

UNIVERSITY OF KWAZULU-NATAL

**AN EXPLORATION OF THE RELATIONSHIP BETWEEN
INTERPERSONAL NEEDS AND NONSUICIDAL SELF-INJURY IN
ADOLESCENTS**

By

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DECLARATION

I, Ariel E. de Villiers, declare that:

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- (ii) This dissertation has not been submitted for any degree or examination at any another university.
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Date:2 February 2019.....

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ABSTRACT

Nonsuicidal self-injury (NSSI) has become a worrying phenomenon amongst adolescents worldwide, emphasising the need for increasing public health awareness and exploration of the factors associated with this behaviour. The current study is motivated by the need to explore the contagion of self-injury. The Interpersonal-Psychological Theory of Suicide by Joiner posits that suicide ideation occurs in the presence of two interpersonal needs constructs: thwarted belongingness and perceived burdensomeness, and that the risk of a lethal suicide attempt occurs in the joint presence of suicide ideation and the capability to enact NSSI.

The aim of this study was to explore the relationship between the interpersonal needs constructs of Joiner's theory and NSSI.

A cross-sectional convenience sampling method was utilised to obtain a sample of 216 adolescents, who were recruited from three schools in the greater Durban area. Binary logistic regression analyses were performed to establish whether a relationship existed between the interpersonal needs constructs and NSSI.

The results indicated a positive relationship between perceived burdensomeness and the occurrence of NSSI in this sample, thereby illuminating thwarted interpersonal needs as a contributor to the occurrence of NSSI in adolescents. It is hoped that the findings of this study will further the understanding of this perplexing behaviour.

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LIST OF ABBREVIATIONS

NSSI – Nonsuicidal Self-Injury
TB – Thwarted Belongingness
PB – Perceived Burdensomeness

CHAPTER ONE: INTRODUCTION

‘They witnessed her destruction, then were left to wonder why.
She saw nothing but darkness, though the stars shone in her eyes.
But maybe they’d forgotten, when they failed to see the cracks.
That a star’s light shines the brightest, when it’s starting to collapse.’
- Hansen, E (n.d.)

Self-harm has become a worrying phenomenon in the nomenclature of adolescent experience; and appears to occur without much warning and in the absence of any characteristic markers (Deiter, Nicholls & Pearlman, 2000). This has become a poignant reminder to therapists of the fragility of the adolescent period of development. Research in the developmental psychology field shows that the greater part of studies often focuses primarily on childhood, lifespan development, and until more recently, geriatric populations (Collins, 1991). Adolescence has been a forgotten period, with the increased interest in adolescence referred to by Fox (1977) as a ‘phenomenon of the modern times’, (p1). Resultantly, there is a paucity of research conducted on the risk factors associated with this age group; and thus, a gap in the body of knowledge with respect to self-injurious behaviour in adolescence.

Self-injury has been documented continuously since the dawn of scientific curiosity, with biblical accounts describing a spirit-possessed man who would cry and cut himself with stones and a depressed widow gouging her eyes out (Favazza, 1998); with most instances being ignored due to stigmatisation and shame, and the view that self-injury occurs primarily as a symptom of severe psychopathy (Bakwin, 1957). It would appear that research into self-injury has gained momentum in recent years owing to studies reporting that close to 10% of adolescents and young adults have engaged in self-harm (Ross & Heath, 2002; Baetens et al., 2015), while Adler and Adler (2011) report that 1% of Americans use self-harm as a method

of coping and self-soothing. Stemming from this, a wealth of interest has been generated on the prevention of self-harming behaviours, and therewith an exploration of the possible precedents to this behaviour (Favazza & Rosenthal, 1993; Whitlock, Lader & Conterio, 2007; Wedig & Nock, 2007).

With an estimated 50% of psychiatric illnesses first presenting in adolescence (American Psychological Association, 2013), the reduction of severe pathologies has been researched extensively; and therefore, there is wide interest by researchers in the individual fields of interpersonal needs and self-injury, while the correlation between them has been largely neglected (Meuhlenkamp, Brausch, Quigley & Whitlock, 2013).

In a study by Baetens et al. (2015), the link between parental expressed emotion and self-harm was explored in a sample of 358 adolescents, the finding of which confirmed the hypothesis that limited expressed emotion was related to an increased incidence of self-harming behaviour. According to this research, perceived parental support and criticism directly influence the prevalence of nonsuicidal self-injury behaviour and, to a more indirect, but tangible degree, depressive symptoms. These authors imply an omnipresent affliction of persistently negative feelings resulting in repeated self-harming actions to subdue this affect.

Within this lies the need to examine whether the inadequate meeting of interpersonal needs and nonsuicidal self-injury correlate or overlap in their aetiology and whether the failure to meet these needs mediates the occurrence of self-injury. Yadegarfar, Ho and Bahramadian (2013) argue that the experiences of acceptance and support, or rejection and marginalisation, affect a person's role in society and his/her personal relationships in particular. In answering these questions, this study also aims to determine the age of onset, frequency and incidence of self-harming in the sample, with ethnographic correlations also being sought. This has led to an interest in the exploration of the underlying predictors of

self-harm with the hope of a more cohesive understanding of this perplexing behaviour. The central aim of this study is to explore whether thwarted interpersonal needs contribute to nonsuicidal self-injury in a sample of adolescents.

1.1. Research Questions and Objectives of the Study

The research objectives of the study are the following:

- i. To explore the nature and incidence of NSSI in a sample of adolescents in the Durban area.
- ii. To explore whether there are age, race, religion and gender differences in interpersonal needs (perceived burdensomeness and thwarted belongingness) and NSSI in the sample.
- iii. To explore the relationship between interpersonal needs (perceived burdensomeness and thwarted belongingness) and NSSI in this sample

The research questions that this study endeavours to answer are:

- i. What are the frequency, methods, and duration of NSSI in the sample?
- ii. What are the demographic variables associated with interpersonal needs and NSSI in this sample?
- iii. Are the variables ‘thwarted belongingness’ and ‘perceived burdensomeness’ predictors of NSSI amongst adolescents?

The study hopes to shed light on the interpersonal constructs associated with NSSI in the hope that the research will inform early detection of interpersonal risk factors that could lead to NSSI.

1.2. Definition of Terms

1.2.1. Nonsuicidal self-injury (NSSI) refers to the deliberate harm to one’s own bodily tissues without having any obvious suicidal intent or ideation (Lundh, Karim & Quilisch, 2007). Other names for NSSI include deliberate self-harm (Lundh et al, 2007;

Hawton, Rodham, Evans, Weatherall, 2002), para-suicide (Bekry, 1999; Kumar & Vincent, 2016), self-wounding, and self-mutilation (Herpertz, 1995; Favazza & Conterio, 1989, Nijman, Dautzenberg, Merckelbach, Jung, Wessel & Campo, 1998). These features distinguish it from behaviour whose harmful consequences are unintended (e.g. accidental drug overdose) and from suicidal behaviour, in which the ultimate intent is to die (Nock, 2009). Culturally sanctioned body modification, such as tattooing or body piercing is excluded from the classification of NSSI (Whitlock, Exner-Cortens & Purington, 2007), as is long-term destructive behaviour, such as substance abuse and deliberate starvation (Lundh et al., 2007). Deliberate self-harm (DSH) is a sub-category of self-destructive behaviour; with many authors operationalising DSH to include suicidal ideation (e.g. Meuhlenkamp, Claes, Havertape & Plener, 2012), while others group DSH and NSSI under the same category of self-injurious behaviour without suicidal intent (Klonsky, Oltmanns & Turkheimer, 2003; Pattison & Kahan, 1983; Nock & Favazza, 2009).

For the purposes of this study; any descriptive names referring to NSSI will exclude any actions with any suicidal ideation or intent. Other references to this kind of behaviour include ‘self-harming’, ‘self-injury’ and ‘self-mutilation’.

1.2.2. Interpersonal needs refers to needs beyond the physiological that humans require to thrive e.g. a need for affection, belonging, communication etc. Joiner’s Interpersonal-Psychological Theory of Suicidal Behaviour (2005) posits that an individual will not die by suicide unless he/she possess both the desire and the capability to do so. He further asserts that when two psychological states, ‘thwarted belongingness’, and ‘perceived burdensomeness’, are simultaneously present for long enough, the desire for suicide will be increased (Van Orden, Witte, Cucrowicz, Braithwaite, Selby & Joiner, 2012). **Thwarted belongingness** refers to an unfulfilled need to connect at a social level, resulting in social isolation and loneliness (Van Orden, Merrill, Joiner & Thomas, 2005). **Perceived**

burdensomeness rests on the assumption that one is replaceable in a family or social group (Van Orden et al., 2005) and that one perpetuates a social pressure or burden on others that would otherwise be absent were one no longer there. **Interpersonal needs** in this study refers to the high or low perceptions of thwarted belongingness and burdensomeness.

1.3. Distinguishing between Suicidal and Nonsuicidal Self-Injury

When working with adolescents, it is often challenging to distinguish between self-injury with and without suicidal ideation. Many studies suggest that clients are forthcoming in that the act has nothing to do with the wish to die (Wilkinson & Goodyer, 2011), and research has shown distinctions between nonsuicidal self-injury and suicidal self-injury (Nock & Favazza, 2009; Baetens et al., 2015), emphasising the importance of viewing NSSI as a separate issue to self-injurious suicidal behaviour. This finding was supported by Nock (2010), who contends that while NSSI behaviours often involve a suicide gesture or threat designed to receive attention from others, these do not characteristically involve an inherent wish to die. When distinguishing between NSSI and suicide attempts, Brent (2009) suggests that the most common motivation for NSSI is to achieve immediate, albeit temporary, relief from negative affect, while suicide attempts involve a permanent wish to remove oneself from the situation.

According to Joiner (2005), an individual will not die by suicide unless he/she has both the desire to die and the ability to enact lethal self-injury. It is therefore suggested that through repeated acts of NSSI behaviours individuals will both numb the self-preservation instinct and will acquire an increasing capability to enact lethal self-harm behaviour. In other words, when individuals increasingly engage in self-injury, it is suggested that they will become tolerant to pain and will develop an increasing fearlessness of death. This, coupled with suicidal ideation, could result in a lethal suicide attempt. Whilst it is therefore important to distinguish between lethal and non-lethal self-harming behaviour for the purposes of this

study, Joiner's theory (2005) provides the underlying motive for research into these phenomena, with the goal of reducing both the prevalence of suicide and self-injury.

Finding support for Joiner's theory, a study by Asarnow et al. (2011) showed that NSSI significantly predicted the incidence of future suicide attempts; thereby underscoring the need to refer to these as mutual phenomena.

Muehlenkamp and Gutierrez (2007) examined differences in a community sample of adolescents with different degrees of self-injury history, studying four groups: no self-injury, NSSI only, NSSI and suicide attempt, and suicide attempt only. The authors found that adolescents who engaged in NSSI only, could be distinguished from those who also made a suicide attempt, based on their levels of depressive symptoms, suicidal ideation, and reasons for living. Another recent study (Xavier, Cunha & Pinto-Gouveia, 2016) on 854 Portuguese adolescents reported that negative experiences in the home environment, particularly interpersonal relationships and perceptions of low belongingness, had a negative impact on self-harm.

It is therefore hoped that through this study the exploration of the relationship between interpersonal needs and NSSI will provide a glimpse into these behaviours in the South African context, which is currently lacking.

1.4. Rationale for the Study

Research conducted on a North American sample of undergraduate students found that a sizeable 35% of adolescents had deliberately engaged in self-harm at least once (Gratz, 2001). Other studies have found that prevalence rates of self-harm behaviour amongst adolescents range from 14% (Ross & Heath, 2002) to 15% (Laye-Gindhu & Schonert-Reichl, 2005). From a purely statistical standpoint, even a modest 14% of adolescents engaging in self-harm is indicative of a worrisome trend, and the alarmingly high incidence of self-harm

in adolescents requires researchers to focus studies on the possible antecedents to self-harm, and thereby highlight the need for intervention in these behaviours.

Whilst many editions of the DSM have been published, the existence of NSSI has only just been acknowledged in the DSM-5, with a distinct diagnosis being proposed in future editions of the manual. This illustrates the lack of attention in the past to NSSI as a clinically discrete behaviour. However, its possible inclusion in future editions of the DSM highlights NSSI as a condition that warrants further study. Reference to NSSI in clinical literature is frequently referred to by way of its association with psychiatric disorders, leading many to place NSSI as a symptom of a psychiatric disorder as opposed to a stand-alone occurrence (Van der Kolk, Perry & Herman, 1991; Andover, Pepper, Ryabchenko, Orrico & Gibb, 2005). This conceptualisation is inadequate, considering the existence and prevalence of self-injury in the absence of significant clinical disorders and provides little by way of explanation and treatment.

Additionally, although individual pathologies and behaviours of NSSI sufferers have been extensively researched, a scarcity of information exists on interpersonal needs as a factor in NSSI behaviour (Baetens et al., 2011). Previous studies have not simultaneously investigated the role of internal distress and interpersonal needs in relation to NSSI (Giletta, Scholte, Engels, Ciairano & Prinstein, 2012), with there being a comparative absence of research on these variables in the South African context.

Therefore, the justification for this study is related to the need to address the gaps in literature in the South African context. While there has been a wealth of research into this phenomenon on the international front (You & Leung, 2012; Madge, Hawton, McMahon, Corcoran, de Leo & Arensman, 2011; Lloyd-Richardson, Perrine, Dierker & Kelley, 2007; Giletta et al., 2012), there is a comparative lack of research conducted in South Africa (Lippi,

2014; Naidoo & Pillay, 1993; Bantjes, Breet, de Wet, Khan, Weiss & Lewis, 2016).

Considering the socio-political, ethnographic and economic diversity of South Africa, it is feasible to consider that there may be differences in the presentation of self-harm in this context in comparison to other countries.

It appears that the majority of self-harm research has been conducted on adult and clinical samples (Andover et al., 2005; Klonsky et al., 2003; Muehlenkamp, Brausch, Quigley & Whitlock, 2013; Kumar & Vincent, 2016; Nijman et al., 1999), while most research suggests that self-harm occurs more frequently in adolescence (Briere & Gil, 1998; Wilkinson & Goodyer, 2011). Furthermore, very little research has been conducted on community samples; with studies into the prevalence and effects of NSSI in a non-clinical population of adolescents, potentially illuminating additional harmful tendencies precipitating self-injurious behaviour. It is therefore feasible to consider that adolescents from a community sample may differ in frequency and function of self-injury from a clinical population.

The value of the present study lies in its quantitative exploration of two variables that are considered risk factors in adolescence. The implications of these findings are thus important for interventions targeted at reducing NSSI.

Given the new clinical attention that NSSI is receiving, it is vital to explore precipitating and mediating factors in NSSI from a community sampling, adolescent, South African perspective, in the hopes of providing opportunities for improved diagnosis and treatment (Brent, 2009). The ubiquity of self-harm as a global phenomenon emphasises the need to investigate these links, and this study aims to address the self-harm problem by determining whether the failure to meet interpersonal needs plays a role in the manifestation of self-injurious behaviour.

1.5.1. Theoretical Framework: Joiner's Interpersonal-Psychological Theory of Suicide

The Interpersonal-Psychological Theory of Suicide (Joiner, 2005) suggests that an individual will only die by suicide if he or she has both the desire to die and the capability to enact suicide. Van Orden et al. (2005) suggest that suicidal desire is increased by the presence of two constructs: thwarted belongingness and perceived burdensomeness. In the presence of a third construct, the acquired capability for suicide, suicidal desire may transform into a lethal act of self-harm. Acquired capability for suicide is posited to result from repeated painful and provocative exposure to pain, with an individual over time developing both a higher tolerance for pain and lowered fear of death. The desire for death and the acquired capability for suicide are thus separate but related constructs i.e. the joint presence of suicide desire *and* an acquired capability for suicide are proximal and sufficient conditions for a lethal suicide attempt to occur. [writer's emphasis] The interpersonal-psychological theory was validated in a South African context in a psychiatric sample (Naidoo, 2016) as well as in a study by Hawton, Zahl, and Weatherall (2003) who investigated the risk of suicide after presentation to hospital following deliberate self-harm. The findings of the latter study suggested that the risk of suicide was increased after acts of deliberate self-harm, was far greater in men, and that the risk increased with age.

Using Joiner's (2005) framework, this study intends to explore whether a more direct relationship exists between unmet interpersonal needs and self-harm behaviour (the latter posited to be one of the factors that leads to acquired capability for suicide over time).

Although the present paper defines suicidal behaviour and nonsuicidal self-harm as distinct categories, in that NSSI is defined as having an absence of suicidal intent, it is clear what the ramifications of Joiner's theory could be. The first requirement for the fulfilment of Joiner's theory refers to unmet interpersonal needs; where adolescents experience feelings of thwarted belongingness and perceived burdensomeness, the externalisation of these feelings

may manifest as self-injury. With repeated exposure to self-harm, Joiner (2005) suggests that the idea of suicide completion may become more attractive. Irrespective of the timeline of these events, Joiner suggests that the culmination of these two variables may push the person over the proverbial edge.

Given that Joiner's Interpersonal Theory (2005) does not directly provide a link between thwarted belongingness, perceived burdensomeness and NSSI it is hoped that this study will contribute to an understanding of the relationship between these variables.

1.5.2. Theoretical framework: Nock and Prinstein's four function model

Many studies have thrown their efforts into the phenomenon of self-injury. Early perspectives have suggested that self-injury serves to detract from strong psychopathological traits (Herpertz, 1995) of emotional pain and trauma (Favazza & Conterio, 1989, Herpertz, 1995), an inability to handle aggression (Rosenthal, 1972), and to detract from suicide (Suyemoto, 1998). Building on this research, and in an attempt to understand NSSI in its totality, Nock and Prinstein (2004) examined self-injury from a functional perspective, rather than from a syndromal approach. Whereas the syndromal approach may examine behaviour through presenting symptomatology and signs, a functional approach classifies behaviour in terms of the antecedents and consequents which serve to maintain that behaviour (Nock, 2009). Bentley, Nock and Barlow (2014) suggest that NSSI is a transdiagnostic behaviour, and that better insight into self-injury can be afforded if the functional processes that produce and maintain the behaviour are identified.

Stemming from this, Nock and Prinstein (2004) developed a comprehensive theoretical model, proposing four primary functions of self-injury. These functions were classified within two dichotomies: functions which are automatic (within the self) and social

(pertaining to others); and functions which were positively reinforced versus those that were negatively reinforced.

Nock and Prinstein (2004) defined the four functions of self-injury as serving ‘automatic negative reinforcement’ (e.g. to stop painful feelings within the self), ‘automatic positive reinforcement’ (e.g. to feel something), ‘social negative reinforcement’ (e.g. to avoid doing something unpleasant) and ‘social positive reinforcement’ (e.g. to show others your pain). The findings of many studies have corroborated the four-factor model, with self-injurers likely to endorse both automatic and social functions (Lloyd-Richardson et al., 2007; Kaess, Parzer, Mattern, Plener, Bifulco & Resch, 2013). The implications of reclassifying NSSI according to the four-factor model (Nock & Prinstein, 2004) are twofold, according to Bentley et al., 2014. First, the adherence to a functional perspective allows the identification of precedents and consequents that serve to produce and maintain NSSI. Secondly, the model places equal emphasis on social precursors to NSSI rather than primarily focusing on internal factors.

1.5.3. Summary of the theoretical framework

The aim of this study is to explore the relationship between interpersonal needs and nonsuicidal self-injury (NSSI). Whilst Joiner’s theory (2005) highlights the importance of interpersonal needs in the understanding of self-injury and suicidal ideation, it also provides a platform upon which self-injury can be understood in relation to the acquired capability for suicide. Nock and Prinstein’s four-factor model builds on this and illuminates the intricacies of interpersonal needs, as well as focusing on the functions that NSSI serves. It is hoped that the use of both Joiner’s (2005) theory and Nock and Prinstein’s (2004) model, will provide a sound and comprehensive theoretical foundation for this study.

1.6 Organisation of the Study

Chapter one of the study has presented the introduction, statement of the problem, research questions, rationale for the study, and operational definitions of the study.

Chapter two contains the review of extant literature exploring interpersonal needs and nonsuicidal self-injury, first as separate entities, followed by an exploration of interpersonal variables as predictors of self-harm in adolescents.

Chapter three entails a review of the research methodology and procedures used to conceptualise and gather data for the study. This includes the population and sample, instrumentation, research procedure and data analysis.

In **chapter four** the findings and results of the study are discussed. This includes response rate, demographic variance and a summary of the findings.

Chapter five presents a final summary and discussion of the findings presented in Chapter five.

Chapter six contains further recommendations and draws final conclusions of the study.

CHAPTER TWO: LITERATURE REVIEW

This chapter provides a review of the related literature pertaining to interpersonal needs and nonsuicidal self-injury, including an exploration of the international and South African epidemiology of NSSI. Furthermore, the roles of age, race and gender are explored as they pertain to interpersonal needs and to NSSI. Lastly, an overview of the literature focusing on interpersonal needs and NSSI is provided. The research objectives of the present study are to describe the incidence of NSSI, to explore whether there are age, race, and gender differences between interpersonal needs and NSSI in this sample, and to explore the relationships between interpersonal needs and NSSI.

2.1. Nonsuicidal Self-Injury (NSSI): Factors and Functions

Feldman (1988) refers to NSSI as ‘auto-aggression’ without the conscious intent to die. According to research, NSSI typically includes behaviours such as cutting, burning, scratching, and self-battery (Lloyd-Richardson et al., 2007; Whitlock, Muehlenkamp, Purington, Eckenrode, Barreira & Baral-Adams, 2011), and manifests most frequently as cutting with a knife or razor (Nock, 2009; Feldman, 1988). Similarly, Nock and Prinstein (2004) report cutting and carving on the legs, arms and stomach as the most prevalent forms of self-injury, a finding supported by other studies (Favazza, 1996; Herpertz, 1995; Klonsky, 2011; Andover et al., 2005). In a study conducted on 6 020 participants between the ages of 15 and 16 years, cutting accounted for 64.6% of self-injurious behaviour (Hawton et al., 2002), while other studies suggest that between 21% and 44% of self-harmers hit themselves, and between 15% and 35% burn their skin (Klonsky et al, 2003; Brunner, Parzer, Haffner, Steen, Roos & Klett, 2007). In his historical paper on the challenges of self-mutilation, Feldman (1988) suggests that self-cutting, ocular self-mutilation and genital self-mutilation

are most common, and that patients who engage in bizarre and unusual mutilation practices such as eye removal are often psychotic, rather than typical self-injurers.

Contrastingly however, other studies have shown that self-injurers are more likely to have a history of psychiatric treatment than non-injurers (Lloyd-Richardson et al., 2007; Ross & Heath, 2002; Laye-Gindhu & Schonert-Reichl, 2005), a finding supporting the suggestion that there is a distinct heterogeneity among self-injurers (Klonsky, 2011). Strong links have been shown between self-injury and schizophrenia (Klonsky et al., 2003), depression (Wilkinson, Kelvin, Roberts, Dubicka & Goodyer, 2011) and personality disorders; most notably, borderline personality disorder (Brunner et al., 2007; Klonsky et al., 2003; Andover et al., 2005; Feldman, 1988; Yen, Gagnon & Spirito, 2013).

Many studies have also explored the associations between NSSI and suicidality (Brown, Comtois & Linehan, 2002), eating disorders (Claes, Vandereycken & Vertommen, 2003; Ross, Heath & Toste, 2009) and the link between related variables like impulsivity and self-esteem (Kingsbury, Hawton, Steinhardt, & James, 1999). A study conducted on South African self-harming female adolescents indicated that ‘relief from overwhelming feelings’, ‘validating and expressing emotional pain’ and ‘communicating pain to self and others’ were the most frequent functions served by NSSI (Robertson, 2008, 85-87). Another study in South Africa found that emotional reactivity greatly increased self-harm tendencies, and that an increase in social support showed a decline in self-harm (Van der Wal, 2017).

Although these studies suggest that NSSI is commonly associated with psychiatric disorders, features of self-injury can be associated with 15% to 20% of community sample adolescents (Nixon, Holly, Schaub & Heath, 2008), necessitating research into the functions of nonsuicidal self-injury in adolescent populations prior to presentation to a clinical setting.

2.2. Nonsuicidal Self-Injury (NSSI) – International Prevalence

Owing to the increased interest in self-injury, there have been numerous studies on the prevalence of self-harm, in both clinical (Briere, 1998; Lev-Ran & Balchand, 2013; Hawton, et al., 2003; Favazza & Conterio, 1998; Kumar & Vincent, 2016; Wilkinson et al., 2011; Andover et al., 2005) and community samples (Klonsky et al., 2003; Lundh et al., 2007; Hawton et al., 2002; Lloyd-Richardson et al., 2007; Giletta et al., 2012). Research in self-harm has been gaining momentum, with studies focusing mainly on adolescence (Muehlenkamp et al., 2012; Garrison et al., 1993; van der Wal, 2017; Robertson, 2008; Baetens et al., 2013) and adulthood (Peterson, Davis-Becker & Fischer, 2014; Lev-Ran & Belchand, 2013). Research has been conducted globally, with studies being completed in many countries: Italy (Giletta et al., 2013), the Netherlands (Madge et al., 2011; Slee, Garnefski, Spinhoven & Arensman, 2008), Portugal (Xavier et al., 2016), Belgium (Baetens et al., 2015), South Africa (Van der Wal, 2017; Robertson, 2008), United States (Barrocas, Hankin, Young & Abela, 2012; Klonsky, 2011), Malaysia (Kumar & Vincent, 2016), China (You & Leung, 2012) and Ethiopia (Bekry, 1999).

In a study of self-harm in a community sample of Swedish adolescents, Lundh et al. (2012) found that 65.9% of adolescents reported having engaged in some sort of self-harm at least once in their lives. However, the high statistic could be attributed to the understanding of ‘some sort of self-harm’, and could have included behaviours that were injurious but unintentional. The same study reported that 13.8% of adolescents indicated that they had engaged in one type of self-harm on many occasions. Lloyd-Richardson et al. (2007) reported that 46.5% of adolescents engaged in self-harm in the year prior to the study, while other studies reported more modest findings of 6.9% (Hawton et al., 2002) to 8% (Barrocas et al., 2012) of youth confirming self-harm behaviour. Klonsky (2011) reported that 2.7% of Canadian adolescents in their study had self-injured more than five times in their lives. In a

large study spanning several countries – Belgium, England, Hungary, Ireland, Norway, Australia, and the Netherlands – Madge et al. (2011) reported that 2.6% of participants reported engaging in self-harm at least once in the past year, and a further 3.2% reported engaging in self-harm on multiple occasions.

2.3. Nonsuicidal Self-Injury (NSSI) in South Africa

The magnitude of the self-harm problem has intensified the need for research in this area; however, research in South Africa is limited (Lippi, 2014; Naidoo & Pillay, 1993; Bantjes et al., 2016; Bheumadu, Fritz & Pillay, 2012). According to Favaro (2013), fatal deliberate self-harm accounts for up to 10% of South Africa's non-natural deaths with non-fatal deliberate self-injury incidences estimated to account for up to 20 times more than that of fatal self-injury. The reasons suggested for the growing self-injury problem include unemployment, poverty, political instability and poor psychiatric and medical care in rural areas (Bantjes et al., 2016). Some studies conducted in Uganda (Kinyanda, Hjelmeland, & Musisi, 2004), and in Nigeria (Odejide, Williams, Ohaeri & Ikuesan, 1986) suggest that there is a higher proportion of men who self-harm as compared to females. Interestingly, Favaro (2013) found that deliberate self-harm hospital admissions declined during winter months and peaked during summer months; an interesting finding which contradicts the idea that Seasonal Affective Disorder contributes to self-harm, and confirms the theory that self-violence increases during warmer months (Pretia & Miotto, 1998; Salib & Gray, 1997; Favara, 2013).

In a study conducted on 603 South African university students, Lippi (2012) found that 46% of participants reported engaging in self-harm once, while another study found that 17.35% of adolescents in the Free State province reported engaging in self-harm (Van der Wal, 2017). While the studies undertaken in a variety of countries and contexts suggest a

universal self-injury phenomenon, it is possible that the South African environment provides for a varying smorgasbord of variables fostering the self-harm phenomenon.

2.4. Nonsuicidal Self-Injury and the Roles of Gender, Race and Age

2.4.1. Nonsuicidal self-injury and the role of gender

Gender appears to be an important sociodemographic indicator of NSSI; with a wealth of studies indicating that females tend to self-harm far more than their male counterparts (Zlotnick and Zimmerman, 1999; Wilkinson et al., 2011; Ross & Heath, 2002; Hawton et al., 2002). Other studies have found that there are no gender differences with regard to self-harming prevalence (Laye-Gindhu & Schonert-Reichl, 2004; Gratz, 2001; Klonsky et al., 2003).

In South African research, it has been found that males constituted a sizeable 40.5% of a self-harming sample, and more frequently endorsed items of self-harm such as laceration, with psychiatric illness noted to be a common co-morbidity factor in the sample (Bantjes et al., 2016). In support of international research, the study by Bantjes et al. (2016) found that females self-harmed more than males, and more frequently cited family discord as the trigger for their self-harm. Research conducted in pre-democratic South Africa found that female self-harmers outnumbered males by a 1.8 : 1 ratio (Naidoo & Pillay, 1993), similar to the ratio reported in a previous study of 2.5 : 1 (Pillay & Wassenaar, 1995). In more recent research it appears that gender differences in self-harm have started to level off, with Bantjes et al. (2016) reporting a ratio of 1.5 : 1 in female and male self-harm frequencies. Lippi (2014) found no significant gender differences in her research, while Meuhlenkamp et al. (2012) reported no gender differences in the rates of repetition of self-harm in adolescents. In studies of the gender differences among self-harm patients in a South African hospital, it was found that females outnumbered males 1.5 : 1; confirming the theory that there is a

decline of self-harm among females, and an increase of self-harm among males; resulting in a balancing of the gender discrepancies (Kinyanda et al., 2004; Odejide et al., 1986).

Research also suggests that the differences in the incidence of self-harm between males and females are less marked in adolescence (Evans, Hawton, Rodham & Deeks, 2005; Muehlenkamp & Gutierrez, 2004). A possible explanation for this may involve the perceived environmental demands and expectations at certain life cycles; whilst females and males both attend school and experience identity struggles associated with the transition into adolescence, it may be worthwhile to note that after school these roles typically change dramatically. Burrows, Vaez and Laflamme (2007) suggest that females might perceive higher rates of stress in comparison to their male counterparts as a result of juggling motherhood, marriage, and a career. Another possibility that may explain this difference is the perpetuation of the male role as head of the household. This may reinforce the idea that males are to remain in control of the family unit, thereby requiring a certain level of emotional composure. Furthermore, hormonal difference and adjustment may also play a role in the development of NSSI, by which males are potentially more likely to act on emotional feelings through overt aggression and are less likely to internalise emotional pain. As a result of gender role assignments and socialisation, females may be less likely to display and enact their emotional experiences, and such emotional pain is then turned toward the self; potentially manifesting as NSSI.

With regard to the functions of NSSI, literature suggests that there are gender differences with regard to method, factors and functions associated with self-injury, with females reporting more self-injury, as well as depression and anxiety, among friends and family. Males report more suicidal behaviour among friends and family, lower self-esteem (Hawton et al., 2002) and NSSI being a function of alleviating boredom (Lundh et al., 2007). It is worth noting that research into NSSI has been historically focused on females on account

of the high reported rates of self-injury within this gender – becoming almost part of the female adolescent culture. For males however, although literature has sparked renewed interest in NSSI as a ‘gender-equal’ affliction, the stigmatisation of reporting NSSI may still remain. In a study in Sweden, adolescent girls reported significantly higher rates of cutting than boys (Lundh et al., 2007).

In a study of para-suicide in a Pietermaritzburg hospital, 147 cases of deliberate self-injury were seen by clinical psychologists (Pillay & Pillay, 1985). The findings suggested that females outnumbered males at a ratio of 2.8 : 1; however, it is crucial to note that the authors did not distinguish between self-injury with and without suicidal intent. Although the present study conceptualises NSSI in isolation; it may be of importance to consider self-injury alongside suicidal intent when accounting for gender differences in NSSI. Additional research is indicated to explore whether the rates of NSSI among males are lower than those of females because they are more likely to escalate to suicide due to a propensity for impulsivity. Some authors have suggested, however, that impulsivity as a trait is more associated with NSSI than it is with suicidal ideation or attempt (Huang, Liu, Tsai, Sun, Huang & Chiu, 2017). Heath et al. (2008) explain gender discrepancies in the literature through likelihood to report, indicating that males are less likely to ask for assistance, leading to a lower figure of reported NSSI rates.

2.4.2. Nonsuicidal self-injury and the role of race

Lippi’s (2014) study of South African students found that 46% of the sample reported a lifetime prevalence of self-injury and 36% reported a history of self-injury in the year preceding the study. Interestingly, while it was found that there were no significant gender differences in the incidence of self-injury, findings did indicate that the participants belonging to the Asian and Coloured groups were significantly more likely to engage in self-

harm than both their Black African and White counterparts, a finding confirmed in other South African research (Joe, Stein, Seedat, Herman & Williams, 2008).

Lippi (2014) also found that Caucasian participants were more likely to cut their wrists and scratch themselves, while Black African participants were more likely to carve words into their skin and burn themselves. Burrows et al. (2007) studied suicide mortality in the South African context and provided an interesting theory suggesting that suicidal ideation may continue on an upward trend within the Caucasian racial grouping as a result of the removal of previous political privilege in a more equalised society. These authors suggest that such contextual changes play a role in the development of unhealthy behaviours within various racial groupings. Interestingly, studies in the South African context have found that the Coloured race is more likely to engage in self-injury (Lippi, 2014) and nonfatal suicidal attempts (Joe et al., 2008). These authors suggest that the Coloured population in South Africa may be especially at risk and that they may face unique stressors leading to increased auto-aggression.

Much of the literature paints a contrasting picture, with the finding that Caucasian individuals being more likely to engage in self-injury confirmed by authors in the community setting (Muehlenlamp & Gutierrez, 2007) as well as in the correctional setting (Borrill, Burnett, Atkins, Miller, Briggs & Weaver, 2003). What is interesting to note is that whilst the Caucasian race has historically occupied an 'elitist' position in society, self-injury appears to be more prevalent within this category of people in comparison to other ethnic groups (Burrows et al., 2007; Lloyd-Richardson et al., 2007; Whitlock et al., 2011).

In describing the medical, nutritional, educational, and financial implications of having a low socio-economic status – what Marmot (2004) coins the 'Status Syndrome' (p1) – may offer an explanation of the racial differences amongst self-injurers. Marmot refers to

the social gradient whereby the lower the socioeconomic status, the lower the average life expectancy. It is possible that suicide plays a role in the reduced life expectancy of individuals from a low socio-economic environment, with the trajectory from self-injury to suicide potentially escalated as a result of dire living conditions (Nada-Raja, Morrison & Skegg, 2003). A possible explanation may be that the non-Caucasian groups spend less time in the self-injury phase, turning instead to more lethal forms of injury.

In alignment with Marmot's status syndrome, it is also possible that many programmes and studies designed to obtain data regarding self-injury are not reaching the lower socioeconomic masses, thereby resulting in lower figures. Similarly, much of the academic literature comes from Westernised first world countries with fewer ethnic groups being represented. Many studies, however, have not found any significant association between self-injury across ethnic groups (Gratz, 2001, Andover, Primack, Gibb & Pepper, 2010).

2.4.3. Nonsuicidal self-injury and the role of age

In respect to age of onset, research suggests that self-harm first occurs during adolescence (Favazza, 1992; Fliege, Lee, Grimm & Klapp, 2009; Pattison & Kahan, 1983). Other authors suggest that self-harming behaviour has a mean age of onset of 16 years (Rosenthal Rinzler, Wallsh & Klausner, 1972; Klonsky, 2011), while Nock (2009) suggests that self-harm typically begins between the ages 12 and 14 years, and Favazza and Conterio (1989) suggest an age of onset between 14 and 24 years. Most of the research on self-harm reports that it is a much more frequent phenomenon in adolescence than adulthood (Plener, Libal, Keller, Fegert & Muehlenkamp, 2009; Baetens et al., 2013), with other research conducted on a comparatively younger sample aged 11 to 14 finding that as many as 18% reported self-harming at least once (Hankin & Abela, 2010). Lippi (2014) found that the highest incidence of self-harm in the sample occurred between the ages of 20 and 21 years, but that self-harm

rates dramatically decreased after the age of 25 years. The same author reported that the earliest mean age of onset (12.77 years) was for preventing wounds from healing, while Barrocas et al. (2012) reported that the youngest self-injurer in the sample was 7 years old. The definition of NSSI that the author adopts is, however, of crucial importance. The same study defined self-injury as encompassing behaviours such as cutting, hitting oneself, burning oneself, and picking at the skin. The latter behaviour can easily be endorsed if not specifically defined as including the intent to cause oneself pain.

However, with the current socio-political climate, it seems that youth are increasingly exposed to traumatic experiences (Barrocas et al., 2012). Studies have shown that childhood maltreatment and abuse is a major risk factor in the development of psychiatric disorders later in life (Springer, Sheridan, Kuo & Carnes, 2013; Bégin, Ensink, Chabot, Normandin & Fonagy, 2017). Such childhood abuse has been linked with self-injury in many contemporary studies (Lang & Sharma-Patel, 2011; Ford & Gomez, 2015; Cassels & Wilkinson, 2016). Whilst many facets of childhood trauma have been implicated in the ontogenesis of NSSI (Cassels & Wilkinson, 2016); Ford and Gomez (2015) found that childhood sexual trauma was the most consistent risk factor in the trajectory to self-injurious behaviours. In support of this research, Bégin, Ensink, Chabot, Normandin & Fonagy (2017) found evidence to suggest a robust relationship between sexual trauma and childhood neglect, and self-injury.

Childhood abuse and trauma has been linked to a variety of negative outcomes. Negriff, Saxbe and Trickett (2015) found that childhood maltreatment was associated with an alteration of the hypothalamic-pituitary-adrenal (HPA) axis; wherein repeated exposure to stressful events resulted in attenuated cortisol levels; which was associated with increased pubertal change. These authors suggest that earlier pubertal maturation predicted increased internalizing factors; confirmed by other studies (van Orden et al., 2010; Muehlenkamp et al., 2013; Taylor, Peterson & Fischer, 2012) to be a function of self-injury. As these studies

suggest, pubertal maturation comes alongside an increased vulnerability to issues such as depression and anxiety (Alloy & Abramson, 2007). Tatnell et al. (2017) indicated that past abuse is likely to decrease an individual's resilience to such stressors; thereby increasing the vulnerability to depression, anxiety, self-injury etc. Furthermore, Cassels and Wilkinson (2016) posited that the alteration of the brain's stress-response system through exposure to trauma impacts on the regulation of emotion. Given that self-injury has been implicated in the relief of negative emotions; it comes as no surprise that negative childhood experiences may perpetuate self-injurious behaviours. Whilst the present study did not focus on potential traumatic antecedents to NSSI; it is a crucial element to the dynamics underlying NSSI behaviour.

Self-injury has become more spoken of and acknowledged, noted in its increasing inclusion in public health awareness and youth programmes (Brown et al., 2002). With NSSI's increasing notoriety, it is possible that this has resulted in the recognition of self-injury as a function to alleviate emotional pain, thereby ironically leading to increased rates of the behaviour.

2.5. Nonsuicidal Self-Injury in Adolescence

There has been a perplexing upward trajectory of self-injury rates worldwide. Nonsuicidal self-injury is known to be a significant problem, and research has indicated that NSSI tends to occur first in adolescence, in the presence of other psychiatric difficulties (Meuhlenkamp et al., 2012). NSSI is an important predictor of future completed suicide, being present in the recent histories of about 40% of suicides (Cavanagh, Carson, Sharpe & Lawrie, 2003).

Despite evidence that NSSI occurs at first onset in adolescence, limited research has been conducted in adolescent populations (Lloyd-Richardson et al., 2007). Studies conducted in community samples (Klonsky et al., 2003; Petersen, Davis-Becker & Fischer, 2014) confirm

the finding that NSSI is a growing trend amongst adolescents, with prevalence rates ranging from 2.6% in a study of 30 000 adolescents in Europe and Australia (Madge et al., 2011) to 43.5 % (Baetens et al., 2013) and 45% respectively (Muehlenkamp, 2005).

Other studies suggest that NSSI affects thousands of adolescents each year with as many as 14% to 17% of adolescents having engaged in self-injury at least once in their lives (Klonsky et al., 2003). Findings of the TORDIA (Treatment of Selective Serotonin Reuptake Inhibitors (SSRI)-Resistant Depression in Adolescents) study reveals that suicide is the third leading cause of death amongst 10 to 24-year olds, with NSSI behaviours occurring at least as often (Asarnow, Porta, Spirito, Emslie, Clarke & Wagner, 2011). Other mental health surveys indicate that NSSI is a more common phenomenon than suicide (Taylor, Thrasher, McGrath, Hickel & Asarnow, 2007; Nock, 2010).

Research conducted into the prevalence of self-injury in certain countries and demographic groups such as Japan, (You & Leung, 2012), Europe and Australia (Madge et al., 2011), the US (Lloyd-Richardson et al., 2007), Italy, and the Netherlands (Giletta et al., 2011), show that the high prevalence of NSSI in many countries suggests a universal, cross-cultural affliction.

Nock (2010) suggests that either the prevalence of self-injury in adolescents is increasing, or the figures of adult self-harm are being underreported due to stigmatisation. At the same time, many adolescents who engage in self-harm do not present to hospitals (Kann, Kinchen, Shanklin, Flint, Hawkins & Harris, 2014), and those who do often report previous self-harm behaviours without accessing treatment (Taylor et al., 2007), implying that the prevalence of NSSI behaviour in adolescents may be even higher than is thought.

Some studies have found significant gender and age differentials in NSSI behaviour, suggesting that the phenomenon may be more prevalent in younger, female individuals (Wilkinson et al., 2011; Ross & Heath, 2002; Hawton et al., 2002). Many studies contradict

this finding, indicating a similarity in the prevalence of NSSI in both genders (Favazza & Conterio, 1988; Herpertz, 1995; Klonsky et al., 2003; Lundh et al., 2007; Brunner et al., 2007). With regard to the functions served by NSSI, Laye-Gindhu and Schonert-Reichl (2005) report that females reported engaging in NSSI as a means to quell negative cognitions and anger, and boys report NSSI more frequently as a function of boredom.

Comparative studies among clinical and community samples have produced slightly higher estimates for clinical samples, with an approximate 13% to 45% for community samples of adolescents engaging in NSSI behaviour (Ross & Heath, 2002; Lloyd-Richardson et al., 2007), and between 40% to 60% for clinical samples of adolescents (Briere & Gil, 1998). Thus, it would appear that NSSI behaviours occur more frequently in clinical adolescent samples, although this could be mediated by several methodological variances between studies. What is less clear is whether adolescent self-injurers also report higher deficiencies in interpersonal needs achievement.

Nock (2010) suggests that the definition of self-injury used (i.e. a broader definition may account for higher rates), the assessment measure used (i.e. interview vs. questionnaires), the frequency of self-injury required for clinical significance and the characteristics of the sample (i.e. clinical vs. non-clinical) could all account for varying rates of NSSI behaviour. Additionally, the discrepancy between adult NSSI rates and adolescent NSSI rates could instead signify that the rates of self-injury are indeed increasing among the youth and could also be attributed to reporting bias associated with stigma.

Notwithstanding this possibility, this increasing prevalence of NSSI in adolescents has been highlighted in a multitude of studies (e.g. Nock, 2010; Giletta et al., 2012; Madge et al., 2011), emphasising the need to illuminate this perplexing behaviour in an effort to understand why adolescents engage in self-injury.

2.6. Nonsuicidal Self-Injury and Interpersonal Needs

A great deal of literature exists on human interpersonal behaviour, all supporting the common thread that humans have an innate and pervasive drive to seek out lasting social relationships. Maslow (1948) described 'belongingness' as one of the higher requirements in the fulfilment of the hierarchy of needs, indicating that the need to belong is one of the fundamental motives of the human condition, the unfulfillment of which is referred to by Sabbath (1969) as 'the expendable child'. A deprivation of this need appears to have strong emotional and cognitive effects on health, adjustment and well-being (Baumeister & Leary, 1995), with the pursuit and gratification of these needs allowing for a movement away from psychopathy (Maslow, 1948). The primary function for self-harm is reported as alleviating intense distress, frequently stemming from familial and parental issues, particularly that of parent-child role reversal (Bheamadu et al., 2012).

According to Joiner (2005) the thwarting of the interpersonal need for belongingness and the perception that one is burdensome may result in suicidal ideation. In the presence of repeated exposure to events such as self-injury, Joiner suggests that an individual becomes increasingly tolerant to pain and develops a fearlessness of death and, coupled with the thwarting of interpersonal needs, may engage in a suicide attempt.

Joiner's model has been praised for its contribution to the body of knowledge and is said to offer a more holistic view of suicidal ideation than current epidemiological models which emphasise other psychiatric disorders as the main predictor variables of suicide attempts (Christensen, Batterham, Soubelet & MacKinnon, 2013). Findings from more current studies are in support of Joiner's theory (Van Orden, 2012), with results indicating that thwarted belongingness and perceived burdensomeness predict suicidal ideation and attempt.

Joiner's theory describes two interpersonal constructs: thwarted belongingness and perceived burdensomeness. Thwarted belongingness results in feelings that one has failed to connect or belong, with an unmet need to integrate into a supportive social group (Van Orden et al., 2012). Participants in studies (Muehlenkamp et al., 2013) report perceived rejection and exclusion, significantly less social support and a lack of social cohesion. Van Orden et al. (2012) propose that social isolation, including loneliness, social withdrawal, lack of social support, and loss of a spouse or significant other, are arguably the strongest predictors of suicidal ideation. Although some studies suggest that these variables are directly associated with an increased risk of attempted suicide, Joiner (2005) proposes that NSSI is linked to suicide attempt through its relation to acquired capability through reductions in fear and pain sensitivity. Unmet psychological needs 'to belong' and to form and maintain social relationships may impact on the self-preservation instinct and result in increasing capability to engage in NSSI (Baumeister & Leary, 1995). Some studies have linked interpersonal variables to NSSI, with findings confirming self-injury as a function of distraction from feelings of loneliness (Suyemoto, 1998; Laye-Gindhu & Schonert-Reichl, 2005; Marty, Segal, Coolidge & Klebe, 2012).

These studies and others (Christensen et al., 2013; Wedig & Nock, 2007) have found that the combination of thwarted belongingness and self-injury significantly mediates the continuum from suicide ideation to attempt. Other studies are in support of these findings, with participants reporting perceived or real abandonment and rejection issues within their social contexts (You & Leung, 2012; Yates, Luthar & Tracy, 2008). This suggests once more that problems in interpersonal functioning may have a role to play in the development of NSSI.

The perception of burdensomeness rests on the belief that others 'would be better off if I were gone' (Van Orden, Witte, James, Castro, Gordon & Braithwaite, 2008), resulting

from factors such as illness, unemployment and family conflict (Van Orden et al., 2012). A failure to belong and perceived feelings of burdensomeness may be perpetuated by environments characterised by parental criticism and invalidation (Linehan, 1993). Sabbath (1969) suggests that adolescents who perceive themselves as expendable in the family environment view their parents as being better off if they were gone. A criticism of Sabbath's theory lies in its one-dimensionality, indicating a need for further research to consider family and social environments from a multi-dimensional, transactional perspective between adolescent and caregiver. Wedig and Nock (2007) indicate that in the past, literature has suggested that parents influence their children through neglectful parenting and 'double-bind' messages (2007). Interestingly however, Nock (2009) found positive associations between parental criticism and NSSI, but not between parental expressed emotion and NSSI, while Baetens et al. (2013) found a direct link between NSSI and perceived parental environment, and by extension, both perceived belongingness and burdensomeness. A study of 240 female self-harmers found that 75% agreed that they 'are a burden to others' and 29% indicated the presence of family problems (Favazza & Conterio, 1989). Despite the convenience sampling method utilised in this study resulting in an exclusively female sample, results indicate high levels of perceived burdensomeness in self-injurers. In contrast, however, a study of 75 suicidal inpatients found significant differences in the reasoning behind NSSI and suicidal attempt, with results indicating that patients were inclined to attempt suicide based on making others 'better off', while nonsuicidal self-injurers did not report perception of, or an inclination to relieve burdensomeness through self-injury (Brown et al., 2002). Moreover, Joiner's theory about suicide also posits that hopelessness about thwarted belongingness and perceived burdensomeness, plays an important role in the escalation from passive suicidal ideation to active suicidal behaviours (Hagan, 2017). Tucker et al. (2018) tested this theory and found that interpersonal hopelessness was positively correlated to

suicide ideation, suicide risk, as well as both perceived burdensomeness and thwarted belongingness. Similarly, other authors (Hagan, Podlogar, Chu & Joiner, 2015; Tucker et al., 2018) indicated that whilst perceived burdensomeness and thwarted belongingness could account for suicide risk, the three-way interaction alongside the addition of interpersonal hopelessness accounted for high levels of suicide risk. These authors found that the moderating effect of hopelessness referred only to hopelessness about the specific variables of PB and TB, rather than general hopelessness itself. Interestingly, in a study about the role of hope and self-forgiveness on the impact on PB and TB; Cheavens et al. (2015) found that hope attenuated the relationship between perceived burdensomeness and suicidal ideation. The same relationship was not found for thwarted belongingness. Steeg et al. (2015) studied the exacerbating influence of hopelessness on repeat self-harm practices, and found that individuals with clinically significant levels of hopelessness were more likely to engage in repeat self-injury and suicide within a year.

It would appear then that the pathway from burdensomeness to NSSI may be more complex than suggested by some research.

2.7. Conclusion

The links between interpersonal needs and NSSI, as predicted extensively in the literature, formed the basis for the grounding of this study. The hypothesis is that sustained interpersonal difficulties will correlate with incidents of self-harming behaviour in the adolescent sample. The assumptions in this research rest on Joiner's interpersonal-psychological theory (2005); which suggests that the perception that one's existence is burdensome on others will result in feelings of alienation and social exclusion (Ribeiro & Joiner, 2009), and that the need to belong is a powerful and pervasive human motivation. A sense of social connectedness, belongingness and an understanding of one's place and role in

a social group or context may act as a buffer against self-injury. Similarly, early diagnosis and identification of unmet interpersonal needs may alleviate the need to suppress and smother this negative affect through engaging in self-harm. A deficiency and inability to acquire these needs may lead to an increased capability to engage in self-harm. This escalating capability will enact a ‘catapult-like’ effect, making the transition from self-harm to suicide more attractive.

The aim of this research study is to explore the relationship between interpersonal needs and nonsuicidal self-injury in an attempt to clarify the relationship between these two variables.

CHAPTER THREE: RESEARCH METHODOLOGY

The primary aim of this study is to explore the relationship between interpersonal needs, and the occurrence of nonsuicidal self-injury (NSSI) in a sample of adolescents. The research objectives of the present study are to describe the nature and incidence of NSSI, to explore whether there are age, race, and gender differences in interpersonal needs and NSSI in this sample, and to explore the relationship between interpersonal needs and NSSI.

This chapter provides an overview of the research methodology for the current study. Outlined in this chapter are the research aim, research questions and objectives. Following this, the method of inquiry is detailed, and thereafter the sample characteristics and the research procedure context are discussed. Lastly, the instrumentation, data collection, data analysis and ethical concerns are described.

3.1. Research Aim

The central aim of this research study is to explore the relationship between interpersonal needs and nonsuicidal self-injury.

3.2. Research Objectives

The research objectives of the current study are thus as follows:

- i. To explore and describe the nature and incidence of NSSI in a sample of adolescents.
- ii. To explore whether there are age, race, and gender differences within interpersonal needs (perceived burdensomeness and thwarted belongingness) and NSSI in this sample.
- iii. To explore the relationship between the interpersonal constructs of ‘thwarted belongingness’ and ‘perceived burdensomeness’ and NSSI in this sample.

3.3. Research Questions

The research questions that the researcher endeavours to answer are as follows:

- i. What is the nature, incidence and function of nonsuicidal self-injury (NSSI) in this sample?
- ii. Are there race, age and gender differences in interpersonal needs (perceived burdensomeness and thwarted belongingness) and NSSI in this sample?
- iii. Are the variables ‘thwarted belongingness’ and ‘perceived burdensomeness’ predictors of nonsuicidal self-injury (NSSI) in this sample?

3.4. Method of Inquiry

This study used a quantitative research design encapsulated by exploratory correlational research. Quantitative research uses deductive reasoning where hypotheses are formed, with the aim of subsequent investigation either proving or disproving the hypothesis. This positivist position relies on an objective, singular reality amongst individuals (Newman & Ridenour, 1998). This research design was selected for three reasons: first, quantitative analysis allows a researcher to obtain information from a group of participants and describe these phenomena holistically; in this case to explore the relationships between age, gender, race, religion, and self-harm. Secondly, quantitative analysis allows the findings of research to be compared in order to establish commonalities. And lastly, quantitative research was considered ideal as relationships between variables interpersonal needs, demographic variables and nonsuicidal self-injury can be determined (Gravetter & Forzano, 2009). The literature search was conducted through searches of the relevant online databases and channels, such as EBSCO, Google Scholar, and the UKZN online library.

Regression analysis is required to explore how the various interest variables in a study relate (Newman & Ridenour, 1998) by describing how an independent variable is numerically related to the dependent variable. Regression analysis was therefore considered ideal in this research study, with data being collected in single sitting.

The current study made use of the survey research design method by administering standardised and validated self-report questionnaires to the participants. The advantage of using this research design refers to the ease with which participants are able to remain anonymous, and with which the researcher is able to obtain large amounts of information from a large sample. However, the downside to this research design lies in its reliance on the truthfulness and transparency of the participants. Additionally, incomplete questionnaires may result in inaccurate findings or unusable data (Gravetter & Forzano, 2009). In order to prevent these issues from occurring, it was crucial to ensure that participants were aware of their right to privacy, anonymity and confidentiality before, during and after participation in the research.

3.5. Sampling

Cross-sectional convenience sampling (also known as availability sampling) is a non-probability sampling method which relies on collecting data from population groups who are readily and conveniently available. Non-probability sampling refers to any kind of sample in which the participants are not selected out of the statistical principle of randomness (Terre Blanche, Durrheim & Painter, 2006). The downside to using a non-probability sampling method refers to its representativeness in a general population and limits the control that the researcher has over the sample characteristics. However, considering that the current study is exploratory and does not purport to obtain data from countrywide population representation, convenience sampling was considered ideal. Inclusion criteria were the selection of participants attending school and being in the adolescent age-range. The selected schools were English medium schools, and therefore all participants were able to understand, read, and write in English. The sample was made up of 216 adolescents from three ex model C and government high schools. Sites were selected based on the consent of gatekeepers, and the

availability of participants in the sites. The population at these schools represent varying socio-economic areas within Durban; ranging from working class to middle-class.

3.6. Setting and Sample Characteristics

The study was conducted in Durban, with data collected from three high schools. The selected sample consisted of 216 adolescent learners, made up of 166 females (76.9%) and 50 males (23.1%). The sample consisted of Grade 8 (n = 15), Grade 9 (n = 87), Grade 10 (n = 63), and Grade 11 (n = 51) pupils. In terms of race¹, 42.6% were Black African, 42.6% were Indian, 7.9% were Coloured and 6.9% were White. With regard to age groups, 31.9% of the total sample were between the ages of 13-14 years, 55.6% were between the ages 15-16 years, and 12.5% were 17 years of age or above.

The sample consisted of 216 adolescents ranging between the ages of 13 to 19 years, all of whom were students at the selected schools. The schools were selected based on accessibility, but also, to reflect socio-economic variability. In terms of the ethnographic constitution of the sample, the sample represented the predominant ethnic groups in the country.

3.7. Research Procedure and Context

This study was a sub-study of a larger project undertaken by the researcher's supervisor, who had already secured gatekeeper permission from the Department of Education in keeping with the requirements of the study. The first stage of this researcher's inquiry involved seeking permission from the Biomedical Research Ethics Committee (BREC) of the

¹ The researcher recognizes that the categorisation of race in South Africa is based on unscientific criteria and does not support such race demarcations. However, since race has been shown to be a risk factor in NSSI in South Africa, the variable was included.

university. Following permission from gatekeepers of the sites and the Biomedical Research and Ethics Committee of the researcher's institution, data collection commenced. Three government high schools were used for the data collection in this study. Two fellow (Honours) students were involved in the larger study, and therefore assisted the researcher in collecting data from the various research sites. The researcher (or fellow Honours students connected to the larger research project) collected data during August and September 2017. Once permission was provided from the various schools and gatekeepers, consent was sought from parents. On the day of data collection, the researcher presented a short talk detailing the nature and purposes of the study as well as the ethical guidelines that framed the research (See 3.10 for more detail on this issue). Assent forms were thereafter provided to students prior to participation in the research study.

Provision was made to utilise the school halls for the data collection process. Considering the sensitive nature of the research, it was considered important to conduct the data collection in a familiar environment; therefore the school premises were utilised. Additionally, the presence of the school counselling psychologist assisted in establishing trust with the participants. Following the provision of assent, participants were provided with a research packet which included a biographical questionnaire, Interpersonal Needs Questionnaire (INQ) and Inventory of Statements about Self-Harm (ISAS) questionnaire. These were handed out by the researcher(s) or a registered counselling psychologist employed at the school. The completion of the questionnaires took between 30 and 40 minutes. The researcher was available at all times to answer any questions or concerns, and to monitor for any possible distress arising from the research. Finally, students were thanked for their participation, and reminded of the availability of follow-up counselling at the Centre of Applied Psychology should the need arise.

3.8. Instruments

Three questionnaires were administered to the participants: a) Biographical questionnaire, b) Inventory of Statements about Self-Injury, and c) Interpersonal Needs Questionnaire.

3.8.1. Biographical Questionnaire

The biographical questionnaire asked participants to answer questions related to their race, gender, age, grade, language and religion. No identifying information was required.

3.8.2. Inventory of Statements about Self-Injury (ISAS)

The Inventory of Statements about Self-Injury (ISAS) is a self-report measure that assesses 13 functions of NSSI and the frequency of 12 NSSI behaviours, occurring intentionally and without suicide intent (Klonsky & Glenn, 2008). The first section of the ISAS assesses the lifetime frequency of 12 NSSI behaviours: cutting, biting, burning, carving, pinching, pulling hair, severe scratching, banging or hitting self, interfering with wound healing, rubbing skin against rough surface, sticking self with needles, and swallowing dangerous substances. Participants are asked how many times they have engaged in the each of the behaviours, with the total number of items endorsed indicating the overall frequency of NSSI (Hamza & Willoughby, 2013). If the participants endorse one or more NSSI behaviour, they are instructed to continue with the questionnaire. Five additional questions assess age of onset, the experience of pain during NSSI behaviour, engaging in NSSI alone or in company, the time between the NSSI behaviours, and a desire to stop self-harming (Klonsky & Glenn, 2009).

The second section of the ISAS assesses 13 functions of NSSI. These functions are divided into two categories: intrapersonal and interpersonal functions. Participants are asked

statements beginning with: ‘When I self-harm, I am . . . ’ with options of ‘calming myself down, punishing myself, causing pain so I will stop feeling numb’ etc. Participants are asked to endorse whether the statements are ‘0 = not relevant’, ‘1 = somewhat relevant’, or ‘2 = very relevant’ to them. Items are summed to provide a total possible score of 78. The ISAS has been shown to have good internal consistency and construct validity in previous research (Klonsky & Glenn, 2009), with subsequent findings indicating that the ISAS behavioural and functional scales demonstrate good test-retest stability over one year.

3.8.3. Interpersonal Needs Questionnaire (INQ)

The INQ is based on Joiner’s (2005) Interpersonal theory and is a 12-item self-report scale designed to measure participants’ current perceptions about the extent to which they feel like a burden to others (perceived burdensomeness) and connected to others (thwarted belongingness). There are seven items on the perceived burdensomeness subscale and five items on the thwarted belongingness subscale. Items are summed to provide a total possible score of 49 for burdensomeness and 35 for belongingness. An example of an item measuring perceived burdensomeness: ‘I feel I have failed the people in my life . . . ’ whilst an example of an item measuring thwarted belongingness: ‘I feel disconnected from other people.’ Some items of the scale are reverse scored.

Internal consistency of the subscales ‘perceived burdensomeness’ and ‘thwarted belongingness’ for the INQ has been found to be in the range of .75 to .90 in three samples in a study conducted by Hill and Pettit (2012). Comparable consistency coefficients were found for thwarted belongingness ($\alpha = .85$) and perceived burdensomeness ($\alpha = .89$) in a study by Van Orden et al. (2012). The same study found predictive validity in that there were greater

odds of reporting suicidal ideation one month later if associated with higher levels of both the thwarted belongingness latent variable and the perceived burdensomeness latent variable.

3.9. Data Analyses

At the conclusion of the data collection phase, each questionnaire was provided with an identification number to ensure anonymity of the participants. Data was analysed using the Statistical Package for the Social Sciences (SPSS), version 24. SPSS is a widely-used program for the statistical analysis of data. The data gathered from the three questionnaires in the study were analysed as quantitative data to determine the incidence of NSSI in the sample, the levels of thwarted belongingness (TB) and perceived burdensomeness (PB), and possible demographic differences within the constructs. The main functions and types of NSSI that were endorsed were also analysed. This was obtained by conducting frequency analyses and descriptive statistics to obtain the means and distribution of the scores pertaining to the continuous variables being studied (thwarted belongingness, perceived burdensomeness, intrapersonal and interpersonal functions).

The demographic predictors of the continuous constructs of the study were obtained by conducting multivariate analyses of variance (MANOVAs) and T-tests, while the demographic predictors of NSSI (dichotomised for analysis) were explored using Chi-square analyses. Lastly, a hierarchical binary logistic regression analysis was performed to explore if a relationship exists between thwarted belongingness (TB), perceived burdensomeness (PB), and the functions of self-harm.

3.10. Ethical Concerns

There were three potential ethical concerns in this study: first, the issue of consent, secondly, the issue of confidentiality and thirdly, the issue of psychological harm due to the nature of the study. These ethical dilemmas are addressed in this section:

The study adhered to all ethical codes required by the Biomedical Research Ethics Committee and was given final ethical clearance on 30 June 2017.

Informed consent refers to the right of a client/participant to make informed and autonomous decisions regarding participation in research, and the right to have access to information pertaining to the study (Corey, 2013). Before the collection of data, consent forms were provided to the school principals and parents/guardians of the students and they were provided the opportunity to acquaint themselves with the study. These consent forms detailed the study and described at length the tenets of voluntary participation, the right to withdraw without penalty, and the right to anonymity. Parents were then required to sign these forms to indicate that they provided parental consent for their child/ward to participate in the study, that they understood their children's rights to withdraw and refuse participation, and that they understood the risks involved. During data collection, it was once more emphasised that participation in the study was entirely voluntary, that participants had the right to refuse participation and the right to withdraw from the study without any penalty. It was also made clear that follow-up counselling was available to the participants should the need arise.

Confidentiality is an ethical issue, and universal guidelines state that it is the duty of a researcher not to disclose certain information (Corey, 2013). Due to the sensitive nature of the study, it was emphasised to the students that all the information provided would be kept strictly confidential. Participants who found this distressing were reminded that they had no obligation to participate in the research. Participants were assured of confidentiality and anonymity in the reporting of results.

The issue of psychological harm was considered at length. Due to the nature of the variables in the study it was understood that the information provided was of a sensitive

nature and that participation could cause distress. Attempts to minimise this distress were made by ensuring that either the school counselling psychologist or the researcher was present during data collection in order to make participants feel at ease. In the case of data collected by Honours students involved in the larger study, provision was made that any sign of distress be communicated to the primary researcher, and follow-up counselling at the Centre of Applied Psychology was made available. None of the participants availed themselves of this opportunity.

Once the data was collected, the participants were provided with a short debriefing session in which they were thanked for their contribution to the research and reminded of follow-up counselling should the need arise.

CHAPTER FOUR: RESULTS

4.1. Introduction

The analyses of the data are presented in this chapter. The aim of the present study was to explore the relationship between interpersonal needs and nonsuicidal self-injury in an adolescent population. The research objectives of the present study were to describe the nature and incidence of NSSI, to explore whether there are age, race, and gender differences in interpersonal needs and NSSI in this sample, and to explore the relationships between interpersonal needs and NSSI.

Within this chapter, the demographic characteristics of the sample are provided, followed by descriptive statistics for constructs. Thereafter, an analysis of the demographic variables which are associated with the constructs are provided, with Chi-square tests for independence to determine if there are significant associations between demographic variables and the occurrence of self-harm in this study. A Pearson-moment correlation is presented to indicate the relationship between the variables in an effort to illuminate the relationship between interpersonal needs and the functions of nonsuicidal self-injury. Lastly, a hierarchical binary logistic regression analysis is conducted to determine if the interpersonal needs variables (TB and PB) are predictors of the occurrence of self-harm in this sample.

4.2.1. Demographic characteristics of the sample

The demographic characteristics of the sample are presented in Table 1.

Table 1.**Participants' Demographic Characteristics of Sample**

	Total n = (216) n (%)	Female n = (166) n (%)	Male n = (50) n (%)
Age Group			
13-14	69 (31.9)	60 (27.8)	9 (4.2)
15-16	120 (55.6)	85 (39.4)	35 (16.2)
17 and Over	27 (12.5)	21 (9.7)	6 (2.8)
*Race			
Black African	92 (42.6)	72 (33.3)	20 (9.3)
Indian	92 (42.6)	65 (30.1)	27 (12.5)
White	15 (6.9)	14 (6.5)	1 (0.5)
Coloured	17 (7.9)	15 (6.9)	2 (0.9)
Religion			
Hindu	62 (28.7)	47 (21.8)	15 (6.9)
Christian	132 (61.1)	101 (46.8)	31 (14.4)
Muslim	8 (3.7)	6 (2.8)	2 (0.9)
Shembe	4 (1.9)	2 (0.9)	2 (0.9)
Other	10 (4.6)	10 (4.6)	0 (0.0)
Grade			
Grade 8	15 (6.9)	15 (6.9)	0 (0.0)
Grade 9	87 (40.3)	75 (34.7)	12 (5.6)
Grade 10	63 (29.2)	38 (17.6)	25 (11.6)
Grade 11	51 (23.6)	38 (17.6)	13 (6.0)

4.2.2. Frequency of NSSI in the sample

Participants were asked to indicate if, and how many times they had endorsed NSSI behaviour by: 'cutting, biting, burning, carving, pinching, pulling hair, scratching, hitting self, interfering with wound healing, rubbing the skin, sticking self with needles, swallowing dangerous substances, and other'. These individual behaviours were coded in such a way that any account of NSSI behaviour, whether on singular or multiple occasions, indicated the occurrence of self-harm. The occurrence of NSSI behaviour of the sample (N = 216) is summarised in **Table 2**.

Of the 60.6% of the sample that engaged in self-harm, only 2.7% reported having engaged in self-harm once in their lives; whilst the remaining 57.9% reported having engaged in self-harm from 2 to 4 700 times (M = 118, SD = 430.7)

Table 2. The occurrence of NSSI behaviour in Sample

Self-Harm behaviour	Sex		Total (n = %)
	Male (n = %)	Female (n = %)	
Yes	24 (11.1)	107 (49.5)	131 (60.6)
No	26 (12.0)	59 (27.3)	85 (39.4)

The most common NSSI behaviour reported was ‘interfering with wound healing’ (31%), followed by ‘banging or hitting self’ (26.9%), and ‘cutting’ (24.5%).

With regard to age, some respondents indicated that they were as young as 5 years old when they started self-harming. The majority of the sample indicated that they started to self-harm at about age 13 (25%). Furthermore, 44.1% of respondents indicated that they had self-harmed as recently as the last month prior to the study.

When asked whether they experience physical pain when they self-harm, 46.7% indicated that they sometimes experience pain, while 29% indicated that they do, and the rest that they do not experience physical pain. 73.8% indicated that they were alone at the time of self-harm, and the remainder indicated that they self-injure in the presence of others. 25.5% indicated that less than an hour would elapse after the thought to self-injure before they would act on the urge to self-harm. Of the total sample, 79.5% indicated that they would like to stop self-harming.

Chi-square analyses did not indicate a significant difference between males and females with regard to the types of NSSI behaviours that were endorsed. Frequency analyses within the groups indicated that females were most likely to interfere with wound healing (33.7%), followed by banging their heads (28.3%) and cutting (27%). Males were most likely to engage in pulling of hair (18%).

With regard to the race groups, frequency analyses within the groups indicated that Black African, White, and Indian respondents were most likely to engage in interfering with wound healing, while Coloured respondents were most likely to engage in cutting.

In terms of age, 13-14-year olds were most likely to engage in interfering with wound healing (33.3%), cutting (26.1%), and biting (26.1%). The 15-16-year old respondents were most likely to engage in interfering with wound healing (30.8%), banging their heads (26.7%), and pinching (24.2%). The oldest age group (17 and over) were most likely to engage in banging their heads (37%), followed by burning themselves (29.6%), and rubbing the skin on a rough surface, interfering with wound healing, and pulling hair (25.9%).

4.2.3. Functions of NSSI in the sample

Participants were asked to indicate what function NSSI behaviour served intrapersonal functions and/or interpersonal functions for them. Chi-square analyses were conducted to determine if there existed significant differences with regard to the functions of NSSI that males and females endorse. The findings indicated that males were significantly more likely than females to endorse NSSI to serve the function of ‘pushing the limits’ ($\chi^2(1, n = 216) = 13.3, p = .001$), ‘to fit in’ ($\chi^2(1, n = 216) = 10.07, p = .006$), and ‘to get back at someone’ ($\chi^2(1, n = 216) = 7.61, p = .02$). Findings also indicated that females were more likely than males to endorse NSSI behaviours as a result ‘of reacting to feeling unhappy’ ($\chi^2(1, n = 216) = 7.04, p = .03$), as well as ‘to avoid suicide impulse’ ($\chi^2(1, n = 216) = 5.86, p = .05$).

4.3. Descriptive Statistics of the INQ subscales and the ISAS functions

4.3.1. Reliability, means, and standard deviations of the INQ subscales and the ISAS functions

As can be seen in **Table 3** the Cronbach’s Alpha coefficient of the INQ subscales Perceived Burdensomeness and Thwarted Belongingness are equal to or above 0.7, indicating good internal consistency (Pallant, 2011). The Cronbach’s alpha coefficient of the Interpersonal and Intrapersonal scales of the ISAS are above 0.9, indicating strong internal consistency (Pallant, 2011).

Table 3. Descriptive Statistics of INQ subscales and NSSI functions (N = 216)

	Cronbach's Alpha	M	SD	Score Range
Perceived Burdensomeness	0.85**	20.66	10.73	5.00-35.00
Thwarted Belongingness	0.70**	15.93	7.12	7.00-49.00
Intrapersonal Scale	0.93**	8.10	8.35	0.00-30.00
Interpersonal Scale	0.93**	7.64	9.56	0.00-48.00

** Cronbach Alpha Coefficient significant at > 0.70

The inter-item correlations of the measures of Perceived Burdensomeness and Thwarted Belongingness ranged from .193 to .766, indicating that the items measure the same underlying construct (Pallant, 2011). Similarly, the inter-item correlations of the Intrapersonal and Interpersonal subscales ranged from .407 to .785, indicating that the items measure the same underlying construct.

4.3.2. Distribution of scores for the constructs

The distribution of scores for INQ subscales are summarised in **Table 4**. The data were assessed for normality using the absolute skewness and kurtosis values, as recommended by Kim (2013) and Field (2009) for larger samples of over 200. The scores for all of the measures were found to be normally distributed when using the absolute skew values (absolute skew value < 2; absolute kurtosis value < 7) (Kim, 2013), but were found to be non-normally distributed when using the z-values (*). The assumption of normality set out by Pallant (2011) requires that the skewness and kurtosis z-values fall within the $-3.29 > z < 3.29$ range under the normal curve for large samples ($p < .001$).

Table 4. Distribution of Scores of Interpersonal Needs Construct

Scale	Skewness			Kurtosis		
	Statistic	Std. Error	Z-Value	Statistic	Std. Error	Z-Value
Perceived Burdensomeness	0.620	0.166	3.73*	-0.741	0.330	2.25
Thwarted Belongingness	0.428	0.166	2.58	-0.654	0.330	1.98

* Differs significantly from what would be expected under the normal curve ($p < .001$)

4.3.2.1. Distribution of scores for NSSI and functions of NSSI

The distribution of scores for NSSI frequency and ISAS functions are summarised in

Table 5. Using the parameters set out by Kim (2013), the scores for all of the measures were found to be normally distributed (absolute skew value < 2 ; absolute kurtosis value < 7), but some of the z-values (*) fell outside of the parameters of $-3.29 > z < 3.29$, set out by Pallant (2011).

Table 5. Distribution of Scores NSSI frequency and ISAS functions

Scale	Skewness			Kurtosis		
	Statistic	Std. Error	Z-Value	Statistic	Std. Error	Z-Value
Intrapersonal Scale	0.551	0.166	3.32*	-1.002	0.330	3.04
Interpersonal Scale	1.194	0.166	7.19*	0.441	0.330	1.34
NSSI Frequency	7.174	0.166	43.22*	64.60	0.330	195.76*

* Differs significantly from what would be expected under the normal curve ($p < .001$)

However, it must be noted that the ISAS measures the occurrence and frequency of self-harm in a community sample in the present study. Consequently, a large portion of the sample did not endorse self-harm behaviour at all, and therefore contributed to a pointy, heavy-tailed distribution which lent itself to very high positive kurtosis values (Field, 2009) on the NSSI Frequency score. The NSSI frequency score was therefore dichotomised into a categorical variable (no = 0; yes = 1) and used as such in all subsequent analyses.

Field (2009) also cautions that large samples will often give rise to small standard errors, and therefore may result in significant values arising from small deviations from normality. Taking this into account, Field (2009) recommends that big samples of over 200 rather ignore a specific criterion, and instead apply a visual identification of normality, and look at the absolute skewness and kurtosis values. In order to normalise the data further, a square root transformation was conducted on the INQ subscales and the NSSI functions, as can be seen in **Table 6**.

Table 6. Distribution of Transformed Scores of Subscales: Square Root

Scale	Skewness			Kurtosis		
	Statistic	Std. Error	Z-Value	Statistic	Std. Error	Z-Value
Perceived Burdensomeness	0.294	0.166	1.77	-1.057	0.330	3.20
Thwarted Belongingness	0.037	0.166	0.22	-0.859	0.330	2.60
Intrapersonal Scale	0.016	0.166	0.10	-1.676	0.330	5.08*
Interpersonal Scale	0.384	0.166	2.31	-1.255	0.330	3.80*

* Differs significantly from what would be expected under the normal curve ($p < .001$)

As can be noted from Table 6, the absolute skewness and kurtosis scores were further normalised following the square root transformation, and the z-values all fell within the parameters ($-3.29 > z < 3.29$; $p < .001$), with the exception of the Intrapersonal and Interpersonal kurtosis z-values which were still not normal after the square root transformation. Although the absolute skewness and kurtosis values outlined in **Tables 4** and **5** are within the parameters of < 2 and < 7 respectively (Kim, 2013), the square root transformation appeared to normalise the data further and was therefore used for all subsequent analyses reported in this study.

4.4. Demographic variables and the Constructs of this Study

4.4.1. Age and race differences in scores on the interpersonal needs subscales

A two-way between-groups multivariate analysis of variance (MANOVA) was performed to investigate age and race differences in the experience of Perceived Burdensomeness (PB) and Thwarted Belongingness (TB). The independent variables were race and age. Participants were divided into groups according to their ages: Group 1: 13-14 years, Group 2: 15-16 years, and Group 3: 17 years and over. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance, covariance matrices, and multicollinearity, with no serious violations noted. Pallant (2011) reports that the significance levels need to be less than or equal to .05 to find out whether the interaction is significant. No statistically significant difference was found between the age

groups on scores for PB and TB, $F(4, 406) = .619, p = .649$; Wilks' Lambda = .99; partial eta squared = .006. When the results were considered separately using a Bonferroni adjusted level of .025, no statistically significant effects for age were found on PB, $p = .292$; or TB, $p = .698$.

Similarly, no statistically significant difference was found between the race groups and scores on PB and TB, $F(6, 406) = 1.806, p = .097$; Wilks' Lambda = .95; partial eta squared = .026. When the results were considered separately using a Bonferroni adjusted level of .025 no statistically significant effects were found for race on Perceived Burdensomeness, $p = .048$; or Thwarted Belongingness, $p = .070$. An inspection of the between-subject effects noted no statistically significant differences in the effect of age on PB for various races ($p = .627$) and TB for various races ($p = .411$).

4.4.2. Age and Race differences in ISAS functions

A two-way between-groups multivariate analysis of variance (MANOVA) was performed to investigate age and race between-group differences in the functions of nonsuicidal self-injury: intrapersonal and interpersonal. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance, covariance matrices, and multicollinearity, with no serious violations noted. There were no statistically significant differences between the age groups on the ISAS functions (Intrapersonal and Interpersonal), $F(4, 406) = .777, p = .541$; Wilks' Lambda = .99; partial eta squared = .008. When the results were considered separately using a Bonferroni adjusted level of .25, no statistically significant effects for age were found on the Intrapersonal scale, $p = .476$; or the Interpersonal scale, $p = .850$.

Similarly, no statistically significant differences were found between the race groups on the ISAS functions (Intrapersonal and Interpersonal), $F(6, 406) = 1.995, p = .065$; Wilks'

Lambda = .94; partial eta squared = .029. When the results were considered separately using a Bonferroni adjusted level of .025, no statistically significant effects were found for race on the Intrapersonal scale, $p = .148$, or the Interpersonal scale, $p = .468$.

The results of the between-subject effects noted no statistically significant differences in the effect of age on the Intrapersonal scale for various races ($p = .153$). No significant effects of age were found on the Interpersonal scale for the difference race groups ($p = .786$).

4.4.3. Gender differences in the INQ subscales and ISAS functions

Independent Samples t-tests were conducted to determine if there was a significant difference in the mean scores for Perceived Burdensomeness, Thwarted Belongingness, Intrapersonal subscale, and the Interpersonal subscale, for males and for females.

4.4.3.1. Gender differences on scores of the interpersonal needs subscales

The Levene's Test of Equality of Error Variances for the Perceived Burdensomeness subscale indicated a significance level of .013. Resultantly, inferences for this subscale were drawn from the Equal Variances Not Assumed table, as recommended by Pallant (2011) for significance levels below .05.

The results indicated that there were no significant gender differences in scores for perceived burdensomeness; males ($M = 4.22$; $SD = .99$) and females ($M = 4.45$; $SD = 1.21$; $t(98) = -1.35$; $p = .18$ (2-tailed). The Levene's Test of Equality of Error Variances for the Thwarted Belongingness subscale indicated a significance level of .603. Resultantly, inferences for this subscale were drawn from the Equal Variances Assumed table, as recommended by Pallant (2011) for significance levels above .05. The results indicated that there were no significant gender differences on scores for Thwarted Belongingness; males ($M = 3.80$; $SD = .87$) and females ($M = 3.92$; $SD = .92$; $t(214) = -.81$; $p = .42$ (2-tailed).

4.4.3.2. Gender differences in ISAS functions

The Levene's Test of Equality of Error Variances for the Intrapersonal subscale indicated a significance level of .928. Therefore, inferences for this subscale were inferred from the Equal Variances Assumed table, as recommended by Pallant (2011) for significance levels above .05. The results indicated that there were no significant gender differences on scores on the Intrapersonal subscale; males ($M = 1.82$; $SD = 1.89$) and females ($M = 2.19$; $SD = 1.91$; $t(214) = -1.19$; $p = .24$ (2-tailed)).

The Levene's Test of Equality of Error Variances for the Interpersonal subscale indicated a significance level of .001. Resultantly, inferences for this subscale were inferred from the Equal Variances Not Assumed table, as recommended by Pallant (2011) for significance levels below .05. The results indicated that there were no significant gender differences in scores on the Interpersonal subscale; males ($M = 2.17$; $SD = 2.24$) and females ($M = 1.90$; $SD = 1.85$; $t(70) = .77$; $p = .44$ (2-tailed)). The results indicate that both males and females in this sample endorsed the Intrapersonal and Interpersonal functions of NSSI to an equal degree.

4.5. Demographic Variables associated with Nonsuicidal Self-Injury

A Chi-Square test for independence was conducted to explore the relationship between the incidence of nonsuicidal self-injury and the demographic variables of gender, race, age group, and religion respectively.

4.5.1. Gender and nonsuicidal self-injury

A Chi-square test for independence (with Yates Continuity Correction) was calculated comparing the prevalence of nonsuicidal self-injury in males and females. A significant association was found between gender and the occurrence of nonsuicidal self-harm in this population, $\chi^2(1, n = 216) = .37$, $p = .05$, $\phi = .14$. This indicates that females were more

likely to report having engaged in nonsuicidal self-harm behaviour (64.5%) than males (48.0%).

4.5.2. Age and nonsuicidal self-injury

A Chi-square test for independence (with Pearson Chi-Square) was calculated comparing the incidence of nonsuicidal self-harm in the various age groups. Participants were divided into groups according to their ages: Group 1: 13-14 years, Group 2: 15-16 years, and Group 3: 17 years and over. No significant association was found between age and the prevalence of nonsuicidal self-harm in this sample, $\chi^2(1, n = 216) = .52, p = .77, phi = .05$. This shows that participants from the various age groups were equally likely to report having engaged in nonsuicidal self-harm behaviour (Group 13-14 years: 60.9%; Group 15-16 years: 59.2%; Group 17 and over: 66.7%).

4.5.3. Race and nonsuicidal self-injury

A Chi-square test for independence (with Pearson Chi-Square) was calculated comparing the prevalence of nonsuicidal self-harm between the race groups in this sample. There was no significant association found between race and the occurrence of nonsuicidal self-harm in this population, $\chi^2(1, n = 216) = 3.84, p = .28, phi = .13$. This indicates that participants belonging to the different race groups were equally likely to report having engaged in nonsuicidal self-harm behaviour (Black African: 60.9%; Indian: 55.4%; White: 73.3%; Coloured: 76.5%). Therefore, there appears to be no significant relationship between race and the occurrence of NSSI in this sample.

4.6. Correlations between INQ subscales and ISAS functions

A correlation analysis between the ISAS functions (Intrapersonal and Interpersonal subscales) and the INQ subscales (Perceived Burdensomeness and Thwarted Belongingness)

was calculated using a Pearson’s product-moment correlation coefficient. The strength of these relationships was determined using the parameters set out by Cohen (1988; as mentioned in Pallant, 2011): small: $r = .10$ to $.29$; medium: $r = .30$ to $.49$; large: $r = .50$ to 1.0 . The results of the Pearson’s product-moment correlation are outlined in **Table 7** below.

Table 7. Correlations Between INQ subscales and ISAS functions

Variable	Correlations			
	1	2	3	4
1. PB	-			
2. TB	0.582**	-		
3. Intrapersonal	0.470**	0.286**	-	
4. Interpersonal	0.310**	0.221**	0.823**	-

** Correlation is significant at the 0.01 level (2-tailed)

As can be seen in the table, a significant positive correlation exists between Perceived Burdensomeness (PB) and Thwarted belongingness (TB). There were also moderate, positive correlations between PB and the Intrapersonal subscale and the Interpersonal subscales. The analyses indicated weaker relationships between TB and the Intrapersonal subscale and the Interpersonal subscale.

4.7. Interpersonal Needs as Predictors of Nonsuicidal Self-Injury

A hierarchical binary logistic regression analysis was conducted to assess the ability of two measures: Perceived Burdensomeness (PB) and Thwarted Belongingness (TB) to predict the occurrence of NSSI after controlling for the influence of gender, (the only variable found to be significantly associated with the occurrence of NSSI in the Chi-square analyses).

Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity. The occurrence of self-harm was regressed on gender in Step 1, with Perceived Burdensomeness and Thwarted Belongingness being added at Step 2 (see Table 8).

Table 8: Binary logistic regression model predicting NSSI behaviour

Step	Variable	OR	95% CI	P	Model			Change	
					R ²	X ² (df)	P	ΔR ²	P
1	(Constant)	0.92		.002	.027	4.29 (1)	.038	.027	.038
	Gender	1.97	1.04-3.72	.038					
2	(Constant)	.014		.000	.259	45.90 (3)	<.001	.232	.038
	Gender	1.88	0.94-3.79	.075					
	PB	2.18	1.54-3.09	.000					
	TB	1.26	0.83-1.90	.276					

Note. Significant predictors are presented in **bold**, $p < 0.05$. PB = Perceived Burdensomeness. TB = Thwarted Belongingness. OR = odds ratio. CI = confidence interval. R² = Variance.

In Step 1, gender explained 2.7% of the variance in NSSI ($\Delta R^2 = .027$, $p < .05$), with the odds ratio indicating that females were twice as likely to report having engaged in NSSI behaviour than their male counterparts.

Following inclusion of the independent measures (PB and TB) at Step 2, the total variance explained by the model as a whole was 25.9% ($\Delta R^2 = .259$, $p < .001$). This finding represents a change in variance of 23.2% after controlling for the effects of gender. The results also indicated a significant main effect of PB (OR = 2.18, $p < .001$), but no significant main effect of TB (OR = 1.26, $p = .276$). The odds ratio of 2.18 for PB, suggests that respondents who reported feelings of Perceived Burdensomeness were twice as likely to report NSSI than respondents who did not.

CHAPTER FIVE: DISCUSSION

5.1. Introduction

The primary research aim of this study was to explore the relationship between interpersonal needs and the occurrence of nonsuicidal self-injury (NSSI) in a sample of adolescents. The demographic variables included in the study were age, race (Black African, Coloured, Indian, White), gender, and religion (Christian, Hindu, Muslim, Shembe, other). The research objectives of the present study were to describe the nature and incidence of NSSI in an adolescent sample, and to explore whether there are age, race, and gender differences in interpersonal needs and NSSI in this sample, and to explore the relationship between interpersonal needs and NSSI. The main findings of the study are discussed below in relation to the extant literature.

5.2. Characteristics of Nonsuicidal Self-injury in the Study

5.2.1. Incidence of nonsuicidal self-injury in the sample

Findings from the analyses indicated that some demographic variables were related to the occurrence of nonsuicidal self-injury (NSSI) in the sample. An analysis of the occurrence of NSSI in this sample indicated that 60.6% of the sample endorsed single or multiple acts of nonsuicidal self-injurious behaviour. Lundh et al. (2007) reported similar results with 65.5% of their adolescent sample reporting at least one engagement in self-injury. Other authors report slightly lower percentages, from 25% (Plener et al., 2009) to 46.5% (Lloyd-Richardson et al., 2007) of participants confirming at least one act of self-injury in the past year. Xavier et al. (2016) reported a similar prevalence (20%) of NSSI in an adult Portuguese sample. Conversely, other authors (Hawton et al., 2002; Klonsky, 2010) reported much lower percentages, ranging between 5.9% and 6.9%. One of the possible explanations for this discrepancy may refer to the definition of NSSI utilised in various studies (Laye-Gindhu &

Schonert-Reichl, 2005; Herpertz, 1995) as being limited to one behaviour (Taylor, Peterson, & Fischer, 2012), multiple specific behaviours (burning, pulling hair, cutting etc) (You & Leung, 2012), or as being inclusive of suicidal intent (Giletta, 2012, Klonsky et al., 2003; Pillay & Pillay, 1987; Patton, Harris, Carlin, Hibbert, Coffey & Schwartz, 1997), or without suicidal intent (Taylor et al., 2012).

Lundh et al., (2007) suggest that the high prevalence of self-injury (65.9%) found in the study may be attributed to the large number of self-harm behaviours asked for in the questionnaire, while Gratz (2001) cautions that a selection bias of schools may have resulted in a higher rate of self-injury than in previous studies.

Of the percentage of respondents in this study who indicated that they had engaged in NSSI in this sample (60.6%), only 2.7% of these reported having engaged in self-injury once, while the remainder confirmed from 2 to 4 700 acts of self-injury in their lives. A possible explanation for the significant percentage of the sample indicating a continuous self-injury trend may relate to Joiner's (2005) theory, according to which increasing acts of NSSI result in a heightened capacity to engage in suicidal behaviour through repeated exposure by habituation to painful experiences. Therefore, it can be theorised that the first act of self-injury merely acts as a gateway through which individuals go on to enact increasingly lethal acts of self-harm. However, it remains pertinent to mention that the majority of respondents who reported a continuation and escalation of self-injury confirmed behaviours such as 'interfering with wound healing and rubbing their skin on a rough surface' which are regarded as less pathological types of self-injury (Lloyd-Richardson et al., 2007).

Furthermore, the respondents in the present sample ranged from 13 to 19 years of age, a time of life characterised by psychosocial and physiological change. Romeo (2013) explains this link in the context of hormonal responsiveness, indicating that adolescence is marked by significant shifts in hypothalamic-pituitary-adrenal (HPA) axis reactivity, resulting in

heightened stress-induced hormonal responses. He reported that these stress-sensitive brain areas may be vulnerable to these shifts and may contribute to the increase in certain psychological challenges or behaviours, e.g. anxiety, depression, and self-injury. Authors in the psycho-endocrinology field (Colich, Kircanski, Foland-Ross & Gotlib, 2015) state that HPA-axis reactivity interacts with the pubertal stage of development, and that the complex transition into adulthood usually balances these rich hormonal processes. The author indicated that a failure of these stress reactivity processes to return to a level of functional homeostasis in adulthood, as assessed by cortisol reactivity, is often a predictor of depression; particularly in females. It can be deduced that the pubertal stage is a high-risk period in which individuals develop a certain stress responsivity, in which some may reach an equilibrium, and others may continue on a path of decreased tolerance to stress, which may result in ‘corrective’ actions such as NSSI during this period. It is therefore important to note that although most self-injuring adolescents in this study reported multiple acts of NSSI, further research needs to be conducted to determine if ageing and maturation beyond adolescence impact on this high percentage.

5.2.2. Nature and frequency of nonsuicidal self-injury behaviour in the present sample

The study findings indicated the endorsement of various types of self-injury in this study. The Inventory of Statements about Self-injury (ISAS) lists 12 NSSI behaviours: ‘Cutting, biting, burning, carving, pinching, pulling hair, severe scratching, banging or hitting self, interfering with wound healing, rubbing skin against rough surface, sticking self with needles, and swallowing dangerous substances.’ The most common NSSI behaviour reported in the present study was ‘Interfering with Wound Healing’ (31%), followed by ‘Banging or Hitting Self’ (26.9%), and ‘Cutting’ (24.5%). Similarly, both Favazza (1998) and Favaro, Ferrara and Santonastaso (2007) found that the most prevalent methods of self-injury were scratching, followed by cutting, and hitting oneself. Studying the same three methods of self-injury,

Plener et al. (2009) found that cutting was the most significantly endorsed behaviour, while no statistically significant differences were found for scratching and hitting oneself.

Whilst not significant, frequency analyses within the separate groups in the present study indicated that females tended to prefer to interfere with wound healing (33.7%), followed by banging their heads (28.3%), and cutting (27%). Males tended to engage in pulling of hair (18%) but were slightly less likely to engage in cutting (16%). Other studies confirm the finding that females are more likely to engage in cutting (Lundh et al., 2007; Laye-Gindhu & Schonert-Reichl, 2005) than males; however, contrary to the findings of this study, Baetens et al. (2015) found that males were more likely to bang or hit themselves. An alternative explanation is that these latter behaviours are considered to be more socially acceptable methods of self-injuring and have not been researched to the extent that cutting as a method of self-injury has been (Klonsky & Olino, 2008).

A comparative paucity of information exists on the impact of race on the methods of self-injury endorsed by a self-harming sample. The present study found that whilst all races were similarly inclined to interfere with wound healing, frequency analyses indicated that Coloured respondents appeared to endorse more cutting behaviours. The preference for a more invasive and potentially harmful method of self-injury may be explained by Joe et al. (2008), who studied the prevalence of non-fatal suicidal behaviour in a sample of South Africans. The study found that an increased prevalence of suicide ideation in Coloured communities may possibly be perpetuated by the unique stressors faced post-apartheid, leading to identities fraught with tension and a lack of belongingness. If one purports that increased nonsuicidal self-injury behaviour results in increasingly lethal self-harming acts, as suggested by Joiner (2005); the increased prevalence of Coloured respondents who reported cutting may be explained as an example of this trend.

5.2.3. Functions of nonsuicidal self-injury in the present sample

The findings of the present study provide insight into the functions that self-injury serves in this sample. Thirteen functions of NSSI were divided into a two-factor model: Intrapersonal and Interpersonal functions. The most commonly endorsed reasons for NSSI in the present sample included releasing emotional pressure, expressing anger to self for being worthless or stupid, to calm down, to reduce anxiety, frustration, and anger, and reacting to feeling unhappy. What is interesting to note is that all of the most-endorsed functions of self-injury serve intrapersonal functions (e.g. to regulate affect, punish oneself, etc). Theoretical models (e.g. Nock and Prinstein's four-factor model; Nock, 2010; Nock & Prinstein, 2004) of NSSI posit that self-injury is maintained through reinforcement processes, indicating either positive or negative reinforcement in the intrapersonal or interpersonal domains. Nock's model posits that if the reward of NSSI acts outweigh the pain of engaging in NSSI, the behaviour will be repeated and will increase in frequency. Findings from other studies support the four-function model (Muehlenkamp et al., 2013; Lloyd-Richardson et al., 2007), suggesting that both intrapersonal precedents and interpersonal precedents need to be monitored.

Similarly, the self-punishment hypothesis theorises that people engage in self-harm as a means of affect regulation and that it serves as the medium through which self-punishment is achieved (Nock, 2010). This is illustrated by self-injurers carving words like 'disgrace' and 'failure' in their skin, proving self-punishment to be among the consistent reasons for NSSI (Nock & Prinstein, 2004). The findings of this study support the notion that respondents engaged in NSSI as a means of increasing desired feelings (positive intrapersonal reinforcement) or as a means of decreasing aversive feelings (negative intrapersonal reinforcement) (Nock, 2010; Kortge, Meade & Tennant, 2013); i.e. to generate or reduce certain affective states.

Gratz, Conrad and Roemer (2002) and other authors (Laye-Gundhu & Schonert-Reichl, 2005; Suyemoto, 1998) also corroborate the finding that affect regulation serves as the most compelling function of NSSI. According to these studies, self-injurers reported that emotional regulation served as a function for self-injury to mitigate feelings of loneliness, and negative feelings toward the self (Laye-Gindhu & Schonert-Reichl, 2005). These intra-punitive functions were reported to manifest as a result of the reduction of seemingly negative emotions, e.g. anger, loneliness, sadness, or the increase of seemingly positive emotions, e.g. relief. A study by Kemperman, Russ, and Shearin (1997), required that 38 female inpatients rate affect before and after self-injurious behaviour, and found that inpatients experienced a positive change in affect after engaging in NSSI acts. Consistent with the findings of this study, support was found to suggest that the primary function of NSSI is the reduction of unpleasant affective states. While the findings of this study echo the results of many other studies, the generalisability of these findings is called into question on account of the use of a purely clinical population sample. Similarly, a study by Briere and Gil (1998) reported that 77% of childhood abuse victims reported a net decrease in negative affect following self-harm; however, the sample was overrepresented by abuse victims, possibly resulting in distorted findings stemming from sampling bias.

While the present study found no gender differences in the endorsement of NSSI functions; Laye-Gindhu and Schonert-Reichl (2005) found that males were more likely to self-injure out of boredom, while females were more likely to engage in NSSI as a means of self-punishment. Ross and Heath (2002) attempt to explain the higher prevalence of NSSI in the female population by discussing a prominent theory of self-mutilation in terms of which self-injury serves as a function through which individuals attempt to rid themselves of overwhelming affect, e.g. anger. The same authors indicate that the outward expression of anger is seen as a socially acceptable way for males to express emotion and is a function of

the gender roles assigned to them which views aggression as playing a salient role in the construction of masculinity. Conversely, since the outward expression of emotion is viewed as unacceptable for females; the emotion is often turned inward, manifesting in self-punitive practices.

In addition to the finding by Ross and Heath (2002) that the regulation of emotion is a powerful motivator of NSSI, Lloyd-Richardson et al. (2007) also found a strong endorsement of intrapersonal functions. Furthermore, Ciairano, Kliewer, Bonino and Bosma (2008) found that while substance use appears to primarily serve a social role, self-injury presents itself as a different type of behaviour. Although adolescence is a period in which individuals attempt to forge lasting relationships and therefore place emphasis on external sources of emotional connection, researchers (Giletta et al., 2012; Ciairano et al., 2008; Klonsky & Olino, 2008) are of the opinion that NSSI may serve primarily internal functions. Similarly, Klonsky et al. (2003) studied self-injury in a nonclinical military population and found that the most commonly cited function was ‘when I am tense, I self-harm to calm myself down’.

The results of the present study corroborate those of another South African study by Pretorius (2011) in which the majority of participants reported a reduction of negative emotions following an episode of NSSI.

Baetens et al. (2015) found that parental criticism provided a veritable breeding ground for self-injury through the creation of self-critical internal schemas. However, these authors indicated that the functions that self-injury served in the sample referred rather to the reduction of negative feelings due to an internalised self-critical cognitive style perpetuated by a toxic home environment, as opposed to just wanting to express painful emotions to the external world.

5.2.4. Summary of findings on nonsuicidal self-injury in this study

In summary, it was found that the majority of respondents endorsed multiple acts of NSSI including ‘interfering with wound healing, banging and hitting oneself, and cutting behaviours’. Results indicated that the majority of respondents endorsed intrapersonal functions of self-harming behaviour – although the functions appeared to be equally distributed amongst females and males. The implications of these findings suggest that tailored treatment models in alignment with the functions that NSSI serves are necessary, potentially leading to an improved understanding and conceptualisation of the treatment of NSSI.

5.3. Demographic Variables Associated with the Constructs of the Study

5.3.1. Demographic variables associated with nonsuicidal self-injury

The only demographic variable which was significantly associated with the occurrence of NSSI in this sample was gender, with females reporting a higher occurrence of NSSI (65.4%) than males (48%). The association between NSSI and being female has been substantiated by a number of studies (Hawton et al., 2002; Ross & Heath, 2000; Brunner et al., 2007; Madge et al., 2011), with some of the studies reporting that females self-injure between two (Ross & Heath, 2000; Brunner et al., 2007) to four times (Hawton et al., 2002) more than males. Other studies have suggested that gender serves a less predictively salient role in the occurrence of self-injury, with the implication being that neither sex is more likely to engage in the behaviour (Briere & Gil, 1998; Lundh et al., 2007; Baetens et al., 2015).

Studies appear divided on the impact of gender on the occurrence of NSSI; however, the results of the present study suggest that females are more likely to engage in self-injury. An exploration of the functions that self-injury serves in males and females respectively, may offer varying explanations for the divided research on the impact of gender. Whitlock et al.

(2011) provide a twofold explanation for the phenomenon of female-dominated self-injury practices, indicating that male-preferred forms of NSSI typically present as outward displays of aggression and anger and may resultantly mask serious intent. Furthermore, these authors suggest that males are more likely to engage in self-injury as a function of sensation-seeking as a result of impulse and anger-control factors (Strüber, Lück & Roth, 2008). These differences may explain why NSSI is viewed as a female behaviour, as sensation-seeking and anger-control are not seen as the prototypical forms of NSSI and are therefore often afforded less attention (Whitlock et al., 2011).

It is lastly important to bear in mind the gender roles typically assigned to males and females by society, in which females were historically viewed as emotional, illogical and slaves to their biological weaknesses (Weitz, 1998). Men were viewed as strong – a concept tending to involve the avoidance of emotional expression in line with ‘cowboys don’t cry’ rhetoric. Although concepts of gender identities have since evolved, remnants of assigned roles remain. The implications of this may be that males are less likely to report instances of NSSI in an attempt to align with societal norms of strength and stoicism, which may mask the true prevalence of this behaviour.

No significant associations were found between the other demographic variables in the study (race and religion), and the occurrence of NSSI. This finding, corroborated by other cross-national studies (Ross & Heath, 2002: in Canada; Giletta et al., 2011: in Italy, Netherlands, and US) possibly suggests that self-injury is becoming a widespread, inclusive contagion amongst adolescents of all races and religions across the world. This serves to caution that self-injury appears to affect all populations, and that no one is immune or less at risk.

5.3.2. Demographic variables associated with INQ constructs

5.3.2.1. Demographic variables associated with Perceived Burdensomeness (PB)

The findings of the present study indicated that none of the demographic variables explored in this study (age, race, gender, religion) were associated with the perception and experience of PB in this sample. An interesting study (Hill & Pettit, 2012) found that an individual's sexual orientation predicted the level of PB through perceived rejection and ostracisation as related to societal norms of sexual preference, a finding substantiated by other studies (Haas, Eliason, Mays, Mathy, Cochran & D'Augelli, 2010; Woodward, Wingate, Grey & Pantalone, 2014). These findings may pave the way for future research, as the implication is that PB rests on perceptions of liability and 'otherness'; rather than on simple, linear definitions of binary groupings.

In support of the findings of the present study, Cukrowicz, Cheavins, Van Orden, Ragain & Cook, (2011) and Bryan (2011) found no indication to suggest a relationship between PB and the variables of gender or race, suggesting an independence of PB from demographic factors. These authors caution, however, that future research is to be directed toward the experience of various cultural entities of PB, as cultures that emphasise family values and expectations above that of individual achievement may be more susceptible to feelings of perceived burdensomeness. Theoretically, it may therefore be surprising that a sample from South Africa, characterised by political upheaval and a wide variation in culture and race, did not confirm a relationship between PB and demographic variables. It can be surmised that PB is a non-discriminatory universality, and that people of all races, religions, and gender, may similarly experience self-hatred and guilt. Considering that all people exist within an interpersonal realm of relationships and some sense of social interaction, it is suggested that all people are equally capable of feeling that their existence means less to others than their demise.

5.3.2.2. Demographic variables associated with Thwarted Belongingness

The current study found that none of the demographic variables (race, age, religion, gender) explored in this study were significantly related to TB. Other studies also found no association between demographic variables and TB (Bryan, 2010; Wolford-Clevenger, Smith, Kuhlman & D'Amato, 2016), while Christensen et al. (2013) found that TB significantly predicted suicidal ideation in males, but not in females. Furthermore, the same authors indicated that both PB and TB were strongly predictive of suicidal ideation in younger groups (in their 20s), but that the variance tended to decline with age. Van Orden et al. (2012) indicate that TB is characterised by a lack of reciprocal care and the subsequent experience of loneliness, and may be better predicted by interpersonal conflict (Silva, Ribeiro & Joiner, 2015). The experience of interpersonal conflict is pervasive, occurring despite age, race, gender, or religion, which may explain why demographic variables did not significantly predict the experience of TB amongst adolescents.

It would appear that adolescence presents as a particularly pernicious stage, characterised by social changes and identity discovery which may impact significantly on the experience of TB and PB. It is to be noted that this study focused only on adolescents within a particular age group, and it is therefore suggested that future research considers exploring whether age plays a significant role in the perception of TB and PB in the South African context.

5.4. Relationships between the INQ constructs and Nonsuicidal Self-injury

Joiner (2005) suggests that increasing acts of self-injury in the presence of thwarted belongingness or feelings of burdensomeness will result in an acquired capability to enact lethal self-injury. Findings from the regression analyses indicated that one of the constructs of the INQ, perceived burdensomeness (PB), was associated with the prevalence of nonsuicidal

self-injury (NSSI). The results of the present study suggest that no significant relationship exists between thwarted belongingness (TB) and NSSI in the sample.

5.4.1. Relationship between Perceived Burdensomeness and nonsuicidal self-injury

Perceived Burdensomeness (PB) refers to the feeling that one's existence is a burden and liability to the well-being of others (Bryan, 2010). The finding that PB is significantly related to NSSI has been extensively corroborated by research (van Orden, Witte, Gordon, Bender & Joiner, 2008; Muehlenkamp et al., 2013; Hill & Pettit, 2012; Cukrowicz et al, 2011; Chu, Rogers & Joiner, 2016; Slee et al., 2008). In a recent study (Mbroh, Zullo, Westers, Stone, King & Kennard, 2018) on the relationship between NSSI and suicidal ideation, it was found that depressive symptomatology greatly mediated the impact of TB on NSSI, but that the impact of PB remained significant within the sample. Similarly, Chu et al. (2016) found that while high levels of TB were associated with NSSI, PB presented as a greater risk factor for long-term suicide risk within their sample.

Anestis, Khazem and Law (2011) suggested that the dysregulation of emotion (low distress tolerance and negative urgency) and the experience of PB are difficult to disentangle, with discovering the antecedents to NSSI being a challenging task. Contrary to expectation, these authors found that high distress tolerance was associated with the occurrence of NSSI. This has implications for the present study, as it aligns with Joiner's Interpersonal Theory of Suicide which posits that in the presence of suicide ideation an individual will have the capability to enact suicide only if they are repeatedly exposed to pain through self-injury. Perhaps, as suggested by Ribeiro and Joiner (2009), high distress tolerance is required in order to physiologically and psychologically habituate to pain; and once acquired, in the continued presence of emotional factors such as PB, may escalate to more lethal acts of self-injury through acquired capability. This may be indicated for further research.

Wedig and Nock (2010) postulate that parental criticism significantly predicts the occurrence of adolescent self-injury in their sample, more so than self-criticism. Linehan (1993) found that the link between PB and NSSI is in part accounted for by psychopathology, similarly suggesting that an invalidating family environment served to facilitate the development of NSSI, and in turn, borderline personality disorder. Fiese et al. (2008) support the finding that PB is significantly related to the experience of anxiety, quality of life, and the experience of rejection in the family home, whilst a study by Kalpakci, Venta, and Sharp (2014) found that family conflictual relations are significantly associated with PB.

However, if looked at through a different lens, borderline personality disorder is an identifying label for a cluster of traits which often arise from invalidating family environments and trauma, leading to feelings of chronic emptiness and unstable relationship patterns, with sufferers often engaging in self-injury (APA, 2013). In the present study, respondents who experienced PB were twice as likely to engage in NSSI behaviour than those who did not perceive burdensomeness. Therefore, it may be surmised that PB plays a pivotal role in the enactment of self-injurious behaviour and may provide for an environment in which psychopathology such as borderline personality disorder may manifest, explaining the frequent history of self-harm in these individuals.

An alternative explanation for this link may be accounted for by Chu et al. (2015), who proposed that NSSI may also conversely bring about feelings of shame (Wong, Kim, Nguyen, Cheng & Saw, 2014) and guilt (Arditte, Morabito, Shaw & Timpano, 2016; Brown et al., 2002), as well as emptiness and meaninglessness (Orbach, Mikulincer, Gilboa-Schechtman & Sirota, 2003), which perpetuate feelings of burdensomeness. Rogers et al. (2017) described the phenomenology of PB, with similar findings of the theoretical linkage between the expression of guilt, shame, and PB in a sample of military veterans.

This may support the findings of the correlation analysis in the present study which indicate that respondents who reported PB were likely to engage in NSSI to serve intrapersonal functions to soothe feelings of guilt and shame, i.e. 'releasing emotional pressure, expressing anger to self for being worthless or stupid'. Furthermore, the experience of shame and guilt is then often masked in order to avoid rejection, negative evaluation, or ostracisation (Chu et al., 2016), possibly arising from a fear of burdening others. The resultant lack of support from loved ones may then cyclically reinforce the sense of PB within the individual, with guilt and shame collectively encouraging silence instead of disclosure.

PB was also found to be correlated with interpersonal functions of NSSI in the current study. Hames et al. (2015) conducted a study amongst clinical outpatients and found that PB predicted excessive reassurance-seeking from others. This may provide insight into the theoretical linkage between PB and intrapersonal, and interpersonal functions of NSSI, in which excessive seeking of affirmation or reassurance serves an interpersonal function of validation. These unmet needs may elicit perceived rejection and result in an internalisation (intrapersonal function) of those thwarted needs, manifesting in cyclical behavioural manifestations, e.g. NSSI. There is emerging evidence (Claes et al., 2010; Meuhlenkamp et al., 2013) to support the notion that individuals who engage in NSSI may have social skills deficits and are therefore increasingly vulnerable to rejection from others, creating a sense of perceived burdensomeness. Moreover, Muehlenkamp et al. (2012) postulated that individuals who reported having engaged in NSSI were more likely to feel unsupported in their immediate environments. From a systemic perspective it can be seen that the perceived lack of support may mean that these individuals are less likely to seek advice from others (Muehlenkamp et al., 2012), thereby circularly reinforcing the perception of burdensomeness and isolation. These findings have implications for intervention strategies which may focus

on increasing emphasis on the therapeutic interventions involving the family support system as a whole.

5.4.2. Relationship between Thwarted Belongingness and nonsuicidal self-injury

Contrary to expectation, TB was not found to be significantly associated with NSSI in the present study. Jarvi et al. (2013) refer to the ‘social contagion of NSSI’ – the notion that membership to a group creates a sense of belongingness, even if, as is the case in this study, group belongingness entails subscription to NSSI. It is therefore possible that this adolescent sample experienced less TB through joint experiences of NSSI, and thereby group membership. Secondly, Woodward et al. (2014) suggest that feelings of PB may automatically suggest an absence of belongingness, making the constructs difficult to separate. Joiner (2005) suggests that it is the combination of both TB and PB which jointly influence the acquired capability to enact lethal self-harm. It is possible that the constructs are so intertwined in their aetiology that viewing them as distinct concepts dilutes the impact of TB and thrusts PB into the spotlight as the more significant variable associated with NSSI.

A comparative dearth of information exists on the relationship between TB and NSSI; with many studies focusing on TB and suicidal behaviour (Van Orden et al., 2012; Bryan, 2011; Christensen et al., 2014). In contrast to the results of this study, Assavedo and Anestis (2015) found that while PB was associated with the frequency of NSSI, this relationship was mediated by the inclusion of the covariates gender and age in the study, significantly diluting the relationship. However, the authors found that TB still remained significantly associated with NSSI even after controlling for covariates. Glenn and Klonsky (2009) explain this association by asserting that because the enactment of NSSI behaviour occurs mainly in isolation, it may therefore result in feelings of loneliness or disconnect, and a failure to belong. Van Orden et al. (2012) argued that isolation acts as one of the strongest predictors of

non-lethal and lethal self-injury. The fact that the majority of individuals who self-injure do so alone is not a new discovery, implying existent feelings of isolation and loneliness. Interestingly, in proving the Minority Stress Theory, Muehlenkamp, Hilt, Ehlinger and McMillan (2015) found that TB was associated with NSSI, particularly amongst sexual minority college students. They asserted that the ostracisation, and subsequent failure to belong in groups resulted in higher levels of TB, resulting in turn in increased incidents of self-injury in the sample relative to their heterosexual peers. The finding that TB was not significantly associated with NSSI in the present study was therefore unexpected, considering the strong link found in extant research (Van Orden et al., 2005; Muehlenkamp et al., 2012).

DeWall and Baumeister (2006) suggest that emotional and physical pain are interrelated, and that the experience of social exclusion is a particularly noxious addition to an already fragile psychological state. These authors posit that continuous emotional pain may act in the same way as physical pain by increasing pain tolerance and pain threshold, thereby making NSSI increasingly attractive.

An alternative explanation is that PB plays such a pivotal role in the occurrence of NSSI that it overshadows TB, and individuals who feel that they are a burden on others will automatically feel disconnected from others, whereas the opposite may not be as directly causal. It is also possible that TB did not add meaningfully to the findings in this study because it is so theoretically intertwined with that of PB (Woodward et al., 2014).

A possible explanation of the discrepancy between existing literature (utilising mainly adult samples) and the present study may be related to the age group of the present sample. Further research may be indicated to determine if schoolgoing individuals are more protected from TB due to the engaging nature of school activities. Mackin et al. (2017) reported that both parental and peer support act as a buffer against the effect of interpersonal life stress. Therefore, it may be worthwhile to study the effects of exposure to varying support systems

and if these offer a protective mechanism to this particular age group. Paradoxically, Martin (2006) indicated that the adolescent phase may serve a protective function within itself, by which mass NSSI acts constitute membership to a certain group, thereby fostering a sense of belongingness (Horton, Hughes, King, Kennard, Westers & Mayes, 2016). Jarvi, Jackson, Swenson and Crawford (2013) refer to this phenomenon as ‘the social contagion of NSSI’.

Notwithstanding this possibility, adolescence has been highlighted as the period of greatest risk for the first onset of self-injurious ideation (Nock, Green, Hwang, McLaughlin, Sampson & Zaslavsky, 2013), with the concern that these risk behaviours may continue in an upward trajectory into adulthood. This serves to highlight the severity of the problem and necessity of intervening during this precarious stage of development.

5.5. Summary of the relationship between the INQ constructs and Nonsuicidal Self-Injury

Results from the study partially support the hypothesis that unmet interpersonal needs are related to nonsuicidal self-injury. This study found that Perceived Burdensomeness is significantly related to the occurrence of NSSI. This implies that the incidence of NSSI is related to perceived deficits in social support and connection. The present study’s finding that TB was not significantly associated with NSSI was disconfirmed by Van Orden et al. (2005), who suggest that a relationship that satisfies a need to belong cannot simultaneously bring about perceptions of burdensomeness. The views of authors illustrate the inextricable inter-linkage of PB and TB, highlighting the need to research further the impact of these constructs.

5.6. Clinical and Future Research Implications of the Study Findings

The present study and extant literature have indicated the extent to which NSSI has become a severe public health concern. As such, this study has endeavoured to explore NSSI within

adolescents in a South African context. The findings from this study provide insight into the relationships between the interpersonal needs constructs and NSSI in an adolescent sample and have important implications for the aetiology of self-injury. The uncovering of the potential antecedents of NSSI will enlighten customised treatment methods and strategies to prevent self-injury in adolescence – a high-risk period according to the NSSI incidence rates reported in this study of 60.6%.

The present study aimed to explore NSSI amongst a community sample of adolescents, with the hope of uncovering the potential precursors to this self-destructive behaviour. This study has several implications: it confirms that adolescents are at a critical risk of engaging in NSSI behaviours and provides findings to support the idea that females engage in NSSI more frequently than their male counterparts, and that intrapersonal functions were more readily endorsed. Additionally, the findings of the study support the relationship between PB and NSSI. Finally, the study provides a more unique contextual understanding of NSSI from within the South African milieu.

Although age was not indicated as having a significant effect in this sample, it may be important to consider age-appropriate intervention and treatment strategies. Thorough research still needs to be undertaken within the young adult, adult, and geriatric populations, to account for varying developmental-stage risk factors. The analysis of the relationships between the constructs found that PB is a critical variable to target in relation to NSSI, the finding of which may also provide for a better understanding of the causal factors associated with the onset of this behaviour. Such information is critical in making a more accurate identification of individuals at risk of NSSI, allowing for improved intervention models and cognisance of varying interpersonal needs.

The finding that PB was significantly related to the incidence of NSSI in the present study has important implications for future research and intervention efforts. It suggests that

interventions focused on reducing perceptions of burdensomeness may mediate or moderate the engagement in NSSI behaviours. Van Orden et al. (2006) suggest that identified clients at risk for NSSI (along with their respective healthcare professionals) create a list of the ways in which the individual has contributed to the lives of others in a meaningful way. The authors indicate that this suggestion rests on the idea that early identification of feelings of PB are more likely to elicit improved emotional states rather than a focus on self-injury. The importance of this intervention rests on the notion that feelings of PB elicit negative self-evaluation and negative other-evaluation (Van Orden et al., 2006; Baetens et al., 2015), which in turn, may reinforce intrapersonal or interpersonal functions for NSSI. This is supported by the present study's finding that intrapersonal functions of NSSI were more frequently endorsed.

Many authors (Christensen et al., 2013; Bryan, 2011) have indicated the efficacy of cognitive-behavioural and mindfulness therapies in addressing the dysfunctional self-talk and perceptions of alienation and burdensomeness associated with PB. Early engagement with such intervention efforts may improve self-esteem and identity risk factors to assist in reducing negative internal schemas and aggressive self-to-self talk (Xavier et al., 2016) that precipitates NSSI, as well as TB and PB. Although many of the studies outlined above concentrated on the use of cognitive-behavioural therapies, Stallard et al. (2013) highlight the importance of considering the social context when developing an intervention process. Muehlenkamp et al. (2012) found that individuals who reported engaging in NSSI were more likely to feel unsupported in their environments, while Linehan (1993) linked PB and NSSI through the experience of invalidating family environments. Interventions may therefore provide insight into the underlying mechanisms of PB and allow for intervention at a systems level. From an intervention perspective, family-level psycho-education may assist in fostering an awareness and sensitivity for the individual (Stewart, Eady, Horton, Hughes & Kennard,

2015). Increased understanding and social support may serve to alleviate perceptions of burdensomeness and will additionally create a sense of belonging. Muehlenkamp et al. (2013) suggest that an intervention aimed at encouraging family cohesiveness may also allow parents to respond to disclosures in appropriate ways so that treatment can ensue.

It is lastly also important to consider that perceptions of burdensomeness and an inability to belong have been demonstrated in other disorders, e.g. depression. A study in South Africa concluded that individuals who experienced a ‘deep sense of shame and guilt’, ‘low self-esteem’, and experience their lives at home as neglectful and rejecting (Robertson, 2008, p. 75, 77, 78), were more likely to be diagnosed with depression. It is noted that these symptoms demonstrate significant overlap with PB, and therefore further research is indicated to investigate the impact of depression alongside these variables.

In conclusion, the findings of the present study emphasise the need for contextually-sensitive, age-appropriate, intervention efforts aimed at the reduction of self-injury through the understanding of PB as a critical role-player within the development of NSSI.

5.7. Strengths and Limitations of the Study

In interpreting these findings, there are several limitations that warrant mention in this paper:

- Due to a convenience sampling method being utilised for this study; data findings may be reflected in such a way that participants from higher or lower socio-economic status are represented slightly more on account of student availability at individual schools. Similarly, due to the exclusive use of a cohort from the Durban Metropolitan area, results may not accurately reflect the experience of the general South African adolescent population. Due to the substantial number of potential participants for this study, a limit on the geographic location was posed in order to make the research

more feasible; and therefore, included a sample located only in the Durban region of KwaZulu-Natal.

- There existed a substantial gender imbalance, with females accounting for 76.8% of the sample, which could limit the generalisability of the findings. While the sample size was adequate for drawing quantitative conclusions, it was characterised by predominantly Black African and Indian respondents and may be less generalisable or representative of White or Coloured races.
- Lastly, this study relied on self-reported data. Due to the sensitive and often stigmatised nature of the variables, some participants may not have responded to questions in a way that reflects their true experience. However, the quantitative method of inquiry allowed for increased anonymity of the respondents in the study and it is hoped that the findings accurately represent the experience of this sample.

Strengths of the study included the use of schools with learners from wide socio-economic backgrounds; it is hoped that this helps to improve the generalisability of the findings to the broader South African population. Secondly, the present study recruited participants between 13 and 19 years of age, thereby gaining insight into the evolution of self-injury within the entire adolescent phase.

Finally, this study provides a deeper understanding into the pivotal role of interpersonal needs in the development of nonsuicidal self-injury within the youth and is the first such enquiry into this relationship in the South African context.

CHAPTER SIX: SUMMARY, RECOMMENDATIONS, AND CONCLUSION

6.1. Summary of the Findings of the Study

The central aim of the study was to investigate the relationship between interpersonal needs and NSSI in an adolescent sample. In addition, the nature, incidence and functions of NSSI were explored, as well as the demographic variables associated with study constructs. Of the total sample, it was found that a substantial 60.6% reported having engaged in NSSI at least once in their lives. With regards to the demographic variables, it was found that being female was the only significant factor implicated in the occurrence of NSSI. Consistent with this finding, numerous studies (Hawton et al., 2002; Ross & Heath, 2000; Brunner et al., 2007) concluded that being female represents a larger risk factor in the incidence of NSSI. The gender discrepancy in NSSI could be accounted for by referring to traditional gender roles within society (Ross & Heath, 2002; Whitlock et al. (2011). These authors provided the two-fold explanation: That the male-preferred forms of NSSI typically present as outward aggression, and may therefore mask serious intent. Secondly, due to the lasting societal notions of masculinity in relation to emotional containment, the possibility exists that NSSI incidence figures for males may be underrepresented in research studies.

Results indicated that both interpersonal and intrapersonal functions of self-harming behaviour were endorsed, with intrapersonal functions being endorsed to a marginally higher degree. The functions appeared to be equally endorsed by both females and males. The endorsement of these functions in the present study is consistent with Nock and Prinstein's four-factor model (2010), in which self-injury is maintained through reinforcement processes, indicating either positive or negative reinforcement in the intrapersonal or interpersonal domains.

There was no evidence to suggest a relationship between demographic variables and either of the interpersonal needs constructs, TB and PB, in the present study. There is a comparative paucity of research collectively examining the relationships between demographic variables, interpersonal needs, and NSSI in the South African context. However, the extant literature corroborates the study finding that demographic variables are not associated with interpersonal needs. This may be accounted for by the fact that belongingness, support, and connection are universal human needs; irrespective of race, gender, or age.

The findings of the present study indicated that PB was significantly related to the occurrence of NSSI in the sample. Rogers et al. (2017) found that PB was enacted in a circular process which resulted in feelings of guilt and shame. These feelings are internalised and manifested through intra-punitive practices of NSSI, thereby creating more shame and isolation. Interventions aimed at reducing PB are therefore necessary to break this cycle as have been discussed previously (See 5.6).

6.2. Recommendations

In keeping with this study's limitations, it is recommended that further research be conducted on a larger sample to explore the precipitants of thwarted belongingness and perceived burdensomeness, thereby gaining a better understanding of these constructs, and thereby the relationship to NSSI.

It is also important to note that this study focused on the cross-sectional incidence of NSSI in an adolescent sample, resulting in a reduction of data focusing on the temporal sequence or longitudinal aetiology of NSSI. It would be beneficial for future research to conduct longitudinal studies to investigate the trajectories of both NSSI and unmet interpersonal needs over a period of time. Such research may contribute to the understanding

of the evolution of NSSI, and may provide illumination into various treatment efforts and possibilities.

A significant gender difference in the engagement of NSSI was found in the present study. In addition, although not a significant finding, males and females were found to endorse different NSSI functions to varied extents. Treatment strategies and intervention methods should therefore focus on gender-specific models. This may, for example, take the form of the introduction of psycho-education programmes to both combat boredom and facilitate a functional outlet for aggression in males; and the provision of school counsellors to provide a safe environment to release emotional tension for females.

Additionally, as this study was conducted on a community sample of adolescents, it may be beneficial for future research to be conducted on a clinical cohort in an attempt to increase the generalisability of the findings to the overall population.

6.3. Conclusion

With a myriad of challenges faced in adolescence, public health efforts are increasingly being focused on intervening in this vulnerable stage of development. The incidence rates of NSSI in the adolescent population is growing, with an international prevalence rate of 17%-18% reported for at least one incident of NSSI (Swannell, Martin, Page, Hasking & St John, 2014), clearly illustrating the ubiquity of NSSI. In the past, NSSI was viewed as a secondary symptom to borderline personality disorder. During more recent times and with widespread attention, the understanding of NSSI has shifted the aetiological models of this behaviour, noting its presence in many psychological issues (Nock, 2009). The transition to viewing NSSI as a grave problem has been underscored by its probable inclusion in the DSM-5; which views NSSI as a separately occurring category.

Considering the socio-political and ethnographic diversity of South Africa, this study hopes to provide a better understanding of the relationship between interpersonal needs and NSSI, with some focus also on the demographic factors and the functions served by engagement in NSSI. It is hoped that the findings of this study will both inform identification of self-injury and enhance customised treatment strategies in the future. The aim of this study was to explore NSSI and its relationship to unmet interpersonal needs, in the hopes of highlighting the importance of early intervention to stem the growing rates of NSSI. It is hoped that this study has done justice to this aim.

‘Thank Heaven! the crisis, the danger, is past,
And the lingering illness is over at last—
And the fever called "Living" is conquered at last.’

- Poe (1849)

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Appendix 1: DoE Approval



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Enquiries: Phindile Duma

Tel: 033 392 1041

Ref.:2/4/8/1185

Ms S Naidoo
University of KwaZulu-Natal
Durban
4000

Dear Ms Naidoo

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: "EXPLORING THE RELATIONSHIP BETWEEN NON-SUICIDAL SELF-INJURY, DEPRESSION AND INTERPERSONAL NEEDS AMONGST ADOLESCENTS", in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 31 March 2017 to 07 June 2019.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Connie Kehologile at the contact numbers below
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report/dissertation/thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

(Please see List of Schools Attached)

Dr. EV Nzama
Head of Department: Education
Date: 03 April 2017

..Championing Quality Education -Creating and Securing a Brighter Future

KWAZULU-NATAL DEPARTMENT OF EDUCATION

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Appendix 2: BREC Approval



30 June 2017

Ms A E de Villiers
Discipline of Clinical Psychology
School of Social Sciences
artede villiers@yahoo.com

Dear Ms de Villiers

Protocol: An exploration of the relationships between depression, interpersonal needs and non-suicidal self-injury in adolescents.

Degree: M Soc Sc

BREC Ref No: BE298/17 (Sub-study of BE138/14)

A sub-committee of the Biomedical Research Ethics Committee has considered and noted your application received on 16 May 2017.

The study was provisionally approved pending appropriate responses to queries raised. Your response dated 20 June 2017 to BREC letter dated 25 May 2017 have been noted by a sub-committee of the Biomedical Research Ethics Committee. The conditions have now been met and the study is given full ethics approval and may begin as from 30 June 2017.

This approval is valid for one year from 30 June 2017. To ensure uninterrupted approval of this study beyond the approval expiry date, an application for recertification must be submitted to BREC on the appropriate BREC form 2-3 months before the expiry date.

Any amendments to this study, unless urgently required to ensure safety of participants, must be approved by BREC prior to implementation.

Your acceptance of this approval denotes your compliance with South African National Research Ethics Guidelines (2015), South African National Good Clinical Practice Guidelines (2006) (if applicable) and with UKZN BREC ethics requirements as contained in the UKZN BREC Terms of Reference and Standard Operating Procedures, all available at <http://research.ukzn.ac.za/Research-Ethics/Biomedical-Research-Ethics.aspx>.

BREC is registered with the South African National Health Research Ethics Council (REC-290-108-009). BREC has US Office for Human Research Protections (OHRP) Federal-wide Assurance (FWA 678).

The sub-committee's decision will be RATIFIED by a full Committee at its next meeting taking place on 08 August 2017.

We wish you well with this study. We would appreciate receiving copies of all publications arising out of this study.

Yours sincerely


Professor J Tsoka-Gwegweni
Chair: Biomedical Research Ethics Committee

cc supervisor: Naidoo15@ukzn.ac.za
cc: postgraduate administrator: shemvile@ukzn.ac.za

Biomedical Research Ethics Committee
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Appendix 3: Amendment Approval



UNIVERSITY OF
KWAZULU-NATAL
INYUVESI
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RESEARCH OFFICE
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Westville Campus, Gowen #Bek1 Building
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18 September 2017

Ms A E de Villiers
Discipline of Clinical Psychology
School of Social Sciences
arieldevilliers@yahoo.com

Dear Ms de Villiers

Protocol: An exploration of the relationships between depression, interpersonal needs and non-suicidal self-injury in adolescents.

Degree: M Soc Sc

BREC ref No: BE298/17 (Sub-study of BE138/14)

Your letter received on 03 August 2017 submitting an application for amendments to change the Deliberate Self-Harm Inventory (DSHI) with the Inventory of Statements about Self-Injury (ISAS) has been noted and approved by a sub-committee of the Biomedical Research Ethics Committee.

The above approval will be ratified at the next meeting to be held on 10 October 2017.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Mrs A Marimuthu'.

Mrs A Marimuthu
Senior Administrator: Biomedical Research Ethics
PP/AM

cc supervisor: Naidoo15@ukzn.ac.za
cc postgraduate administrator: khanyilet@ukzn.ac.za

Appendix 4: Amendment Approval



08 March 2018

Ms A E de Villiers
Discipline of Clinical Psychology
School of Social Sciences
arieldeivilliers@yahoo.com

Dear Ms de Villiers

Protocol: An exploration of the relationships between depression, Interpersonal needs and non-suicidal self-injury in adolescents.

Degree: M Soc Sc

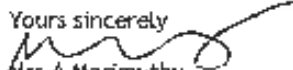
BREC Ref No: BE298/17 (Sub-study of BE138/14)

NEW TITLE: *An exploration of the relationships between Interpersonal needs and non-suicidal self-injury in adolescents.*

Your letter received on 13 February 2018 submitting an application for amendments to change the title to the above has been noted and approved by a sub-committee of the Biomedical Research Ethics Committee.

The above approval will be ratified at the next meeting to be held on 10 April 2018.

Yours sincerely


Mrs A Marimuthu
Senior Administrator: Biomedical Research Ethics
PP/AM

cc supervisor: Naidoo15@ukzn.ac.za

cc postgraduate administrator: khanyilet@ukzn.ac.za

Appendix 5: Information Sheet and Informed Consent Form: School

Information Sheet and Consent to Participate in Research: Principal

BREC ref no: BE298/17 (Sub-study of BE138/14)

Date:

Dear Principal

My name is Ariel de Villiers from the Department of Psychology in the School of Applied Human Sciences at the University of KwaZulu-Natal. I am a Masters student collecting information for my research dissertation.

Your school is being invited to consider participating in a study that involves the exploration of self-injury, depression and interpersonal needs in adolescents. The aim and purpose of this research is to investigate the nature and incidence of self-harm behaviour in adolescents, including the possible links to depression and interpersonal problems in a South African context.

The study is expected to enrol 600 students in seven schools from the Durban area in KZN. This will involve the administration of three questionnaires to elicit information pertaining to depression, interpersonal needs and self-injury. The duration of the participants' involvement (if he/she chooses to enrol and remain in the study) is expected to be approximately 30 minutes.

Please note that your school's participation in this research is entirely voluntary, and that withdrawal or refusal to participate, may be done without any consequence or penalty. The study will not harm any student and all information provided will be kept strictly confidential. If any students experience distress whilst participating in the study, as a Clinical psychology trainee; I will be present to debrief and/or counsel the student and refer him/her for follow-up counselling to the Centre of Applied Psychology if necessary. Participation in the study is free and carries no extra costs or payment. All individual data collected will be treated confidentially and coded to ensure anonymity of participants. Results will be presented as aggregated data only. Information gathered from questionnaires will be stored and locked thereafter in researcher's/supervisor's offices; after which it will be destroyed by shredding in five years.

We hope that the study will increase understanding into self-harm behaviour in adolescents; with the goal of altering the future trajectory of self-harm behaviour and assisting in the prevention and treatment thereof.

This study is in the process of being ethically reviewed and approved by the UKZN Biomedical Research Ethics Committee.

In the event of any problems or concerns/questions you may contact the researcher at Department of Psychology Howard College (031 260 7425) or the UKZN Biomedical Research Ethics Committee. Contact details are as follows:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609

Email: [BREC@ukzn.ac.za](mailto: BREC@ukzn.ac.za)

CONSENT SLIP

I _____ the principal of _____ school have been informed about the study titled: An exploration of the relationships between depression, interpersonal needs and non-suicidal self-injury in adolescents by Ariel de Villiers.

I understand the purpose and procedures of the study as have been explained to me.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my school's participation in this study is entirely voluntary and that I may withdraw my participation at any time without penalty. I have been informed about counselling available to my learners in the event that they become distressed as a result of their participation in the research.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at the Discipline of Psychology, Howard College, UKZN (Tel: 031 2607615)

If I have any questions or concerns about my learners' rights as study participants, or if I am concerned about an aspect of the study or the researchers then I may contact:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609

Email: [BREC@ukzn.ac.za](mailto: BREC@ukzn.ac.za)

Signature of Principal

Date

Appendix 6: Information Sheet and Informed Consent Form: Parent

Information Sheet and Consent to Participate in Research: Parents

BREC ref no: BE298/17 (Sub-study of BE138/14)

Date:

Dear Parent

My name is Ariel de Villiers from the Department of Psychology in the School of Applied Human Sciences at the University of KwaZulu-Natal. I am a Masters student collecting information for my research dissertation.

Your child/ward is being invited to consider participating in a study that involves the exploration of self-injury, depression, and interpersonal needs in adolescents. The aim and purpose of this research is to investigate the nature and incidence of self-harm behaviour in adolescents, including the possible links to depression and interpersonal problems in a South African context.

The study is expected to enrol 600 students in seven schools from the Durban area in KZN. This will involve the administration of three questionnaires to elicit information pertaining to depression, interpersonal needs and self-injury. The duration of the participants' involvement (if he/she chooses to enrol and remain in the study) is expected to be approximately 30 minutes.

Please note that your child/ward's participation in this research is entirely voluntary, and that withdrawal or refusal to participate may be done without any consequence or penalty. The study will not harm any child/ward and all information provided will be kept strictly confidential. Should your child/ward experience distress whilst participating in the study, as a Clinical psychology trainee, I will be present to debrief and/or counsel your child/ward and refer him/her for follow-up counselling to the Centre of Applied Psychology if necessary. Participation in the study is free and carries no extra costs or payment.

All individual data collected will be treated confidentially and coded to ensure anonymity of participants. Results will be presented as aggregated data only. Information gathered from questionnaires will be stored and locked thereafter in the supervisor's/ researcher's office; after which it will be destroyed by shredding in five years.

We hope that the study will increase understanding into self-harm behaviour in adolescents; with the goal of altering the future trajectory of self-harm behaviour and assisting in the prevention and treatment thereof.

This study is in the process of being ethically reviewed and approved by the UKZN Biomedical Research Ethics Committee.

In the event of any problems or concerns/questions, you may contact the researcher at Department of Psychology Howard College (031 260 7425) or the UKZN Biomedical Research Ethics Administration. Contact details are as follows:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
Govan Mbeki Building

Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 - Fax: 27 31 2604609
Email: [BREC@ukzn.ac.za](mailto: BREC@ukzn.ac.za)

CONSENT SLIP

I _____ the parent of _____ have been informed about the study titled: An exploration of the relationships between depression, interpersonal needs and non-suicidal self-injury in adolescents by Ariel de Villiers.

I understand the purpose and procedures of the study as have been explained to me.

I declare that my child's participation in this study is entirely voluntary and that he/she may withdraw from the study at any time without penalty. I have been informed about counselling available to my child/ward in the event that they become distressed as a result of their participation in the research.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at the Discipline of Psychology, Howard College, UKZN (Tel: 031 260 7615)

If I have any questions or concerns about my child/wards' rights as study participants, or if I am concerned about an aspect of the study or the researchers, then I may contact:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 - Fax: 27 31 2604609
Email: [BREC@ukzn.ac.za](mailto: BREC@ukzn.ac.za)

Signature of Parent

Date

Appendix 7: Information Sheet and Informed Assent Form: Participant

Information Sheet and Assent to participate in Research: Student

BREC ref no: BE298/17 (Sub-study of BE138/14)

Date:

Dear Student

My name is Ariel de Villiers from the Department of Psychology in the School of Applied Human Sciences at the University of KwaZulu-Natal. I am a Masters student collecting information for my research dissertation.

You are being invited to consider participating in a study that involves the exploration of self-injury, depression and interpersonal needs in adolescents. The aim and purpose of this research is to investigate the nature and incidence of self-harm behaviours in adolescents, including the possible links to depression and interpersonal problems in a South African context.

The study is expected to enroll 600 students in seven schools from the Durban area in KZN. This will involve the administration of three questionnaires to elicit information pertaining to depression, interpersonal needs and self-injury. The duration of your involvement (if you choose to enrol and remain in the study) is expected to be approximately 30 minutes.

Please note that your participation in this research is entirely voluntary, and that withdrawal, or refusal to participate, may be done without any consequence or penalty. The study will not harm any student and all information provided will be kept strictly confidential. If any students experience distress whilst participating in the study, as a Clinical psychology trainee, I will be present to debrief and/or counsel the student and refer for follow-up counselling to the Centre of Applied Psychology if necessary. Participation in the study is free and carries no extra costs or payment.

All individual data collected will be treated confidentially and coded to ensure anonymity of participants. Results will be presented as aggregated data only. Information gathered from questionnaires will be stored and locked thereafter in researcher's/supervisor's offices; after which it will be destroyed by shredding in five years.

We hope that the study will increase understanding into self-harm behaviour in adolescents; with the goal of altering the future trajectory of self-harm behaviour and assisting in the prevention and treatment thereof.

This study is in the process of being ethically reviewed and approved by the UKZN Biomedical Research Ethics Committee.

In the event of any problems or concerns/questions you may contact the researcher at Department of Psychology Howard College (031 260 7425) or the UKZN Humanities & Social Sciences Research Ethics Committee. Contact details are as follows:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 - Fax: 27 31 2604609
Email: [BREC@ukzn.ac.za](mailto: BREC@ukzn.ac.za)

CONSENT SLIP

I _____, student at _____ school have been informed about the study titled: An exploration of the relationships between depression, interpersonal needs and non-suicidal self-injury in adolescents by Ariel de Villiers, and do hereby agree to participate in the research.

I understand the purpose and procedures of the study as have been explained to me.

I have been given an opportunity to ask questions about the study and have had answers to my satisfaction.

I declare that my participation in this study is entirely voluntary and that I may withdraw my participation at any time without penalty. I have been informed about counselling available to me in the event that I become distressed as a result of my participation in the research.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at the Discipline of Psychology, Howard College, UKZN (Tel: 031 260 7615)

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may also contact:

BIOMEDICAL RESEARCH ETHICS ADMINISTRATION

Research Office, Westville Campus
Govan Mbeki Building
Private Bag X 54001
Durban
4000
KwaZulu-Natal, SOUTH AFRICA
Tel: 27 31 2604769 - Fax: 27 31 2604609
Email: [BREC@ukzn.ac.za](mailto: BREC@ukzn.ac.za)

Signature of Student

Date

Appendix 8: Questionnaires

DEMOGRAPHIC QUESTIONNAIRE: LEARNERS

1. Age: ____years
2. Sex: Male Female
3. Race: Black Indian White Coloured Other
4. Religion: Hindu Christian Muslim Buddhist Shembe Other please specify _____
5. Who do you live with? Parent/s Sibling Grandparent Other please specify _____
6. Current grade: Grade 8 9 10 11 12

INQ

The following questions ask you to think about yourself and other people. Please respond to each question by using your own current beliefs and experiences, NOT what you think is true in general, or what might be true for other people. Please base your responses on how you've been feeling recently. Use the rating scale to find the number that best matches how you feel and write that number next to the item. There are no right or wrong answers: we are interested in what you think and feel.

1	2	3	4	5	6	7
Not at all true for me			Somewhat true for me			Very True for me

- | | Score |
|---|--------------|
| Item 1: These days the people in my life would be better off if I were gone | _____ |
| Item 2: These days the people in my life would be happier without me. | _____ |
| Item 3: These days I think I have failed the people in my life. | _____ |
| Item 4: These days I think I contribute to the well-being of the people in my life. | _____ |
| Item 5: These days I feel like a burden on the people in my life. | _____ |
| Item 6: These days I think the people in my life wish they could be rid of me. | _____ |
| Item 7: These days I think I make things worse for the people in my life. | _____ |
| Use a tick to indicate which of the above items you feel will not change (ie. that you feel hopeless about) | |
| Item 8: These days, other people care about me. | _____ |
| Item 9: These days, I feel disconnected from other people. | _____ |
| Item 10: These days, I feel that there are people I can turn to in times of need. | _____ |
| Item 11: These days, I am close to other people. | _____ |
| Item 12: These days, I have at least one satisfying interaction every day. | _____ |
| Use a tick to indicate which of the above items you feel will not change (ie. that you feel hopeless about) | |

INVENTORY OF STATEMENTS ABOUT SELF-INJURY (ISAS) – SECTION I. BEHAVIORS

This questionnaire asks about a variety of self-harm behaviors. Please only endorse a behavior if you have done it intentionally (i.e., on purpose) and without suicidal intent (i.e., not for suicidal reasons).

1. Please estimate the number of times in your life you have intentionally (i.e., on purpose) performed each type of non-suicidal self-harm (e.g., 0, 10, 100, 500):

Cutting	_____	Severe Scratching	_____
Biting	_____	Banging or Hitting Self	_____
Burning	_____	Interfering w/ Wound Healing (e.g., picking scabs)	_____
Carving	_____	Rubbing Skin Against Rough Surface	_____
Pinching	_____	Sticking Self w/ Needles	_____
Pulling Hair	_____	Swallowing Dangerous Substances	_____
Other _____,	_____		

Important: If you have performed one or more of the behaviors listed above, please complete the final part of this questionnaire. If you have not performed any of the behaviors listed above, you are done with this particular questionnaire and should continue to the next.

2. If you feel that you have a *main* form of self-harm, please circle the behavior(s) on the first page above that you consider to be your main form of self-harm.

3. At what age did you:

First harm yourself? _____ Most recently harm yourself? _____
(approximate date – month/date/year)

4. Do you experience physical pain during self-harm?

Please circle a choice: YES SOMETIMES NO

5. When you self-harm, are you alone?

Please circle a choice: YES SOMETIMES NO

6. Typically, how much time elapses from the time you have the urge to self-harm until you act on the urge?

Please circle a choice:

< 1 hour	1 - 3 hours	3 - 6 hours
6 - 12 hours	12 - 24 hours	> 1 day

7. Do/did you want to stop self-harming?

Please circle a choice: YES NO

INVENTORY OF STATEMENTS ABOUT SELF-INJURY (ISAS) – SECTION II. FUNCTIONS

Name: _____

Date: _____

Instructions

This inventory was written to help us better understand the experience of non-suicidal self-harm. Below is a list of statements that may or may not be relevant to your experience of self-harm. Please identify the statements that are most relevant for you:

- Circle **0** if the statement **not relevant** for you at all
- Circle **1** if the statement is **somewhat relevant** for you
- Circle **2** if the statement is **very relevant** for you

“When I self-harm, I am ...	<u>Response</u>		
1. ... calming myself down	0	1	2
2. ... creating a boundary between myself and others	0	1	2
3. ... punishing myself	0	1	2
4. ... giving myself a way to care for myself (by attending to the wound)	0	1	2
5. ... causing pain so I will stop feeling numb	0	1	2
6. ... avoiding the impulse to attempt suicide	0	1	2
7. ... doing something to generate excitement or exhilaration	0	1	2
8. ... bonding with peers	0	1	2
9. ... letting others know the extent of my emotional pain	0	1	2
10. ... seeing if I can stand the pain	0	1	2
11. ... creating a physical sign that I feel awful	0	1	2
12. ... getting back at someone	0	1	2
13. ... ensuring that I am self-sufficient	0	1	2
14. ... releasing emotional pressure that has built up inside of me	0	1	2
15. ... demonstrating that I am separate from other people	0	1	2
16. ... expressing anger towards myself for being worthless or stupid	0	1	2

Response Key: 0 – not relevant, 1 – somewhat relevant, 2 – very relevant

“When I self-harm, I am ...

17. ... creating a physical injury that is easier to care for than my emotional distress	0	1	2
18. ... trying to feel something (as opposed to nothing) even if it is physical pain	0	1	2
19. ... responding to suicidal thoughts without actually attempting suicide	0	1	2
20. ... entertaining myself or others by doing something extreme	0	1	2
21. ... fitting in with others	0	1	2
22. ... seeking care or help from others	0	1	2
23. ... demonstrating I am tough or strong	0	1	2
24. ... proving to myself that my emotional pain is real	0	1	2
25. ... getting revenge against others	0	1	2
26. ... demonstrating that I do not need to rely on others for help	0	1	2
27. ... reducing anxiety, frustration, anger, or other overwhelming emotions	0	1	2
28. ... establishing a barrier between myself and others	0	1	2
29. ... reacting to feeling unhappy with myself or disgusted with myself	0	1	2
30. ... allowing myself to focus on treating the injury, which can be gratifying or satisfying	0	1	2
31. ... making sure I am still alive when I don't feel real	0	1	2
32. ... putting a stop to suicidal thoughts	0	1	2
33. ... pushing my limits in a manner akin to skydiving or other extreme activities	0	1	2
34. ... creating a sign of friendship or kinship with friends or loved ones	0	1	2
35. ... keeping a loved one from leaving or abandoning me	0	1	2
36. ... proving I can take the physical pain	0	1	2
37. ... signifying the emotional distress I'm experiencing	0	1	2
38. ... trying to hurt someone close to me	0	1	2
39. ... establishing that I am autonomous/independent	0	1	2

Response Key: 0 – not relevant, 1 – somewhat relevant, 2 – very relevant