equal (e.g., Smith & Kaminski, 2011). Yet, these findings may be possibly due to factors such as contagion, lack of access to other ways of coping, or secondary gain.

### **Demographic Information for Self-Injurers**

This study's self-injurers were typically Caucasian females in their mid-twenties who were fairly well educated. The majority of participants reported

having a university education and were employed or post-secondary students. Within the self-injury group, a mental health history and a trauma background were common. Many of the participants had multiple traumas that included a combination of physical, sexual, and emotional abuse. These are well-known risk factors for self-injury (e.g., Klonsky, 2011; Low et al., 2000, van der Kolk & Fisler, 1994). The average age of onset of self-injury in this sample was at 15 years. This is consistent with findings in the literature that report self-injury typically begins in adolescence (e.g., Herpertz, 1995, Muehlenhamp & Guitierrez, 2004, Whitlock, Eckenrode, & Silverman, 2006); however, the current findings also show that the behaviour can persist into adulthood and does not necessarily subside in later stages of adolescence or young adulthood.

### **Characteristics of Self-Injury**

This study found that the frequency of self-injurious behaviour ranged from daily to once every two to six months. The majority of participants reported self-injuring two to six times a week, which is an alarmingly high frequency. Favazza and Simeon's (1995) classification system of self-injury can be used to categorize the frequency of self-injury reported by the sample. According to their system, self-injury can be classified as major, stereotypic, or moderate/superficial self-injury. Major self-injury involves extreme acts such as amputation whereas stereotypic self-injury involves behaviours such as head-banging that is sometimes seen in individuals with pervasive developmental delays. Moderate/superficial self-injury refers to the types of self-injury investigated in this study and similar studies where there is superficial damage to body tissue but

is not serious enough to require medical care (i.e., cutting, burning, scratching). Moderate/superficial self-injury can be further delineated as compulsive, episodic, or repetitive.

Participants' self-injurious behaviour in the present study is consistent with the description of the moderate/superficial category. Taking into account the frequency of the behaviour reported by the sample, the majority of participants appear to engage in episodic or repetitive self-injury. Favazza and Simeon (1995) describe episodic self-injurers as those that do not engage in the behaviour frequently and do not incorporate the behaviour into their self-identity. On the other hand, the repetitive self-injurer has more preoccupation with the behaviour and it is incorporated into the self-identity. Unfortunately in this study there was no assessment as to whether a person identified as a 'self-injurer' or not. The finding that 60% of the sample reported injuring on a daily to weekly basis would suggest that for these people the behaviour requires a great deal of time and is likely to be a source of self-identity. This finding related to frequency was not expected in a community sample. Other researchers have reported lower rates of self-injury in community samples. Only 1.4% of Klonsky's (2011) sample (n = 439) reported a lifetime prevalence of engaging in self-injury more than ten times. Most of the sample endorsed injuring between one and four times. Laye-Gindhu and Schonert-Reichl (2005) reported that half of the self-injurers in their community sample injured between two and ten times in the past year. Similarly, Lloyd-Richardson et al. (2007) found that self-injurers in their sample reported injuring, on average, thirteen times in the past year. The high frequency of self-

injurious behaviour in this study suggests that the sample, while recruited from the community, may be more similar to psychiatric samples used in previous studies. Supporting this is the high rate of psychiatric diagnoses reported by the participants.

### **Form and function of the behaviour.**

Turning to the results for the Functional Assessment of Self-Mutilation (FASM), participants were asked about the form and function of self-injury. The results showed that typically an individual self-injures in more than one modality. Results also suggest that the time between thinking about and acting on self-injury is variable. While many participants identified being impulsive about self-injuring, there were times where although there was an urge to injure, the behaviour appeared to have been planned.

A vast majority of participants reported cutting or carving the skin. This form of self-injury is commonly reported in the empirical literature. Picking and reopening wounds were also commonly reported. This form of self-injury would not require a cutting tool, yet like cutting, it would typically result in bleeding, which is often an important aspect in self-injury. In one of the first studies to examine the role of blood in self-injury, Glenn and Klonsky, (2010) reported that self-injurers who identified blood as being an important part of their injuring had a higher frequency of self-injuring compared to those that injured but did not identify blood as being important. Viewing blood as important was also seen in participants who had symptoms of bulimia nervosa and borderline personality disorder.

Self-hitting was also commonly reported as a way to self-injure.

Interestingly, burning was not a frequently endorsed form of self-injury. Only 1.5% of the sample reported using this method. The finding that little pain was experienced during self-injury suggests higher pain thresholds in those that self-injure. This is consistent with studies that have shown those that self-injure are able to tolerate more pain than individuals that do not self-injure (Hooley, Ho, Slater, & Lockstein, 2010; McCoy, Fremouw & McNeil, 2010). Another possible explanation for reduced pain perception could be the role of dissociation.

Dissociative processes can impact the ability to feel pain (Bracken, Berman, Mclusky, & Bullock, 2005). It is difficult to discern from the data collected whether self-injury is done to end a dissociated state or whether the act of injuring induces a dissociated state. Further work in this area would help to clarify the function of self-injury as it relates to dissociative processes as well as pain perception.

Additional results of the FASM provide information about the functions of self-injury. This is an area of particular interest as it attempts to provide explanations for why people purposely injure themselves. The results offer some insight into the purpose of the behaviour. There was a strong tendency for self-injury to be used to relieve unpleasant feelings. This supports the emotion regulation function of self-injury as well as the idea of experiential avoidance and negative reinforcement of the behaviour (Chapmen et al., 2005). Individuals reported using self-injury to avoid unpleasant feelings, which is consistent with the EAM model. This results in the behaviour being both negative and positively

reinforcing, as it replaces aversive feelings often with a sense of relief or other pleasant feelings. These reinforcements make it more likely that the individual will return to this coping strategy in the future. Self-injurers in this sample reported engaging in self-injury to avoid feelings of numbness or emptiness and general “bad” feelings. These are consistent with the reasons cited in the literature for self-injury (e.g., Klonsky, 2011, Lloyd-Richardson, Perrine, Dierker, & Kelly, 2007). The participants also used self-injury as a form of self-punishment. Within the extant literature, this has been a commonly endorsed function of the behaviour and is described as being related to harsh self-criticism that tends to have its etiology in childhood abuse (Nock, 2009).

Not only was self-injury used to gain control of an internal sense of discomfort, it also served to give a sense of gaining control over the external environment. Aside from this one function of self-injury to gain control over the environment, the present study did not support the use of self-injury for escaping social situations (negative reinforcement), such as avoiding punishment or consequences. Furthermore, the use of self-injury for gaining attention in social situations (positive reinforcement) was not supported by the data, including using self-injury to gain attention from others. These findings challenge many clinicians’ tendencies to view the behaviour as manipulative and attention seeking. While others have found support for these functions of self-injury, it tends to be more common in samples of adolescents that self-injure (e.g., Lloyd-Richardson, et al., 2007) or in samples of individuals with borderline personality disorder (BPD) (Kleindienst et al., 2008). The present sample consisted primarily

of young adults and while there were many individuals with a BPD diagnosis, the sample was largely diverse in terms of psychiatric diagnoses.

Overall, the findings reconfirm that self-injury is a behaviour that may take several forms and serves multiple functions, often to avoid feeling uncomfortable affect, to serve as a self-punitive action, or to avoid being in distressing situations that evoke a sense of a lack of control. Having a thorough understanding of function is integral to treatment, yet it may be challenging to identify the function due to the multifaceted nature of self-injury. The idea of using self-injury to avoid uncomfortable affect is consistent with the EAM and serves as an over-arching principle in identifying the function(s) of self-injury as well as how the behaviour is being reinforced.

### **Group Comparisons**

The findings related to the group comparisons on the measures of interest were somewhat surprising given the stronger relationships between variables in the control group. A likely explanation is there was more variation in the self-injury group responses than in the control group, suggesting there is not one 'type' of self-injurer, which further supports a classification system such as the one put forth by Favazza & Simeon (1995). Despite the stronger correlations between measures within the control group, the self-injury group had higher means on all of the measures. This would be expected; the only exception was on the subscale reflecting secure attachment where the control group had a greater mean than the self-injury group. This is not surprising given most individuals that self-injure have deleterious childhoods and interpersonal deficits reflective of insecure

attachment styles rather than secure attachment styles. (Hallab & Covic, 2010; Jutengren, Kerr & Stattin, 2010)

The control group served as a basis of comparison for the analysis of whether or not insecure attachment styles (avoidant or anxious/ambivalent), affect intensity, negative emotions and affect dysregulation, would predict the presence or absence of self-injury. The results suggest that avoidant attachment along with negative emotions and affect dysregulation play an important role in distinguishing self-injurers from non-self-injurers. Although avoidant attachment style is typically associated with suppressed emotion (e.g., hostility and aggression) and attempts to control affect, these avoidant coping strategies may fail in times of stress (Muller, 2009). It is plausible that when these strategies become ineffective, self-injury becomes a mechanism to re-establish control and cope with uncomfortable feelings. Neither anxious/ambivalent attachment nor affect intensity were found to be significant predictors in distinguishing between the self-injury and the control groups. This was not expected, as individuals with an anxious/ambivalent attachment style tend to have greater difficulty regulating affect. Affect intensity has also been a consistent predictor of self-injury.

An explanation for these findings could be the mixed findings around the role of attachment in self-injury with some studies showing support for avoidant attachment (e.g., Kimball & Diddams, 2007), no support for avoidant attachment (e.g., Levesque et al., 2010) and no support for any form of insecure attachment (e.g., Heath et al., 2008). The failure of affect intensity to be a predictor in distinguishing between group membership is surprising. Again, it may relate to

the finding of avoidant attachment being predictive of self-injury such that avoidant attachment tends to not be associated with high affect intensity, as affect is suppressed. Another possible explanation could be that reporting affect intensity requires an awareness of one's emotional state (Thompson, Dizen, & Berenbaum, 2009). As such, it can be speculated that individuals within the self-injury group may not be acutely aware of their emotions, either due to a lack of ability to express their emotions (i.e., alexithymia) or due to dissociated processes that create distance between the individual and their emotions. Furthermore, these results suggest that in distinguishing self-injurers from non-self-injurers, how one regulates emotions may be more important than the intensity of emotions. Several studies have identified affect dysregulation as a key factor in self-injury (e.g., Martin et al., 2011; Heath et al., 2008; Slee, Spinhoven, Garnefski, & Arensman, 2008). With the exception of affect intensity, this study's findings pertaining to self-injury based on group membership also support components of the EAM model (i.e., negative emotions and difficulties with affect regulation) in explaining self-injury.

### **Affect Dysregulation and Negative Emotions**

While there is a strong foundation of research that supports the role of affect dysregulation deficits in self-injury, few studies have examined specific types of emotions as they relate to self-injury. Klonsky (2009) examined affective states before and after self-injury. He found that a feeling of being overwhelmed was most commonly reported prior to self-injuring. This was followed by feelings of sadness and hurt. Following self-injury, participants reported feeling relief but

also anger towards themselves. A minority of the sample reported feeling guilt after self-injuring. Claes et al., (2010) had similar findings but reported guilt as a feeling precipitating self-injury that tended to decrease for individuals who cut but not for those that scratched, bruised, or burned themselves. If self-injury is used to avoid uncomfortable emotion, then it would be helpful for treatment providers to know which emotions self-injurers have difficulty experiencing and regulating.

In relation to the current study's results, affect dysregulation was positively related to negative emotions. Guilt had the strongest relationship with affect dysregulation, followed by sadness. In fact self-injurers, when compared to non-self-injurers, had more negative emotions and a tendency to experience substantially more guilt. The subscale for guilt in this study included descriptors of shame, making it not only a measure of guilt, but also to some degree a measure of shame.

Guilt has been identified as a reason for self-injury (Briere & Gil, 1998; Favazza, 1998) yet minimal research has focussed on how self-conscious emotions, such as guilt and shame, play a role in self-injury. A handful of studies have examined the role of shame in self-injurious behaviour. Gilbert et al. (2010) concluded that shame may trigger aversive feelings related to the self which are coped with by the use of self-injury. Arney and Crowther (2008) found that aversive self-awareness was involved in self-injury. Similar to the present study, they used the PANAS-X and derived a shame subscale from items that loaded onto the guilt subscale. Shame, fear, hostility, and sadness were all aspects of aversive self-awareness and were found to be predictive of dissociation and self-

injury. It appears that self-conscious emotions such as shame and guilt may potentiate or evoke other psychological symptoms such as anxiety and depression (Tangney, Youman, & Stuewig, 2009) that we know are associated with self-injury. Additionally, these self-conscious emotions may be particularly difficult to regulate as there is a tendency to ruminate on these emotions, and at times, individuals may experience a need to make amends (Tangney et al., 2009). Therefore self-injury may not only serve to experientially avoid emotions but may also serve as a self-punitive or atoning action. Flett, Goldstein, Hewitt, and Wekerle (2012) found support for self-injury being related to shame and self-punishment in females more so than males. The females believed they were not meeting the perceived expectations of others.

The findings related to emotion further highlight that self-injury is often done within the context of feeling sad and fearful, which is consistent with the research literature. In this sample self-injurers did not often experience hostility. This was surprising as hostility has been linked to self-injury in previous studies (e.g., Sadeh, Shabnam, Finy, & Verona, 2011). A possible explanation for the present results could be that hostility may be seen more in males, which were lacking in this study. Furthermore, hostility's role in self-injury may be related to interpersonal relationships, rather than self-injury itself (e.g. Critchfield, Levy, Clarkin, & Kernberg, 2008). Apart from the lack of relationship with hostility, these results suggest that self-injury is done to avoid uncomfortable emotions, which is consistent with the Experiential Avoidance Model.

## **EAM Models**

In addition to the findings presented above, this research also focussed on testing the EAM in a sample of self-injurers and expanding the model to include insecure attachment. While it was expected that insecure attachment styles of avoidant and anxious/ambivalent attachment would be instrumental in understanding experiential avoidance and self-injury, this was not fully supported. Separating insecure attachment into avoidant and anxious/ambivalent attachment produced some important findings.

Two of the four models tested fit the data (the EAM and the EAM with anxious/ambivalent attachment). In both models, it was expected that there would be multiple predictive relationships between negative emotions, affect intensity and affect dysregulation, which would in turn be predictive of experiential avoidance and self-injury. Overall this was supported through direct and indirect effects in the models.

The expanded EAM model that included anxious/ambivalent attachment did not account for more explained variance in experiential avoidance or the frequency of self-injury than the EAM model alone. The expanded model was also ranked slightly lower than the original EAM when the two models were compared. Despite this numerical difference, the expanded model showed that attachment does have a pervasive influence on the variables identified in the EAM and is an area to address in treatment. The model that included anxious/ambivalent attachment highlighted attachment's direct effect on negative affect and affect intensity. This suggests that the more anxious/ambivalently

attached one is, the greater the intensity of negative emotions they will experience. Results also show that anxious/ambivalent attachment, in its relationship with other variables in the model, has an effect on affect dysregulation, experiential avoidance, and to some degree indirectly influences the frequency of self-injury. These findings support the idea that attachment influences not only negative emotions and affect intensity but also affect regulation as well as the tendency to engage in experiential avoidance through the use of self-injurious behaviour.

Affect dysregulation, negative emotions, and experiential avoidance had the greatest influence on the frequency of self-injury in both models. While affect intensity was statistically significant, it did not have as great an impact as expected, suggesting it may not be the intensity that is most important, but more so the ability to effectively regulate negative emotion. It may be that self-injurers have a low threshold for emotion and therefore do not require high affect intensity in order to feel the aversive effects of emotion.

Similar to findings that have suggested experiential avoidance plays a key role in problematic behaviour (Kingson, Clarke, & Remington, 2010), the present findings indicate that experiential avoidance is directly related to the frequency of self-injury and is also impacted by other variables in the model. This suggests that there are several important areas that need to be addressed in the treatment of self-injury. The direct path from affect dysregulation to experiential avoidance in both models suggests that the inability to effectively regulate affect is predictive of using experiential avoidance, which in turn has a direct relationship on frequency

of self-injury. This supports the notion that self-injury is a behaviour of experiential avoidance.

### **Attachment**

The inclusion of anxious/ambivalent attachment in the model highlighted its role as a mediating variable on affect dysregulation, experiential avoidance, and frequency of self-injury. Anxious/ambivalent attachment was directly related to, and predictive of, affect intensity and negative emotions in those that self-injure. The findings related to attachment provide some evidence for what was originally hypothesized that attachment style influences emotional process, which in turn can lead to self-injury. Evocation of the attachment system in those that are anxious/ambivalently attached may be the stimulus that triggers a series of events, particularly emotional events that lead to experiential avoidance and self-injury. Levesque et al., (2010) reported that anxious/ambivalent attachment style in those that self-injure was predictive of self-injurious thoughts and behaviours when one is faced with fears of abandonment in their relationships. The results add to the findings by Kimball and Diddams (2007) and Gratz (2002). Kimball and Diddams found support for their model that insecure attachment and self-injury were mediated by negative affect regulation strategies. Gratz (2002) assessed attachment to the parent and found that insecure attachment was predictive of self-injury in females.

The results of this model show that anxious/ambivalent attachment is important to the understanding of self-injury as it influences other variables that help explain self-injuring behaviour. Anxious/ambivalent attachment indirectly

influenced experiential avoidance through its effect on affect intensity, negative emotions, and affect dysregulation. Anxious/ambivalent attachment also appears important in predicting the frequency of self-injury due to its relationship with other variables in the model, however, the key elements in predicting experiential avoidance appear to be affect intensity, negative emotions, and affect dysregulation.

Similar to the limited existing literature that examines attachment in self-injury, the present study also has mixed findings with respect to attachment. While the path model supported the role for anxious/ambivalent attachment and not avoidant attachment in the frequency of self-injury, the opposite was found in the logistic regression results. Here avoidant attachment was a stronger predictor in the presence of self-injury than anxious/ambivalent attachment when compared to the no-self-injury group. A possible explanation for these findings could involve the outcome variables, as one is dichotomous whereas the other was continuous. Furthermore, the logistic regression analysis combined the self-injury and control samples, whereas the path analysis was based only on the self-injury group. These results, as well as the results from the existing literature, highlight that while there is a role of attachment in self-injury it continues to not be clearly understood.

Adding to the divergent findings are issues related to measurement and sampling. There are a wide variety of attachment measures that have been used in studies. Some measures assess early childhood and parental bonding, while others assess romantic attachment or general attachment style. Clinical samples and

samples consisting of individuals that injure frequently would be expected to have more attachment related difficulties than individuals that injure once or twice then cease the behaviour. Often these differences are overlooked in research and can skew results and contribute to some of the inconsistent findings. Further research in the area of attachment is warranted in order to demystify the conflicting findings.

### **Treatment Implications**

The results of this research support existing treatment modalities for self-injury. These include behavioural and Dialectical Behavior Therapy (DBT) based approaches. From a behavioural treatment perspective, it is necessary to understand the function of self-injury and its positive and negative reinforcing properties so that a behavioural plan can be developed. This plan should include replacement strategies for the self-injuring behaviour that serve a similar function (Kilburn & Whitlock, 2012; Smith & Kaminski, 2011). Self-injury serves as an avoidance strategy from an aversive state. For treatment to be successful, it is necessary for the clinician to have a solid understanding of this process (Peterson, Freedenthal, Sheldon, & Anderson, 2008).

The finding that affect intensity, negative emotions, affect dysregulation, and experiential avoidance are involved in self-injury suggests treatment needs to focus on several aspects related to emotions that include emotional awareness, regulation, and comfort with emotions. Individuals that self-injure have a propensity to experience high levels of negative emotion that may be challenging to regulate. The findings also suggest that even low levels of negative emotions

may pose difficulties for emotion regulation. Given this information, clients would benefit from being taught to identify emotions and to apply emotion regulation strategies. This would enable them to reduce affect intensity and the tendency to avoid emotions that feel so much out of their control. Knowledge gained about emotions may increase a sense of control and efficacy to cope with these emotions. Cognitive strategies may also be beneficial in reducing the intensity of emotions, particularly if there is a tendency of the client to think in ways that exacerbate emotions. For example, thinking that the worst possible outcome of a situation will occur increases anxiety, panic, and creates a feeling of being overwhelmed.

Many of these deficits can be addressed through the modules covered in DBT: Mindfulness, Emotion Regulation, Interpersonal Effectiveness, and Distress Tolerance. Mindfulness strategies assist clients in becoming more aware of their thoughts and emotions by observing and describing their experiences rather than being overwhelmed or acting impulsively (Koerner, 2012). Being mindful would reduce the tendency to experientially avoid, as one must be present with their current experience, allowing it to unfold rather than engaging in behaviour such as self-injury that would terminate the experience. Emotion regulation strategies focus on providing basic education around emotions and validating emotions, something that is typically lacking in self-injurers' backgrounds due to invalidating and dismissive environments. Individuals that engage in self-injuring behaviour often have been taught emotional myths such as certain emotions are bad or cannot be expressed (Linehan, 1993). The goal of emotion regulation is to

challenge these myths as well as to teach skills that can assist a person in reducing negative emotions and increasing positive emotions. Distress tolerance also teaches skills that help an individual cope with intense emotions in the present moment rather than giving into the tendency to avoid and escape the situation through behaviours such as self-injury (Koerner, 2012). As individuals that self-injure tend to have insecure attachment, it is no surprise that they tend to experience problems in their interpersonal relationships that can lead to negative emotions and thoughts. DBT addresses these interpersonal problems by teaching skills designed to increase the likelihood of having successful, healthy relationships. For example assertiveness and communication skills can be taught (Koerner, 2012).

Aside from DBT therapy, Emotion Regulation Therapy has shown some success in treating self-injury in those with borderline personality disorder (e.g., Gratz & Tull, 2011). The purpose of the treatment program developed by Gratz and Tull was to teach basic understanding about emotions as well as creating emotional awareness and acceptance. Participants were additionally taught emotion regulation strategies to allow them to better tolerate emotions and reduce impulsive behaviours that often serve to avoid emotions. The treatment also used acceptance-based strategies that encouraged participants to be open to all of their emotions, positive or negative, and find ways to live a life that corresponds with a meaningful life. Results showed that the treatment program decreased emotion dysregulation, reduced the use of emotional avoidance, lessened social impairment, and decreased anxiety, depression, and stress. There was also a

reduction in self-injurious behaviour with some participants ceasing the behaviour for the duration of the group. These are promising results and it may be possible to apply emotion regulation therapy to those without BPD who self-injure.

Expanding treatment for self-injury beyond those with BPD will become an important issue to address, as the DSM-V is expected to include self-injury as a disorder on its own as opposed to a criterion of BPD as it is now listed in the DSM-IV (APA, DSM-5, 2012).

Insecure attachment had an influence on the prediction of self-injury and played a role in the EAM, which suggests there is some support for it to be considered during treatment, particularly as it relates to other treatment targets such as negative emotion and affect regulation. Despite Bowlby's initial belief that attachment is fixed, research has shown that attachment has the potential to be altered through an effective therapeutic alliance (e.g., Levy et al., 2006). Kimball (2009) argues that therapists' using Emotion Focussed Therapy are able to have "corrective" experiences with the clients that can alter attachment patterns. It could be argued that therapists using other modalities of therapy may have similar effects depending on their relationship with the client as well as the techniques they use in session. Wallin (2007) offers a variety of ways to work with maladaptive attachment patterns in session to alter clients' ways of relating interpersonally. Similarly, Muller (2009) discusses activating client's attachment systems in therapy in order to create change.

The primary concern of treatment with self-injury should be to provide a validating, non-judgemental therapeutic relationship that can address skill deficits

prior to addressing attachment patterns and related historical concerns such as childhood abuse and trauma. Interpersonal deficits and the resulting relationship discord are also areas to be addressed, as these can become precipitating events that could lead to an inability to regulate emotion and increase the risk of self-injury. While treatment can address attachment, it must also address important areas such as affect regulation. This is confirmed by studies such as Adrian et al. (2011) who highlighted that although interpersonal difficulties were found to be predictive of self-injury, emotion regulation was weighted as the strongest predictor of the behaviour.

### **Limitations of the Study**

The present study includes the use of self-report questionnaires as well as the use of the internet to recruit participants. There is always the risk with self-report questionnaires that participants do not respond accurately or honestly. There are benefits to using the internet. The use of the internet for research has provided an opportunity to recruit a large number of participants with relative ease as well as recruiting participants that may not be accessible through the use of traditional recruiting methods. The internet provides some anonymity and can potentially increase the likelihood of people being willing to participate in research on sensitive topics such as self-injury that can be perceived as shameful behaviour.

While these are benefits, there is also a downside to using the internet for research participation. This form of data collection makes it difficult to determine if participants actually meet the study requirements. Furthermore for this study, a

condition for participation in the control group was to not have had a mental health diagnosis within the past five years. There may have been participants that had mental health issues that were not severe enough to warrant treatment, yet may have negatively influenced the data by having responses similar to those in the self-injury group. A screening questionnaire may have provided more rigorous restrictions on who could participate in the control group. The fact that the control group was higher in age may have also influenced the findings, as the two groups may not be entirely comparable in some respects. Those that were older may have had more emotional awareness than those participants that were younger. Another problem related to internet recruitment was the geographical catchments. The self-injury group had respondents from several countries whereas the control group was mainly from Canada. This may affect the comparability between groups.

Additional limitations stem from the measures used in the study. In hindsight it would have been useful to include a separate measure of alexithymia or emotional awareness. There is a possibility that a lack of emotional awareness may have been relevant to the findings related to affect intensity and possibly negative emotions. Similarly a trauma or dissociation measure would have helped identify how important these variables are to avoidance behaviours as research has supported a strong link between the two (e.g., Briere, Hodges, & Godbout, 2010). Given the high frequency of self-injury in this sample, in retrospect, it would have been informative to include some questions about how much a participant's self-identity was based on self-injuring. A further limitation is the measurement of experiential avoidance. It may have been more informative to

examine the results of each measure that made up experiential avoidance rather than combining them into one variable. There is no agreed upon method of assessing experiential avoidance, which raises some concern that something in addition to experiential avoidance is being assessed (Chapman, Dixon-Gordon, & Walters, 2011). A possibility is that there is overlap between affect regulation and experiential avoidance. Chapman et al. (2011), suggest that the distinction between experiential avoidance and affect dysregulation is not well defined and have commented on the similarities between the two constructs. More research is needed to understand the overlap or difference between the two constructs.

### **Directions for Future Research**

Future research on the area of self-injury and experiential avoidance would benefit by examining precipitating factors, specifically ones that are related to attachment that may evoke aversive affect such as shame, contempt for the self, and self-deprecation. It may be that such self-conscious states increase a focus on the self that is difficult to regulate and may lead to the use of self-injury as a way to avoid an intolerable state of self-awareness. Research also needs to further delineate the differences or similarities between experiential avoidance and affect regulation.

There have been mixed findings in regards to insecure styles of attachment and self-injury both within this study and in the literature. More research is clearly needed to help elucidate how insecure attachment styles relate to self-injury. It would make sense that avoidant attached self-injurers who tend to detach from their emotions would have less emotional awareness and engage more in the use

of experiential avoidance. Conversely, those who are anxious/ambivalently attached and who focus more on emotions would be expected to have trouble with not attending to difficult emotions, and may need to self-injure to stop perseveration. Further research comparing attachment styles may shed light on important areas such as affect intensity, affect regulation, and the use of experiential avoidance.

While this research focussed on emotions and their role in experiential avoidance, research also needs to explore the types of thoughts and behaviours that may be aversive to experience for those that self-injure. The present research also highlighted that there is some variability within the group of self-injurers suggesting that there are different types of self-injurers. Unfortunately the majority of existing research either focuses on self-injury in those with borderline personality disorder or does not discriminate between individuals who injure frequently and those that injure sporadically or once. The mechanisms of the EAM may work differently depending on the frequency of self-injury.

## **Conclusion**

The Experiential Avoidance Model (EAM, Chapman et al., 2006) proposes that self-injury is done for the purpose of avoiding aversive affect that cannot otherwise be successfully regulated. This research tested the applicability of the Experiential Avoidance Model in a sample obtained from the general population, that contrary to what was anticipated, reported demographic information which suggests the sample was similar to psychiatric samples that have been traditionally used in the study of self-injury. It was theorized that

attachment would provide an explanatory role in the EAM as the model's components are influenced by attachment style. Overall, the results support the EAM framework and demonstrate that anxious/ambivalent attachment contributes to the model. Affect dysregulation, negative emotions, and experiential avoidance had the greatest impact on the frequency of self-injury. Additional hypotheses also tested components of the EAM.

A control group of non-self-injurers was also recruited to serve as a comparison. In comparing the self-injury group to the control group, avoidant attachment was predictive of self-injury. Similar to the extant literature, there continues to be inconsistent findings with the relationship between attachment and self-injury, which speaks to the need for further investigation. The findings also provide evidence that guilt and shame may be particularly aversive emotions that are difficult for self-injurers to regulate.

The role of affect dysregulation in self-injury was supported by this study and is consistent with what is reported in the literature. Affect dysregulation and poor coping skills are deficits that are continually identified in those that self-injure. The initial stages of treatment need to identify the function(s) of the self-injurious behaviour in order to tailor interventions for coping skills that can serve as replacement skills, meaning they are able to provide a similar function to self-injury. For example, if self-injury serves the function of expressing anger, other healthy ways of expressing anger need to be taught to the client. Treatment must also address poor affect regulation skills by teaching clients about emotion and

assisting them in building an overall larger repertoire of healthier coping strategies that include accepting rather than avoiding emotion.

There were several limitations to this study. These included the lack of males in the sample and that the control group participants, on average, were older than those in the self-injury group. There was also a high degree of psychopathology in the self-injury group. This latter point creates a suspicion that the sample is similar to those derived from psychiatric populations rather than the general population. This is an unfortunate outcome as this research set out to broaden the understanding of self-injury beyond individuals with psychiatric conditions.

Directions for future research include further investigation into specific types of aversive emotions, particularly those that evoke distressing self-conscious states. More research on attachment would help to clarify its role in self-injury, which continues to be ambiguous. Finally, while experiential avoidance of emotions plays a role in self-injury, future research should expand this area by examining the thoughts and behaviours that may contribute to experiential avoidance and self-injury as well as distinguishing experiential avoidance from affect regulation.

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## Appendices

### Appendix A

#### Self – Injury as Experiential Avoidance – Information Page

The purpose of this research project is to test the Experiential Avoidance Model (EAM) in a general population sample of males and females and to expand the model by examining possible underlying vulnerabilities, such as attachment style, to the development of experiential avoidance by using self-injury.

The Experiential Avoidance Model has been put forth as a unifying framework for the understanding of self-injurious behaviour (Chapman, Gratz, & Brown, 2006). The EAM describes self-injury as a way to avoid or escape from aversive emotions that cannot be copes with in any other way. The immediate result for those that self-injure is relief from these emotions. This becomes reinforcing and strengthens the use of self-injury as a way to avoid uncomfortable emotions. It is expected that this research will provide support for the EAM as well as show how underlying factors such as relationship attachment may contribute to the role of aversive emotions and to way of coping with emotions. This information will be beneficial for guiding treatment of self-injury as well as for directing future research in this area.

#### Criteria for Participation:

Two groups of participants are needed for this research.

#### Group 1:

- Individual that are interested in participating this study must be at least 18 years old
- Self-injury must have been engaged in within the past 1 – 2 years.
- The self-injury must not have been related to a suicide attempt.
- Each participant will be asked to complete an on-line set of questionnaires, including background and demographic information (copies by mail can also be sent if computer access is a problem).
- The time it takes to complete the questionnaires may vary for each individual but is expected to be no more than 45 minutes. All information collected for this study on-line will be kept confidential though encrypted servers and identifying information being removed from the questionnaires when necessary. Participants that opt to complete the questionnaires through the mail will have their responses kept in a locked cabinet that will be accessed only by the researchers.

#### Group 2 (Control Group):

- Individuals must be 18 years or older
- No history of self-injury

- Have not had a diagnosis of a mental health related issue within the past 5 years.
- Each participant will be asked to complete an on-line set of questionnaires, including background and demographic information (copies by mail can also be sent if computer access is a problem).
- The time it takes to complete the questionnaires may vary for each individual but is expected to be no more than 45 minutes. All information collected for this study on-line will be kept confidential through encrypted servers and identifying information being removed from the questionnaires when necessary. Participants that opt to complete the questionnaires through the mail will have their responses kept in a locked cabinet that will be accessed only by the researchers.

This research is being conducted for a requirement for the researcher's Doctoral Dissertation in Counselling Psychology at the University of Alberta under the supervision of Dr. William Whelton. Research findings may also be published in professional journals and/or presented at psychological conferences. Participants are entitled to receive a copy of the findings upon completion of the study.

If you have any further questions about your participation in the study at any time, please discuss them with the researcher, Sandra Hall. Email: [research.eam@gmail.com](mailto:research.eam@gmail.com)

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension, Augustana and Campus Saint Jean Research Ethics Board (EEASJ REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEASJ REB at (780) 492-3751.

## Appendix B

### Consent to Participate in Research

#### Informed Consent

Research Project: Self-Injury as Experiential Avoidance  
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The purpose of this research project is to test and expand the Experiential Avoidance Model (EAM) as it applies to self-injury. According to the Experiential Avoidance Model, self-injury is a behaviour that is used to avoid uncomfortable or unmanageable emotions.

Each participant will be asked to complete basic demographic questions and background information as well as questionnaires. These questionnaires pertain to emotions, coping, relationships, avoidance behaviour, and self-injurious behaviour. Participants will be given a link to the webpage where they will access the questionnaires. An option to have the material completed by mail will also be given. All information collected for this study will be kept confidential. Any identifying information will be changed in order to protect the anonymity of the participant.

There is a potential risk for psychological distress or discomfort. Contact information for locating support agencies and the referral number for finding a psychologist will be made available to each participant. Participation in the research project is voluntary. Individuals have the right to withdraw from the project at any time without any negative effects. Participants are entitled to receive a copy of the findings upon completion of the study. The researcher, research supervisor, or department chair can be contacted if you have any questions or concerns about this project.

The plan for this study has been reviewed for its adherence to ethical guidelines and approved by the Faculties of Education, Extension, Augustana and Campus

Saint Jean Research Ethics Board (EEASJ REB) at the University of Alberta. For questions regarding participant rights and ethical conduct of research, contact the Chair of the EEASJ REB at (780) 492-3751.

By clicking 'Yes' you agree that you are 18 years or older, and meet the study criteria for either the Self-Injury or the Control group.

## Appendix C

Attachment Style Questionnaire (ASQ; Feeney, Noller, & Hanrahan, 1994)

Show how much you agree with each of the following items by rating them on this scale:

1= totally disagree 2= strongly disagree 3=slightly disagree 4=slightly agree

5=strongly agree 6=totally agree

1. Overall, I am a worthwhile person.	1	2	3	4	5	6
2. I am easier to get to know than most people.	1	2	3	4	5	6
3. I feel confident that other people will be there for me when I need them.	1	2	3	4	5	6
4. I prefer to depend on myself rather than other people.	1	2	3	4	5	6
5. I prefer to keep to myself.	1	2	3	4	5	6
6. To ask for help is to admit that you're a failure.	1	2	3	4	5	6
7. People's worth should be judged by what they achieve.	1	2	3	4	5	6
8. Achieving things is more important than building relationships.	1	2	3	4	5	6
9. Doing your best is more important than getting along with others.	1	2	3	4	5	6
10. If you've got a job to do, you should do it no matter who gets hurt.	1	2	3	4	5	6
11. It's important to me that others like me.	1	2	3	4	5	6
12. It's important to me to avoid doing things that other's won't like.	1	2	3	4	5	6
13. I find it hard to make a decision unless I know that other people think.	1	2	3	4	5	6
14. My relationships with others are generally superficial.	1	2	3	4	5	6

15. Sometimes I think I am not good at all.	1	2	3	4	5	6
16. I find it hard to trust other people.	1	2	3	4	5	6
17. I find it difficult to depend on others.	1	2	3	4	5	6
18. I find that others are reluctant to get as close as I would like.	1	2	3	4	5	6
19. I find it relatively easy to get close to other people.	1	2	3	4	5	6
20. I find it easy to trust others.	1	2	3	4	5	6
21. I feel comfortable depending on other people.	1	2	3	4	5	6
22. I worry that others won't care about me as much as I care about them.	1	2	3	4	5	6
23. I worry about people getting too close.	1	2	3	4	5	6
24. I worry that I won't measure up to other people.	1	2	3	4	5	6
25. I have mixed feelings about being close to others.	1	2	3	4	5	6
26. While I want to get close to others, I feel uneasy about it.	1	2	3	4	5	6
27. I wonder why people would want to be involved with me.	1	2	3	4	5	6
28. It's very important to me to have a close relationship.	1	2	3	4	5	6
29. I worry a lot about my relationships.	1	2	3	4	5	6
30. I wonder how I would cope without someone to love me.	1	2	3	4	5	6
31. I feel confident about relation to others.	1	2	3	4	5	6

32. I often feel left out or alone.	1	2	3	4	5	6
33. I often worry that I do not really fit in with other people.	1	2	3	4	5	6
34. Other people have their own problems, so I don't bother then with mine.	1	2	3	4	5	6
35. When I talk over my problems with other, I generally feel ashamed or foolish.	1	2	3	4	5	6
36. I am too busy with other activities to put much time into relationships.	1	2	3	4	5	6
37. If something is bothering me, others are generally aware and concerned.	1	2	3	4	5	6
38. I am confident that other people will like and respect me.	1	2	3	4	5	6
39. I get frustrated when others are not available when I need them.	1	2	3	4	5	6
40. Other people often disappoint me.	1	2	3	4	5	6

## Appendix D

## Positive and Negative Affect Schedule – Expanded Form (PANAS-X; Watson &amp; Clark, 1994)

This scale consists of a number of words and phrases that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to that word. Indicate to what extent have you felt this way during the past few weeks. Use the following scale to record your answers:

1	2	3	4	5
very slightly or not at all	a little	moderately	quite a bit	extremely
<input type="checkbox"/> cheerful	<input type="checkbox"/> sad	<input type="checkbox"/> active	<input type="checkbox"/> angry at self	
<input type="checkbox"/> disgusted	<input type="checkbox"/> calm	<input type="checkbox"/> guilty	<input type="checkbox"/> enthusiastic	
<input type="checkbox"/> attentive	<input type="checkbox"/> afraid	<input type="checkbox"/> joyful	<input type="checkbox"/> downhearted	
<input type="checkbox"/> bashful	<input type="checkbox"/> tired	<input type="checkbox"/> nervous	<input type="checkbox"/> sheepish	
<input type="checkbox"/> sluggish	<input type="checkbox"/> amazed	<input type="checkbox"/> lonely	<input type="checkbox"/> distressed	
<input type="checkbox"/> daring	<input type="checkbox"/> shaky	<input type="checkbox"/> sleepy	<input type="checkbox"/> blameworthy	
<input type="checkbox"/> surprised	<input type="checkbox"/> happy	<input type="checkbox"/> excited	<input type="checkbox"/> determined	
<input type="checkbox"/> strong	<input type="checkbox"/> timid	<input type="checkbox"/> hostile	<input type="checkbox"/> frightened	
<input type="checkbox"/> scornful	<input type="checkbox"/> alone	<input type="checkbox"/> proud	<input type="checkbox"/> astonished	
<input type="checkbox"/> relaxed	<input type="checkbox"/> alert	<input type="checkbox"/> jittery	<input type="checkbox"/> interested	
<input type="checkbox"/> irritable	<input type="checkbox"/> upset	<input type="checkbox"/> lively	<input type="checkbox"/> loathing	
<input type="checkbox"/> delighted	<input type="checkbox"/> angry	<input type="checkbox"/> ashamed	<input type="checkbox"/> confident	
<input type="checkbox"/> inspired	<input type="checkbox"/> bold	<input type="checkbox"/> at ease	<input type="checkbox"/> energetic	
<input type="checkbox"/> fearless	<input type="checkbox"/> blue	<input type="checkbox"/> scared	<input type="checkbox"/> concentrating	
<input type="checkbox"/> disgusted with self	<input type="checkbox"/> shy	<input type="checkbox"/> drowsy	<input type="checkbox"/> dissatisfied with self	

## Appendix E

## Affect Intensity Measure (AIM; Larsen &amp; Diener, 1987)

Read each statement and indicate your agreement with it using the following responses:

1	2	3	4	5	6
Never	Almost Never	Occasionally	Usually	Almost Always	Always

1. \_\_\_ When I accomplish something difficult I feel delighted or elated
2. \_\_\_ When I feel happy it is a strong type of exuberance.
3. \_\_\_ I enjoy being with other people very much.
4. \_\_\_ I feel pretty bad when I tell a lie.
5. \_\_\_ When I solve a small personal problem, I feel euphoric.
6. \_\_\_ My emotions tend to be more intense than those of most people.
7. \_\_\_ My happy moods are so strong that I feel like I'm "in heaven."
8. \_\_\_ I get overly enthusiastic.
9. \_\_\_ If I complete a task I thought was impossible, I am ecstatic.
10. \_\_\_ My heart races at the anticipation of some exciting event.
11. \_\_\_ Sad movies deeply touch me.
12. \_\_\_ When I'm happy it's a feeling of being untroubled and content rather than being zestful and aroused.
13. \_\_\_ When I talk in front of a group for the first time my voice gets shaky and my heart races.
14. \_\_\_ When something good happens, I am usually much more jubilant than others.
15. \_\_\_ My friends might say I'm emotional.
16. \_\_\_ The memories I like the most are of those times when I felt content and peaceful rather than zestful and enthusiastic.
17. \_\_\_ The sight of someone who is hurt badly affects me.
18. \_\_\_ When I'm feeling well it's easy for me to go from being in a good mood to being really joyful.
19. \_\_\_ "Calm and cool" could easily describe me.
20. \_\_\_ When I'm happy I feel like I'm bursting with joy.
21. \_\_\_ Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.
22. \_\_\_ When I'm happy I feel very energetic.
23. \_\_\_ When I receive an award I become overjoyed.
24. \_\_\_ When I succeed at something, my reaction is calm contentment.
25. \_\_\_ When I do something wrong I have strong feelings of shame and guilt.
26. \_\_\_ I can remain calm even on the most trying days.
27. \_\_\_ When things are going good I feel "on top of the world."
28. \_\_\_ When I get angry it's easy for me to still be rational and not overreact.
29. \_\_\_ When I know I have done something very well, I feel relaxed and content rather than excited and elated.

30. \_\_\_ When I do feel anxiety it is normally very strong.
31. \_\_\_ My negative moods are mild in intensity.
32. \_\_\_ When I am excited over something I want to share my feelings.
33. \_\_\_ When I feel happiness, it is a quiet type of contentment.
34. \_\_\_ My friends would probably say I'm a tense or "high-strung" person.
35. \_\_\_ When I'm happy I bubble over with energy.
36. \_\_\_ When I feel guilty, this emotion is quite strong.
37. \_\_\_ I would characterize my happy moods as closer to contentment than to joy.
38. \_\_\_ When someone compliments me, I get so happy I could "burst".
39. \_\_\_ When I am nervous I get shaky all over.
40. \_\_\_ When I am happy the feeling is more like contentment and inner calm than one of exhilaration and excitement.

## Appendix F

## Difficulties In Emotion Regulation Scale (DERS; Gratz &amp; Roemer, 2004)

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item:

1-----	2-----	3-----	4-----	5-----
almost never	sometimes	about half the time	most of the time	almost
always				
(0-10%)	(11-35%)	(36-65%)	(66-90%)	(91-100%)

- 
- \_\_\_\_\_ 1) I am clear about my feelings.
- \_\_\_\_\_ 2) I pay attention to how I feel.
- \_\_\_\_\_ 3) I experience my emotions as overwhelming and out of control.
- \_\_\_\_\_ 4) I have no idea how I am feeling.
- \_\_\_\_\_ 5) I have difficulty making sense out of my feelings.
- \_\_\_\_\_ 6) I am attentive to my feelings.
- \_\_\_\_\_ 7) I know exactly how I am feeling.
- \_\_\_\_\_ 8) I care about what I am feeling.
- \_\_\_\_\_ 9) I am confused about how I feel.
- \_\_\_\_\_ 10) When I'm upset, I acknowledge my emotions.
- \_\_\_\_\_ 11) When I'm upset, I become angry with myself for feeling that way.
- \_\_\_\_\_ 12) When I'm upset, I become embarrassed for feeling that way.
- \_\_\_\_\_ 13) When I'm upset, I have difficulty getting work done.
- \_\_\_\_\_ 14) When I'm upset, I become out of control.
- \_\_\_\_\_ 15) When I'm upset, I believe that I will remain that way for a long time.
- \_\_\_\_\_ 16) When I'm upset, I believe that I'll end up feeling very depressed.
- \_\_\_\_\_ 17) When I'm upset, I believe that my feelings are valid and important.
- \_\_\_\_\_ 18) When I'm upset, I have difficulty focusing on other things.
- \_\_\_\_\_ 19) When I'm upset, I feel out of control.
- \_\_\_\_\_ 20) When I'm upset, I can still get things done.

- \_\_\_\_\_ 21) When I'm upset, I feel ashamed with myself for feeling that way.
- \_\_\_\_\_ 22) When I'm upset, I know that I can find a way to eventually feel better.
- \_\_\_\_\_ 23) When I'm upset, I feel like I am weak.
- \_\_\_\_\_ 24) When I'm upset, I feel like I can remain in control of my behaviors.
- \_\_\_\_\_ 25) When I'm upset, I feel guilty for feeling that way.
- \_\_\_\_\_ 26) When I'm upset, I have difficulty concentrating.
- \_\_\_\_\_ 27) When I'm upset, I have difficulty controlling my behaviors.
- \_\_\_\_\_ 28) When I'm upset, I believe that there is nothing I can do to make myself feel better.
- \_\_\_\_\_ 29) When I'm upset, I become irritated with myself for feeling that way.
- \_\_\_\_\_ 30) When I'm upset, I start to feel very bad about myself.
- \_\_\_\_\_ 31) When I'm upset, I believe that wallowing in it is all I can do.
- \_\_\_\_\_ 32) When I'm upset, I lose control over my behaviors.
- \_\_\_\_\_ 33) When I'm upset, I have difficulty thinking about anything else.
- \_\_\_\_\_ 34) When I'm upset, I take time to figure out what I'm really feeling.
- \_\_\_\_\_ 35) When I'm upset, it takes me a long time to feel better.
- \_\_\_\_\_ 36) When I'm upset, my emotions feel overwhelming.

## Appendix G

## White Bear Suppression Inventory (WBSI; Wegner &amp; Zanakos, 1994)

Read each statement and indicate your agreement with it using the following responses:

1=strongly disagree    2=disagree    3=sometimes    4=agree    5=strongly agree

1. There are things I prefer not to think about.	1	2	3	4	5
2. Sometimes I wonder why I have the thoughts I do.	1	2	3	4	5
3. I have thought that I cannot stop.	1	2	3	4	5
4. There are images that come to mind that I cannot erase.	1	2	3	4	5
5. My thought frequently return to one idea.	1	2	3	4	5
6. I wish I could stop thinking of certain things.	1	2	3	4	5
7. Sometimes my mind races so fast I wish I could stop it.	1	2	3	4	5
8. I always try to put problems out of my mind.	1	2	3	4	5
9. There are some thoughts that keep jumping into my head.	1	2	3	4	5
10. Sometimes I stay busy just to keep thoughts from intruding on my mind.	1	2	3	4	5
11. There are things that I try not to think about.	1	2	3	4	5
12. Sometimes I really wish I could stop thinking.	1	2	3	4	5
13. I often do things to distract myself from my thoughts.	1	2	3	4	5
14. I have thoughts that I try to avoid.	1	2	3	4	5
15. There are many thought that I have that I don't tell anyone.	1	2	3	4	5

## Appendix H

## Acceptance and Action Questionnaire (AAQ; Hayes et al., 2004)

Using the response key below, how true are each of the following statements for you.

1	2	3	4	5	6	7
Never True	Very rarely true	Seldom true	Sometimes true	Frequently true	Almost Always true	Always true

1. I am able to take action on a problem even if I am uncertain what is the right thing to do. \_\_\_\_\_
2. I often catch myself daydreaming about things I've done and what I would do differently next time. \_\_\_\_\_
3. When I feel depressed or anxious, I am unable to take care of my responsibilities. \_\_\_\_\_
4. I rarely worry about getting my anxiety worries, and feelings under control. \_\_\_\_\_
5. I'm not afraid of my feelings. \_\_\_\_\_
6. When I evaluate something negatively, I usually recognize that this is just a reaction, not an objective fact. \_\_\_\_\_
7. When I compare myself to other people, it seems that most of them are handling their lives better than I do. \_\_\_\_\_
8. Anxiety is bad. \_\_\_\_\_
9. If I could magically remove all the painful experiences I've had in my life, I would do so. \_\_\_\_\_

## Appendix I

## BriefCOPE (Carver, 1997)

We are interested in how people respond when they confront difficult or stressful events in their lives. There are lots of ways to try to deal with stress. This questionnaire asks you to indicate what you generally do and feel, when you experience stressful events. Obviously, different events bring out somewhat different responses, but think about what you usually do when you are under a lot of stress.

Then respond to each of the following items by writing one number in the space provided using the response choices listed just below. Please try to respond to each item separately in your mind from each other item. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item. There are no "right" or "wrong" answers, so choose the most accurate answer for YOU--not what you think "most people" would say or do. Indicate what YOU usually do when YOU experience a stressful event.

1 = I haven't been doing this at all                      2 = I've been doing this a little bit  
3 = I've been doing this a medium amount            4 = I've been doing this a lot

1. I turn to work or other activities to take my mind off things. \_\_\_\_\_
2. I concentrate my efforts on doing something about the situation I'm in.  
\_\_\_\_\_
3. I say to myself "this isn't real." \_\_\_\_\_
4. I use alcohol or other drugs to make myself feel better. \_\_\_\_\_
5. I get emotional support from others. \_\_\_\_\_
6. I give up trying to deal with it. \_\_\_\_\_
7. I take action to try to make the situation better. \_\_\_\_\_
8. I refuse to believe that it has happened. \_\_\_\_\_
9. I say things to let my unpleasant feelings escape. \_\_\_\_\_
10. I get help and advice from other people. \_\_\_\_\_
11. I use alcohol or other drugs to help me get through it. \_\_\_\_\_
12. I try to see it in a different light, to make it seem more positive. \_\_\_\_\_
13. I criticize myself. \_\_\_\_\_
14. I try to come up with a strategy about what to do. \_\_\_\_\_
15. I get comfort and understanding from someone. \_\_\_\_\_

16. I give up the attempt to cope. \_\_\_\_\_
17. I look for something good in what is happening. \_\_\_\_\_
18. I make jokes about it. \_\_\_\_\_
19. I do something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping. \_\_\_\_\_
20. I accept the reality of the fact that it has happened. \_\_\_\_\_
21. I express my negative feelings. \_\_\_\_\_
22. I try to find comfort in my religion or spiritual beliefs. \_\_\_\_\_
23. I try to get advice or help from other people about what to do. \_\_\_\_\_
24. I learn to live with it. \_\_\_\_\_
25. I think hard about what steps to take. \_\_\_\_\_
26. I blame myself for things that happened. \_\_\_\_\_
27. I pray or meditate. \_\_\_\_\_
28. I make fun of the situation. \_\_\_\_\_

## Appendix J

Functional Assessment of Self-Mutilation (FASM; Lloyd, Kelley, & Hope, 1997).

A. In the past year, have you engaged in the following behaviors to deliberately harm yourself (check all that apply):

	No	Yes	How many times?	Have you gotten medical treatment?
1. cut or carved on your skin				
2. hit yourself on purpose				
3. pulled your hair out				
4. gave yourself a tattoo				
5. picked at a wound				
6. burned your skin (i.e., with a cigarette, match or other hot object)				
7. inserted objects under your nails or skin				
8. bit yourself (e.g., your mouth or lip)				
9. picked areas of your body to the point of drawing blood				
10. scraped your skin				
11. "erased" your skin				
12. other: _____				

B. If not in the past year, have you EVER done any of the above acts?

\_\_\_\_\_ Yes  
\_\_\_\_\_ No

If yes to any of the above behaviors in the past year, please complete the questions (C-H) below:

C. While doing any of the above acts, were you trying to kill yourself?

\_\_\_\_\_ Yes \_\_\_\_\_ No

D. How long did you think about doing the above act(s) before actually doing it?

- none  
 "a few minutes"  
 < 60 minutes  
 > 1 hour but < 24 hours  
 more than 1 day but less than a week  
 greater than a week

E. Did you perform any of the above behaviors while you were taking drugs or alcohol?  Yes

No

F. Did you experience pain during this self-harm?

- severe pain  
 moderate pain  
 little pain  
 no pain

G. How old were you when you first harmed yourself in this way? \_\_\_\_\_

H. Did you harm yourself for any of the reasons listed below? (check all reasons that apply):

	0 Never	1 Rarely	2 Some	3 Often
Reasons:				Rating
1. to avoid school, work, or other activities				
2. to relieve feeling "numb" or empty				
3. to get attention				
4. to feel something, even if it was pain				
5. to avoid having to do something unpleasant you don't want to do				
6. to get control of a situation				
7. to try to get a reaction from someone, even if its a negative reaction				
8. to receive more attention from your parents or friends				
9. to avoid being with people				
10. to punish yourself				

11. to get other people to act differently or change	
12. to be like someone you respect	
13. to avoid punishment or paying the consequences	
14. to stop bad feelings	
15. to let others know how desperate you were	
16. to feel more a part of a group	
17. to get your parents to understand or notice you	
18. to give yourself something to do when alone	
19. to give yourself something to do when with others	
20. to get help	
21. to make others angry	
22. to feel relaxed	
23. other:	