An exploratory study of the relationship between deliberate self-harm and symptoms of depression and anxiety among a South African university population

by

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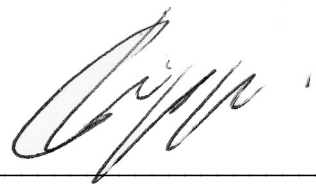

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Abstract

This cross-sectional, exploratory study aimed to determine the prevalence and characteristics of self-harming behaviours among a sample of South African university students (N = 603), as well as the relationship between deliberate self-harm (DSH) and symptoms of depression and anxiety. A battery of instruments, including the Beck Depression Inventory (BDI-II), State-Trait Anxiety Inventory (STAI), and Deliberate Self-Harm Inventory (DSHI) was administered to participants. Data were analysed by means of descriptive statistics, Chi Square tests, t-tests, and logistic regression analyses. The findings suggest high rates of DSH among the sample (46% lifetime prevalence; 36% 12-month prevalence). No significant gender differences were found in the rates of DSH. Participants from the combined Asian and Coloured racial group reported significantly higher rates of DSH than both White and Black participants. Participants aged 20-21 were significantly more likely to report DSH than those in other age groups. Overall, depression scores in the sample fell within the normal range (M = 15.79), while anxiety scores were found to be exceptionally high (state anxiety: M = 46.56; trait anxiety: M = 48.72). The findings suggest that participants with elevated levels of depression are significantly more likely to report DSH. A significant, negative relationship was found between DSH and state anxiety, while a positive yet insignificant relationship was found between DSH and trait anxiety. The findings of this exploratory study partially support the findings of international research investigating the relationship between DSH and depression and anxiety, but warrant further exploration in order to better understand the complexities of these relationships, particularly in the South African context.

Keywords: exploratory research; deliberate self-harm; depression, anxiety; university students; South Africa; functions of deliberate self-harm; emotion regulation; experiential avoidance; Deliberate Self-Harm Inventory; Beck Depression Inventory; State-Trait Anxiety Inventory; descriptive statistics; Chi Square test; t-test; logistic regression analysis

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Chapter 1: Introduction

Deliberate self-harm is a prevalent and poorly understood phenomenon that has received considerable attention in psychological research (Favazza, 1987). For more than seven decades, it has been the focus of numerous studies investigating its prevalence and nature, as well as factors that contribute to self-harming behaviours (Suyemoto, 1998). Previous, international research shows that deliberate self-harm is a worldwide, prevalent phenomenon, with lifetime rates of self-harm ranging from 4% to 43% in non-clinical samples in the United States and Australia, respectively (e.g. Briere & Gil, 1998; Hasking, Momeni, Swannell, and Chia, 2008). Little research on the subject, however, has been conducted in South Africa, indicating a gap in local knowledge and understandings of deliberate self-harm.

Deliberate self-harm can be defined as a range of deliberate, socially unacceptable behaviours involving physical self-injury without suicidal intent (Laye-Gindu & Schonert-Reichl, 2005; Slag, 2005; Croyle & Waltz, 2007). A number of terms are used interchangeably to describe such behaviours, including "self-harm", "self-injury", "non-suicidal self-injury" (NSSI), "self-mutilation" and "parasuicide" (Cleas & Vandereycken, 2007; Hoff & Muehlenkamp, 2009; Sadock & Sadock, 2007). Several studies (e.g. Gratz, 2001; Klonsky & Muehlenkamp, 2007) have found cutting-type behaviours to be the most common methods of deliberate self-harm; other common self-harming behaviours include carving (for example words and/or pictures), burning, scratching, piercing (excluding tattoos and body piercings), abrading and bruising the body surface, as well as the intentional breaking of one's own bones (Gratz, 2001). In many cases of deliberate self-harm, individuals report engaging in more than one type of self-harming behaviour (Gratz, 2001; Laye-Gindhu & Schonert-Reichl, 2005).

1.1. Research problem

International research suggests that deliberate self-harm is an increasingly prevalent phenomenon, particularly among adolescents and young adults (e.g. Laye-Gindu & Schonert-Reichl, 2005; Gratz, 2001). The prevalence of deliberate self-harm among college and/or university students is comparable to that found in clinical settings, suggesting that student populations may represent an at-risk group for deliberate self-harm. The possible reasons for this have not been explored in depth in the literature, but the high rates of self-harm among adolescents and students may be related to a variety of developmental factors and stress associated with academic, social, and personal pressures.

While deliberate self-harm has been associated with a variety of psychological disorders – including mood and anxiety disorders, eating disorders, substance abuse disorders, and personality disorders (Fliege, Lee, Grimm & Klapp, 2009) – it may also occur in the absence of comorbid clinical syndromes, leading some authors to suggest that it may constitute a separate clinical syndrome (see Muehlenkamp, 2005).

The current study forms part of a larger study conducted in the Department of Psychology (University of Pretoria), and aims to provide information on the extent to which deliberate self-harm is correlated with anxiety and depression among a sample of psychology students at a tertiary institution in South Africa. The study will also describe the nature and extent of deliberate self-harm in South Africa as well as possible gender, age and race differences in the findings.

Considering the paucity of research on deliberate self-harm in South Africa, the current study is exploratory in nature and aims to contribute to an increased understanding of deliberate self-harm in the local context. Because deliberate self-harm is commonly associated with anxiety and depression, both of which are prevalent psychological disorders in South Africa, (Herman et al., 2009), local knowledge of the association between deliberate self-harm and these disorders may be valuable for mental health practitioners who work with individuals who self-harm, and to assist practitioners to identify individuals who may be at risk of deliberate self-harm. Furthermore, understanding the relationship between DSH and common psychiatric disorders may assist in informing treatment plans and improve our understanding of anxiety and depression, as well as the presentation and consequences of these disorders.

1.2. Aims and Objectives

The exploratory study seeks to determine whether a relationship exists between DSH and symptoms of depression and anxiety among a sample of psychology students at a tertiary institution in South Africa. Specifically, the research aims to provide preliminary information on the degree to which DSH is correlated with anxiety and depression, two psychological disorders commonly associated with DSH (e.g. Klonsky, Oltmanns, & Turkheimer, 2003), and to demographic characteristics of gender, race, and age.

The primary research question is:

1. Is there a correlation between the presence of DSH behaviour and symptoms of depression and anxiety?

Secondary research questions that will be explored are:

2. Is there a difference in DSH behaviour between males and females?
3. Is there a difference in DSH behaviour between different racial groups?
4. Is there a difference in DSH behaviour between different age groups?

Specific objectives of the study include:

- To describe the nature and extent of DSH in the sample, using the DSH Inventory (DSHI). This will include descriptions of types of DSH, age of onset, frequency, duration, and severity.
- To investigate the relationship between engagement in DSH and depression using the Beck Depression Inventory II (BDI-II) to measure depression.
- To investigate the relationship between engagement in DSH and anxiety using the State-Trait Anxiety Inventory (STAI) to measure anxiety.
- To explore the relationship between engagement in DSH and gender, age and race.

1.3. Rationale

In light of international research findings that DSH is an increasingly prevalent problem, as well as the paucity of research exploring DSH in South Africa, the current study investigates a phenomenon that has received little research interest in the local context. The current research is therefore exploratory in nature, and it is anticipated that the results will be valuable in that they may uncover important areas for future research (Babbie, 2005). Because of the cultural and socioeconomic diversity of the South African population, it is possible that there are risk and protective factors unique to the local context. Risk factors may include high rates of poverty, unemployment, HIV/AIDS and other health endemics, as well a high lifetime prevalence of depressive and anxiety disorders (10% and 17%, respectively; Herman et al., 2009). Since no research on the subject has been conducted in SA, little is known about such risk factors, or conversely, protective factors. The current research might identify important factors for future research.

The current study explores the relationship between DSH and depression and anxiety, which are prevalent psychological disorders in South Africa, with lifetime prevalence rates of 10% for mood disorders and 16% for anxiety disorders (Herman et al., 2009; Stein et al., 2008; Williams et al., 2008). In clinical practice, knowledge of the association between DSH and these disorders may therefore be valuable for mental health practitioners to work with individuals who self-harm, to understand the potential underlying psychiatric symptomology, and to identify individuals who may be at risk of DSH and to create treatment plans that take this into consideration.

1.4. Description of methodology

The current research is a quantitative, correlational study using data from the larger data set gathered for the original 2009 exploratory study on deliberate self-harm (Appendix C). This study employed a survey research design, which involves the administration of standardised, self-report questionnaires (Babbie & Mouton, 1998). The survey design is especially useful for gathering information from a large sample and allows participants to complete the questionnaires anonymously (Babbie & Mouton, 1998). The sample for the current study was comprised of undergraduate and postgraduate psychology students at a South African University ($N = 603$), who were recruited by means of convenience sampling.

Basic descriptive statistics were performed creating frequency tables to describe the characteristics of the sample and the frequency and characteristics of DSH, depression, and anxiety. Chi Square and t-tests tests were performed to determine significant differences between categorical and continuous data, respectively. Logistic regression analyses were done to determine the presence and significance of relationships between DSH and depression and/or anxiety.

1.5. Theoretical framework

Several studies have investigated possible reasons for deliberate self-harm in order to better understand and treat such behaviours (Klonsky & Muehlenkamp, 2007). There has been an apparent shift from theoretically based explanations (e.g. Suyemoto, 1998) to more empirically supported understandings (e.g. Klonsky, 2007) of deliberate self-harm, and recent literature has focused increasingly on the functions (i.e. reasons and motivations) of self-harm (Klonsky & Muehlenkamp, 2007). Chapman, Gratz and Brown (2006) propose a behavioural theory of deliberate self-harm, which they refer to as the experiential avoidance model. This

model is "based on the premise that [deliberate self-harm] is a negatively reinforced strategy for reducing or terminating unwanted emotional arousal" (Chapman et al., 2006, p. 372), and forms the theoretical basis of the present research as feelings of anxiety and depression are included as negative emotional states that individuals who self-harm may seek to reduce or avoid.

Many leading theories are founded on the hypothesis that deliberate self-harm serves the function of helping individuals escape from or regulate emotions (Chapman et al., 2006). The affect regulation model, for instance, suggests that individuals self-harm in order to express and/or control intense, unwanted emotions. Consistent with this explanation, Chapman et al. (2006) conceptualise deliberate self-harm as an experiential avoidance behaviour that functions to escape from or avoid – and thus regulate – "unwanted internal experiences or those external conditions that elicit them" (p. 374). Avoided experiences are not limited to feelings, and may include any experiences that a person finds distressing, such as unpleasant thoughts, memories, and somatic sensations. However, Chapman et al. (2006) point out that avoidance behaviours are typically used to avoid the negative emotions associated with other distressing internal or external experiences, and the authors thus refer to deliberate self-harm primarily as a behaviour of emotional avoidance.

1.6. Structure of the mini-dissertation

Chapter two provides a review of literature on deliberate self-harm, with specific focus on defining deliberate self-harm, the prevalence and nature of deliberate self-harm, and gender and racial differences in the rates of self-harming behaviours. Research examining risk factors associated with deliberate self-harm and the relationship between deliberate self-harm and depression and anxiety will also be discussed, followed by a review of previous literature investigating deliberate self-harm in the local context. Chapter three explores functional models of DSH, with specific focus on the experiential avoidance model of DSH, the theoretical framework that forms the basis of the current study. Chapter four outlines the research methodology, including the research process, sampling, and research design. The results are presented in Chapter five. Chapter six presents interpretations of the results and the relevance of the findings in context of the literature and theory explored in previous chapters. The paper concludes with a discussion of the limitations as well as implications of the study and proposes areas for future research.

Chapter 2: Literature review

This chapter provides an overview of previous international and local research on deliberate self-harm (DSH). The first section is concerned with defining DSH and explores terminological considerations related to various clusters of self-harming behaviour. Epidemiological research will then be discussed, with specific focus on the prevalence and nature of DSH, demographic correlates, and associated risk factors and psychiatric conditions. Previous research exploring the relationship between depression and anxiety in particular will also be discussed. The chapter will be concluded with a review of previous research investigating DSH in the South African context.

2.1. Deliberate Self-Harm: Definition, Terminology, and Classification

2.1.1. Definition.

Deliberate self-harm refers to a wide range of deliberate, socially unacceptable behaviours involving physical self-injury without suicidal intent (Croyle & Waltz, 2007; Laye-Gindu & Schonert-Reichl, 2005; Skegg, 2005). This definition encapsulates three important components of DSH. Firstly, it requires that the behaviour is intentional and deliberate, and thus likely to be goal-directed (Briere & Gil, 1998). A second important criterion in the definition is the exclusion of socially acceptable body modifications such as cosmetic surgery, tattoos, and body piercings, or culturally sanctioned behaviours such as those performed during cultural rituals (Claes & Vandereycken, 2007; Simeon & Favazza, 2001). Finally, DSH is distinguished from suicidal behaviour in that it is not motivated by a desire to end one's life; however, this is a contested issue.

While it has been suggested (e.g. Cooper et al., 2005; Favazza, 1998; Walker-Robison, Rowe, Jeglic, & Hirsch, 2009) that individuals who self-harm – particularly repetitive self-cutters – may be at a greater risk of future suicide attempts than non-self-harmers, it is generally accepted that suicide is not the immediate motivation for self-harming behaviours. Whitlock and Knox (2007) found that DSH is used as a strategy to cope with psychological distress, which may ultimately lead to subsequent suicide attempts. Favazza and Conterio (1989) further suggest that the desperate attempts to control self-harming behaviour may culminate in actual suicide attempts, typically by drug overdose. Thus, while DSH may in some cases

predict future suicide attempts, the immediate act remains a distinct behaviour in terms of its motivations, intent, and lethality (Muehlenkamp & Gutierrez, 2004).

2.1.2. Terminological variations.

A number of terms are used interchangeably to describe DSH, including (inter alia) "self-harm", "self-injury", "self-injurious behaviour", "non-suicidal self-injury" (NSSI), "self-mutilation" and "parasuicide" (Claes & Vandereycken, 2007; Hoff & Muehlenkamp, 2009; Sadock & Sadock, 2007). While these various terms often refer to similar clusters of behaviour, they are at times defined differently in terms of the inclusion or exclusion of certain self-harming behaviours. For example, "self-injurious behaviour" often refers to repetitive behaviours associated with developmental disorders and mental retardation; such behaviours include hair pulling, head banging, scratching, and biting (Favazza, 1998; Klonsky, 2007; Sadock & Sadock, 2007). "Self-mutilation" is sometimes reserved for describing more severe forms of deliberate, self-inflicted body derangements, such as castration, amputation, and eye enucleation, which may occur during extreme psychotic episodes (Claes & Vandereycken, 2007). Some definitions focus exclusively on "moderate derangements of the body surface, such as cutting, carving, and burning of the skin" (Claes & Vandereycken, 2007, p. 138), while others may include substance abuse, deliberate overdoses and other "parasuicidal" behaviours as forms of self-harm. Generally, the term "self-poisoning" is used to refer to behaviours involving the deliberate ingestion of medication or other harmful substances (Tantam & Huband, 2009).

2.1.3. Classification.

In light of the confusion that may arise from such terminological variations, Simeon and Favazza (2001) provide a useful classification of DSH based on the severity, pattern, and frequency of behaviour. The categories of self-injurious behaviours proposed by the authors are stereotypic, major, compulsive, and impulsive (Simeon & Favazza, 2001). Before reviewing the categories, it is important to note that Simeon and Favazza (2001) use the term "self-injurious behaviours" to broadly refer to self-harming behaviours, with no inherent reference to their nature or severity.

The category of "stereotypic self-injurious behaviour" is used by Simeon and Favazza (2001) to describe repetitive acts such as head banging, self-biting, lip or hand chewing, skin picking or scratching, hair pulling, and self-hitting. These behaviours are mostly seen in cases of

mental retardation and pervasive developmental disorders. "Major self-injurious behaviour" describes infrequent acts of severe or life-threatening self-harm and includes castration, amputation, and eye enucleation, which may occur during psychotic episodes, intoxication, transsexualism, or in cases of "severe character disorders" (Simeon & Favazza, 2001, p. 5). The third category, "compulsive self-injurious behaviour", refers to repetitive acts of hair pulling, nail biting, and skin picking, which may result in mild to moderate tissue damage (Simeon & Favazza, 2001). These behaviours have been associated with trichotillomania (compulsive hair pulling) and stereotypic movement disorder. Finally, "impulsive self-injurious behaviour" includes skin cutting, skin burning, and self-hitting, resulting in mild to moderate tissue damage. This category of self-injurious behaviour is most commonly associated with personality disorders, particularly borderline personality disorder, as well as eating disorders, post-traumatic stress disorder, and abuse, trauma, or dissociation (Simeon & Favazza, 2001). The current study primarily explores behaviours described in the fourth category, namely impulsive self-injurious behaviours, further described below.

2.1.4. Operational definition.

For the purposes of the current study, DSH is operationally defined as intentional behaviours aimed at inflicting damage to body tissue, including cutting, carving (for example words and/or pictures), burning, scratching, piercing (excluding tattoos and body piercings), abrading and bruising the body surface, as well as the intentional breaking of one's own bones (Gratz, 2001). These behaviours are assessed using the Deliberate Self-Harm Inventory (DSHI; Gratz, 2001).

2.2. Prevalence of Deliberate Self-Harm

Numerous international studies have explored the prevalence of DSH among various populations, including psychiatric (clinical) samples (e.g. Briere & Gil, 1998; Zlotnick, Mattia, & Zimmerman, 1999), community (non-clinical) samples (e.g. Klonsky et al., 2003), children (e.g. Mojtabai & Olfson, 2008), adolescents (e.g. Hawton, Rodham, Evans, & Weatherall, 2002; Nixon, Cloutier, & Jansson, 2008), and adults (Huyse et al., 2001). This section provides an overview of previous epidemiological research relevant to the current study; specifically, the findings of studies investigating DSH among nonclinical samples of young adults and college or university students will be reviewed.

In a study exploring DSH in the general adult population, Klonsky et al. (2003) found a prevalence rate for DSH of approximately 4% among military Air Force recruits in the United States. Two closed-ended questions asking whether participants have engaged in DSH (in response to tension or otherwise) were presented to participants. The participants in this study were young adults, with a mean age of 20. The majority of the participants in the sample were male (62%), and no significant gender differences were found with regard to self-harming behaviours. Briere and Gil (1998) also found a 4% prevalence rate among a representative, community sample of adults in the US. These authors presented a single item asking if participants have engaged in DSH on a scale from 0 (never) to 3 (often) in the six months preceding the study. The age range of participants in this study was 18-90, with a mean age of 46. The low prevalence rate found in this study may also be related to the fact that older adults were included in the sample, as DSH is generally found to be more common among adolescents and young adults (Catledge, Scharer, & Fuller, 2012). However, the 4% prevalence matches rates found by Klonsky et al. (2003), and may therefore reflect the characteristics of non-student, community populations. Moreover, the aforementioned studies used closed-ended questions assessing any behaviours perceived by participants as self-harm rather than exploring a variety of behaviours conceptualised as DSH in psychological literature and research. Therefore, participants may have underreported behaviours that are classified as DSH in theory and research but which they do not consider self-harming. Additionally, Briere and Gil (1998) only explored self-harm in the six months preceding the study rather than lifetime incidents.

Hasking, Momeni, Swannell, and Chia, (2008) conducted a study on DSH among a non-clinical, adult population in Melbourne, Australia. A total of 211 participants were recruited, which included university students as well as other adults between the ages of 18 and 30 (M = 21.29). The researchers presented participants with a questionnaire assessing a range of self-harming behaviours as well as the frequency, location on the body, recency, and severity of these behaviours. Suicide attempts were excluded in the measure. Overall, 43% of the participants reported engaging in DSH at some point in their lives (Hasking et al., 2008). In terms of recent incidents of self-harm, 36% of the participants reported acts of self-harm during the year preceding the study, and 15% had engaged in such behaviours in the month preceding the study (Hasking et al., 2008). These rates are strikingly high, which may be related to methodological factors. For example, the recruitment of participants relied on their willingness to volunteer. Many of the individuals may have volunteered because of personal

relevance – that is, individuals with a history of DSH may have been more likely to respond, and the sample therefore may have consisted of a disproportionate number of self-harmers. However, the high rates of DSH may also be related to the comprehensiveness and specificity of the measuring instrument used.

In general, the prevalence of DSH in student populations has been found to be higher than in the general population, with the exception of Hasking et al.'s (2008) findings described above. In a recent study investigating the correlation between disordered eating and self-harm, Wright, Bewick, Barkham, House, and Hill (2009) found a 14% lifetime prevalence rate of DSH among university students in the United Kingdom. In an epidemiological study of DSH among college students in the US, Whitlock, Eckenrode, and Silverman (2006) found that 17% of college students in the US reported engaging in self-harming at some point in their lives, while 7% reported acts of DSH in the 12 months preceding the study. Best (2009) found that 26% of students from a university in the UK reported at least one act of DSH since commencing their university career. Another study conducted among university students in the UK yielded similar results, with 30% of participants reporting engaging in self-harm at some point in their lives (Batey, May, & Andrade, 2010).

Kimball and Diddams (2007), Brown, Williams, and Collins (2007), Croyle and Waltz (2007), Gratz (2001), Gratz, Conrad, and Roemer (2002), and Paivio and McCulloch (2004) all investigated DSH among psychology students from universities in the US and found strikingly high prevalence rates. Kimball and Diddams (2007) found a 9% prevalence rate of DSH among their sample. In Brown et al.'s (2007) study, the lifetime prevalence was found to be 28%, with a 10% one-year prevalence. Croyle and Waltz (2007) found remarkably high prevalence rates for self-harm, with 68% of participants reporting "low self-harm" (e.g. skin picking and nail biting) and 35% reporting "high self-harm (e.g. cutting and burning). Other research among psychology students in the US has yielded similar results. For example, Gratz (2001) and Gratz et al. (2002) found life-time prevalence rates of 35% and 38%, respectively. Paivio and McCulloch (2004) found a 41% prevalence of DSH among psychology students at a Canadian university. The sample used In Pavio and McCulloch's study was relatively small (N=100) and consisted only of female students, and therefore the results may not be representative of student populations in general.

The variable findings of these studies may reflect differences in the instruments used and their particular items, the specific operational definitions of DSH, the respondents' interpretations of items, and the samples used in the various studies. The lack of consensus regarding definitions and terminology and what specific behaviours should be included or excluded poses a challenge when attempting to study DSH in a unified, consistent way, which has implications for the results yielded by various studies (Fliege et al., 2009; Gratz, 2001). Gratz (2001) asserts that "the self-harm literature is replete with numerous operational definitions of DSH, resulting in the likelihood that different researchers are actually measuring different constructs and behaviours" (p. 254).

Therefore, these results, while valuable, should be interpreted with caution. The fact that data was obtained from psychology students specifically means that the results cannot be generalised to other students. There may be characteristics unique to psychology students or the nature and content of their courses, such as increased awareness of or exposure to DSH and the factors associated with it, which may make them more susceptible to self-harming behaviours. Furthermore, psychology students may be more aware of the theoretical definition of self-harm and have a greater understanding of the concept, which may influence their responses to questionnaires.

Despite the variability in the findings discussed above, overall they indicate that DSH may be more prevalent among student populations than in the general population. In fact, the rates of DSH among students is comparable to rates in clinical samples (e.g. Briere & Gil, 1998: 21%; Claes, Vandereycken, & Vertommen, 2007: 46%; Nijman et al., 1999: 44%; Zlotnick et al., 1999: 33%). It has also been suggested that the prevalence of DSH may be on the increase in college or university students (e.g. Whitlock, Eells, Cummings, & Purington, 2009). In addition, some studies have found that depression and anxiety, two disorders commonly associated with DSH (discussed in Section 2.7), are on the increase among high school and university students (e.g. Bor, Dean, Najman, & Hayatbakhsh, 2014; Twenge et al., 2010) and should therefore be considered as potential risk factors for or correlates of DSH among these populations.

It is possible that academic pressures and demanding work schedules may add to subjective psychological distress among university/college students, increasing their risk for DSH. In addition, attending university may represent an important and challenging life transition for

many individuals, perhaps making them more susceptible to emotional distress. Kisch, Leino, and Silverman (2005) and Andrews and Wilding (2004) found that university students from low socio-economic backgrounds or those experiencing financial difficulties may be particularly at risk of mental health problems. While Andrews and Wilding (2004) suggest that university attendance itself is unlikely to create mental health problems and may, in some cases, actually improve mental health status in some individuals, Kadison (2004) and Eisenberg, Gollust, Golberstein, and Hefner (2007) note a variety of academic and social or environmental stressors that may precipitate student mental health problems. These include increased academic pressures, competitive admissions processes, rising college costs, disrupted or erratic sleep patterns, and lack of social and financial support due to the disintegration of nuclear family system (Eisenberg et al., 2007; Kadison, 2004). Therefore, although risk factors related to university attendance have not been explored in relation to DSH specifically, such factors may contribute to mental health problems in general, and self-harm in particular. Kisch et al. (2005) and Kadison (2004) also found that suicidalilty may be on the increase among students, which may be related to the abovementioned risk factors and mental health problems. However, while DSH has been identified as a potential risk for future suicide attempts (e.g. Hawton, Zahl, & Weatherall, 2003), the findings of Kisch et al. (2005) and Kadison (2004) relate only to suicidality, and no such studies have been conducted investigating DSH in relation to university stressors.

Furthermore, as previously noted, psychology students in particular have comprised the samples used in a number of studies, including the present study. The high rates of self-harm found in these studies may indicate that psychology students are a high-risk group. It is also possible, however, that the findings among student populations may be related to other factors such as age. The high rate of DSH in both student and clinical populations also motivates the value of local research exploring not only the prevalence and nature of DSH among students, but also possible correlations between self-harm and psychiatric conditions. Future research investigating DSH among a more representative student population, as well as possible differences between psychology students and students from other faculties, may prove valuable in providing some elucidation regarding these findings.

2.3. The Characteristics of Deliberate Self-Harm

This section summarises research findings on the different forms (methods) of DSH, age of onset, and the frequency of self-harming behaviours.

2.3.1. Methods of deliberate self-harm.

As previously noted, DSH is a complex phenomenon involving a range of behaviours. Authors have attempted to categorise the various behaviours in terms of, inter alia, their severity and pattern, associated characteristics, and comorbid psychiatric conditions (e.g. Best, 2009; Kahan & Pattison, 1984; Simeon & Favazza, 2001). Despite these efforts, there is little consistency in terms of the particular behaviours that are included in the questionnaires used in various studies (Gratz, 2001). As a result, research investigating the most common methods of self-harm often produces mixed results. In addition, research suggests that many individuals who self-harm report using more than one method of DSH (e.g. Gratz, 2001; Gratz, 2006; Hoff & Muehlenkamp, 2009).

According to Simeon and Favazza (2001), the most common impulsive self-injurious behaviours, which constitute the primary focus of the current study, are "skin cutting, skin burning, self-sticking with pins, and various ways of self-hitting" (p. 15). Empirical research among clinical and nonclinical populations has produced similar findings. Several studies (e.g. Briere & Gil, 1998; Gratz, 2001; Gratz, 2006; Hoff & Muehlenkamp, 2009; Paivio & McCulloch, 2004) have found cutting-type behaviours to be the most common methods of DSH. To the author's knowledge, no studies have been conducted to investigate reasons for this. Other frequently reported methods of self-harm include inserting needles or sharp objects into the skin, severe scratching, hitting and/or punching objects or oneself, carving words into the skin, and self-burning (Croyle & Waltz, 2007; Favazza, 1992; Gollust, Eisenberg, & Golberstein, 2008; Gratz, 2001; Gratz, 2006; Gratz et al., 2002; Hasking et al., 2008; Hoff & Muehlenkamp, 2009; Paivio & McCulloch, 2004; Whitlock et al., 2006).

2.3.2. Age of onset.

Initial acts of DSH typically occur during adolescence or early adulthood (Favazza, 1992; Hoff & Muehlenkamp, 2009). Many authors report the age of onset to be between 13 and 16 years (e.g. Klonsky & Muehlenkamp, 2007; Skegg, 2005; Whitlock, 2009), while Favazza and Conterio, (1989) found the average age of onset to be between 14 and 24 years. However, the onset of self-harm may also occur in childhood or later adulthood (Whitlock, 2009). According to Croyle and Waltz (2007), subclinical ("low") self-harming behaviours often have their onset during childhood, while clinical ("high") self-harm is more likely to begin during adolescence, between the ages of 15 and 18.

The finding that DSH often has its onset in adolescents suggests that DSH may be a response to emotional distress associated with developmental changes occurring during adolescence combined with poor coping strategies as well as personality traits such as impulsivity (e.g. Laye-Gindhu & Schonert-Reichl, 2005). Furthermore, the age of onset of DSH coincides with the age of onset of various psychiatric conditions that may be associated with DSH, including mood and anxiety disorders (e.g. Barlow & Durand, 2005; Kessler et al., 2003). While the age of onset for mood disorders, including depression, has been reported to be approximately 30 years, some researchers have found that depression is increasing among adolescents and young adults (e.g. Eisenberg et al., 2007; Kadison, 2004).

2.3.3. Frequency of deliberate self-harm.

Simeon and Favazza (2001) distinguish between "episodic" and "repetitive" self-injury. Episodic self-harmers engage in a limited number of acts of self-harm in their lifetimes, while repetitive self-harmers "do so quite frequently and habitually" (p. 15). Self-harm may resemble "other habit disorders like binge eating, smoking, gambling or internet behaviour" (Tantam & Huband, 2009, p. 3), and some individuals engage in self-harm more and more frequently, at times developing a craving for it even in the absence of distress. According to Favazza (1992), the majority of repetitive self-harmers describe their behaviour as an addiction, and Nock (2010) suggests that self-harm and substance abuse may serve similar functions, namely to diminish or escape from emotional pain. Episodic self-harmers, on the other hand, may injure themselves only occasionally as a last resort in response to overwhelming distress (Tantam & Huband, 2009).

Self-harmers often experience anticipation and a craving to engage in self-harm, or tension associated with attempting to avoid it (Tantam & Huband, 2009). They may become preoccupied with thoughts of self-harm, experiencing increased tension associated with the urge to self-harm and efforts to resist it, which typically fail (Simeon & Favazza, 2001). Self-harmers may choose not to entertain thoughts about the consequences of self-harming, and may even engage in self-harm when in a state of dissociation, unable to control their behaviour (Tantam & Huband, 2009). Finally, "the act of self-injury appears to be an end in itself' (Tantam & Huband, 2009, p. 2), with no intention of causing significant physical change or ending one's life. The goals of self-harm appear to be "wound(s), pain, bleeding or a combination of these" (Tantam & Huband, 2009, p. 2), and individuals often experience a sense of relief following the act of self-harm (Simeon & Favazza, 2001). This relief has been

linked to neurobiological factors involving the endogenous opioid system. Specifically, it has been suggested that DSH may stimulate the release of endogenous opioids (endorphins), and that individuals who self-harm show deficiencies in these endorphins (e.g. Kerr, Muehlenkamp, & Turner, 2010; Mazelis, 2008; Nock, 2010; Stanley et al., 2010).

Research indicates that individuals who have engaged in DSH typically report more than one episode of the behaviour, supporting the repetitive nature of self-harm (e.g. Gratz, 2001; Gratz, 2006; Gratz et al., 2002; Whitlock et al., 2006). It has been found that about 70% (Whitlock et al., 2006) to 83% (Gratz, 2001) of self-harmers in nonclinical, student populations report at least two episodes of DSH. Gratz (2001; 2006) found that 15% to 18% report more than 10 incidents, and 9% to 10% report 100 or more acts of DSH in their lifetimes (Gratz, 2001; Gratz et al., 2002). It is possible that the lack of consensus regarding the definition of DSH may at least in part explain the variability in the findings above.

2.4. Deliberate Self-Harm and Gender

Traditionally, it was believed that DSH was more prevalent among women than men (e.g. Gratz, 2001; Klonsky & Muehlenkamp, 2007; Skegg, 2005), however recent research has not consistently supported this assertion. For example, Klonsky et al. (2003), Gratz (2001), Croyle and Waltz (2007), and Andover, Primack, Gibb, and Pepper (2010) found roughly equivalent prevalence rates of DSH for men and women. Gratz et al. (2002), Marchetto (2006), and Gollust et al. (2008) found only insignificant gender differences, with men reporting slightly higher rates of self-harm.

Many studies, however, have found higher rates of self-harm among women than men (e.g. Hawton & Harriss, 2008; Claes et al., 2007; Hoff & Muehlenkamp, 2009). Hawton and Harriss (2008) examined gender differences in the rates of DSH across the life cycle. The results of their study suggest that women reported higher rates than men overall, but differences became smaller as age increased. Whitlock et al. (2006) found little gender differences in the rates of single episodes of self-harm, but women were more likely than men to report repetitive self-harm. A number of factors may place women at greater risk for DSH. For example, psychological disorders such as borderline personality disorder, eating disorders, depression, and anxiety often co-occur with DSH and are more prevalent among women than men (APA, 2013; Barlow & Durand, 2005; Sadock & Sadock, 2007; Skegg, 2005). While the majority of both men and women report that their first episode of DSH

occurred during adolescence, women report a slightly earlier age of onset than men (Andover et al., 2010). The authors suggest that this may be related to the earlier age of onset of depression in women compared to men. Women are also more likely to be exposed to other risk factors commonly associated with DSH, such as childhood sexual abuse (Skegg, 2005).

Research suggests that the most pertinent gender differences related to DSH may lie in the most common methods of self-harm used by men and women (Klonsky & Muehlenkamp, 2007). In a study investigating gender differences in self-harm among female and male psychiatric inpatients, Claes et al. (2007) found that men were more likely to burn and/or hit themselves, while self-cutting and scratching were more common among women. In a similar study among university students, Andover et al. (2010) also found that women reported more cutting and scratching behaviours, while men were more likely to report self-burning. In general, while many men also report cutting, they are more likely than women to engage in more violent and severe forms of self-harm, such as punching windows or breaking bones (Hawton, 2000; Taylor, 2003).

According to Hawton (2000), the more severe and violent methods of self-harm used by men may be related to stronger suicidal intent, higher levels of aggression, and "less concern with bodily disfigurement" (p. 484). Men who self-harm are also more likely than women to report other self-destructive or impulsive behaviours such as alcohol abuse, reckless driving, and high-risk sexual activities (Claes et al., 2007). Gender differences in the specific types of self-harming behaviours may arise from differences in the socialisation of men and women, reflecting gender-appropriate methods of DSH (Andover et al., 2010; Laye-Gindhu & Schonert-Reichl, 2005; Taylor, 2003).

While gender differences found in DSH have not been thoroughly investigated in terms of differential functions and risks for men and women, respectively, it has been suggested that homosexual men may be more at risk of self-harm and suicide than heterosexual men and homosexual women (King et al., 2008; Skegg, Nada-Raja, Dickson, Paul, & Williams, 2003). This may be a related to greater social stigmatisation of homosexuality in men, as well as perceptions among homosexual men that same-sex attraction is "wrong" or unacceptable, leading to greater emotional distress (including symptoms of depression and anxiety) in homosexual men (Skegg et al., 2003). Furthermore, men who self-harm may be at greater risk of subsequent suicide attempts (e.g. Hawton et al., 2003), suggesting a need for research

exploring the motivations for DSH and potential suicide risk associated with self-harm among men.

To conclude, research on gender differences in the rates of DSH has produced mixed results, but suggests that any differences may be less significant than previously assumed. Women tend to report higher rates of repetitive self-harm, as well as an earlier age of onset, while men are more likely than women to report violent methods of self-harm. Gender differences in DSH may be related to a number of factors such as different risk factors, associated characteristics, and motivations, as well as sexual orientation and different socialisation experiences and gender-role expectations. Prospective research exploring the similarities and differences between men and women who self-harm would be valuable in increasing our understanding of the complex relationship between gender and DSH.

2.5. Deliberate Self-Harm and Race/Ethnicity

This section provides an overview of research that has explored racial or ethnic differences pertaining to DSH, although such research is limited and the findings have been mixed. Klonsky and Muehlenkamp (2007) and Muehlenkamp (2010), report that rates of DSH differ significantly across racial or ethnic groups. Specifically, the authors found that Caucasians tend to report higher rates of self-harming behaviour than non-Caucasians (Muehlenkamp, 2010). Little difference, however, was found in rates of DSH within non-Caucasian ethnic groups (Muehlenkamp, 2010). Various authors (e.g. Gollust et al., 2008; Gratz, 2006; Marchetto, 2006; Whitlock et al., 2006) have reported similar findings, suggesting that DSH may be more prevalent among Caucasian populations compared to other racial/ethnic groups. In Whitlock et al.'s (2006) study, it was found that Asian participants in particular were less likely to engage in DSH than other ethnic groups.

Other studies have not supported the findings discussed above. For example, Gratz et al. (2002), Andover et al. (2010), and Best (2009) found no significant differences in rates of self-harm across racial/ethnic groups. Bhui, McKenzie and Rasul (2007) reviewed research exploring self-harm across ethnic groups in the UK from 1960 to 2004, and concluded that rates of self-harm were found to be higher among South Asian women than Caucasian women and South Asian men, which directly contradicts the findings reported by Whitlock et al. (2006). Other research has supported these findings, suggesting that the prevalence of

DSH among young, Asian women in the UK is on the increase (e.g. Bhardwaj, 2001; Marshall, 1999).

In summary, relatively few studies have investigated race/ethnicity as a factor in DSH (Goddard, Subotsky, & Fombonne, 1996). Where racial/ethnic differences have been found, the reasons for such discrepancies have not been explained. One possible explanation may be related to factors such as access to medical and/or psychiatric services as well as willingness to report self-harming behaviours (Goddard et al., 1996). Methodological factors, such as the behaviours included in questionnaires and the samples used in the various studies, may also play a role in the variability in the findings. Furthermore, the definitions of DSH describe it as a socially unacceptable behaviour. In many cultures, this may not be the case, and self-harming behaviours may constitute a culturally sanctioned behaviour or even a necessary practice in certain rituals and rites of passage. These include body modifications that are intended to promote healing, health, and spirituality in communities (Favazza, 1998). For example, shamans (or "sangomas" in the local context) may engage in self-mutilation in the process of becoming healers (Favazza, 1987). Such rituals may be performed by the individuals themselves, or they may consensually allow others to perform them (Favazza, 1987; Favazza, 1998). It is therefore important to keep in mind that the concept of self-harm may be interpreted differently according to cultural perspectives and practices (e.g. Favazza, 1998).

Future research examining racial/ethnic differences in DSH and the potential role of the cultural beliefs and practices associated with specific racial/ethnic groups may be valuable in improving our understanding of the possible relationship between self-harm and race/ethnicity. Visser, Hirsch, Hatfield, and Jeglic (2009) suggest that ethnic, cultural and religious factors all interact to influence individuals' reaction patterns to stress. Cultural beliefs and norms may not only impact on the rates of DSH, but also on the motivations for self-harming behaviours and the meanings attached to these behaviours (Bhardwaj, 2001; Marshall, 1999). For example, individuals from collectivistic cultures may self-harm in response to relational stressors, while those from individualistic backgrounds may do so in response to personal struggles.

While racial differences have been found in many international studies, these results cannot be generalised to the local context, as South Africa is unique in terms of its racial/ethnic

composition and cultural diversity. An investigation of differences in self-harming behaviour may uncover important areas for future research related to potential risk and protective factors associated with the cultural norms and practices of diverse racial/ethnic groups. This motivates the need to explore DSH among different racial/ethnic groups in the local context.

2.6. Deliberate Self-Harm: Associated Characteristics

2.6.1. Risk factors associated with deliberate self-harm.

This section provides an overview of research exploring the most common risk factors associated with DSH. Both environmental and individual risk factors will be discussed, with specific focus on childhood experiences, psychological and emotional characteristics of self-harmers, and broader socioeconomic factors. DSH is unlikely to arise from any single risk factor, such as an isolated experience or individual vulnerability; rather, a variety of environmental and individual factors interact in the development of self-harming behaviours (Gratz, 2003; Gratz, 2006). It is also important to note that the risk factors and psychopathologies discussed in this section are correlative rather than causal factors in DSH. In other words, some relationship does exist between the psychopathologies discussed here and DSH but it is unclear whether the risk factors occur before or after presentation of DSH and whether the relationship is dependent on a more complex interplay of factors (Fliege et al., 2009).

Much of the literature has focused on the relationship between adverse or traumatic childhood experiences within the family context and DSH in adulthood (Batey et al., 2010; Fliege et al., 2009; Gratz, 2003; Gratz et al., 2002; McAllister, 2003; Nijman et al., 1999; Simeon & Favazza, 2001). Childhood sexual abuse, in particular, has been widely associated with self-harm later in life (e.g. Evren & Evren, 2005; Gratz, 2003; Gratz et al., 2002; Whitlock et al., 2006; 2002; Zanarini, Laudate, Frankenburg, Reich, & Fitzmaurice, 2011; Zlotnick et al., 1996). Gratz (2003) notes that it is difficult to determine whether there is a direct relationship between childhood sexual abuse and self-harm, as there may be other risk factors that co-occur with sexual abuse, such as emotional neglect. Furthermore, childhood sexual abuse appears to be a stronger predictor of DSH among women than men (Gratz, 2002). Other risk factors related to childhood experiences include physical and/or emotional abuse, physical and/or emotional neglect, separation and/or loss, poor early attachment relationships, and an invalidating environment (Gratz, 2003; Linehan, 1993; van der Kolk,

Perry, & Herman, 1991; Whitlock et al., 2006). Emotional neglect has been found to be a stronger risk factor for self-harm among women, while the physical absence of a parent, particularly the father, has been found to be the strongest risk factor for men (Gratz et al., 2002).

Research investigating individual risk factors for DSH typically focuses on emotional and personality characteristics of self-harmers. These include negative emotionality, emotion-regulation or coping deficits, and self-derogation (Brown et al., 2007; Gratz, 2003; Klonsky & Muehlenkamp, 2007). Individuals who engage in DSH tend to experience more negative emotions than non-self-harmers (Brown et al., 2007). Self-harmers may also experience negative emotions as more intense and often have difficulties regulating and expressing such emotions (Chapman, Gratz, & Brown, 2006; Gratz & Roemer, 2008; Klonsky & Muehlenkamp, 2007). They "often report experiencing chronic emptiness, alienation, and isolation in combination with intense, overwhelming negative emotions" (Gratz, 2003, p. 192). They are also more likely than others to be self-critical, experiencing high levels of self-directed anger and/or self-dislike (Klonsky & Muehlenkamp, 2007). In general, self-harmers tend to resort to avoidance strategies rather than other coping strategies when confronted with psychological distress and may resort to self-harm to provide relief from tension, anxiety, and other distressing emotions (Andover, Pepper, & Gibb, 2007; Chapman et al., 2006; Favazza, 1989; Haines & Williams, 1997; Klonsky, 2007).

Other individual characteristics found to be related to DSH include dissociation, alexithymia, and impulsivity (e.g. Zlotnick et al., 1996). The results of numerous studies suggest a significant correlation between dissociation and DSH (e.g. Favazza, 1989; Gratz et al., 2002; Low, Jones, MacLeod, Power, & Duggan, 2000; Nijman et al., 1999; van der Kolk, 1996; Zanarini et al., 2011; Zlotnick et al., 1999). Dissociation refers to an altered state of consciousness, during which an individual experiences a sense of detachment from his/her internal reality (such as one's thoughts or emotions) or external reality (Barlow & Durand, 2005). Individuals may dissociate in response to extreme stress or negative emotions, and DSH may interrupt the distressing dissociative episode (Batey et al., 2010; Chapman & Dixon-Gordon, 2007; Favazza, 1989; Klonsky, 2007; Low et al., 2000; van der Kolk, 1996). Self-harmers who experience dissociation often report that self-harm, particularly cutting, makes them feel "real" or "alive" again (Favazza, 1989; van der Kolk, 1996).

Alexithymia refers to deficits in the ability "to identify and express emotional experience appropriately" (Paivio & McCulloch, 2004, p. 341). Individuals who self-harm often show reduced awareness and clarity of emotional responses, as well as intolerance or non-acceptance of their emotions (Slee, Garnefski, Spinhoven, & Arensman, 2008). Alexithymia interferes with effective emotion regulation, which requires individuals to "experience the full range of emotions [...]; modulate emotional intensity without being overwhelmed or shutting down; and communicate feelings and needs appropriately in order to elicit interpersonal support" (Paivio & McCulloch, 2004, p. 341). When individuals have difficulties with emotion regulation in general, and alexithymia in particular, they tend to experience emotions as overwhelming and unmanageable, and may engage in DSH in order to cope with their emotions (Klonsky, 2007; Paivio & McCulloch, 2004; Slee et al., 2008).

Finally, impulsivity may also be a risk factor for DSH, although research has produced mixed findings (Gratz, 2003). Self-harmers have been found to engage in other impulsive behaviours such as substance abuse, binge eating, and high-risk sexual behaviour (Croyle & Waltz, 2007; Favazza, 1989; Herpertz, Sass, & Favazza, 1997; Zlotnick et al., 1996). Herpertz et al. (1997) found that self-harmers showed a pattern of impulsivity "in the form of a deficit in future-oriented problem-solving" (p. 461). Evans, Platts, and Liebenau (1996) examined impulsivity in patients admitted to a hospital for DSH. The authors found that patients who reported a history of repetitive self-harm showed higher levels of impulsivity than those who reported a first-time, single incident of self-harm. "First-time" self-harmers, however, showed more impulsivity than non-self-harmers (Evans et al., 1996).

Emotion regulation deficits in self-harmers may be related to the risk factors associated with childhood experiences discussed previously. For example, dissociation and alexithymia have been found to be more common among individuals with a history of childhood sexual abuse (Beeghly & Cicchetti, 1994; Low et al., 2000; Rodriguez-Srednicki, 2002; Zlotnick et al., 1996) and physical and emotional neglect (Zlotnick, Mattia, & Zimmerman, 2001). It has been suggested that traumatic or distressing childhood experiences and inadequate early attachments and relationships may impair the emotional development of individuals, resulting in a number of deficits in constructively dealing with emotions and increasing the risk for self-harm (Beeghly & Cicchetti, 1994; Paivio & McCulloch, 2004). Emotional deficits may arise from early relationships and family dynamics in which the child is unable to adequately experience and express his or her emotions, such as in the context of an invalidating or

exploitative environment (Linehan, 1993; Paivio & McCulloch, 2004). Such family environments "provide limited opportunities for children to learn about and express feelings appropriately, and limited support for coping with painful emotional experiences" (Paivio & McCulloch, 2004, p. 341).

Isolation and inadequate social support may also place individuals at risk for DSH (Hawton, Harriss, Hodder, Simkin, & Gunnell, 2001; Hawton et al., 2003). According to Suyemoto (1998), individuals who self-harm tend to experience a sense of loss and/or loneliness, and are often isolated from others preceding the act of self-harm. Furthermore, DSH is often precipitated by a relational crisis that causes emotional distress, such as interpersonal conflict (Skegg, 2005; Williams & Padmanabhan, 2008), or real or perceived rejection, loss, or abandonment (Simeon & Favazza, 2001).

Risk factors related to environmental and life stressors include a low educational level, low socioeconomic status and income, poverty, and unemployment (Skegg, 2005). Socioeconomic deprivation appears to be a stronger risk factor among men than women (Hawton et al., 2001; McAllister, 2003). Socioeconomic risk factors are particularly relevant in developing countries such as South Africa, where a large percentage of the population is living in conditions of extreme socioeconomic deprivation, which may increase the risk for self-harming behaviours. However, it is also important to consider potential protective factors associated with the cultural beliefs and practices of particular ethnic groups or communities. For example, a sense of commitment to certain cultural norms and religious affiliations may serve as protective factors against DSH despite a number of challenging life circumstances faced by many disadvantaged communities (Skegg, 2005). It is therefore likely that perceptions of and reactions to psychological distress will be different across racial/ethnic and cultural groups.

In addition to individual psychological factors and environmental factors, some authors have found that same-sex attraction increases the risk of DSH for both men and women, although findings are mixed (King et al., 2008; Skegg, Nada-Raja, Dickson, Paul, & Williams, 2003; Skegg, 2005). Skegg et al. (2003) found that homosexual males, in particular, may be more likely to engage in DSH. The authors suggest that this may be related to greater social acceptance of homosexuality among women compared to men as well as homosexual males being more likely to perceive their sexual orientation as "wrong". Homosexual males,

therefore, may be more likely to experience distress regarding their sexual orientation and may be more at risk for psychological symptoms of, inter alia, depression and anxiety, and in turn self-harming behaviour.

In sum, a number of individual and past and present environmental and relational risk factors interact in the development of DSH. Adverse or traumatic experiences and relationships during childhood may impede the development of effective emotion regulation in adulthood, placing individuals at risk for self-harm. The development and maintenance of self-harming behaviours are likely to arise from a complex interaction of past and current environmental stressors, as well as individual characteristics (Fliege, Lee, Grimm, & Klapp, 2009; McAllister, 2003).

2.6.2. Co-occurring psychiatric conditions.

While DSH has been associated with a variety of psychological disorders, it may also occur in the absence of co-occurring psychiatric diagnoses, and some authors suggest that it may constitute a separate clinical syndrome (e.g. Favazza, 1992; Favazza & Rosenthal, 1993; Kahan & Pattison, 1984; Muehlenkamp, 2005). Kahan and Pattison (1984) proposed a DSH syndrome that is characterised by multiple episodes of low lethality, direct acts of physical self-harm. Favazza and Rosenthal (1993) similarly proposed a separate diagnostic category for what they termed the "repetitive self-mutilation" syndrome. Features of this syndrome include a consistent failure to resist the urge to self-harm; an experience of increased tension or arousal preceding the act; and relief or pleasure following self-harm. Favazza and Rosenthal (1993) assert that the syndrome of repetitive self-mutilation is essentially a disorder of impulse control.

Authors such as Favazza and Rosenthal (1993), Kahan and Pattison (1984), and Muehlenkamp (2005) argue that a DSH syndrome warrants a separate diagnostic category due to a relatively distinct symptom pattern and presentation, as well as many common clinical features, precipitating factors, and course among self-harmers. It is further asserted that high rates of comorbidity with other diagnoses should not be a determining factor in its inclusion as a separate syndrome, as comorbidity is common among a number of psychiatric and personality disorders (Muehlenkamp, 2005). This remains a contested issue, and specific inclusion and exclusion criteria have been proposed in order to clearly differentiate the criteria for a DSH syndrome (see Favazza & Rosenthal, 1993; Kahan & Pattison, 1984;

Muehlenkamp, 2005). The *Diagnostic and Statistical Manual of Mental Disorders* (5th ed., *DSM-5*; American Psychiatric Association [APA], 2013) has included nonsuicidal self-injury syndrome in Section III under "Conditions for Further Study", suggesting that a separate diagnostic category for self-harming behaviour may be included in the future following further research (Selby, Bender, Gordon, Nock, & Joiner, 2012).

This section provides an overview of literature that has investigated personality and psychiatric disorders associated with DSH among adults in both community and clinical populations. Klonsky and Muehlenkamp (2007) point out that "the presence of self-injury does not imply the presence of any particular diagnosis" (p. 1048), and individuals who self-harm are diagnostically diverse (Favazza & Rosenthal, 1993; Fliege et al., 2009). DSH may be especially prevalent among individuals who suffer from comorbid personality and psychiatric disorders (Haw et al., 2001; Krysinska et al., 2006).

In general, self-harmers have been found to display more features of Axis II personality disorders than non-self-harmers (e.g. Claes et al., 2007; Herpertz et al., 1997; Klonsky et al., 2003; Krysinska, Heller, & De Leo, 2006). Ferreira de Castro, Cunha, Pimenta, and Costa (1998) and Haw, Hawton, Houston, and Townsend (2001) found that 56% and 46% of self-harmers, respectively, met the criteria for at least one personality disorder. The diagnosis most commonly associated with DSH is borderline personality disorder (e.g. Herpertz et al., 1997; Klonsky & Muehlenkamp, 2007; Sadock & Sadock, 2007; Zlotnick et al., 1999). In a study examining psychiatric diagnoses among a clinical sample of self-harmers, Herpertz et al. (1997) found that borderline personality disorder was the most common co-occurring personality disorder (48%), followed by histrionic personality disorder (26%) and dependent personality disorder (19%). DSH has also been associated with antisocial personality disorder (e.g. Grossman & Siever, 2001; Simeon & Favazza, 2001).

In the *DSM-5*, borderline personality disorder is the only diagnosis for which self-harming behaviour is listed in the diagnostic criteria (APA, 2013; Klonsky & Muehlenkamp, 2007). Borderline personality disorder is associated with a number of the risk factors for DSH discussed in the previous section, including affective instability and emotion dysregulation, relational instability, impulsivity, and transient, stress-related dissociation (APA, 2013). Childhood trauma or sexual abuse is also a common risk factor for both borderline personality disorder and DSH (Barlow & Durand, 2005; Gratz, 2003; Gratz et al., 2002). In a

study by Haw et al. (2001), obsessive-compulsive personality disorder (OCPD) was found to be the most common co-occurring personality disorder. This is in contrast to findings by Klonsky et al. (2003), but a relationship between perfectionistic tendencies common to OCPD and DSH has been supported by research by Favazza and Rosenthal (1993) and Hoff and Muehlenkamp (2009).

With regards to Axis I psychiatric disorders, Haw et al. (2001) found that 92% of patients treated for self-harming behaviours presented with a psychiatric diagnosis. Of these patients, 45% presented with a psychiatric disorder, 37% presented with two disorders, and 10% were diagnosed with three or more disorders (Haw et al., 2001). The most common diagnoses found in these patients were affective disorders (particularly depressive episodes), substance abuse disorders, and anxiety disorders (Haw et al., 2001). These disorders were also found to be the most common diagnoses among self-harmers in a study by Skegg, Nada-Raja, and Moffitt (2004).

In general, self-harmers tend to display higher levels of depression and anxiety than non-self-harmers (discussed in detail below; e.g. Gollust et al., 2008; Haw et al., 2001; Herpertz et al., 1997) and are more likely to report co-occurring alcohol or substance abuse (e.g. Favazza, 1992; Haw et al., 2001; Harned, Najavits, & Weiss, 2006; Klonsky & Muehlenkamp, 2007). Some research suggests that eating disorders frequently co-occur with self-harm (Favazza, 1992; Gollust et al., 2008; Haw et al., 2001; Herpertz et al., 1997; Simeon & Favazza, 2001; Wright et al., 2009). In a study by Herpertz et al. (1997), eating disorders were the most common diagnoses among self-harmers, followed by mood, anxiety, and substance-related disorders. Gollust et al. (2008) found that the correlation between DSH and eating disorders was particularly strong among male participants. Other Axis I disorders that have been found to co-occur with DSH include dissociative and somatoform disorders (e.g. Briere & Gil, 1998; Herpertz et al., 1997; Simeon & Favazza, 2001), posttraumatic stress disorder (e.g. Briere & Gil, 1998; Harned et al., 2006; Simeon & Favazza, 2001; Zlotnick et al., 1999), schizophrenia (e.g. Haw et al., 2001; Haw, Hawton, Sutton, Sinclair, & Deeks, 2005), and intermittent explosive disorder (Zlotnick et al., 1999).

In summary, while a distinctive diagnostic category for a “DSH syndrome” has been proposed by some authors (e.g. Kahan & Pattison, 1984), the results of numerous studies suggest that self-harming behaviour frequently co-occurs with various Axis I and Axis II

diagnoses. DSH can be "classified as a disorder of impulse control not otherwise specified" in the *DSM-5*, and the "ICD-10 has an additional Z code for a personal history of self-harm" (Fliege et al., 2009, p. 478). Although borderline personality disorder is the personality disorder most commonly associated with DSH, self-harmers are diagnostically diverse and often present with comorbid personality and psychiatric disorders. Self-harm, therefore, may be a response to high levels of general distress rather than to any specific disorder or symptom (e.g. Whitlock et al., 2006).

2.7. Deliberate Self-Harm and Anxiety and Depression

This section is concerned with the relationship between DSH and depression and anxiety, two psychiatric diagnoses commonly associated with self-harm and which will form the focus of the current study. The overlap between symptoms of depression and anxiety will be discussed with reference to the tripartite model of anxiety and depression. Finally, international and local research investigating the rates of depression and anxiety among student and non-student adult populations will be discussed briefly.

Anxiety is a broad term used to describe a negative mood state characterised by a number of physiological, cognitive, and emotional symptoms (Barlow & Durand, 2005). These include physiological complaints such as physical tension and elevations in heart rate; cognitive disturbances such as poor concentration and reduced attention and recall; and emotional distress related to feelings of fear, apprehension, and nervousness (Barlow & Durand, 2005; Sadock & Sadock, 2007). Anxiety disorders are classified as distinct but related psychological disorders based on specific clusters of symptoms. The *DSM-5* provides the following diagnostic categories for anxiety disorders: separation anxiety disorder; selective mutism; specific phobia; social anxiety disorder (social phobia); panic disorder; panic attack (specifier); agoraphobia; generalized anxiety disorder; substance/medication-induced anxiety disorder; anxiety disorder due to another medical condition; other specified anxiety disorder; and unspecified anxiety disorder (APA, 2013). Separate categories are provided for stress- or trauma-related disorders, which include reactive attachment disorder; disinhibited social engagement disorder; posttraumatic stress disorder; acute stress disorder; adjustment disorders; other specified trauma-and stressor-related disorder; and unspecified trauma-and stressor-related disorder (APA, 2013). For the purposes of the current study, anxiety refers to a construct operationally defined by the presence of both transient and enduring symptoms of

anxiety as measured by the State-Trait Anxiety Inventory (STAI), and no attempt is made to distinguish between or diagnose specific anxiety disorders.

Depression is described as a negative mood state characterised by feelings of sadness, guilt, pessimism, loss of pleasure and/or interest in activities, and hopelessness. Various cognitive and physical symptoms are also present, including poor concentration, loss of energy, sleep disturbances, and changes in appetite (Barlow & Durand, 2005; Sadock & Sadock, 2007). Like anxiety, depression is an umbrella term for a variety of symptoms and discrete psychiatric disorders, which are classified under the category of depressive disorders in the *DSM-5* (APA, 2013). Specific mood disorders are diagnosed based on the chronicity and severity of symptoms as well as the presence or absence of accompanying manic episodes (Barlow & Durand, 2005). In the current study, depression was measured using the Beck Depression Inventory (BDI-II), which assesses symptoms of depression and their severity. The BDI-II is consistent with the diagnostic criteria for depression as stipulated in the *DSM-5* and "successfully discriminates between clinically depressed and normal individuals" (Jooste & Foxcroft, 2005, p. 144), but is not intended to diagnose specific mood disorders in this study.

Several studies have included diagnostic measures for clinical and personality disorders in relation to DSH, yet few have directly compared symptoms of anxiety and depression as correlates for self-harm. In general, however, research suggests that self-harmers present with higher levels of depression and anxiety than non-self-harmers (e.g. Andover et al., 2007; Fliege et al., 2009; Gollust et al., 2008; Haw et al., 2001; Herpertz et al., 1997; Hoff & Muehlenkamp, 2009; Klonsky et al., 2003).

Hoff and Muehlenkamp (2009) investigated differences in depression and anxiety among self-harming versus non-self-harming university students. The authors found that students who reported a history of DSH obtained significantly higher scores on both the Beck Depression Inventory (BDI) and trait anxiety scale of the State-Trait Anxiety Inventory (STAI). Fliege et al. (2009) conducted an extensive review of international empirical research investigating psychological correlates of DSH and reported that self-harm was frequently found to be associated with symptoms of depression and anxiety. As previously mentioned, however, no such research has been conducted among South African populations.

Andover, Pepper, Ryabchenko, Orrico, and Gibb (2005) found that self-harming behaviours were strongly associated with symptoms of both depression and anxiety. These authors explored the different forms of self-harming behaviours in relation to symptoms of depression and anxiety, and distinguished between self-cutting (cutting behaviours only) and self-harm (forms of DSH other than self-cutting). It was found that self-harmers reported higher levels of both depression and anxiety compared to non-self-harming controls (Andover et al., 2005). Symptom levels for depression and anxiety were found to be roughly equivalent among self-harmers. Self-cutting was particularly associated with higher levels of anxiety compared to other methods of self-harm (Andover et al., 2005). One factor that may have potentially played a role in the differences found may be the presence or absence of borderline personality disorder, which is strongly related to depression, anxiety, and self-harm. Andover et al. (2005) "found that all of the relations between self-mutilation and depressive and anxious symptoms were reduced to nonsignificant once BPD symptoms were statistically controlled" (p. 588). In other words, once symptoms of borderline personality disorder were controlled for, few differences in self-harming behaviours were found between individuals with depression versus anxiety. Because this was an exploratory study, and the first to differentiate between cutting and other forms of self-harm, the possible relationships between forms of self-harm and symptoms of depression and anxiety warrant further investigation.

In a study investigating DSH among a community sample of military recruits, Klonsky et al. (2003) found that self-harmers scored higher on measures of both depression and anxiety compared to non-self-harmers, yet "anxiety maintained a substantial unique relationship to DSH over and above depression" (p. 1506). Specifically, the authors found that once symptoms of anxiety were controlled for, the correlation between depression and DSH was smaller (Klonsky et al., 2003). This finding suggests that symptoms of anxiety, which are present to a large extent in depressed individuals (Barlow & Durand, 2005), may play a more prominent role than depression in DSH (Klonsky et al., 2003). An interesting finding in Klonsky et al.'s (2003) study was that although self-harmers reported higher levels of negative affect than non-self-harmers, they "scored equivalently on a measure of positive temperament" (p. 1506). Therefore, although self-harmers may display more features of personality pathology and generally have a greater propensity for negative affect, they do not appear to differ in terms of their capacity to experience positive affect. When interpreted within the framework of the tripartite model of anxiety and depression (Clark & Watson,

1991), this finding further supports the possibility that individuals who self-harm may be more anxious than depressed (Klonsky et al., 2003).

Ennis, Barnes, Kennedy, and Trachtenberg (1989) examined depression among a sample of DSH patients and found that 80% were moderately to severely depressed based on BDI scores, while 31% met criteria for major depressive disorder. Some research suggests that self-harmers report higher rates of depression than anxiety (e.g. Gollust et al., 2008; Haw et al., 2001). For example, Haw et al. (2001) found that 72% of individuals with a history of DSH presented with major depression, while only 14% presented with an anxiety disorder. Gollust et al. (2008) also found higher rates of depression than anxiety among self-harming participants (33% and 17%, respectively). However, the high rate of comorbidity between depression and anxiety and the nonspecific symptoms common to both depression and anxiety complicate efforts to investigate their distinctive roles in DSH. The overlap between depression and anxiety will be discussed below.

2.7.1. The tripartite model of anxiety and depression.

It has been suggested that depression and anxiety "may represent different aspects of the same construct" (Ingram & Malcarne, 1995, p. 47) or "different points along the same continuum" (Clark & Watson, 1991, p. 316). The tripartite model of anxiety and depression (Clark & Watson, 1991) subdivides symptoms of depression and anxiety into three broad categories. The first category includes nonspecific symptoms of general distress or negative affect common to both depression and anxiety (Clark & Watson, 1991; Ingram & Malcarne, 1995; Watson et al., 1995). Such symptoms include both depressed and anxious affect, irritability, worry, cognitive disturbances such as impaired memory and concentration, and physical symptoms of insomnia and restlessness (Barlow & Durand, 2005; Watson et al., 1995).

The other two categories are characterised by clusters of symptoms that are relatively unique and specific to anxiety and depression, respectively (Watson et al., 1995). Barlow and Durand (2005) refer to these as "pure anxiety symptoms" and "pure depression symptoms" (p. 224). Symptoms specific to depression include anhedonia and the absence of positive affect, which may be characterised by a loss of pleasure, interest, and energy (Barlow & Durand, 2005; Clark & Watson, 1991; Watson et al., 1995). Specific anxiety symptoms are typically characterised by somatic symptoms of tension and arousal, such as edginess,

shortness of breath, and trembling (Barlow & Durand, 2005; Clark & Watson, 1991; Watson et al., 1995).

2.7.2. International and national prevalence rates for depression and anxiety.

Mood and anxiety disorders are among the most prevalent psychiatric conditions worldwide (Sadock & Sadock, 2007). Research in the US suggests that "major depressive disorder has the highest lifetime prevalence [...] of any psychiatric disorder" (Sadock & Sadock, 2007, p. 528), with rates ranging from 5% to 17% in community samples. Women are about two times more likely than men to develop major depressive disorder (Sadock & Sadock, 2007). The prevalence rates of anxiety disorders vary according to the specific disorder, but the lifetime prevalence of any anxiety disorder is around 30% for women and 19% for men, and there is a high rate of comorbidity among anxiety disorders (APA, 2013; Sadock & Sadock, 2007).

The results from the National Comorbidity Survey Replication (NCS-R) – a large, nationwide epidemiological study in the US – indicate lifetime prevalence rates of anxiety and mood disorders among the general population to be 29% and 21%, respectively (Kessler et al., 2005). The most common anxiety disorder was specific phobia (13%), followed by social phobia (12%), posttraumatic stress disorder (7%), and generalised anxiety disorder (6%). The most common mood disorder was major depressive disorder (17%). The same study found 12-month prevalence rates of anxiety and mood disorders of 18% and 10%, respectively (Kessler, Chiu, Demler, & Walters, 2005). Results from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) in the US indicated a similar 12-month prevalence of mood disorders (9%), but lower rates for anxiety disorders (11%) than suggested by the NCS-R findings (Grant et al., 2004).

Studies investigating the prevalence of mood and anxiety disorders among university and/or college students in the US have produced varied results. Data from the NESARC were used to investigate possible differences between the mental health of college students and their non-college-attending peers (Blanco et al., 2008). Almost one-half of both groups met the *DSM-IV* criteria for at least one psychiatric diagnosis in the year preceding the study. The rates of anxiety and mood disorders were high for both groups, but did not differ significantly. The prevalence of anxiety disorders was 12% among college students and 13% among non-college attending peers. The most common anxiety disorder reported by both

groups was specific phobia, followed by social phobia (Blanco et al., 2008). Mood disorders were found in 11% of college students and 12% of non-college-attending peers. Major depressive disorder was the most common mood disorder, reported by 7% of participants from each group (Blanco et al., 2008).

Another epidemiological study of psychiatric conditions among university students in the US explored differences in the mental health status of undergraduate and graduate students (Eisenberg et al., 2007). Clinically significant depression was found in 14% of undergraduate students and 11% of graduate students, while clinically significant anxiety was found in 4% of both undergraduate and graduate students (Eisenberg et al., 2007).

International research has shown that depression, anxiety, and general psychopathology are on the increase among university students (e.g. Andrews & Wilding, 2004; Kadison, 2004). Andrews and Wilding (2004) suggest that this may be due to the stress and pressure involved in the transition to university life, but warn that it is difficult to discern whether mental health problems were present or not prior to university entry. The authors found that 9% of students who were previously symptom-free developed clinically significant symptoms of depression and 20% developed clinically significant anxiety by mid-course (Andrews & Wilding, 2004). However, 36% of students who presented with depression and anxiety before university entry showed recovery by mid-course. Therefore, university life may affect different individuals in unpredictable ways, but Andrews and Wilding (2004) found that financial difficulties contributed significantly to the development and maintenance of depression and anxiety among students. Other factors that may represent risk factors for depression, anxiety, and other mental health problems among university students include increased academic pressures, competitive admissions processes, rising college costs, disrupted or erratic sleep patterns, and lack of social and financial support due to the breakdown of nuclear family systems (Andrews & Wilding, 2004; Eisenberg et al., 2007; Kadison, 2004).

With regard to local statistics, findings from the South African Stress and Health (SASH) Study indicate high rates of depression and anxiety among the general population in SA (Herman et al., 2009; Stein et al., 2008). Anxiety disorders were found to be the most prevalent class of disorders, with a lifetime prevalence of 16%, followed by substance abuse disorders (13%) and mood disorders (10%). The most commonly reported anxiety disorder was agoraphobia without panic, and major depressive disorder accounted for the total

prevalence of mood disorders (Stein et al., 2008). Using the data from the SASH, Williams et al. (2008) reported that the 12-month prevalence rates for mood and anxiety disorders were 5% and 8%, respectively. The most commonly reported mood disorder was major depressive disorder (5%), and agoraphobia without panic was the most common anxiety disorder (5%).

Few local studies have investigated the prevalence of psychological disorders among university and/or college students as a distinct population. Pillay, Edwards, Sargent, and Dhlomo (2001) and Pillay, Edwards, Gambu, and Dhlomo (2002) explored anxiety and depression, respectively, among students from historically Black universities in Kwazulu-Natal in South Africa. Pillay et al. (2001) found that 18% of the participants reported severe anxiety symptoms. Pillay et al. (2002) did not report on the prevalence of depression in their sample, but noted that their findings "indicate a rather high mean score" (p. 726) of depressive symptoms compared to international findings. In both studies, there were slightly more rural than urban participants in the samples, and English was not the first language of the majority of participants. A possible limitation of these studies is that the items of the instruments used (the Beck Anxiety Inventory and Beck Depression Inventory) are in English, and the instruments themselves were developed and standardised in western contexts (Pillay et al., 2001; Pillay et al., 2002). It is important to note that the participants in these studies were attending a historically Black university, and many of the participants had been previously disadvantaged. The high rates of depression and anxiety may be related, in part, to life circumstances and possible difficulties related to adjustment to a new way of life since the recent abolishment of apartheid (Pillay et al., 2001; Pillay et al., 2002).

Due to the specific nature of the context and demographic characteristics of the samples used, the results should be interpreted with caution and cannot be assumed to be representative of the broader South African student population. No similar studies have been conducted among other cultural groups with which to compare results. Therefore, in addition to investigating DSH in a local university population, the present study may be valuable in providing exploratory data on the rates of depression and anxiety among the sample.

2.8. Deliberate Self-Harm in the South African Context

Little recent research investigating DSH in the South African context has been conducted. To the author's knowledge, no local research on DSH among university or college students has been conducted. Furthermore, after an extensive literature review, no local studies

examining the relationship between DSH and the variables included in the current study, namely depression, anxiety, and age, gender and race, were found.

Pillay and Pillay (1987) conducted a study on DSH in a clinical context to identify high-risk groups and possible precipitating factors for self-harm. They found that psychologists working at a hospital in Pietermaritzburg encountered 147 cases of DSH in the 12-month period preceding the research. The findings further indicated that single individuals between the ages of 16 and 25 years constituted a high-risk group for DSH, and family conflict was a commonly reported precipitating factor for self-harming behaviour (Pillay & Pillay, 1987).

Scholtz and Fiedeldey (1994) explored central themes related to DSH among individuals diagnosed with borderline personality disorder. Their research was qualitative in nature and was also conducted in a clinical context. The authors found that the participants reported engaging in DSH as a means of communicating their distress to others and receiving sympathy or support, highlighting the interpersonal nature of the behaviour (Scholtz & Fiedeldey, 1994). The participants reported negative self-perceptions, felt that they had no future, and displayed an external locus of control. Self-harm was described as a largely impulsive act in response to overwhelming negative emotions, which the participants found difficult to control. A cyclical pattern of self-harm was identified. Self-harm was precipitated by a stressor that was perceived as unmanageable, and participants would experience a sense of depersonalisation in response to overwhelming distress. In order to reduce the distress and dissociation, they would engage in DSH, which was followed by a sense of relief (Scholtz & Fiedeldey, 1994). Furthermore, the participants reported an absence of pain during the act of self-harm. Of the three participants, two described self-harm as an impulsive act, while one reported that it was planned and related to a desire to lose his legs. It was also found that the participants self-harmed in isolation, and the act is described as highly personal and ritualistic (Scholtz & Fiedeldey, 1994).

Another quantitative study in South Africa examined obsessive-compulsive disorder in a clinical context, and also reported on self-injurious behaviour in the sample (Lochner et al., 2004). The authors found 23% of female participants and 8% of male participants reported comorbid self-injurious behaviour. While these results suggest a correlation between DSH and a specific anxiety disorder, this was not the focus of the research, and the article does not elaborate on this correlation.

Finally, two recent, local, unpublished theses explored DSH; both are qualitative in nature. Morison (2006) conducted a discourse analysis of narratives provided by five female participants in order to explore the participants' thoughts, feelings and experiences related to their self-harming behaviours. A general theme that emerged from this research was that participants perceived themselves as victims of their emotions or circumstances, and self-harm was described as a reasonable and necessary means to cope with these (Morison, 2006). Some participants reported feeling unable to express their emotions due to prescriptions regarding the appropriateness of emotional expression and the invalidating or dismissive reactions of others toward their distress. Therefore, self-harm may represent a "means of protest or of challenging the ways that expressions of distress are disciplined or controlled through others' insistence on restraint, containment of unacceptable emotions and the prescription of appropriate modes of expression" (Morison, 2006, p. 75). Ambivalence in participants' perceptions of DSH is evident here. On the one hand, they report a lack of control over their behaviour, which is described as a response to distress or circumstances that they feel are overwhelming. On the other hand, there is a sense of ownership and empowerment over their behaviours, or defiance against societal expectations that limit or "prohibit" emotional expression (Morison, 2006).

Jacobs (2011) also conducted a discourse analysis of two female participants' accounts of the onset of their DSH, in both cases, self-cutting. Both participants reported feeling like stigmatised outsiders and believed they were unfairly judged by non-self-harmers. The participants described self-harm as an unhealthy coping mechanism, but one that had meaning and purpose rather than merely an irrational act (Jacobs, 2011). One participant focused her discourse primarily on feelings of worthlessness, low self-esteem, and depression, while the other reported that she experienced her emotions as uncomfortable or excessive and engaged in self-harm to escape from them (Jacobs, 2011). For the former participant, self-harm was described as a response to intrapsychic struggles, while the latter participant reported that she harmed herself in response to interpersonal situations that frustrated her. Both reported that they lacked skills to cope more effectively with such negative emotions and experiences, which controlled their behaviour. They also described self-harming behaviour as addictive (Jacobs, 2011).

In summary, while DSH is receiving increased attention in international research, it remains severely under-researched in SA. Furthermore, local research has focused primarily on

clinical samples, and recent available research accounts have made use of qualitative approaches. This motivates the value of a quantitative study exploring self-harm in a non-clinical sample. Several authors have emphasised the need for more research on this topic, particularly in non-clinical samples (see Klonsky, 2007).

2.9. Chapter Summary

DSH is a widely researched topic in psychological literature. This chapter has highlighted the complexity of the phenomenon by examining the terminological variations and the challenges involved in studying DSH as a consistent, distinct cluster of behaviours.

Research indicates that DSH is prevalent, particularly among clinical and college and/or university populations. It is also widely associated with a number of personality and psychiatric disorders, including depression and anxiety, which form the focus of the current study and are prevalent psychological disorders both locally and internationally.

Few studies on DSH have been conducted in the South African context, indicating a gap in local research on the topic. The results from many international studies suggest that self-harm is more prevalent among Whites than other ethnic/racial groups. Comparing the rates of self-harm among racial/ethnic groups in the local context may be valuable in informing future research that could further explore possible differences in risk and protective factors associated with, for example, cultural norms and practices. This kind of research is particularly relevant to ethically/racially and culturally diverse countries such as SA.

Chapter 3: Theoretical framework

3.1. Overview: The Functions of Deliberate Self-Harm

Deliberate self-harm has received much attention in clinical research for over 65 years, and despite efforts to explain the behaviour, it remains a poorly understood phenomenon (Klonsky & Muehlenkamp, 2007; Suyemoto, 1998). In attempts to gain greater insight into DSH, there has been an apparent shift from theoretically based explanations (e.g. Suyemoto, 1998) to more empirically supported understandings (e.g. Klonsky, 2007), and recent literature has focused increasingly on the functions or motivations of self-harm (Klonsky & Muehlenkamp, 2007). In psychological literature, the term "function" is used to describe the psychological mechanisms and other factors that underlie or motivate particular behaviours. A variety of psychological (both cognitive and emotional) and interpersonal factors have been found to play a role in the onset and maintenance of self-harming behaviours, and therefore serve as a function or motivation for DSH.

Briere and Gil (1998) found that self-harming participants reported using DSH as a means of reducing dissociation, distressing memories and/or flashbacks, and negative affect. Other functions reported included "punishing themselves and communicating distress to others" (Briere & Gil, 1998, p. 618). The specific emotions reduced by DSH included self- and other-directed anger, emptiness, fear, hurt, loneliness, and sadness. It was reported that participants experienced a sense of relief from such emotions following the act of self-harm. Similar findings are reported by Favazza (1989; 1998), Klonsky (2009), and Brown, Comtois, and Linehan (2002). It is likely that DSH serves more than one function simultaneously; the functions therefore tend to overlap and co-occur (Klonsky, 2007; Klonsky & Muehlenkamp, 2007; Suyemoto, 1998). Clinical research, as summarised by Gratz (2003), suggests that self-harm may function in the following ways:

> (1) to relieve anxiety; (2) to release anger; (3) to relieve unpleasant thoughts and feelings; (4) to release tension; (5) to relieve feelings of guilt, loneliness, alienation, self-hatred, and depression; (6) to externalize and concretize emotional pain; (7) to provide an escape from emotional pain; (8) to provide a sense of security; (9) to provide a sense of control; (10) to self-punish; (11) to set boundaries with others; (12) to terminate depersonalization and derealization; (13) to end flashbacks; and (14) to stop racing thoughts. (p. 199)

The theoretical models of the functions of DSH most frequently discussed in literature focus on specific factors or states believed to underlie DSH and include the environmental or interpersonal influence, drive, dissociation or anti-dissociation, interpersonal boundaries, self-punishment, sensation-seeking, and affect regulation models (e.g. Klonsky, 2007; Klonsky, 2009; Suyemoto, 1998). This chapter briefly reviews these models, with specific focus on the experiential avoidance model proposed by Chapman, Gratz, and Brown (2006). The experiential avoidance model forms the theoretical basis of the current study due to its comprehensive nature and its focus on negative affectivity in relation to DSH, which are particularly relevant to the variables included in the current research.

3.2. Functional Models of Deliberate Self-Harm

This section briefly describes commonly cited functional models of DSH, which focus on both systemic, interpersonal factors as well as individual, intrapersonal factors believed to be associated with DSH. The latter include psychoanalytic theories as well as theories related to individual psychological and emotional traits.

Systemic models include environmental and interpersonal influence models, which both focus on how DSH serves to elicit certain responses from others in the self-harmer's environment (Klonsky, 2007; Suyemoto, 1998). The environmental model proposes that certain factors initiate and maintain self-harming behaviour, which serves both the self-harmer and the environment in some way. There is a strong focus on social learning and reinforcement. The self-harmer learns, often through abuse in his or her family environment, that self-harm is somehow beneficial, and this behaviour is reinforced by the special care or attention it attracts as well as the relief from distress or dissociation that it provides. It is possible that, during childhood or adolescence, individuals "learn through their parents' models that injury and care are associated, and attempt to self-care through self-injury" (Suyemoto, 1998, p. 538). Self-harm may also serve the individual's system, for example by maintaining homeostasis or expressing the conflicts and needs of the system. The interpersonal-influence model suggests that the primary function of DSH is to manipulate or influence others (Klonsky, 2007). For example, an individual may engage in self-harm to elicit attention and care, or to avoid abandonment (Favazza, 1989; Klonsky, 2007). The interpersonal-influence model, therefore, regards DSH behaviour as a cry for help or a way to influence others to meet unfulfilled needs. This manipulation may or may not be conscious on the part of the self-harmer (Klonsky, 2007). Nock and Prinstein (2004) found that about

15% of adolescents reported engaging in self-harm in order to elicit attention or help from others. The motivations for adolescent self-harm may differ from those of adult self-harm. Klonsky (2009) found that only 5% of adult self-harmers reported using self-harm to gain social support. Importantly, Gratz (2003) notes that it is a common misconception that self-harmers wish to gain attention through self-harm; the majority of self-harmers injure themselves in private and conceal their wounds.

Psychodynamic theories of DSH explore the internal, mostly unconscious drives and motives of self-harmers. Drive theories are based on psychoanalytic developmental theory and "attempt to understand self-mutilation as an expression or repression of life, death, and sexual drives" (Suyemoto, 1998, p. 540). Two drive theories are discussed in Suyemoto's (1998) review of functional models of DSH, namely the antisuicide and sexual models. The antisuicide model proposes that DSH serves as a coping mechanism against extreme distress, allowing the self-harmer to embrace his or her destructive impulses while preventing or avoiding complete self-destruction, namely suicide (Klonsky, 2007; Klonsky & Muehlenkamp, 2007; Suyemoto, 1998). Self-harm, therefore, represents a conciliation of the life and death drives (Suyemoto, 1998). In Klonsky's (2009) study, 5% of self-harmers reported that they engaged in self-harm to avoid suicidal urges. The sexual model suggests that DSH fulfils or defends against sexual urges, either by providing sexual gratification, punishing oneself for sexual behaviour, thoughts, or feelings, or avoiding or controlling one's sexuality (Suyemoto, 1998).

Another psychoanalytic-based model is the interpersonal boundaries model, which is an object-relations-based, psychodynamic theory of DSH (Klonsky, 2007). The interpersonal boundaries model suggests that self-harm "is a way to create boundaries or identity and protect against feelings of being engulfed or fear of loss of identity" (Suyemoto, 1998, p. 537). The model is more interpersonal than the drive theories and focuses on the self-harmer's relationship with and attempt to differentiate from an attachment figure, most typically the mother. This model holds that individuals who self-harm are likely to have insecure maternal attachments, resulting in a poor sense of self and difficulty in separating the self from the mother (Klonsky, 2007). Following from this, "marking the skin, which separates individuals from the environment and other people, is thought to affirm a distinction between oneself and others, and assert one's identity or autonomy" (Klonsky, 2007, p. 1051).

As mentioned in Chapter 2, dissociation is commonly associated with DSH. A theory based on this relationship has been proposed, known as the dissociation (or anti-dissociation) model of DSH. The model postulates that DSH functions to interrupt or terminate dissociative episodes (Klonsky, 2007 Klonsky & Muehlenkamp, 2007; Suyemoto, 1998). Dissociation may occur in response to intense and intolerable emotional states (Favazza & Conterio, 1989; Low et al., 2000). Klonsky equates the anti-dissociation function of DSH with "feeling-generation"; dissociation may cause feelings of unreality or numbness, "and self-injury may be a way to generate emotional and physical sensations that allow individuals to feel real or alive again" (Klonsky, 2007, p. 229). The anti-dissociation function of self-harm has found support in research literature (e.g. Briere & Gil, 1998; Klonsky, 2007; Klonsky, 2009). It is worth noting that dissociation has been conceptualised by some authors (e.g. Hayes, Wilson, Gifford, & Follette, 1996) as a form of experiential avoidance. The frequent co-occurrence of dissociation and DSH may therefore reflect a common form of coping through avoiding unpleasant emotional states.

The sensation-seeking model is also based on individual traits and psychological processes and proposes that DSH functions to provide exhilaration or excitement (Klonsky, 2007). This model is not widely cited in literature, but there is evidence that self-harm may relieve boredom or numbness experienced by self-harmers (e.g. Chapman & Dixon-Gordon, 2007; Klonsky, 2009).

Finally, the self-punishment model describes emotional experiences of self-harmers and postulates that DSH is an expression of self-directed anger or contempt (Chapman & Dixon-Gordon, 2007; Favazza, 1989; Klonsky, 2007). It is suggested by Linehan (1993) that individuals learn from invalidating environments that their own feelings are unacceptable. As a result, they may engage in self-harm to punish or invalidate themselves and their emotional experiences (Klonsky, 2007). Self-punishment is a commonly reported function of DSH among self-harmers (e.g. Briere & Gil, 1998; Klonsky, 2007; Klonsky, 2009; Nock & Prinstein, 2004).

The models discussed above are useful theoretical hypotheses for the various reasons an individual might engage in DSH. However, they all describe specific, unpleasant internal states or interpersonal challenges that a person might attempt to manage or relieve through self-harming behaviour. Therefore, it can be said that the models above describe attempts to

regulate unwanted emotional states, the emphasis of which relates to the affect regulation model.

Tying together various intra- and interpersonal factors potentially contributing to self-harm, the affect regulation model proposes that DSH serves the function of expressing, controlling, or alleviating acute, intolerable negative affect (Klonsky, 2007; Suyemoto, 1998). This appears to be the most prevalent function of self-harm (Gratz & Roemer, 2004; Klonsky, 2007; Klonsky, 2009; Klonsky & Muehlenkamp, 2007). According to Suyemoto (1998), there is striking consistency among phenomenological accounts of deliberate self-harm.

> The individual generally reports feeling extremely tense, anxious, angry, or fearful prior to self-mutilating. Often, but not always, the individual reacts to the overwhelming emotion by experiencing dissociation. [...] The anger, tension, or dissociation typically are [sic] ended by the self-mutilating behaviour. (Suyemoto, 1998, p. 533-534)

The affect regulation model has received support from empirical research findings suggesting that individuals typically engage in self-harm in response to overwhelming emotions, and that they experience a sense of relief following the act (e.g. Briere & Gil, 1998; Favazza & Conterio, 1989; Gratz, 2000; Nock & Prinstein, 2004; Simeon & Favazza, 2001; Tantam & Huband, 2009). A number of possibilities have been proposed regarding how self-harm may regulate emotions. Psychodynamic explanations propose individuals may engage in DSH to "express emotion and conflict both to the self and to others, as well as to achieve a sense of control over emotion that threatens to generally overwhelm the individual, her sense of self, and her connectedness to the world" (Suyemoto, 1998, p. 542). Self-harm may also serve to make emotional pain more "real". Self-inflicted wounds become physical evidence of pain and therefore become an expression and validation of such emotional pain. It also regulates emotions by turning passive emotional pain into a more active and controllable physical pain. As previously discussed in Chapter 2, self-harm is associated with alexythymia, or the inability to verbally express one's emotional experiences. If one is unable to use language to regulate emotions, DSH may be used as a primitive means of emotional release, allowing communication of internal emotional processes as well as emotional control and regulation through externalisation (Suyemoto, 1998).

Linehan's (1993) model of emotion dysregulation in borderline personality disorder has been extended to DSH (e.g. Gratz, 2003). As a result of both biological and environmental factors, self-harmers may lack effective and constructive strategies to cope with negative emotions (Gratz, 2003; Klonsky, 2007; Linehan, 1993). Linehan (1993) emphasises that invalidating environments during childhood negate or punish emotional experiences or expression, thus interfering with the acquisition of necessary skills to regulate emotions. It is unclear how DSH serves to regulate emotions, although it is postulated that both biological and psychological factors are involved (Brain, Haines, & Williams, 1998; Favazza, 1989; Klonsky, 2007).

3.3. Experiential Avoidance

Hayes et al. (1996) explored behavioural disorders from a functional perspective using experiential avoidance to understand a range of pathological behaviours. The authors make a distinction between syndromal classification and functional classification. Syndromal approaches describe collections of signs and symptoms and provide categories of syndromes based on these. Functional approaches are concerned with the "functional processes that are thought to have produced and maintained [clusters of behaviours]" (Hayes et al., 1996, n.p.). From this premise, Hayes et al. (1996) conceptualise a variety of pathological behaviours, including DSH, in terms of experiential avoidance as an underlying functional process. Experiential avoidance is defined as a "phenomenon that occurs when a person is unwilling to remain in contact with particular private experiences [...] and takes steps to alter the form or frequency of these events and the contexts that occasion them" (Hayes et al., 1996, n.p.). Pathological behaviours, according to Hayes et al. (1996), represent unhealthy strategies of avoiding unwanted private experiences.

One possible pathway for the development of avoidant coping styles may lie in socialisation (Hayes et al., 1996). According to Hayes et al. (1996), human beings are conditioned to be deliberate and controlled in most areas of life, including emotional responsiveness. We are also encouraged and socialised to suppress emotional expression (for example, telling a child not to cry). Being encouraged to not express emotions not only teaches us that certain emotions are "unacceptable" or "bad", but may also interfere with the ability to use language to express our internal experiences. Therefore, experiential avoiders may rely on behaviour rather than language to express their feelings. As previously discussed, difficulty with identifying and expressing emotions appropriately is called alexithymia, a common

phenomenon among self-harmers (Klonsky, 2007). Avoidance of internal experiences, therefore, may interfere with a person's ability to effectively cope with and regulate negative emotions, potentially leading to long-term emotional difficulties (Hayes et al., 1996).

According to Hayes et al. (1996), various clinical syndromes can be interpreted from an experiential avoidance perspective, including substance abuse, obsessive-compulsive disorder, panic disorder with agoraphobia, and DSH, which they discuss in the context of borderline personality disorder (BPD). The common feature of these syndromes is the attempts to ignore, suppress, or avoid particular thoughts or emotions through engaging in particular actions. This is iterated by Chawla and Ostafin (2007), who also include generalised anxiety disorder (GAD) in their list of experiential avoidant syndromes. Research has found strong correlations between anxiety and experiential avoidance (e.g. Chawla & Ostafin, 2007; Lee, Orsillo, Roemer, & Allen, 2010; Roemer, Salters, Raffa, & Orsillo, 2005). Specifically, individuals with GAD appear to experience distress about being in contact with emotions and therefore attempt to avoid them (Lee et al., 2010). The underlying fear of uncertainty may lead to avoidance of a variety of both negative and positive emotions. Worry – a core feature of GAD – appears to serve an avoidant function and allow the individual to anticipate, prepare for, and problem-solve for or avoid possible catastrophic events (Lee et al., 2010). Depression has not been widely explored in relation to experiential avoidance, although it has been suggested that fear of depression may be related to GAD and ineffective coping and poor self-regulation "may lead to anxiety-related distress via the tendency to avoid unwanted private experiences" (Chawla & Ostafin (2007). The following section explores the relationship between experiential avoidance and DSH in particular, with focus on the experiential avoidance model proposed by Chapman et al. (2006).

3.3.1. The experiential avoidance model of deliberate self-harm.

Chapman et al. (2006) propose a behavioural theory of DSH, referred to as the "experiential avoidance model". This model is "based on the premise that DSH is a negatively reinforced strategy for reducing or terminating unwanted emotional arousal" (Chapman et al., 2006, p. 372). The authors conceptualise DSH as an experiential avoidance behaviour that functions to escape from or avoid, and thus regulate, "unwanted internal experiences or those external conditions that elicit them" (Chapman et al., 2006, p. 374). Avoided experiences are not limited to feelings, and may include any experiences that a person finds distressing, such as

unpleasant thoughts, memories, and somatic sensations. However, Chapman et al. (2006) point out that avoidance behaviours are typically used to avoid the negative emotions associated with other distressing internal or external experiences, and the authors thus refer to DSH primarily as a behaviour of emotional avoidance (Chapman et al., 2006; Hayes et al., 1996).

Experiential avoidance behaviours can take many forms (for example substance abuse, avoidant coping styles etc.), but they have the common function of providing relief from unwanted experiences (Chapman et al., 2006). Consistent with the affect regulation model, DSH is functional in that it tends to be exceptionally effective in reducing or terminating a number of negative emotional states, including anxiety, tension, depression, loneliness, dissociation, guilt, feelings of emptiness, and intrusive thoughts, memories, and/or ruminations (Briere & Gil, 1998; Chapman et al., 2006). Therefore, depression, anxiety, and DSH may all represent a common experiential avoidance function.

The experiential avoidance model suggests that self-harming behaviours are "maintained and strengthened through the process of escape conditioning [...] and powerful negative reinforcement" (Chapman et al., 2006, p. 374). In other words, an individual with a tendency to escape from negative, unwanted emotional states may engage in DSH, which provides relief from the emotional arousal. Negative reinforcement occurs when the individual experiences relief from negative affect following DSH. The association between unpleasant, distressing emotional arousal and DSH as a mechanism to provide relief becomes strengthened through repeated acts of self-harm, which becomes an automatic escape response (Chapman et al., 2006).

The experiential avoidance model is both based on and supported by empirical research. For example, there is "tentative support for the presence of stronger experiential avoidance tendencies among individuals who engage in [DSH]" (Chapman et al., 2006, p. 374). In a study examining the relationship between coping strategies and DSH, Andover et al. (2007) found that individuals who engage in DSH are more likely than controls to use avoidant coping strategies. Factors that may underlie the use of avoidant coping tendencies are intensity of emotional states and tolerance for emotional distress (Chapman et al., 2006). Individuals who experience heightened emotional intensity or who have low distress tolerance may be more likely to perceive emotions as overwhelming and intolerable, and may

thus be at greater risk of using avoidance strategies, such as DSH (Chapman et al., 2006; Gratz & Roemer, 2008). Research on borderline personality disorder, which is strongly associated with self-harming behaviour, provides some support for this hypothesis (Chapman et al., 2006). Borderline personality disorder is characterised by symptoms of emotion dysregulation and intolerance for emotional distress (Sadock & Sadock, 2007). It has been suggested that many of the behaviours associated with this disorder, including DSH, may serve to avoid, reduce or eliminate emotional distress (Chapman et al., 2006). Heightened emotional intensity and/or low distress tolerance may interact with another important component in the development of experiential avoidance, namely deficient adaptive coping strategies to regulate emotions (Chapman et al., 2006; Gratz, 2003; Gratz & Roemer, 2008; Klonsky, 2007).

In a study of the antecedents and consequences of DSH, Chapman and Dixon-Gordon (2007) found that the majority of participants who self-harm reported both negative emotions prior to engaging in self-harm and relief following the act. Klonsky et al. (2003) investigated psychological correlates of DSH among military recruits, and their findings support the premise of the experiential avoidance model that self-harm reduces negative emotional arousal. The authors conclude that "the findings from past research and the current study suggest that self-harmers tend to be anxious and that self-harming is a method of reducing anxiety" (Klonsky et al., 2003, p. 1506). Overall, the results of various studies investigating self-reported reasons for DSH consistently support the hypothesis that individuals engage in DSH in order to reduce or eliminate unwanted emotional states.

3.3.2. Implications for treatment.

The experiential avoidance model not only provides a theoretical backdrop for understanding DSH, but also has important treatment implications. Acceptance-based therapies such as acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) and dialectical behaviour therapy (DBT; Linehan, 1993) focus on behavioural change through the non-judgmental acceptance of internal experiences rather than avoiding or attempting to change them.

ACT targets experiential avoidance by focusing on changing maladaptive responses (i.e. behaviour) to negative private experiences rather than attempting to change or control the thoughts and feelings themselves (Hayes, Luoma, Bond, Masuda, & Lillis, 2006). There is

also an emphasis on the role of how verbal constructions of thoughts and feelings support dysfunctional behaviour (Chawla & Ostafin, 2007). The core features of ACT are acceptance of private experiences; changing one's responses to these experiences; being present in the moment and in contact with one's private experiences without judging or evaluating them; self-awareness and perspective-taking; values; and committed action to change maladaptive behaviours (Hayes et al., 2006). Outcome studies suggest that ACT is effective in reducing experiential avoidance and rigid, maladaptive behaviours associated with it, as well as symptoms of a broad range of clinical syndromes, including depression and anxiety disorders Hayes et al., 2006). No studies assessing the use of ACT in the treatment of DSH were found.

DBT is a behaviourally oriented therapy that was designed to change maladaptive behaviour in patients with BPD (Linehan, Armstrong, Suarex, Allmon, & Heard, 1991; Shearin & Linehan, 1994). Specifically, DBT targets individuals' self-destructive attempts to avoid or change emotions deemed as "negative" or "wrong" or "bad". The core difficulty addressed by DBT is therefore one of emotion regulation, and one of the primary behaviours targeted is DSH or other parasuicidal behaviours (Linehan et al., 1991; Shearin & Linehan, 1994). In line with the self-regulation and emotional avoidance models, DBT conceptualises DSH as an attempt to relieve intolerable emotions (Shearin & Linehan, 1994). DBT is a brief, skills-based treatment that teaches patients to observe and describe their emotions in a nonjudgmental manner; to tolerate distress; to regulate painful emotions and responses to them; and to be more effective in interpersonal relationships (Shearin & Linehan, 1994). DBT has been found to be effective in reducing experiential avoidance, emotion-dysregulation, DSH, depression, and anxiety in both outpatient and inpatient contexts (e.g. Bohus et al., 2004; Gratz & Gunderson, 2006; Linehan et al., 1991, Low, Jones, & Duggan, 2001; Turner, 2000).

3.4. Chapter Summary

Literature has explored various overlapping and often co-occurring functions of DSH. The most commonly reported functions of self-harm include the regulation or reduction of negative affective states, self-punishment, disruption of dissociative episodes, and communication or expression of emotional pain to others. Affect regulation appears to be the most commonly reported reason for self-harm, which is effective in reducing various acute, negative emotional states such as anger, tension, and sadness. Consistent with such findings,

the experiential avoidance model proposes that DSH is a behaviour that has the potential to alleviate or eliminate powerful, negative internal states, particularly emotions. Research suggests that individuals who engage in DSH are more likely to exhibit avoidant response tendencies, and the relief experienced after engaging in DSH negatively reinforces and thus strengthens and maintains this behavioural pattern. Experiential avoidance, as a coping strategy, thus serves as a means to regulate unwanted negative affect, and DSH behaviour has been found to be effective in achieving this. This model may therefore be useful for understanding the relationship between the variables in the current study, namely DSH and negative emotions associated with depression and anxiety. Specifically, individuals may experience symptoms of depression and/or anxiety as intolerable and overwhelming and attempt to regulate, reduce, or avoid these feelings by engaging in self-harm. The experiential avoidance model also has implications for treatment of DSH. Interventions aimed at behavioural change through acceptance of one's private experiences have been found to be effective with emotional avoidance and behaviours such as DSH, as well as symptoms of various psychiatric conditions, including depression and anxiety.

Chapter 4: Research Methods

This chapter provides an overview of the research process for the current study. It provides an outline of the research question and the aims and objectives of the study. This is followed by a description of the research design, the procedures for sampling and data collection, the measuring instruments used, and the data analysis procedure. Finally, ethical considerations and the steps taken to ensure compliance to ethical standards in the research process will be described.

4.1. Research Question, Aims, and Objectives

The primary research question is:

5. Is there a correlation between the presence of DSH behaviour and symptoms of depression and anxiety?

Secondary research questions that will be explored are:

6. Is there a difference in DSH behaviour between males and females?
7. Is there a difference in DSH behaviour between different racial groups?
8. Is there a difference in DSH behaviour between different age groups?

The study is exploratory in nature and aims to provide preliminary information on the extent to which the engagement in DSH is correlated to anxiety and depression, two psychological disorders commonly associated with DSH (e.g. Klonsky, Oltmanns, & Turkheimer, 2003), and to gender, age and race.

Specific objectives of the study include:

- To describe the nature and extent of DSH in the sample, using the DSH Inventory (DSHI). This will include descriptions of types of DSH, age of onset, frequency, duration, and severity.
- To investigate the relationship between engagement in DSH and depression using the Beck Depression Inventory II (BDI-II) to measure depression.
- To investigate the relationship between engagement in DSH and anxiety using the State-Trait Anxiety Inventory (STAI) to measure anxiety.

It is predicted that symptoms of depression and/or anxiety will predict the occurrence of DSH. That is, the higher the levels of depression and/or anxiety, the more likely participants will be to report having engaged in DSH. No predictions are made regarding the relationship between DSH and demographic variables of gender, age, and race; these differences are purely exploratory and descriptive.

4.2. Research Design

The current study is a descriptive and correlational quantitative study, as it attempts to describe the epidemiology of DSH as well as relationships between variables (Gravetter & Forzano, 2009). Specifically, it aims to establish whether self-harming behaviour is correlated to depression and/or anxiety and whether the rates of DSH differ according to gender, age, and race. The research forms part of a larger study conducted in the Department of Psychology at the University of Pretoria.

This study made use of a survey research design, which involved the administration of standardised, self-report questionnaires to the research participants (Babbie & Mouton, 1998). The survey design is especially useful for gathering information from a large sample and allows participants to complete the questionnaires anonymously (Babbie & Mouton, 1998). However, it is important to note that the use of self-report questionnaires in a survey research design may result in inaccurate or incomplete information as it relies on participants' willingness to be truthful as well as their ability to recall events and understand the questions presented to them (Gravetter & Forzano, 2009). Because of the sensitive nature of the research subject, anonymous participation was an important ethical consideration. Identifying details of participants were not captured by the questionnaires and the responses to the questionnaires could not be connected to individual participants, thereby protecting their anonymity and ensuring confidentiality. Moreover, emphasising and assuring anonymity and confidentiality may have improved the likelihood that participants would have been more willing to participate and disclose honest, accurate information, which would enhance the accuracy and validity of results.

4.3. Participants

4.3.1. Sampling procedure.

Participants were selected using nonprobability, convenience sampling. Convenience samples consist of participants "selected on the basis of their availability and willingness to respond" (Gravetter & Forzano, 2009, p. 141), which limits the researcher's control over sample characteristics and its representativeness of the general population. Convenience sampling, however, is a timely and inexpensive sampling method and can be used successfully for research that is exploratory in nature or research that does not attempt to generalise results to the broader population. The current study is exploratory and aims to describe DSH and its correlation to depression, anxiety, and particular demographic characteristics among psychology students from a specific tertiary institution in South Africa. While the results of the study are unlikely to be representative of all students or the general South African population, it is anticipated that they will provide valuable information regarding DSH among the specific sample studied and may also reflect trends in DSH among psychology students from similar tertiary institutions with similar demographic characteristics (Gravetter & Forzano, 2009).

The target population of the current study included undergraduate (year levels one, two and three) and postgraduate (Honours level) psychology students from a South African university. Psychology students were targeted not only for convenience, but also to allow for comparison with findings of international research on DSH. A number of large, community-based international studies have relied on samples comprising psychology students (e.g. Brown, et al., 2007; Croyle & Waltz 2007; Gratz, 2001; Gratz et al., 2002; Kimball & Diddams, 2007; Paivio & McCulloch, 2004). However, such studies have not been conducted in South Africa. The high rate of DSH among students found in international research suggests that they may be a high risk population (Klonsky & Muehlenkamp, 2007), warranting exploration of DSH among psychology students in the local context and further motivating the sample choice for the current study.

4.3.2. Sample characteristics.

A sample of 603 students at a university in South Africa participated in this study. Participants completed a socio-demographic questionnaire as part of the procedure. The sample consisted of 483 females (80%) and 120 males (20%). The majority of the sample

was White (81%, *n* = 480), followed by Black (16%, *n* = 97), Asian (1%, *n* = 8) and Coloured (1%, *n* = 7). For the purposes of data analysis, the categories of Coloured and Asian participants were collapsed and classified under the category of "other" (*n* = 15) due to the small sample sizes of each. Eleven participants (2%) did not indicate their race. Ages of participants ranged from 17 to 49 with a mean age of 19.88. Fifty participants (8%) did not provide their ages. The age categories used in the data analysis were based on the age distribution in the sample, also taking into account potential life or transitional stages. Ages 17 to 18 may be considered late adolescence; 19 represents a transition from adolescence to emerging adulthood (20-21); 22 to 24 can be regarded as early adulthood; and at 25 and older, the individual may be more established in his/her identity as an adult. The demographic characteristics of the sample are presented in Table 4.1.

Table 4.1
Sample Characteristics

		F (%)
Sex	**Male**	120 (19.9%)
	Female	483 (80.1%)
	Total	603 (100%)
Race	**White**	480 (81.08%)
	Black	97 (16.39%)
	Asian	8 (1.35%)
	Coloured	7 (1.18%)
	Total	592 (98.82%)
	Missing	11 (1.82%)
Age	**17-18**	171 (30.92%
	19	148 (26.76%)
	20-21	154 (27.85%)
	22-24	64 (11.57%)
	25-49	16 (2.88%)
	Total	553 (91.71%)
	Missing	50 (8.29%)

Because participation in the study was entirely voluntary, students had the option not to participate. Individuals who chose to participate cannot be assumed to be representative of the sample as a whole. In other words, those who participated may have characteristics that are different from those who did not participate. For example, it may be that the subject

matter was of personal relevance or interest for those who participated. Further, non-response rates may negatively impact on the validity of results. A number of participants did not complete all the questions in the questionnaire.

4.4. Procedure

Contact was made with participants in lecture halls during the presentation of the psychology modules that they were enrolled for. This was convenient and effective procedure in that it allowed for expeditious data collection from a large number of participants. The contact session was arranged with the relevant lecturers prior to the time to minimise disruption of teaching activities. The contact session with the participants was brief and aimed to inform students about the research as well as provide instructions for the completion of questionnaires. Participants were fully informed about the purpose of the research and the sensitive and possibly distressing nature of the topic, and it was asserted that participation was entirely voluntary.

Students were then provided with an information letter, a letter of informed consent (Appendix A), and five questionnaires for data collection (Appendix B). The following questionnaires were included for the purposes of the larger study: a demographic questionnaire, the Beck Depression Inventory (BDI-II), the State-Trait Anxiety Inventory (STAI), the Deliberate Self-Harm Inventory (DSHI), and the Functional Assessment of Self-Mutilation (FASM). The FASM was not included in the analysis for the current study. Participants completed the questionnaires during the contact session, and the total testing time did not exceed one hour. Following the completion and submission of the questionnaires, participants were provided an opportunity to ask questions regarding the research. Information about the study was provided at the conclusion of the session, along with contact numbers for psychological services, should participants have wished to make use of such services.

4.5. Instruments

Participants completed a total of five questionnaires. Data obtained from the demographic questionnaire, the DSH Inventory, the Beck Depression Inventory, and the State-Trait Anxiety Inventory were analysed for the purposes of the current study. The questionnaires are briefly described below. The measures can be found in appendix B.

4.5.1. Demographic questionnaire.

The demographic questionnaire was constructed to capture the following basic information: age, gender, race, language and level/year of study. To ensure anonymity, no identifying details such as names or student numbers were obtained.

4.5.2. The Deliberate Self-Harm Inventory (DSHI).

The Deliberate Self-Harm Inventory (DSHI) is a 17-item, self-report questionnaire developed by Gratz (2001) to assess DSH. The DSHI is a behaviourally based measure, designed to assess multiple aspects of DSH, including the "frequency, severity, duration, and type of self-harming behavior [sic]" (Gratz, 2001, p. 255). Deliberate self-harm is conceptualised by Gratz (2001) as "the deliberate, direct destruction or alteration of body tissue without conscious suicidal intent, but resulting in injury severe enough for tissue damage (e.g., scarring) to occur" (p. 255). Gratz's (2001) conceptualisation of DSH is in line with the repetitive, superficial/moderate self-mutilation category proposed by Favazza (1998).

The DSHI includes a variety of intentional self-harming behaviours involving direct destruction of body tissue, such as cutting, burning, carving words or patterns into the skin, severe scratching, biting, abrading the skin with rough or sharp objects or erosive chemicals, piercing the skin with sharp objects, breaking of bones, self-punching or -hitting, banging one's head against hard surfaces, and wound interference (Gratz, 2001). The DSHI excludes self-poisoning or substance ingestion, as well as suicide attempts, making it an appropriate measure of DSH as operationally and conceptually defined for the purposes of the current study.

The DSHI demonstrates high reliability and validity (Gratz, 2001; Fliege et al., 2006). Preliminary data on the psychometric properties of the DSHI suggest high internal consistency ($\alpha = .82$), adequate test-retest reliability (.68, $p > .001$), and "adequate construct, convergent, and discriminant validity" (Gratz, 2001, p. 260). The DSHI was found to correlate significantly to other measures of DSH as well as to symptoms of borderline personality disorder (BPD), which is commonly associated with self-harming behaviour (Gratz, 2001). Furthermore, the DSHI successfully discriminates between self-harm and suicide attempts, which is an important exclusion in the definition of DSH (Gratz, 2001).

The DSHI has previously been used to assess DSH in student samples (e.g. Gratz et al., 2002; Gratz, 2006; Hoff & Muehlenkamp, 2009; Kimball & Diddams, 2007), but is the only measure used in the current study that has not been previously used in the South African context. This is not anticipated to be problematic as the DSHI is a purely descriptive measure of behaviours and is not intended to assess or diagnose psychological constructs. Gratz (2001) maintains that "the DSHI is a behaviourally [sic] based measure of deliberate self-harm, its use would leave little doubt as to the construct being measured by different researchers across different studies" (p. 260). A full exploration of this measure and its validity and reliability in this sample is beyond the scope of the current study.

The DSHI (Gratz, 2001) measures various characteristics of DSH with specific questions. Only those participants reporting that they have engaged in the specific behaviour answer these questions. For the purposes of this study, the following questions were used to determine the age of onset, frequency, duration, and severity of DSH, respectively:

- How old were you when you first did this?
- How many times have you done this?
- How many years have you been doing this?
- Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?

4.5.3. The Beck Depression Inventory (BDI-II).

The Beck Depression Inventory Second Edition (BDI-II) is a 21-item, self-report inventory designed to measure the presence and severity of depressive symptoms among individuals aged 13 and older (Beck, Steer, & Brown, 1996). The BDI-II can be administered individually or in a group setting, with a completion time of approximately 5-10 minutes. Items in the BDI-II are presented and scored on a 4-point Likert-type scale rated from zero (absence of the symptom) to three (severe or persistent presence of the symptom). The symptoms assessed by the BDI-II are consistent with the diagnostic criteria for depression as stipulated in the DSM-IV-TR and include affective, cognitive, and somatic symptoms associated with depression (Beck et al., 1996; Jooste & Foxcroft, 2005).

The BDI-II demonstrates high validity and reliability (Clark & Watson, 1991; Whisman, Perez, & Ramel, 2000), and has been described as "one of the most widely used, reliable, and valid self-report measures of depression for both psychiatrically diagnosed patients and

normal populations" (Nezu et al., 2002, p. 73). The BDI-II has high internal consistency (α = .89 – .94, *M* = .86) and test-retest reliability (.93 over a one-week interval; Groth-Marnat, 2003). The BDI-II also has adequate concurrent and content validity in that it shows moderate to high correlations to symptoms of depression based on clinician ratings and diagnoses as well as other instruments measuring depression (Groth-Marnat, 2003). In terms of discriminant validity, Svanborg and Asberg (2001) found that the BDI-II is able to discriminate between different depressive disorders as well as between depressive and anxiety disorders. Richter, Werner, Heerlein, Kraus, and Sauer (1998), however, found that the BDI-II demonstrated poor discriminant validity against anxiety. It is not within the scope of the current study to fully explore the discriminant validity of the instruments used. However, despite concerns regarding discriminant validity, the BDI-II was used in the current study due to its otherwise strong validity and reliability, as well as its extensive use in psychological research, allowing for the comparison of findings and opportunities to highlight potential issues for prospective research on the BDI-II in the South African context.

The BDI-II has been widely used in research studies in the South African context and with various South African cultural groups (e.g. Faure & Loxton, 2003; Laster & Akande, 1997; Seedat, Nyamai, Njenga, Vythilingum, & Stein, 2004), and is in the process of being standardised and adapted for different cultural groups in South Africa (Jooste & Foxcroft, 2005). The BDI-II is also commonly used among college and/or university student populations (e.g. Gawrysiak, Nicholas, & Hopko, 2009; Hoff & Muehlenkamp, 2009) and other non-clinical populations (e.g. Klonsky et al., 2003).

In order to determine the severity of depressive symptoms among the sample, the cutoff scores provided in the manual for Beck Depression Inventory, Second Edition (BDI-II) were used (Beck et al., 1996). The different depression categories and their cut-off scores are presented in Table 4.2 below (Beck et al., 1996; Groth-Marnat, 2003).

Table 4.2

Scoring the Beck Depression Inventory

Score	Level of depression
0-13	No or minimal depression
14-19	Mild depression
20-28	Moderate depression
29-69	Severe depression

4.5.4. The State-Trait Anxiety Inventory (STAI).

The State-Trait Anxiety Inventory (STAI) is a widely used self-report measure designed to assess both transitory (state) anxiety and enduring (trait) anxiety (Clark & Watson, 1991; Spielberger, 1983). The STAI assesses general symptoms of anxiety and is not intended for the diagnosis of specific anxiety disorders (Kabacoff, Segal, Hersen, & Van Hasselt, 1997). It can be administered to individuals or groups in a short amount of time (about 10 minutes). The test can be completed by any persons with a sixth grade reading level, and norms are available for secondary school and college/university students as well as adults (Tilton, 2008). The STAI consists of two separate 20-item scales that assess state and trait anxiety respectively on a four-point Likert scale ranging from 1-4 (1 = "not at all" [state anxiety] and "almost never [trait anxiety]; 4 = "very much so" [state anxiety] and "almost always" [trait anxiety]).

The STAI has demonstrated adequate reliability and validity (Spielberger, 1983). Internal consistency is high for both state and trait anxiety (α = .88 – .94 and .92 – .94, respectively; Groth-Marnat, 2003). While test-retest reliability is high for trait anxiety (α = .73 – .86), the state anxiety scale demonstrates relatively poor test-retest reliability (.51 for males and .36 for females). However, this may be due to the transient nature of state anxiety (Groth-Marnat, 2003). The STAI also demonstrates adequate construct, content, and concurrent validity based on its correlations to symptoms of anxiety among psychiatric patients, *DSM-IV* criteria for generalised anxiety disorder, and other measures of anxiety, respectively (Groth-Marnat, 2003). The STAI has been widely used in both student populations (e.g. Croyle & Waltz, 2007; Field, Diego, Pelaez, Deeds, & Delgado, 2012; Hoff & Muehlenkamp, 2009; Misra & McKean, 2000) and in the South African context (e.g. Faure & Loxton, 2003;

Seedat, Fritelli, Oosthuizen, Emsley, & Stein, 2007). To date, there are no South African norms for the STAI (Jooste & Foxcroft, 2005).

Although the STAI is intended to discriminate between symptoms of anxiety and depression (Groth-Marnat, 2003; Tilton, 2008), Fydrich, Dowdall, and Chambless (1992) found a high correlation between symptoms of depression and anxiety as measured by the STAI and the BDI-II, respectively. In a review of instruments measuring anxiety, Julian (2011) also highlighted findings that suggest that the STAI may not adequately differentiate between symptoms of depression and anxiety. However, despite such concerns, the STAI remains one of the "most widely researched and widely used measures of general anxiety based on its high validity and reliability, as well as the fact that it is a brief measure that can be completed in a relatively short time (Groth-Marnat, 2003; Julian, 2011, p. 468). A full exploration of the discriminant validity of the instruments is beyond the scope of the current study. As with the BDI-II, the extensive use of the STAI (allowing for comparison of results and identification of areas for exploration in South African populations) and its strong psychometric properties informed the decision to include it as a measure in the current study.

Scores on the STAI can range from 20-80, with higher scores indicating higher levels of anxiety (Julian, 2011). Suggested cutoff scores indicating elevated anxiety range from 39 to 55 (Julian, 2011). The manual for the STAI provides mean scores and standard deviations in order to interpret scores obtained on the test. The norms for undergraduate American college students provided in the STAI manual are presented in Table 4.3 below (Spielberger, Gorsuch, & Lushene, 1970).

Table 4.3

International Norms for the State-Trait Anxiety Inventory

	State Mean	**SD**	**Trait Mean**	**SD**
Males	36.35	9.67	37.65	9.69
Females	35.12	9.25	38.25	9.14

Based on the norms provided in the STAI manual (Spielberger et al., 1970) and on previous research (e.g. Amiri, Mohamadpour, Salmalian, & Ahmadi, 2010; Bunevicius et al., 2013; Hermanns, Kulzer, Krichbaum, Kubiak, & Haak, 2005), a cutoff score of 45 was used for state and trait anxiety to identify elevated anxiety for the purposes of the current study.

Although the findings pertaining to the STAI will include both state and trait anxiety, the primary focus will be on trait anxiety as this construct reflects more enduring, general levels of anxiety reported by participants and may therefore be more relevant to self-harming behaviour, as opposed to situational, transitory anxiety reported at the time of the completion of the questionnaires.

4.6. Data Analysis

The data were cleaned and then coded and analysed using SAS Software, Version 9.3 (SAS Institute, 2011, Cary, NC, U.S.A). The researcher consulted the statistics department at the University of Pretoria to run the statistical analyses. Basic descriptive statistics were performed creating frequency tables to describe the characteristics of the sample and the prevalence and characteristics of DSH, depression, and anxiety. The descriptive statistics regarding self-harm included examining DSH in relation to demographic variables of gender, race, and age, and to investigate aspects of DSH such as prevalence, types of DSH, age of onset, frequency, duration, and severity of self-harming behaviours in order to obtain an overview of the nature of self-harm in the sample. With regard to depression and anxiety, descriptive statistics were used to examine the distribution and severity of symptoms across gender, race, and age groups. Chi Square tests were performed to determine significant difference between categorical data (for example demographic groups, categories of depression and anxiety, and yes or no responses in the DSHI). T-tests were performed to test for significant differences between mean scores obtained on the BDI and STAI across gender, race, and age, as well as between self-harming versus non-self-harming participants. Logistic regression analyses were used in order to establish whether there is a relationship between DSH and depression and/or anxiety. This model was used as DSH is a discrete variable, coded as 0 (no history of DSH) and 1 (history of DSH). The logistic regression analyses were not performed with the intention of establishing the predictive capability of the variables. The probabilities and likelihoods (odds ratios) were used to establish the extent to which a relationship exists between DSH and depression and/or anxiety. An alpha level of 0.05 was used to determine the significance of differences and relationships for all procedures described above.

It was hypothesised that symptoms of depression and anxiety will predict the frequency of self-harming behaviour reported by participants. Specifically, it was expected that

individuals reporting symptoms of depression and/or anxiety would report a higher frequency of DSH than those reporting no symptoms of depression and/or anxiety.

4.7. Ethical Considerations

The study adhered to the ethical guidelines for psychological research, as stipulated by the Health Professions Council of South Africa (HPCSA, 2006) and was approved by the relevant ethics committee. During the information session when questionnaires were distributed to participants, it was emphasised that participation in the study was voluntary. All interested participants were also required to sign an informed consent form whereby they agreed to participate in the research and affirmed that they understood the conditions and possible risks involved (attached as appendix A).

Due to the sensitive nature of the topic of investigation, care was taken not to expose the participants to any harm. Transparency regarding the nature of the research allowed for students to make an informed decision as to their participation. Some students who found the area of research upsetting had the option not to participate. Contact details for referral for counselling were provided to all participants, had they felt that they required any psychological support. Anonymity was assured as no identifying details were captured in the questionnaires. Respondents were also ensured of confidentiality in the study. That is, the information provided by participants is disseminated in such a way that individual participants' responses will not be identifiable by the public. As per the data storage agreement of the larger study, the data is being stored in a secure location to which only the researchers have access, for a minimum period of 15 years. The raw data from the questionnaires is stored in their original format in a locked cabinet in an office in the Department of Psychology at the University of Pretoria.

Participants were debriefed after completion of the study, in order for them to benefit from the research as well (Babbie, 2005). The debriefing took the form of an information session advertised to all of the initial participants in the study, as well as other interested psychology students. During the information session, the aims and descriptive findings of the study were presented and participants were invited to comment on the findings. Participants in attendance were again made aware of available support structures.

4.8. Chapter Summary

The current research is an exploratory study on the correlation between DSH and symptoms of depression, anxiety, and certain demographic characteristics. Because it involves exploring epidemiological factors, a large sample was needed in order to obtain adequate data to describe the phenomena as accurately as possible. Convenience sampling was used for the selection of participants, which limits the representativeness of the sample and the potential to generalise results to the broader population. However, for the purposes of the current research, convenience sampling was a suitable option in that the study is concerned with describing the behaviours and characteristics of a specific population and not the general population as a whole. In addition, the sample used will allow for the comparison of findings with those of international studies. The procedures employed allowed for efficient collection of data from a large sample and required minimal time and financial resources. The instruments used in this study have been widely used in local and international research and with similar populations, which increases the potential to compare findings with those of other research. Data were analysed using descriptive statistics and tests of correlation to describe the variables of the study and explore the relationship between them. Finally, the HPCSA ethical standards for research were adhered to at each stage of the research process.

Chapter 5: Findings

In this chapter, the findings of the study are reported. Firstly, the results of the descriptive analyses are reported. The findings regarding the prevalence of DSH will be provided with a detailed report on differences in DSH across gender, race, and age groups. The results regarding age of onset, frequency, duration, and severity of DSH will then be reported. This will be followed by a description of depression and anxiety among the sample. The final section reports the results of the logistic regression analyses used to describe the relationships between DSH and the predictor variables, namely depression and anxiety.

5.1. Descriptive Statistics

5.1.1. Prevalence and characteristics of deliberate self-harm.

Overall, 46% (n = 278) of the sample reported having engaged in self-harming behaviour at least once in their lifetimes. Almost 80% (78%, n = 216) of participants reporting a history of DSH indicated that they had engaged in self-harm during the 12 months preceding the study (36% of total sample). The most commonly reported method of DSH was cutting (22%, n = 132), followed by severe scratching (16%, n = 93), carving words into the skin (12%, n = 70), burning oneself with a lighter or match (11%, n = 66), and sticking sharp objects into the skin (9%, n = 52). More than half of self-harming participants (53%, n = 146) reported using more than one method of DSH. The descriptive statistics for DSH are presented in Table 5.1.

Table 5.1

*Frequencies and *Percentages of DSH across Gender, Race, and Age Groups in Total Sample*

Self-harm behaviour	Overall	Gender		Race			Age (years)				
	N (%)	Male (%)	Female (%)	White (%)	Black (%)	Other (%)	17-18 (%)	19 (%)	20-21 (%)	22-24 (%)	25-49 (%)
Any self-harm	278 (46.10)	59 (49.17)	219 (45.34)	223 (46.46)	39 (40.21)	12 (80.00)	83 (48.54)	54 (36.49)	86 (55.84)	30 (46.88)	3 (18.75)
Cutting	132 (21.96)	18 (15.00)	114 (23.70)	119 (24.79)	7 (7.37)	4 (26.67)	36 (21.18)	27(18.24)	45 (29.41)	14 (21.88)	2 (12.50)
Burning (cigarette)	42 (7.02)	15 (12.50)	27 (5.65)	39 (8.16)	1 (1.06)	1 (2.44)	13 (7.74)	4 (2.70)	12 (7.89)	6 (9.38)	2 (12.50)
Burning (lighter or match)	66 (11.02)	21 (17.50)	45 (9.39)	53 (11.09)	10 (10.53)	2 (13.33)	19 (11.24)	11 (7.43)	21 (13.73)	5 (7.94)	2 (12.50)
Carving words into skin	70 (11.67)	7 (5.83)	63 (13.13)	53 (11.06)	11 (11.58)	3 (20.00)	30 (17.65)	11 (7.43)	20 (13.07)	6 (9.52)	0 (0.00)
Carving pictures into skin	44 (7.41)	10 (8.55)	34 (7.13)	33 (6.96)	7 (7.45)	4 (26.67)	11 (6.63)	6 (4.08)	18 (11.84)	4 (6.35)	2 (12.50)
Severe scratching	93 (15.60)	10 (8.47)	83 (17.36)	82 (17.19)	6 (6.45)	4 (26.67)	27 (15.98)	21 (14.19)	30 (19.87)	9 (14.52)	0 (0.00)
Biting	28 (4.68)	6 (5.04)	22 (4.59)	24 (5.01)	2 (2.15)	2 (13.33)	14 (8.24)	6 (4.08)	8 (5.23)	0 (0.00)	0 (0.00)
Rubbing sandpaper on skin	7 (1.20)	3 (2.61)	4 (0.85)	7 (1.50)	0 (0.00)	0 (0.00)	4 (2.41)	2 (1.38)	1 (0.67)	0 (0.00)	0 (0.00
Dripping acid on skin	3 (0.50)	1 (0.85)	2 (0.42)	3 (0.63)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.66)	2 (3.23)	0 (0.00)
Using bleach or oven cleaner to scrub skin	8 (1.34)	3 (2.56)	5 (1.04)	8 (1.68)	0 (0.00)	0 (0.00)	0 (0.00)	1 (0.68)	4 (2.63)	2 (3.23)	0 (0.00)
Sticking pins, needles, staples into skin	52 (8.68)	13 (10.92)	39 (8.13)	43 (8.98)	6 (6.38)	3 (20.00)	16 (9.41)	12 (8.11)	17 (11.11)	4 (6.45)	1 (6.25)
Rubbing glass into skin	16 (2.67)	1 (0.83)	15 (3.13)	16 (3.34)	0 (0.00)	0 (0.00)	7 (4.12)	0 (0.00)	6 (3.92)	2 (3.17)	0 (0.00)
Breaking bones	5 (0.84)	2 (1.68)	3 (0.63)	5 (1.05)	0 (0.00)	0 (0.00)	3 (1.76)	0 (0.00)	2 (1.32)	0 (0.00)	0 (0.00)
Banging head	30 (5.02)	8 (6.67)	22 (4.60)	25 (5.24)	1 (1.05)	3 (20.00)	8 (4.71)	6 (4.08)	10 (6.58)	6 (9.52)	0 (0.00)
Punching self	48 (8.01)	11 (9.17)	37 (7.72)	45 (9.41)	0 (0.00)	3 (20.00)	13 (7.65)	11 (7.43)	15 (9.87)	3 (4.76)	1 (6.25)
Interference with wound healing	39 (6.51)	4 (3.33)	35 (7.31)	35 (7.32)	3 (3.16)	1 (6.67)	14 (8.24)	10 (6.76)	10 (6.58)	3 (4.76)	0 (0.00)

**Percentages represent percentage of population (e.g. percent of male population)*

5.1.2. Gender.

Males and females reported similar rates of DSH (49%, n = 59 and 45%, n = 219 respectively). Although men reported slightly higher overall rates of DSH, this difference was not found to be significant, χ^2 (1, N = 603) = .57, p = .452.

The most commonly reported methods of DSH among men were burning with a lighter or match, cutting, burning with a cigarette, sticking sharp objects into the skin, and punching oneself. For women, cutting was the most commonly reported method of DSH, followed by severe scratching, carving words into the skin, burning with a lighter or match, and sticking sharp objects into the skin. Women were significantly more likely than men to report cutting, χ^2 (1, n = 114) = 4.24, p = .039, severe scratching, χ^2 (1, n = 83) = 5.68, p = .017, and carving words into the skin, χ^2 (1, n = 63) = 4.95, p = .026, while men were significantly more likely to report burning with a lighter or match, χ^2 (1, n = 21) = 6.43, p = .011, and burning with a cigarette, χ^2 (1, n = 15) = 6.90, p = .009.

5.1.3. Race.

With regard to race, 46% (n = 223) of white participants and 40% (n = 39) of Black participants reported having engaged in any type of DSH. The rate of DSH among other races was 80% (n = 12), which was found to be significantly higher than that of White and Black participants, χ^2 (2, N = 592) = 8.31, p = .016, although the small sample size for this group limits the interpretation of the result.

The most commonly reported methods of DSH among White participants were cutting, followed by severe scratching, burning oneself with a lighter or match, and carving words into the skin. For Black participants, the most common method of DSH was carving words into the skin, followed by burning oneself with a lighter or, cutting, and carving pictures into the skin. Among other races, cutting and severe scratching were the most common methods of DSH, followed by carving words and pictures/designs into the skin. White participants were significantly more likely than Black participants to report cutting, χ^2 (1, n = 130) = 14.07, p < .001, severe scratching, χ^2 (1, n = 92) = 6.88, p = .009, self-punching, χ^2 (1, n = 48) = 9.71, p = .002, and burning with a cigarette, χ^2 (1, n = 41) = 6.08, p = .014. Participants of other races were significantly more likely than Black participants to report banging one's head, χ^2 (1, N = 29) = 8.42, p = .004.

5.1.4. Age.

Significant differences were found between rates of DSH across age groups, χ^2 (4, n = 553) = 16.61, p = .002. The highest rates of DSH were found in the 20 to 21 age group, followed by participants aged 17 to 18, 22 to 24, 19, and 25 and above.

The rates of DSH among 20- and 21-year-olds were significantly higher than those among participants aged 19, χ^2 (4, n = 41) = 11.37, p < .001, and 25 and older, χ^2 (4, n = 170) = 8.00, p = .004, but not more so than other age groups. Participants in the 25 years and above age group reported significantly lower rates of DSH than participants in other age groups (17-18: χ^2 (1, n = 187) = 4.100, p = .043; 20-21: χ^2 (1, n = 170) = 6.58, p = .010; 22-24: χ^2 (1, n = 80) = 3.10, p = .078), with the exception of 19-year-olds.

Cutting was the most common method of self-harm across all age groups. Severe scratching was the second most common method of DSH among participants aged 19 to 24, while participants aged 17 to 18 reported carving words into the skin as the second most common method of DSH, and participants aged 25 and above reported burning with a cigarette as the second most common method. No significant differences were found regarding the commonly reported methods of DSH. Where significant differences were found, they involved infrequently reported behaviours, namely dripping acid on the skin, rubbing the skin with bleach and oven cleaner, rubbing glass into the skin, and severe biting. These will not be discussed as it is more likely that, due to the low frequency of these types of DSH, the tests of significance might not have been able to detect true differences. In other words, the small sample size that fell within each of these DSH categories would not allow the test to truly reflect an age difference.

5.1.5. Age of onset, frequency, duration, and severity.

Table 5.2 displays the age of onset, frequency, duration, and severity for each method of DSH. These results pertain only to participants who indicated that they have engaged in self-harming behaviour.

The mean age of onset for self-harming behaviour was 14.55 years (SD = 3.14, range = 2-23). The earliest mean age of onset was reported for preventing wounds from healing (12.77 years). The mean number of incidents (frequency) for all self-harming behaviour was 11.28 (SD = 29.11), ranging from 1 to 500 incidents of DSH. Of the participants reporting self-

harm, the majority (76%, *n* = 198) reported more than one incident of DSH, while 37% (*n* = 97) reported ten or more incidents. Almost 20% (19%; *n* = 49) of self-harming participants reported 20 or more incidents of DSH, and 8% (*n* = 21) reported 50 or more incidents of DSH. The mean duration of self-harming behaviour was 2.53 years (*SD* = 2.28), with a range from 0.10 (approximately eight months) to 16 years. Of participants reporting any self-harm, 11% (*n* = 51) reported having required hospitalisation or medical treatment as a result of the injury. The method of self-harm most commonly reported to have required hospitalisation or medical treatment was the breaking of one's own bones (80%, *n* = 4).

Table 5.2

Age of Onset, Frequency, Duration, and Severity of DSH

Method of DSH	**Age of onset**		**Frequency**		**Duration**		**Severity***	
	Mean	Range	Mean	Range	Mean	Range	*N*	%
All DSH	**14.55**	**2-23**	**11.28**	**1-500**	**2.53**	**0.10-16**	**51**	**10.72**
Cutting	15.21	7-22	19.98	1-500	2.81	0.10-13	21	16.41
Burning with cigarette	16.07	11-21	2.73	1-20	1.24	1-4	0	0
Burning with match/lighter	14.73	7-20	3.05	1-25	1.88	0.2-9	2	3.17
Carving (words)	14.22	6-20	2.76	1-21	2.33	1-10	2	2.94
Carving (pictures, designs)	15.06	10-19	4.34	1-100	1.72	1-6	1	2.38
Severe scratching	15.07	5-23	14.30	1-500	3.23	0.2-15	6	6.52
Severe biting	14.00	7-19	3.39	1-20	2.59	0.2-10	0	0
Rubbing sandpaper on skin	14.86	10-17	2.86	1-10	2.50	1-7	0	0
Dripping acid on skin	17.33	16-19	1.33	1-2	0.50	0.5-0.5	0	0
Scrubbing skin with bleach/oven cleaner	13.43	7-19	75.86	1-500	4.83	1-10	1	14.29
Self-piercing with pins, needles etc.	14.36	7-20	6.46	1-41	2.62	0.1-14	1	1.96
Rubbing glass into skin	16.00	12-21	6.27	1-50	2.14	1-8	2	12.5
Breaking own bones	15.40	12-17	1.40	1-20	1.52	0.6-4	4	80
Banging head against something	15.81	2-23	4.13	1-40	2.75	0.3-16	4	14.29
Punching oneself	15.86	8-23	8	1-80	3.13	1-9	3	6.52
Preventing wounds from healing	12.77	2-17	23.47	1-500	4.75	1-16	4	10.53

**Number of participants indicating that they required hospitalisation or medical treatment for their injuries*

5.1.6. Depression among sample.

The majority of participants did not obtain elevated scores on the BDI. Mean BDI scores and the percentages of participants according to depression categories – namely no/minimal, mild, moderate, and severe – and according to gender, race and age, are presented in Table 5.3.

The majority of men and women fell within the normal range (no or minimal depression). However, an independent group t-test showed that the mean BDI score of female participants was significantly higher than that of male participants, t (601) = 3.13, $p < .001$. Furthermore, a chi-square showed significant gender differences in frequencies across depression categories, χ^2 (3, n = 603) = 7.61, p = .054. Women were almost twice as likely as men to score within the moderate to severe ranges of depression (21% and 12%, respectively).

An independent group t-test revealed no significant differences between mean BDI scores across racial groups. However, the mean BDI score was highest among participants of other races, followed by Black participants. Although the majority of participants from all race groups fell within the no/minimal to mild depression ranges, a chi-square revealed significant differences regarding the frequencies across BDI depression categories, χ^2 (6, n = 592) = 19.70, p = .003. While no significant differences were found between frequencies across the moderate to severe depression ranges, participants of other races were more than three times more likely than White and Black participants to score in the severe depression range only (27%, 7%, and7%, respectively).

In terms of age, significant differences between mean BDI scores were found for participants aged 25 and above, whose mean scores were significantly lower than those aged 17 to 18, t (185) = 2.32, p = .022; 19, t (162) = 2.17, p = .031; and 20 to 21, t (168) = 2.29, p = .023. No significant differences were found regarding the distribution of age groups across BDI depression categories, although participants aged 20-21 represented the highest percentage in the moderate to severe ranges of depression, while those aged 25 years and above represented the smallest group in these categories.

Table 5.3

Mean BDI Scores and Frequencies across BDI Categories for Overall Sample and by Gender, Race, and Age

		Mean Score	Standard Deviation	Depression Category				
				No/Minimal n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	Total n
Overall Sample		12.95	9.74	383 (63.52)	105 (17.41)	70 (11.61)	45 (7.46)	603
Gender	**Male**	10.48	8.55	88 (73.33)	18 (15.00)	7 (5.83)	7 (5.83)	120
	Female	13.56	9.93	295 (61.08)	87 (18.01)	63 (13.04)	38 (7.87)	483
	Total	-	-	383 (63.52)	105 (17.41)	70 (11.61)	45 (7.46)	603
Race	**White**	12.53	9.89	319 (66.46)	76 (15.83)	51 (10.63)	34 (7.08)	480
	Black	14.46	8.21	49 (50.52)	24 (24.74)	17 (17.53)	7 (7.22)	97
	Other	17.20	14.12	8 (53.33)	3 (20.00)	0 (0.00)	4 (26.67)	15
	Total	-	-	376 (63.51)	103 (17.40)	68 (11.49)	45 (7.60)	592
	Missing	-	-					11
Age	**17-18**	12.96	8.90	104 (60.82)	37 (21.64)	20 (11.70)	10 (5.85)	4
	19	12.87	9.32	96 (64.86)	27 (18.24)	16 (10.81)	9 (6.08)	315
	20-21	13.84	10.57	98 (63.64)	19 (12.34)	20 (12.99)	17 (11.04)	154
	22-24	11.88	10.22	43 (67.19)	12 (18.75)	5 (7.81)	4 (6.25)	64
	25+	7.63	7.50	13 (81.25)	2 (12.50)	1 (6.25)	0 (0.00)	16
	Total	-	-	354 (64.01)	97 (17.54)	62 (11.21)	40 (7.23)	553
	Missing	-	-					50

5.1.7. Anxiety among sample.

The majority of participants scored above the 45 cutoff score for state and trait anxiety, with the majority falling in the 45-54 anxiety range. Trait anxiety scores were consistently higher than state anxiety scores for the overall sample and across gender, race, and age. Detailed results regarding mean scores and frequencies across anxiety categories are presented in Table 5.4.

The mean STAI scores for state anxiety were higher among male participants compared to female participants, and an independent group t-test found this difference to be significant, t (601) = 2.02, p = .044. The gender difference for mean trait anxiety scores was not found to

be significant. Male participants were more likely than women to score in the 45-54 range for both state and trait anxiety; however, the differences in frequencies were insignificant.

Mean STAI scores were similar for White, Black, and other races for both state and trait anxiety, with no significant differences. White participants were more likely to score above the 45 cutoff for state anxiety, while participants in the other races category represented the majority scoring above the 45 cutoff for trait anxiety. Again, these frequencies were not found to be significant.

Mean STAI scores were also similar across age groups for state and trait anxiety, and no significant differences were found in mean scores or frequencies across anxiety categories. Participants aged 25 and above represented the majority of those scoring above the cutoff for both state and trait anxiety.

Table 5.4

Mean STAI Scores and Frequencies across STAI Categories for Overall Sample and by Gender, Race, and Age

		State Anxiety (SA)		Trait Anxiety (TA)		44 or lower		45-54		55 and above		Total	
		Mean	SD	Mean	SD	SA n (%)	TA n (%)	SA n (%)	TA n (%)	SA n (%)	TA n (%)	SA n	TA n
OVERALL SAMPLE		47.06	5.55	48.58	4.45	187 (31.01)	106 (17.61)	372 (67.69)	437 (72.59)	44 (7.30)	59 (9.80)	603	602
GENDER	**Male**	47.06	5.60	49.14	4.38	29 (24.17)	18 (15.00)	83 (69.17)	89 (74.17)	8 (6.67)	13 (10.83)	120	120
	Female	46.83	5.52	48.44	4.46	158 (32.71)	88 (18.26)	289 (59.83)	348 (72.20)	36 (7.45)	46 (9.54)	483	483
	Total	-	-	-	-	187 (31.01)	106 (17.58)	372 (61.69)	437 (72.47)	44 (7.30)	59 (9.78)	603	603
	Missing												1
RACE	**White**	47.15	5.37	48.58	4.37	144 (30.00)	83 (17.33)	303 (63.13)	350 (73.07)	33 (6.88)	46 (9.60)	480	479
	Black/African	47.07	6.04	48.42	4.87	31 (31.96)	20 (20.62)	56 (57.73)	67 (69.07)	10 (10.31)	10 (10.31)	97	97
	Other	47.20	6.60	49.53	3.40	5 (33.33)	1 (6.67)	9 (60.00)	13 (86.67)	1 (6.67)	1 (6.67)	15	15
	Total	-	-	-	-	180 (30.40)	104 (17.60)	368 (62.16)	430 (72.76)	44 (7.43)	57 (9.64)	592	591
	Missing											11	12
AGE	**17-18**	47.29	5.46	48.64	4.34	58 (33.92)	28 (16.37)	98 (57.31)	124 (72.51)	15 (8.77)	19 (11.11)	171	171
	19	46.97	5.16	48.59	4.71	44 (29.73)	30 (20.27)	94 (63.51)	102 (68.92)	10 (6.76)	16 (10.81)	148	148
	20 – 21	47.16	5.67	48.88	4.54	41 (26.63)	25 (16.23)	102 (66.23)	114 (74.03)	11 (7.14)	15 (9.74)	154	154
	22 – 24	47.30	5.94	48.14	4.14	21 (32.81)	12 (18.75)	39 (60.94)	47 (73.44)	4 (6.25)	5 (7.81)	64	64
	25 +	46.75	6.39	47.69	3.36	4 (25.00)	2 (12.50)	11 (68.75)	13 (81.25)	1 (6.25)	1 (6.25)	16	16
	Total	-	-	-	-	168 (30.38)	97 (17.54)	344 (62.21)	400 (72.33)	41 (7.41)	56 (10.13)	553	553
	Missing											50	50

5.2. Relationship between Deliberate Self-Harm and Depression and Anxiety

5.2.1. Deliberate self-harm and depression.

An independent group t-test showed that the mean BDI score among participants reporting self-harm was significantly higher compared to that of non-self-harmers (M = 15.79, SD = 11.02 and M = 10.52, SD = 7.72, respectively; t (601) = 6.87, p < .001. Furthermore, although more than half of participants (52%, n = 144) reporting DSH did not obtain elevated BDI-II scores, a chi-square indicated that they were significantly more likely to score in the moderate and severe ranges of depression compared to participants without a history of self-harm (28% and 12%, respectively, χ^2 (601) = 4.99, p < .001. Table 5.5 summarises the mean BDI scores and frequencies of participants in each depression category.

Table 5.5

Mean BDI Scores and Frequencies across Depression Categories for DSH versus No DSH

		Mean Score	Standard Deviation	Depression Category				
				No/Minimal n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	Total n
DSH	Yes	15.79	11.02	144 (51.8)	57 (20.5)	44 (15.83)	33 (11.87)	278
	No	10.52	7.72	239 (73.54)	48 (14.77)	26 (8.00)	12 (3.69)	325
	Total	-	-	383 (63.52)	105 (17.41)	70 (11.61)	45 (7.46)	603

A binary logistic regression analysis also indicated a significant positive relationship between the likelihood of participating in DSH and depression, χ^2 (1) = 45.97, p <.001. That is, the higher the score obtained on the BDI (i.e. the more depressed), the more likely it was for participants to report a history of DSH (odds ratio (OR) 1.064, 95% confidence interval (CI): 1.04-1.08). Table 5.6 presents the estimates of variability and the Wald Chi-Square and probability figures for the relationship between DSH and depression. For every unit increase in depression score the likelihood of reporting self harm increased by 1.064 (see Graph 5.1). This positive relationship was consistent across methods of DSH, but it was not significant for rubbing sandpaper on one's skin, dripping acid onto the skin, scrubbing the skin with bleach/oven cleaner, and breaking one's own bones. Table 5.12 at the end of the chapter presents the logistic regression results for each method of DSH.

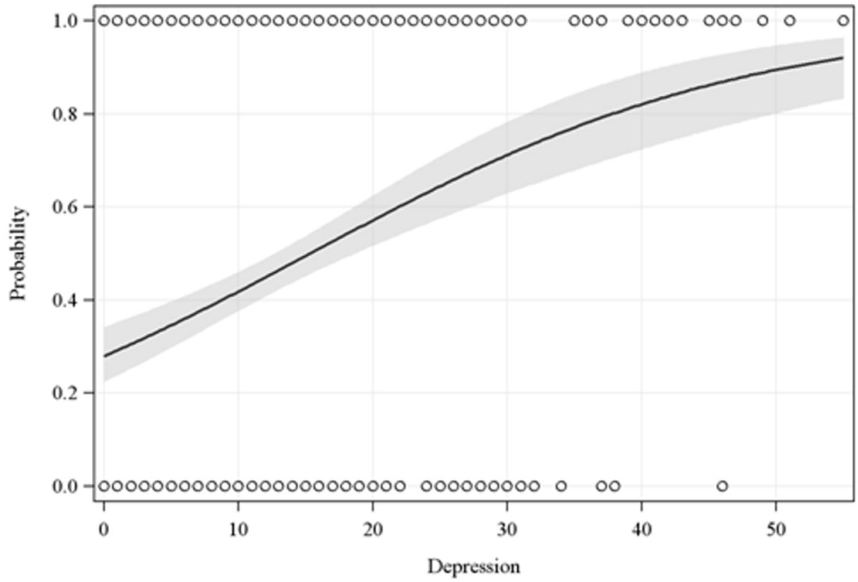
Table 5.6

Analysis of Maximum Likelihood Estimates for Depression and DSH

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.9467	0.1494	40.1557	<.0001
Depression	1	0.0616	0.00986	39.0777	<.0001

Graph 5.1

Logistic Regression Analysis showing Significant Positive Relationship between Overall DSH and Depression



5.2.2. Deliberate self-harm and anxiety.

An independent group t-test indicated that the mean STAI score for state anxiety was significantly higher among non-self-harmers compared to participants reporting DSH (M = 47.48, SD = 5.64 and M = 46.56, SD = 5.42, respectively, t (601) = 2.03, p = .043). However, no significant differences were found between the frequencies of self-harming versus non-self-harming participants scoring above the 45 cutoff score for state anxiety (72%, n = 234 and 65%, n = 182, respectively). For trait anxiety, no significant differences were found between the mean scores of participants reporting self-harm versus those without a history of DSH, although mean trait anxiety scores were slightly higher among self-harming participants, t (600) = 0.69, p = .491. Furthermore, while slightly more self-harming participants scored above the 45 cutoff for trait anxiety, the difference in frequencies was not

significantly higher than that of non-self-harming participants (83%, n = 231 and 82%, n = 265, respectively). Table 5.7 summarises the mean STAI scores and frequencies of participants in each category of state and trait anxiety.

Table 5.7

Mean STAI Scores and Frequencies across Anxiety Categories for DSH versus No DSH

		State Anxiety (SA)		Trait Anxiety (TA)		Anxiety Category							
						44 or lower		45-54		55 and above		Total	
		Mean	SD	Mean	SD	SA n (%)	TA n (%)	SA n (%)	TA n (%)	SA n (%)	TA n (%)	SA n	TA n
DSH	Yes	46.56	5.42	48.72	4.45	96 (34.53)	46 (16.61)	169 (60.79)	204 (73.65)	13 (4.68)	27 (9.75)	278	277
	No	47.48	5.64	48.47	4.46	91 (28.00)	60 (18.46)	203 (62.46)	233 (71.69)	31 (9.54)	32 (9.85)	325	325
	Total	-	-	-	-	160 (26.53)	106 (17.61)	372 (61.69)	437 (72.59)	44 (7.30)	59 (9.80)	603	602
Missing												0	1

The results of the logistic regression analyses indicate a significant negative correlation between overall DSH and state anxiety, χ^2 (1) = 4.12, p = .042. The higher the score obtained on the STAI state anxiety scale (i.e. the more anxious at the time of assessment), the less likely it was for participants to report a history of DSH. For every unit increase in state anxiety score, the likelihood of reporting self harm was 0.97 (i.e. less than 1; OR 0.97, 95% CI: 0.94-0.10). Tables 5.8 and 5.9 present the estimates of variability and the Wald Chi-Square and probability figures for the relationships between DSH and state and trait anxiety, respectively. Graph 5.2 illustrates the negative relationship between state anxiety and overall DSH. This negative relationship was consistent across all methods of DSH, but was only significant for overall DSH, cutting, and burning with a cigarette. A positive relationship was found between overall DSH and trait anxiety, although the relationship was not found to be significant, χ^2 (1) = 0.48, p = .490. That is, for every unit increase in state anxiety score, participants were 1.013 times more likely to report DSH (OR 1.01, 95% CI: 0.98-1.05). The direction of the relationship (positive or negative correlation) varied across different methods of DSH, but none of the methods were significantly related to trait anxiety. Graph 5.3 shows the relationship between overall DSH and trait anxiety. Detailed results of the logistic regression analyses for each method of DSH are presented in Table 5.12 at the end of the chapter.

Table 5.8

Analysis of Maximum Likelihood Estimates for State Anxiety and DSH

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	1.2589	0.7054	3.1847	0.0743
State Anxiety	1	-0.0301	0.0149	4.0734	0.0436

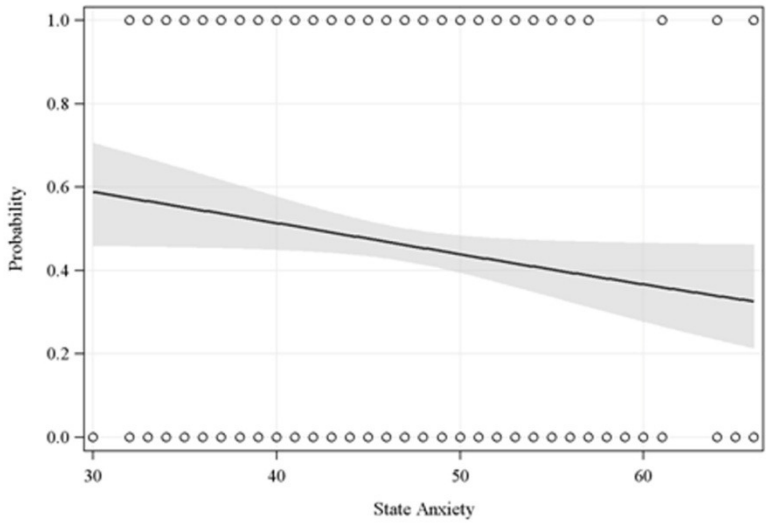
Table 5.9

Analysis of Maximum Likelihood Estimates for Trait Anxiety and DSH

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-0.7761	0.8983	0.7464	0.3876
Trait Anxiety	1	0.0127	0.0184	0.4749	0.4907

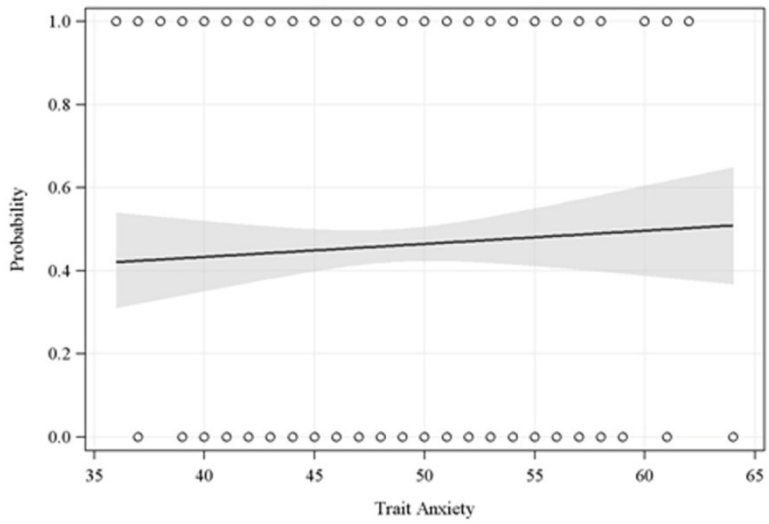
Graph 5.2

Logistic Regression Analysis showing Significant Negative Relationship between Overall DSH and State Anxiety



Graph 5.3

Logistic Regression Analysis showing Insignificant Positive Relationship between Overall DSH and Trait Anxiety



5.3. Summarising comments: Deliberate Self-Harm and Depression and Anxiety

In summation, DSH was found to be positively correlated with symptoms of depression. Participants reporting self-harm scored significantly higher on the BDI compared to those without a history of DSH. Furthermore, significantly more self-harming participants scored within the moderate to severe ranges of depression. This positive relationship between depression and DSH was consistent across the majority of methods of DSH.

The relationship between DSH and anxiety, however, proved to be inconsistent. State anxiety was found to be negatively correlated with DSH, while no significant relationship was found between trait anxiety and DSH.

The mean BDI and STAI scores for participants with and without a history of self-harm as well as the probability figures (significance) obtained from t-tests are presented in Table 5.10. A summary of the frequencies of participants obtaining elevated scores on the BDI and STAI is presented in Table 5.11. Finally, the logistic regression results are presented in Table 5.12, which displays the odds ratios as well as probabilities for each method of DSH in relation to BDI and STAI scores.

Table 5.10

Mean BDI and STAI Scores for Participants with and without a history of DSH

Scale	Participants with a history of DSH		Participants without a history of DSH		Prob
	Mean	SD	Mean	SD	*p*
Beck Depression Inventory	15.79	11.02	10.52	7.72	> .001
Stait Trait Anxiety Inventory					
State Anxiety	46.56	5.42	47.48	5.64	.043
Trait Anxiety	48.72	4.45	48.47	4.46	.491

Table 5.11

Frequencies of Participants with and without a history of DSH obtaining Elevated Scores on the BDI and STAI

Category	Participants with a history of DSH	Participants without a history of DSH
	n (%)	n (%)
Depression		
Moderate – Severe	77 (27.70)	38 (11.69)
State Anxiety		
45 and above	182 (65.47)	234 (72.00)
Trait Anxiety		
45 and above	231 (83.40)	265 (81.54)

Table 5.12

Logistic Regression Analysis: Odds Ratios and Probabilities for Depression and Anxiety for Each Method of DSH

Method of DSH	Depression		State Anxiety		Trait Anxiety	
	Odds Ratio	*p*	Odds Ratio	*p*	Odds Ratio	*p*
Any self-harm	1.064	< .001	0.970	.042	1.013	.490
Cutting	1.074	< .001	0.949	.004	0.996	.852
Burning (cigarette)	1.062	< .001	0.927	.008	0.975	.481
Burning (lighter or match)	1.060	< .001	0.967	.149	1.013	.660
Carving words into skin	1.029	.015	0.960	.074	0.972	.326
Carving pictures into skin	1.066	< .001	0.962	.162	1.011	.765
Severe scratching	1.087	< .001	0.975	.222	1.000	.993
Biting	1.063	< .001	1.016	.652	1.035	.429
Rubbing sandpaper on skin	1.037	.274	1.004	.958	0.986	.870
Dripping acid on skin	1.054	.265	0.966	.739	1.037	.776

Table 5.12 (*Continued*)

Method of DSH	Depression		State Anxiety		Trait Anxiety	
	Odds Ratio	*p*	Odds Ratio	*p*	Odds Ratio	*p*
Using bleach or oven cleaner to scrub skin	1.050	.098	0.986	.821	0.912	.264
Sticking pins, needles, staples into skin	1.051	< .001	0.986	.591	1.036	.272
Rubbing glass into skin	1.101	< .001	0.950	.257	0.973	.630
Breaking bones	1.031	.446	0.955	.562	0.981	.853
Banging head	1.077	< .001	1.005	.880	0.999	.984
Punching self	1.070	< .001	0.961	.137	1.055	.109
Interference with wound healing	1.057	< .001	0.978	.448	1.071	.060

5.4. Chapter Summary

An alarming proportion of the sample (46%) reported at least one incident of DSH during their lifetime. The most commonly reported method of DSH was cutting, followed by severe scratching, carving words into the skin, burning oneself with a lighter or match, and sticking sharp objects into the skin. Gender differences in rates of DSH were insignificant, while the prevalence of DSH among White and Black participants were significantly lower than that of participants of other races. Participants aged 25 and above also reported lower rates of DSH compared to other age groups. The mean age of onset of self-harming behaviour was found to occur in adolescence. The majority of participants with a history of DSH reported more than one incident of DSH, as well as engaging in multiple methods of DSH. More than 10% of participants with a history of self-harm reported requiring medical treatment and/or hospitalisation for their injuries.

Overall, the sample did not obtain elevated depression scores as measured by the BDI-II. However, the vast majority of the sample obtained significantly elevated scores on the state and trait anxiety scales in the STAI. A strong, positive correlation was found between DSH and depression. With regard to anxiety, DSH was found to be positively but insignificantly related to trait anxiety, while a significant negative relationship was found between DSH and state anxiety.

Chapter 6: Discussion

In this chapter, the results presented in Chapter 5 will be discussed in relation to the literature and theory reviewed in Chapters 2 and 3 and the research questions and objectives of the current study. In addition, the contributions and limitations of this study will be discussed, and recommendations for further research will be proposed.

6.1. Prevalence of Deliberate Self-Harm

One purpose of this study was to determine the prevalence of DSH among a sample of psychology students at a South African university. A strikingly high percentage of participants (46%) reported having engaged in self-harming behaviour at least once in their lifetimes. This figure is significantly higher than those found in international studies among community samples (e.g. Briere & Gil, 1998; Klonsky et al., 2003) and psychology student samples (e.g. Croyle & Waltz, 2007; Gratz, 2001; Gratz et al., 2002). These differences may reflect characteristics unique to a South African population, but may also be related to methodological or sampling procedures. For example, the sample in the current study was larger those used in the studies by Croyle and Waltz (2007; $N = 290$), Gratz (2001; $N = 150$), and Gratz et al. (2002; $N=133$). Furthermore, the lack of consistency in operationalising and assessing self-harming behaviour complicates efforts to compare findings across studies. The prevalence of DSH found in the current study is comparable to that found by Paivio and McCulloch (2004; 41%); however, the sample in these authors' study was significantly smaller than that of the current study ($N = 100$) and consisted only of female participants. It is also concerning that the prevalence of DSH found in the current study is higher than that found among clinical populations in international research (Briere & Gil, 1998; Claes et al., 2007; Nijman et al., 1999; Zlotnick et al., 1999).

Nock (2010) points out a number of methodological factors that may result in inflated reported rates of DSH. These include the use of an instrument that measures a variety of self-harming behaviours, the use of self-report measures as opposed to interviews, the requirement of a single episode of DSH as opposed to repeated DSH, and the use of a limited or homogenous sample, such as psychology students (Nock, 2010). The abovementioned factors should therefore be kept in mind when interpreting the high rate of DSH found in the current study.

However, the high prevalence of self-harm may reflect more than methodological issues, including higher rates of depression, anxiety, and general psychopathology among student populations. Risk factors specifically related to university life have not been explored in relation to DSH, but Kadison (2004) reports that depression and suicidality among students have almost doubled between 1988 and 2001. While little is known about the specific reasons or factors associated with this risk, Eisenberg et al. (2007) mention that those from a lower socio-economic background or who are experiencing financial difficulties may be especially at risk.

The findings of the National College Health Assessment Survey (NCHAS) indicate that, among a large sample of US college students, approximately 10% reported having seriously considered attempting suicide and approximately 2% had attempted suicide during the year preceding the study (Kisch et al., 2005). Risk factors identified include sexual victimisation, problematic relationships, problems related to sexual identity, and substance abuse. However, Kisch et al. (2005) point out that college itself does not represent a risk factor for suicidal thoughts and behaviour, which has a higher prevalence among demographically matched, non-student cohorts. Therefore, while epidemiological research is extensive, little is known about risk factors for suicidal behaviour among college or university students, indicating a need for research exploring potential stressors among student and non-student populations to determine whether they are at a greater risk than the general population. Furthermore, further research is needed in order to explore potential risk factors specific to DSH (as opposed thoughts or acts related to suicide) among students in the South African context.

With regard to the methods of DSH explored in the current study, the most commonly reported form of DSH was cutting, followed by severe scratching, carving words into the skin, and burning oneself with a lighter or match. This is consistent with a number of studies that found cutting to be the most common form of DSH (e.g. Briere & Gil, 1998; Gratz, 2001; Gratz, 2006; Hoff & Muehlenkamp, 2009; Paivio & McCulloch, 2004). Cutting, therefore, may serve unique functions compared to other forms of DSH (discussed further below). Furthermore, consistent with the findings of previous research (e.g. Gratz, 2001; Gratz, 2006; Hoff & Muehlenkamp, 2009), more than half of self-harming participants (53%) in the current study reported using more than one method of self-harm. To the author's knowledge, no research has been conducted to investigate or compare the different functions

of different methods of DSH, why cutting is more common than other methods, and why individuals use multiple methods of DSH.

After finding that cutting in particular may have a unique relationship with anxiety, Andover et al. (2010) highlighted the importance of understanding the correlates of other methods of DSH. While this is not within the scope of the current study, further research investigating factors related to different methods of DSH is necessary to understand the unique functions of these behaviours. Such studies may focus, for example, on varying degrees of experienced relief following different methods of DSH. This may involve exploring both neurobiological factors (such as the release of endorphins associated with DSH) and psychological factors. Perhaps self-cutting provides distinctive sensations and experiences compared to other forms of DSH. In her qualitative research, Rao (2006) explored such experiences and reported on the phenomenology of self-cutting, including the symbolism of bleeding. For example, the injury may validate the painful emotions experienced by the individual. Rao (2006) writes, "Flowing blood is always the signal of a serious event" (p. 52). The physical image of blood resulting from cutting symbolises the release of overwhelming emotions, and tending to the wound and experiencing healing following the act may symbolise nurturance craved by the individual. While Rao (2006) examined these factors in her study, they were only explored with regard self-cutting. Qualitative research exploring such experiences across different methods of DSH will perhaps highlight reasons for the higher rates of cutting compared to other forms of DSH and also provide valuable insights into the experience of various forms of DSH.

6.2. Deliberate Self-Harm and Gender, Race, and Age

6.2.1 Gender.

No significant differences were found between men and women in terms of the prevalence of DSH, although men reported slightly higher rates of DSH than women (49% and 45%, respectively). This finding lends support to the growing body of research suggesting that there are no significant gender differences in terms of the rates of DSH (e.g. Andover et al., 2010; Croyle & Waltz, 2007; Gratz, 2001; Klonsky et al., 2003). Because many psychiatric and personality disorders associated with DSH (such as depression, anxiety, and borderline personality disorder) are more prevalent among women, this finding is somewhat surprising. To the author's knowledge, no studies have been conducted to investigate and compare

reasons for DSH men and women separately. Such research may shed light on the possible differences in the functions of and motivations for self-harm for men and women, respectively. In the past, it was largely assumed that DSH is more prevalent among women (e.g. Skegg, 2005), but this picture seems to be changing and it is now generally acknowledged that men and women may be equally at risk for self-harm (e.g. Klonksy & Muehlenkamp, 2007).

Furthermore, Hawton et al. (2003) suggest that males who self-harm are more likely than females who self-harm to commit suicide. Therefore, attempts should be made to identify and understand male DSH and the risk factors and correlates specific to men. One such factor, for example, may be same-sex attraction (Skegg, 2005). While homosexuality has been identified as a risk factor for DSH for both men and women, it may be more strongly associated with male homosexuality (King et al., 2008; Skegg et al., 2003). It has been suggested that homosexual men may be more likely to perceive their same-sex attraction as unacceptable and "wrong" due to greater social stigmatisation, which may create emotional distress (Skegg et al., 2003). However, sexual orientation was not a variable investigated in the current study and the number of homosexual participants is not known. Further research is needed to further explore this relationship. It should also be noted that, because men were underrepresented in the sample for the current study, it is difficult to draw concrete conclusions about gender differences in DSH, and these results should be interpreted with caution.

It was also found that women were more likely than men to engage in cutting and scratching behaviours, while men were more likely to report self-burning behaviours. This is consistent with findings by Claes et al. (2007) and Andover et al. (2010). It has been suggested that men are more likely to engage in other, more violent methods of DSH, such as self-punching or breaking one's own bones (e.g. Claes et al., 2007; Hawton, 2000; Taylor, 2003). This may be related to gender socialisation and what is deemed "acceptable" masculine and feminine behaviour. For example, men may be expected and therefore permitted to be more aggressive than women (e.g. Barlow & Durand, 2005). The current study, however, did not find significant differences between men and women with regard to many methods of DSH that could be considered more extreme or violent, including self-punching, banging one's head, or breaking one's own bones. Again, the functions and correlates of different methods of DSH

should be explored in light of demographic variables such as gender in order to better understand such findings.

6.2.2 Race.

Although White participants reported slightly higher rates of DSH than Black participants, these differences were not found to be significant. This is consistent with the findings of Goddard et al. (1996), who reported that Black and White participants did not differ significantly with regard to the rates and characteristics of DSH. However, the results of the current study suggest significantly higher rates of DSH among participants of other races compared to both White and Black participants. This finding is in contrast to the findings of international studies (e.g. Gratz, 2006; Gollust et al., 2008; Klonsky and Muehlenkamp, 2007; Marchetto, 2006; Muehlenkamp, 2010; Whitlock et al., 2006) that suggest that DSH is more prevalent among White populations than among other racial/ethnic groups. However, research that has explored the relationship between race and DSH has produced inconsistent findings, and other authors have found higher rates of DSH among minority ethnic groups compared to White populations (e.g. Bhui et al., 2007). Furthermore, the current study is the first to explore DSH in the South African population with its diverse cultures, and therefore there is no data available for comparison.

While the findings in the current study regarding the rates of DSH across race may reflect factors specific to the South African context, it is important to note that Asian and Coloured participants were underrepresented in the sample, which renders the comparison of DSH across racial groups difficult. The sample used in the current study may also not represent the demographic distribution of the general population or other student populations. Further research in the future examining the relationship between race and self-harm may be valuable in exploring possible differences among participants in a more representative sample in order to better describe DSH across racial/ethnic groups in the local context and what factors within racial groups act as risk and protective factors.

Aside from methodological factors, it is possible that cultural and/or historical factors may play a role in the high rates of DSH among participants comprising the “other” racial/ethnic category. For example, Kedison (2004) and suggests that Asian students in particular may place great pressure on themselves to succeed academically, and Asian students were more likely to report having seriously considered attempting suicide in the National College Health

Assessment Survey (Kisch et al., 2005). Research exploring such factors in relation to the functions of DSH may highlight important risk and protective factors associated with diverse cultures.

6.2.3 Age.

Overall, age differences in the rates of DSH were not found to be significant. However, the highest rates of DSH were reported by participants in the 20-21 year age group, followed by those aged 17-18, 22-24, 19, and 25 and above. Participants aged 25 years and above were significantly less likely to report DSH compared to those in other age groups, with the exception of the 19-year age group.

While these results may suggest that older individuals are less likely to engage in self-harm or that DSH may be on the increase (hence more prevalent among younger age groups, as suggested by, e.g. Hawton et al., 1997; Hawton et al., 2003), participants aged 25 and above represented only a small proportion of the total sample, and these results may not be representative of the general student or overall population. While methodological factors are an important consideration, other developmental factors may also contribute to age differences in DSH. For example, self-harm has been linked to deficient problem-solving and emotion-regulation skills, and it may be that older individuals have more effective means of dealing with adversity and emotional distress (e.g. Blanchard-Fields, 2007; Larcom & Isaacowitz, 2009). However, because the current study explored life-time DSH, it is likely that factors other than developmental factors play a role in the higher rates of DSH among younger cohorts. The higher rates of self-harm among younger participants may, for example, be related to increased real or perceived stressors and demands as well as increasing rates of depression and anxiety (e.g. Andrews & Wilding, 2004; Bor et al., 2014; Twenge et al., 2010). Again, an exploration of the specific functions and experiences of DSH across different age groups among a representative sample would assist in understanding the variability of rates in DSH across age.

6.3. Age of Onset, Frequency, Duration, and Severity

As has been suggested by previous research (e.g. Klonsky & Muehlenkamp, 2007; Nock, 2010; Skegg, 2005; Whitlock, 2009), the stage at which self-harming behaviour debuts is adolescence, with a mean age of onset of approximately 14.55. This age coincides with the age of onset of various psychiatric conditions that may be associated with DSH, including

mood and anxiety disorders. For example, anxiety disorders have a mean age of onset of 11 years, while the mean age for depression is 30 years (e.g. Barlow & Durand, 2005; Kessler et al., 2003). However, it has been suggested that the age of onset for depression is decreasing (e.g. Kisch et al., 2005), and approximately half of individuals with psychiatric conditions, including depressive disorders, report the onset to be age 14 (Kessler et al., 2003).

Of those that reported engaging in DSH, the majority (76%) indicated that they engaged in self-harming behaviour more than once, and 37% reported 10 or more incidents of DSH. Nearly 10% (8%) of participants indicated 50 or more incidents of self-harm in their lifetimes. This finding again supports previous research suggesting that self-harming individuals typically engage in DSH on more than one occasion (e.g. Gratz, 2001; Gratz, 2006; Gratz et al., 2002; Whitlock et al., 2006). The current study also found that self-harming behaviour may continue for a period of time, even years (M = 2.53 years). Approximately 11% of participants indicated that they have been hospitalised or otherwise medically treated for their injuries as a result of DSH.

The findings that self-harming behaviour may continue over a period of years and that the majority participants reported more than one incident of DSH suggests that self-harm may indeed be habit-forming or become a regular means of coping with distress or adversity (e.g. Favazza, 1992; Nock, 2010; Tantam & Huband, 2009). As previously mentioned, the act of self-harm may provide relief related to neurobiological factors, namely the increased release of endorphins that may be deficient in some individuals who self-harm (e.g. Kerr, Muehlenkamp, & Turner, 2010; Mazelis, 2008; Nock, 2010; Stanley et al., 2010). Furthermore, literature exploring the functions of DSH has highlighted a variety of emotional and psychological factors that may play a role in repetitive self-harm. The function of emotion regulation has received support in both theoretical and empirical research, which suggests that DSH is often preceded by overwhelming emotional distress, and individuals experience a sense of relief following the act of self-harm, (e.g. Briere & Gil, 1998; Favazza & Conterio, 1989; Gratz, 2000; Nock & Prinstein, 2004; Simeon & Favazza, 2001; Tantam & Huband, 2009). The experiential avoidance model (Chapman et al., 2006) explains repetitive self-harm by applying concepts from behavioural theory. Specifically, the model proposes that DSH is maintained through the process of negative reinforcement whereby an individual experiences relief from negative affect following DSH. The association between unpleasant, distressing emotional arousal and self-harm as a means to provide relief becomes

strengthened through repeated acts of self-harm, which becomes an automatic escape response (Chapman et al., 2006). Thus, individuals who are vulnerable to emotion dysregulation and who lack effective coping strategies may be more likely to report frequent engagement in DSH.

6.4. Depression

The mean BDI score for the sample was 12.95 (*SD* = 9.74), suggesting no or minimal levels of depression among the sample as a whole. This mean is lower than that reported by Pillay et al. (2002), whose study yielded a mean BDI score of 19.3 (*SD* = 11.3) among South African university students. However, the sample used by Pillay et al. consisted of mostly rural participants from a historically Black university in KwaZulu Natal.

The majority of the sample in the current study (80%) scored within the no/minimal to mild ranges of depression, while just under 20% of participants scored in the moderate and severe ranges. Because the BDI is not intended to be used as a diagnostic measure, it is difficult to compare the results of the current study with those of research investigating the prevalence of formal mood disorders, including major depressive disorder. However, the proportion of participants scoring in the severe depression category (7%) is slightly lower than the lifetime prevalence of major depressive disorder (10%) reported by the South African Stress and Health (SASH) Study (Herman et al., 2009).

Although the majority of participants did not obtain elevated depression scores, the correlation found between depression and DSH (discussed below) is concerning. According to Kadison (2004), the rates of depression and suicide among university students have almost doubled from 1988 to 2001. Andrews and Wilding (2004) emphasise that the transition to university life may be a significant stressor, particularly among individuals who are vulnerable to mental health problems and who lack effective coping skills and adequate social support. Kadison (2004) and Eisenberg et al. (2007) note a variety of academic and social or environmental stressors that may precipitate student mental health problems, including increased academic pressures, competitive admissions processes, rising college costs, disrupted or erratic sleep patterns, and lack of social and financial support due to the disintegration of nuclear family system. However, these factors were identified in college students in the United States, and research investigating risk factors and correlates of depression in South African university students is required. Furthermore, it is important to

reiterate that stressors unrelated to university life may underlie the onset of depressive symptoms (Kisch et al., 2005), and it is therefore important to explore pre- and post-entry mental health among students.

The mean BDI score for female participants was found to be significantly higher than that of male participants (M = 13.56, SD = 9.33 and M = 10.48, SD = 8.55, respectively). Female participants were also almost twice as likely as men to score in the moderate to severe ranges of depression, which is consistent with the general 2:1 female to male ratio for depressive disorders (Sadock & Sadock, 2007). Possible reasons for this gender difference may be rooted in different social norms and expectations for men and women (Barlow & Durand, 2005). For example, it is more acceptable for women to display passivity, vulnerability, and dependence, and as a result they may present with more internalising disorders such as depression (Barlow & Durand, 2005). Men, on the other hand, may be expected to show greater assertiveness, resilience, and independence, and they may be more likely to present with externalising disorders such as conduct disorder, antisocial personality disorder, and substance abuse disorders. As a result, underlying depression may go unreported and undiagnosed (Barlow & Durand, 2005). Furthermore, Nolen-Hoeksema (2001) points out that women are more vulnerable to traumatic events such as sexual abuse, which may increase their susceptibility to depression and other mental health problems. This may be a direct result of the trauma, but also due to a more general sense of helplessness (Nolen-Hoeksema, 2001).

The mean depression score for White participants was lower than that of Black or other participants. All three groups, however, represented more or less similar proportions in the moderate to severe ranges, but participants of other races were more likely to fall in the severe range of depression than both White and Black participants. Again, because White participants formed the large majority of the sample, these results should be interpreted with caution and not be assumed to accurately reflect racial/ethnic differences pertaining to depression in the general population. However, differential cultural and socio-economic factors may play a role in differences in depression levels across racial/ethnic groups, and research investigating such factors may improve our understanding of various risk factors and struggles experienced by individuals from different ethnic backgrounds.

Overall, few significant differences were found regarding depression across age groups, with the exception of participants aged 25 and above, whose mean BDI scores were significantly lower than participants in the 17-18, 19, and 20-21 year age groups. The proportion of each age group falling in the moderate to severe ranges of depression did not differ significantly, although participants aged 25 and above represented the smallest proportion in these categories. Interestingly, according to Barlow and Durand (2005) and Sadock and Sadock (2007), the mean age of onset for major depressive disorder is 25 and 40, respectively. The finding that younger participants in the current study displayed higher levels of depression may therefore be related to the reported increase in anxiety among adolescents and young adults (e.g. Andrews & Wilding, 2004; Kadison, 2004). However, studies exploring the distribution of depression across age typically focus on broader age groups than that included in the current study, making the comparison of data to previous research difficult.

6.5. Anxiety

The mean STAI scores for the overall sample were significantly higher than the cutoff scores provided in the STAI manual (Spielberger et al., 1970) and by other authors (e.g. Amiri et al., 2010), with 69% and 73% of participants falling above the cutoff for state and trait anxiety, respectively. Furthermore, close to 10% of participants scored one standard deviation (10) above the 45 cutoff for state and trait anxiety, suggesting that a number of participants may experience severe anxiety symptoms.

It is important to note that the cutoff score used in the current study was based on international data, making it difficult to comment on the results of this study in comparison to that data due to social, historical, cultural, educational, and economic factors that are idiosyncratic to the South African context. It therefore cannot be assumed that the levels of anxiety in South Africa will match those of other countries and contexts. However, the results suggest that an alarmingly high proportion of the sample reported elevated to severe anxiety levels, which may reflect factors or circumstances unique to South African university students that contribute to high anxiety levels. In the SASH study, anxiety disorders were found to be the most prevalent class of disorders in the country (Herman et al., 2009). Pillay et al. (2001) also found high rates of severe anxiety in their study among a historically Black university in KwaZulu Natal, South Africa. The results of the current study and those of other local studies provide a tentative indication that the levels of anxiety in SA may be higher than those in other countries. However, exploring these rates using a control, non-

student sample for comparison purposes may shed light on possible factors unique to university settings that may contribute to elevated anxiety.

Furthermore, various experiences specific to student populations, as discussed in Section 6.4 in relation to depression, may contribute to increased anxiety among university students. While 9% of previously symptom-free students developed clinically significant symptoms of depression, 20% developed clinically significant symptoms of anxiety mid-course (Andrews & Wilding, 2004). The stressors pertaining to university life may therefore contribute more significantly to anxiety than to depression. However, as Kisch et al. (2005) warned, mental health problems cannot be attributed to university attendance alone. Again, research comparing anxiety of students pre- and post-entry to university, as well as non-students, may improve our understanding of how students perceive and respond to the transition to and demands of university and how this may contribute to anxiety levels.

The mean STAI scores of male participants were higher than those of female participants for both state and trait anxiety. This difference was only found to be significant for state anxiety and not for trait anxiety. In terms of the proportions of men and women falling above the cutoff score, no significant differences were found for state or trait anxiety (76% and 67%; 85% and 82%, respectively). Although nearly 10% of male participants obtained elevated state anxiety scores, this may not be an accurate reflection of higher anxiety levels among males in general as the state anxiety scale measures anxiety at the time of assessment rather than more enduring levels of anxiety. In other words, because state anxiety is situational, it cannot be assumed to reflect an individual's general levels of anxiety. Nevertheless, the similar rates of elevated trait anxiety among men and women is interesting in light of findings that anxiety disorders are more prevalent among women (APA, 2013; Sadock & Sadock, 2007; Stein et al., 2008). However, gender differences in anxiety should be considered in relation to specific anxiety disorders and their severity, and the STAI is not intended to diagnose specific anxiety disorders. For example, obsessive-compulsive anxiety disorder tends to be equally prevalent among men and women, and the prevalence of social phobia in men and women in clinical settings is approximately equal (Sadock & Sadock, 2007). Empirical research exploring the reasons for gender differences in anxiety is limited, but they may be similar to those related to depression. Specifically, gender role expectations, vulnerability to victimisation, and perceived sense of control may all play a role in the higher rates of anxiety in women (e.g. Barlow & Durand, 2005; Nolen-Hoeksema, 2001). The

findings of the current study may also reflect aspects of anxiety and gender that are specific to psychology students in South Africa and warrant further exploration. No significant differences were found regarding anxiety across racial/ethnic and age groups.

6.6. Relationship between Deliberate Self-Harm and Depression and Anxiety

The findings of the current study partially support the hypotheses presented in Chapters 1 and 4. That is, a strong, positive correlation was found between DSH and depression, while a negative correlation was found between DSH and state anxiety, with no significant relationship between DSH and trait anxiety. The findings are in accordance with international research suggesting a stronger relationship between depression and DSH compared to anxiety and DSH (e.g. Gollust et al., 2008; Haw et al., 2001; Herpertz et al., 1997; Marchetto, 2006), but contradict the findings of other research that has suggested a strong relationship between DSH and anxiety (e.g. Andover et al., 2005; Klonsky et al., 2003).

The findings of the current study indicate that an increased BDI score is associated with an increased likelihood of reported DSH. This relationship was consistent across the majority of methods of DSH. The mean BDI score was significantly higher among participants reporting DSH compared to those with no history of DSH. Furthermore, participants with a history of DSH were significantly more likely to score within the moderate to severe ranges of depression (28% and 12%, respectively).

In contrast, no significant relationship was found between trait anxiety and DSH. Interestingly, state anxiety was negatively correlated to DSH, with the likelihood of DSH decreasing as STAI scores increased. This finding may be related to the high levels of anxiety found in the current study. Specifically, the majority of the overall sample obtained elevated trait and state anxiety compared to scores reported in international research and the international norms presented in the STAI manual. Therefore, the high rates of anxiety among the current sample may obscure or negate any potentially unique relationship between anxiety and self-harming behaviour. Furthermore, the negative relationship between state anxiety and DSH may suggest that state anxiety a) does not parallel more enduring, trait anxiety, b) may have interfered with accurate, focused responses to the questionnaires, and/or c) is related to factors that were not investigated in the current study, such as the presence of various life circumstances, concerns, and psychiatric conditions. It is also possible that the

STAI may not accurately measure anxiety in the population in the current study. It is therefore recommended that a thorough exploration of state anxiety in relation to trait anxiety and other psychological disorders be conducted among South African university students.

While the lack of a significant positive relationship between trait anxiety and DSH is perplexing in light of previous research and theory, the high levels of anxiety found in the current study may obscure a significant relationship. Furthermore, as suggested by Nock (2010) and Klonsky et al. (2003), depression and anxiety may represent a more general risk factor related to high emotional reactivity. Other specific risk factors, as posited by various functional models, may add value to our understanding of the reasons for and phenomenology of DSH. For example, the current study did not investigate symptoms of dissociation, which is a commonly reported risk factor for DSH (e.g. Favazza, 1989; Gratz et al., 2002; van der Kolk, 1996; Zanarini et al., 2011). Other individual traits that have been linked to DSH such as impulsivity, sensation-seeking, and emotion reactivity and regulation were also not explored in the current study (e.g. Linehan, 1993; Zlotnick et al., 1996). Furthermore, adverse interpersonal experiences such as sexual, emotional, and physical abuse and problematic relationships were not included as variables in the research (e.g. Linehan, 1993).

The positive correlation between DSH and symptoms of depression supports research and theory suggesting some relationship between self-harm and negative affect. Specifically, it provides tentative support for findings and theories suggesting that self-harm may be used as a coping or avoidance strategy in individuals who experience negative emotions. However, the current study did not explore self-reported motivations for DSH, so the data cannot explain the reasons for the correlation between self-harm and depression. In addition, it should be noted that anxiety and depression are broad categories that describe clusters of specific disorders and symptoms, and it is therefore difficult to determine the specific symptoms or emotions that may contribute to self-harming behaviour. However, it is possible that DSH may have a unique relationship to depression. According to Clark and Watson (1991) and Watson (1995), the absence of positive affect is a defining feature of depression, but not anxiety. Also, the tripartite model of depression and anxiety suggests that anxiety is always present in depressed individuals, while anxious people do not necessarily experience depression. Again, this may point to a unique relationship between DSH and symptoms of depression, or it may reflect high levels of anxiety among depressed individuals

that may contribute to DSH but were not detected by the STAI due to the generally elevated levels of anxiety in the sample. However, the current study is exploratory and further research is needed in order to better understand how DSH may be differentially related to symptoms of depression and anxiety, respectively, by exploring self-harm in relation to specific symptoms, affects, and motivations preceding the behaviour.

6.7. Limitations of the Study

Considering its exploratory nature, this study relied on a convenience sample drawn from a single academic department at a South African university. The sample may therefore be atypical and not representative of university students in general or of the general population, and the results cannot be assumed to be a reflection of what might be found in the broader South African population. However, it is anticipated that the information gained from the research will be valuable in directing future studies that may address questions arising from the findings of this study. The high rates of DSH and anxiety among South African students, for example, may direct research and intervention efforts to understand and address these issues. Furthermore, Eisenberg et al. (2007) point out that colleges and universities are in an advantageous position to provide support for and treatment to at-risk individuals due to the large numbers of young adults attending universities, as well as the resources available to universities for student care and counselling services. Specific recommendations for future research will be discussed in Section 6.8 below.

A second limitation involves the measuring instruments used in the current study. Specifically, to the author's knowledge, the DSHI inventory has not been employed in the local context prior to the current study. The implication is that no data are available for comparative purposes. Furthermore, no South African norms are available for the BDI-II and STAI. This is particularly problematic with regards to the STAI, as the majority of the sample obtained elevated scores compared to international findings and norms. This makes the comparison of findings difficult and may hinder the interpretation of results pertaining to the relationship between DSH and symptoms of anxiety. Furthermore, the significantly high STAI scores obtained by the sample may indicate that the instrument does not accurately measure anxiety in this population, further highlighting the need for a thorough investigation of the STAI among South African populations.

While the DSHI, BDI-II, and STAI have demonstrated high validity and reliability in international populations, the psychometric properties of these instruments have not been investigated in South African populations. Therefore, it cannot be assumed that they accurately and consistently measure the constructs they are intended to measure in the local context. It is possible, for example, that symptoms anxiety and depression may be experienced and perceived differently among South African populations, particularly across diverse cultural and racial groups. Thus, although the results obtained by these instruments are valuable in providing a preliminary indication of DSH, depression, and anxiety for the purposes of the current study, they should be interpreted with caution.

A more general limitation regarding the instruments used is that they are self-report measures, relying on participants' willingness and ability to provide accurate information, as well as their understanding and interpretation of the questions presented to them. In addition, a number of participants did not complete all questions in the questionnaires, which may introduce bias into the results of the study. However, due to the exploratory nature of the current research, this is not anticipated to be problematic but rather to inform future research that may explore different aspects of the variables either quantitatively or qualitatively. Furthermore, participants were addressed prior to the administration of the instruments and guaranteed that the information they provide would remain confidential and anonymous, which may have encouraged honest disclosure. For the purposes of the current research, transparency is a key issue in the interpretation of results obtained from instruments that have not been standardised for the specific population of interest, and it is hoped that this will be a priority in future research.

Another potential limitation is that the high rate of DSH found in the current study may reflect difficulties regarding the conceptualisation and operationalisation of DSH, which remains inconsistent in the literature. As a result of this inconsistency, it is difficult to compare findings with a large body of international research. For example, the DSHI includes a variety of behaviours that have not been explored in other research, and many behaviours included in other studies are omitted from the DSHI (including "mild" forms of self-harm, such as skin-picking and hair-pulling). While efforts were made to narrow down the literature review to include studies exploring behaviours similar to those included in the DSHI, the variability in behaviours conceptualised as self-harm remains problematic in the general body of research exploring the phenomenon.

6.8. Recommendations for Future Research

The current data and findings should be considered as exploratory, and replication with demographically representative populations or alternative cohorts is recommended in order to obtain a more complete and accurate picture of DSH in the South African context. It is also recommended that efforts be made to obtain South African norms for the BDI and STAI to assist with the comparison of findings pertaining to depression and anxiety. The high mean STAI score indicates a need to obtain norms for the instrument in the SA context in order to better interpret results of local studies and compare them to international findings. Furthermore, it is recommended that efforts are made to evaluate the psychometric properties (reliability and validity) of the BDI, STAI, and DSHI using South African samples, which will further support or discredit their use in the local context.

The high rates of DSH found in the current study warrant further exploration to understand the nature of the population and factors unique to the setting or sample that may contribute to this alarming figure. This may include explorations of the functions and correlates of self-harm among both student and non-student populations in order to gain insight into the reasons for the high prevalence of DSH as well as for comparative purposes to explore whether university students are at greater risk for self-harm and what underlies the behaviours. It is also recommended that instruments exploring risk and protective factors be included, as well as questionnaires pertaining to cultural factors in the local context.

The findings of the current research highlighted the importance of exploring differences across gender, race, and age groups in terms of the rates and methods of DSH. It is possible that demographic characteristics may be associated with different risk factors and may contribute to variability in rates and methods of DSH. In addition, the finding that cutting is the most commonly reported method of DSH supports findings of previous research, yet no studies have explored the specific functions of different methods of DSH. This points to a gap in understanding why certain forms of self-harm are more common than others.

Another pressing issue that warrants further research is the general level of anxiety in South Africa. Although the current research was exploratory and should not be assumed to represent the broader population, the finding that the mean STAI score is comparable to clinically significant anxiety based on international norms and research is concerning. Anxiety in the local context should be explored further in terms of demographic distribution,

risk factors, and correlates in order to guide research and intervention efforts. Although the rates of depression were not found to be as alarming as those of anxiety, the aforementioned factors should also be explored in the local context. Large, epidemiological studies exploring mental health issues among demographically representative samples may point to important areas for further research.

Finally, in light of the findings of this study as well as those of international research, it is hoped that DSH will receive increased interest in academic research, which could contribute to greater awareness and understanding of the phenomenon and lead to enhanced efforts to prevent and/or treat DSH and factors that contribute to it. This is particularly relevant to universities, where there are opportunities and resources to reach a large number of young adults in terms of providing information and support.

6.9. Conclusion

An alarming proportion of the sample (46%) reported at least one incident of DSH during their lifetime. A strong, positive correlation was found between DSH and depression, but not anxiety, which presents an important area for future research to better understand DSH in terms of specific symptoms, correlates, and risk factors. The current study supports many findings of international research, but also highlighted some inconsistencies. This may be related to methodological as well as contextual factors. It is anticipated that this research has highlighted important questions regarding areas for future research investigating DSH in the local context, as well as the general mental health status of students in South Africa.

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Appendix A

Informed Consent

The Purpose of the Study

The purpose of the study is to examine people's experiences of self-harm, including the different kinds of ways in which people sometimes intentionally harm themselves physically when they are under stress. You will be asked to fill out a questionnaire consisting, amongst other things, of a list of different behaviours in which people may engage to physically harm themselves. Since the questionnaire is behaviourally-based, it may be somewhat shocking and potentially distressing. If you find this topic distressing, or if you are currently having difficulty not hurting yourself in some way, it is advised that you do not participate in this study.

Your Participation

You will be required to complete the attached questionnaire at home and bring it with to your next psychology class, enclosed in the unmarked envelope you received. Completing the questionnaire should take approximately 30 minutes. Your participation in this study is voluntary, and you may withdraw at any time without offering any explanation or suffering any consequences. You do not need to share any information that you feel uncomfortable disclosing.

It is not anticipated that participating in the study will harm you in any way. However, should you feel the need to talk about anything that arose out of completing this questionnaire, you can contact:

UP Student Support, 24-hour crisis line: 0800 00 64 28

Anonymity and Confidentiality

You will complete this questionnaire anonymously, without any specific identifying information. Should you have any questions regarding the research study, you can contact the researcher:

Ingrid Lynch: (012) 420 5451

Consent to Participate

I (the participant).....hereby confirm that I have read the information sheet regarding the "Exploratory study of deliberate self-harm among students" and understand the nature of the anticipated activities. My participation in the study is voluntary and I can withdraw at any time without offering any explanation or suffering any consequences.

Participant's signature.....
Date.....

TO ENSURE YOUR ANONYMITY, PLEASE DETACH THIS FORM AND HAND IN SEPARATELY TO THE RESEARCH ASSISTANTS

Appendix B

Questionnaire

	Official Use
Respondent Number:	

Section A

Please complete your demographic details in the section below by circling your response. Please note that the section below should be completed by all respondents. The information that you provide in no way links you to any personally identifying information. Your responses will also be treated confidentially.

1	Sex	Male	1	V1
		Female	2	
2	Which language do you speak mostly at home	Afrikaans	1	V2
		English	2	
		Sepedi	3	
		Sesotho	4	
		Setswana	5	
		IsiZulu	6	
		IsiXhosa	7	
		IsiNdebele	8	
		SiSwati	9	
		Tsivenda	10	
		Xitsonga	11	
		Other	12	
3	Race	Asian	1	V3
		Black/African	2	
		Coloured	3	
		White	4	
4	Age			V4
5	Academic year level. (The year level of your current degree)	First year	1	V5
		Second year	2	
		Third year	3	
		Honours	4	
6	Please indicate your faculty	Economic and Management Science	1	V6

EBIT	2
Humanities	3
Law	4
Natural and Agricultural Sciences	5
Theology	6
Education	7
Veterinary Sciences	8
Health Sciences	9

7 Resident status

Day student	1
Residence student	2

V7

Section B

Read each group of statements carefully and pick out the one statement in each group that best describes the way you have been feeling in the past two weeks, including the present day.

8 Sadness:

I do not feel sad	0
I feel sad much of the time	1
I am sad all the time	2
I am so sad or unhappy that I can't stand it	3

V8

9 Pessimism:

I am not discouraged about my future	0
I feel more discouraged about my future than I used to be	1
I do not expect things to work out for me	2
I feel my future is hopeless and will only get worse	3

V9

10 Past failure:

I do not feel like a failure	0
I have failed more than I should have	1
As I look back, I see a lot of failures	2
I feel I am a total failure as a person	3

V10

11 Loss of pleasure:

I get as much pleasure as I ever did from the things I enjoy	0
I don't enjoy things as much as I used to	1
I get very little pleasure from the things I used to enjoy	2
I can't get any pleasure from the things I used to enjoy	3

V11

12	Guilty feelings:	I don't feel particularly guilty	0	V12
		I feel guilty over many things I have done or should have done	1	
		I feel guilty most of the time	2	
		I feel guilty all the time	3	
13	Punishment feelings:	I don't feel I am being punished	0	V13
		I feel I may be punished	1	
		I expect to be punished	2	
		I feel I am being punished	3	
14	Self-Dislike:	I feel the same about myself as ever	0	V14
		I have lost confidence in myself	1	
		I am disappointed in myself	2	
		I dislike myself	3	
15	Self-Criticalness:	I don't criticize or blame myself more than usual	0	V15
		I am more critical of myself than I used to be	1	
		I criticize myself for all my faults	2	
		I blame myself for everything bad that happens	3	
16	Suicidal thoughts or wishes:	I don't have any thoughts of killing myself	0	V16
		I have thoughts of killing myself, but I would not carry them out	1	
		I would like to kill myself	2	
		I would kill myself if I had the chance	3	
17	Crying:	I don't cry any more than I used to	0	V17
		I cry more than I used to	1	
		I cry over every little thing	2	
		I feel like crying, but I can't	3	
18	Agitation:	I am no more restless or wound up than usual	0	V18
		I feel more restless or wound up than usual	1	
		I am so restless or agitated that it's hard to stay still	2	
		I am so restless or agitated that I have to keep moving or doing something	3	

19	Loss of interest:	I have not lost interest in other people or activities	0	V19
		I am less interested in other people or things than before	1	
		I have lost most of my interest in other people or things	2	
		It's hard to get interested in anything	3	
20	Indicisiveness:	I make decisions about as well as ever	0	V20
		I find it more difficult to make decisions than usual	1	
		I have much greater difficulty in making decisions than I used to	2	
		I have trouble making any decisions	3	
21	Worthlessness:	I do not feel I am worthless	0	V21
		I don't consider myself as worthwhile and useful as I used to	1	
		I feel more worthless as compared to other people	2	
		I feel utterly worthless	3	
22	Loss of energy:	I have as much energy as ever	0	V22
		I have less energy than I used to have	1	
		I don't have enough energy to do very much	2	
		I don't have enough energy to do anything	3	
23	Changes in sleeping pattern:	I have not experienced any changes in my sleeping pattern	0	V23
		I sleep somewhat more than usual	1a	
		I sleep somewhat less than usual	1b	
		I sleep a lot more than usual	2a	
		I sleep a lot less than usual	2b	
		I sleep most of the day	3a	
		I wake up 1-2 hours early and can't get back to sleep	3b	
24	Irritability:	I am no more irritable than usual	0	V24
		I am more irritable than usual	1	
		I am much more irritable than usual	2	

		I am irritable all the time	3
25	Changes in appetite:	I have not experienced any change in my appetite	0
		My appetite is somewhat less than usual	1a
		My appetite is somewhat greater than usual	1b
		My appetite is much less than before	2a
		My appetite is much greater than usual	2b
		I have no appetite at all	3a
		I crave food all the time	3b
26	Concentration difficulty:	I can concentrate as well as ever	0
		I can't concentrate as well as usual	1
		It's hard to keep my mind on anything for very long	2
		I find I can't concentrate on anything	3
27	Tiredness or fatigue:	I am no more tired or fatigued than usual	0
		I get more tired or fatigued more easily than usual	1
		I am too tired or fatigued to do a lot of the things I used to do	2
		I am too tired or fatigued to do most of the things I used to do	3
28	Loss of interest in sex:	I have not noticed any recent change in my interest in sex	0
		I am less interested in sex than I used to be	1
		I am much less interested in sex now	2
		I have lost interest in sex completely	3

Section C

Read each statement and then circle the appropriate number to the right of the statement to indicate how you feel *right now,* that is, at *this moment.*There are no right or wrong answers. Do not spend too much time on any one statement but give the answer which seems to describe your present feelings best.

		Not at All	Somewhat	Moderately So	Very Much So	
29	I feel calm	1	2	3	4	V29
30	I feel secure	1	2	3	4	V30
31	I am tense	1	2	3	4	V31
32	I feel strained	1	2	3	4	V32

33	I feel at ease	1	2	3	4	V33
34	I feel upset	1	2	3	4	V34
35	I am presently worrying over possible misfortunes	1	2	3	4	V35
36	I feel satisfied	1	2	3	4	V36
37	I feel frightened	1	2	3	4	V37
38	I feel comfortable	1	2	3	4	V38
39	I feel self-confident	1	2	3	4	V39
40	I feel nervous	1	2	3	4	V40
41	I am jittery	1	2	3	4	V41
42	I feel indecisive	1	2	3	4	V42
43	I am relaxed	1	2	3	4	V43
44	I feel content	1	2	3	4	V44
45	I am worried	1	2	3	4	V45
46	I feel confused	1	2	3	4	V46
47	I feel steady	1	2	3	4	V47
48	I feel pleasant	1	2	3	4	V48

Read each statement and then circle the appropriate number to the right of the statement to indicate how you *generally feel*.

		Almost Never	**Sometimes**	**Often**	**Almost Always**	
49	I feel pleasant	1	2	3	4	V49
50	I feel nervous and restless	1	2	3	4	V50
51	I feel satisfied with myself	1	2	3	4	V51
52	I wish I could be as happy as others seem to be	1	2	3	4	V52
53	I feel like a failure	1	2	3	4	V53
54	I feel rested	1	2	3	4	V54
55	I am "calm, cool, and collected"	1	2	3	4	V55
56	I feel that difficulties are piling up so that I cannot overcome them	1	2	3	4	V56
57	I worry too much over something that really doesn't matter	1	2	3	4	V57
58	I am happy	1	2	3	4	V58
59	I have disturbing thoughts	1	2	3	4	V59
60	I lack self-confidence	1	2	3	4	V60
61	I feel secure	1	2	3	4	V61
62	I make decisions easily	1	2	3	4	V62
63	I feel inadequate	1	2	3	4	V63
64	I am content	1	2	3	4	V64

65	Some unimportant thought runs through my mind and bothers me	1	2	3	4	V65
66	I take disappointments so keenly that I can't put them out of my mind	1	2	3	4	V66
67	I am a steady person	1	2	3	4	V67
68	I get in a state of tension or turmoil as I think over my recent concerns and interests	1	2	3	4	V68

Section D

This section asks about a number of different things that people sometimes do to hurt themselves. Please be sure to read each question carefully and respond honestly. Often, people who do these kinds of things to themselves keep it a secret, for a variety of reasons. However, honest responses to these questions will provide us with greater understanding and knowledge about these behaviors and the best way to help people. Please answer yes to a question only if you did the behavior intentionally, or on purpose, to hurt yourself. Do not respond yes if you did something accidentally (e.g., you tripped and banged you head on accident).

69 Have you ever intentionally (i.e., on purpose) cut your wrist, arms, or other area(s) of your body (without intending to kill yourself)?

Yes	1	V69
No	2	

If Yes

How old were you when you first did this?		V70
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V71
When was the last time you did this?		V72
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**		V73
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V74

70 Have you ever intentionally (i.e., on purpose) burned yourself with a cigarette?

Yes	1	V75
No	2	

If Yes

How old were you when you first did this?		V76
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V77
When was the last time you did this?		V78
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**		V79
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V80

71 Have you ever intentionally (i.e., on purpose) burned yourself with a lighter or a match?

Yes	1	V81
No	2	

If Yes

How old were you when you first did this?		V82
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V83
When was the last time you did this?		V84
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**		V85
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V86

72 Have you ever intentionally (i.e., on purpose) carved words into your skin?

Yes	1	V87
No	2	

If Yes

How old were you when you first did this?		V88
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V89
When was the last time you did this?		V90
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**		V91
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V92

73 Have you ever intentionally (i.e., on purpose) carved pictures, designs, or other marks into your skin?

Yes	1	V93
No	2	

If Yes

How old were you when you first did this?		V94
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V95
When was the last time you did this?		V96
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**		V97
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V98

74 Have you ever intentionally (i.e., on purpose) severely scratched yourself, to the extent that scarring or bleeding occurred?

Yes	1	V99
No	2	

If Yes

How old were you when you first did this?		V100
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V101
When was the last time you did this?		V102
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**		V103
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V104

75 Have you ever intentionally (i.e., on purpose) bit yourself, to the extent that you broke the skin?

Yes	1	V105
No	2	

If Yes

How old were you when you first did this?		V106

How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V107
When was the last time you did this?		V108
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**		V109
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V110

76 Have you ever intentionally (i.e., on purpose) rubbed sandpaper on your body?

Yes	1	V111
No	2	

If Yes

How old were you when you first did this?		V112
How many times have you done this? **Please write an actual number (e.g., 1, 5or 15 not some, many or few).**		V113
When was the last time you did this?		V114
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**		V115
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V116

77 Have you ever intentionally (i.e., on purpose) dripped acid onto your skin?

Yes	1	V117
No	2	

If Yes

How old were you when you first did this?		V118
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V119
When was the last time you did this?		V120
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in this behavior.**		V121
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V122

78 Have you ever intentionally (i.e., on purpose) used bleach, comet, or oven cleaner to scrub your skin?

Yes	1	V123
No	2	

If Yes

How old were you when you first did this?		V124
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V125
When was the last time you did this?		V126
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in behaviour.**		V127
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V128

79 Have you ever intentionally (i.e., on purpose) stuck sharp objects such as needles, pins, staples etc into your skin, **not including** tattoos, ear piercing, needles used for drug use or body piercing?

Yes	1	V129
No	2	

If Yes

How old were you when you first did this?		V130
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V131
When was the last time you did this?		V132
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in behaviour.**		V133
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V134

80 Have you ever intentionally (i.e., on purpose) rubbed glass into your skin?

Yes	1	V135
No	2	

If Yes

How old were you when you first did this?		V136
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V137
When was the last time you did this?		V138
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in behaviour.**		V139
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V140

81 Have you ever intentionally (i.e., on purpose) broken your own bones?

Yes	1	V141
No	2	

If Yes

How old were you when you first did this?		V142
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V143
When was the last time you did this?		V144
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in behaviour.**		V145
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V146

82 Have you ever intentionally (i.e., on purpose) banged your head against something, to the extent that you caused a bruise to appear?

Yes	1	V147
No	2	

If Yes

How old were you when you first did this?		V148
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V149
When was the last time you did this?		V150
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in behaviour.**		V151
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V152

83 Have you ever intentionally (i.e., on purpose) punched yourself to the extent that you caused a bruise to appear?

Yes	1	V153
No	2	

If Yes

How old were you when you first did this?		V154
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V155
When was the last time you did this?		V156

How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in behaviour.**		V157
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V158

84 Have you ever intentionally (i.e., on purpose) prevented wounds from healing?

Yes	1	V159
No	2	

If Yes

How old were you when you first did this?		V160
How many times have you done this? **Please write an actual number (e.g., 1, 5 or 15 not some, many or few).**		V161
When was the last time you did this?		V162
How many years have you been doing this? (If you are no longer doing this how many years did you do this before you stopped?) **Please write the actual number of years you engaged in behaviour.**		V163
Has this behaviour ever resulted in hospitalisation or injury severe enough to require medical treatment?		V164

Appendix C

Permission to Analyse Archival Data

Re: Permission to analyse archival data **14 March 2012**

To Whom It May Concern:

As principal investigator of the research project *An exploratory study of deliberate self-harm, depression and anxiety among students at a tertiary institution,* I hereby confirm that Carla Lippi has permission to analyse archival data from this project for the purposes of her MA Clinical Psychology mini-dissertation. I will also act as her supervisor. Carla will be addressing one of the stated research objectives of this broader study. She will not deviate from these research objectives formulated by the larger research team, and will abide by the conditions for ethical conduct in the initial application for ethical clearance submitted by the research team in 2009. The conditions of the use of the data therefore remain the same as stated in the letter of informed consent.

Please do not hesitate to contact me should you require any further information.

Kind regards,

Ingrid Lynch
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