Suicide Ideation as a Risk Factor for Self-harm in a Clinical Population

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Suicide Ideation and Self-harm in Clinical Populations

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I declare that this thesis is my own account of my research and contains as its main content work which has not previously been submitted for a degree at any tertiary educational institution.

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Vanessa May Campbell
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“Every action has its consequence”

-Monica Campbell
Abstract

Individuals who self-harm are at an increased risk of suicide ideation and attempts. Although risk of completed suicide for clinical adults who self-harm is often minimalized, individuals who experience suicide ideation are at a heightened risk for suicide attempts. It is therefore important to understand the risk factors associated with suicide ideation in order to identify those most at risk.

The aim of this project was to determine the prevalence, risk factors and main differences associated with self-harm in a clinical population presenting with and without suicide ideation. The study was conducted using 675 patient review forms from a large psychiatric clinic in Western Australia. Logistic regression was used to determine if socio-demographic factors (age, gender, socio-economic status), acute alcohol use, and affect (deflated mood, anxiety) at the time of presentation were associated with an increased risk of self-harm behaviour. Self-harm with and without suicide ideation was found to be associated with female gender, younger age groups (<18 years), and alcohol use. In addition, suicide ideation was associated with a deflated mood.

Compared to females who self-harm, male clinical adults were significantly more likely to present with co-morbid suicidal ideation than not. The findings support the need for more consistent and informative definitions of self-harm and suicidal behaviour. In particular, the factors associated with suicide ideation should be explored in young people/adults presenting with self-harm, and strategies targeting the antecedents and concomitants of self-harm behaviour, such as negative affective states and alcohol consumption, should be employed.

Keywords: self-harm, self-injury, clinical, suicide, risk factors, alcohol
Self-harm and suicide are major public health issues in Australia which carry considerable costs to individuals, communities, and health care systems (Australian Bureau of Statistics [ABS], 2003; Gagnon & Hasking, 2012). In 2012 alone, 2535 deaths attributed to self-harm were recorded in Australia (ABS, 2014), but in recent years an overall decrease in death by suicide has been observed in Australia. In contrast to national trends however, Western Australia has seen an increase in suicide and continues to have the highest rate of death by suicide in the country (ABS, 2014). Individuals who engage in self-harm behaviours are at an increased risk of suicide attempts and completion (Bergen et al., 2012; Laye-Gindhul & Schonert-Reichl, 2005; Hawton & Harris, 2007). In fact, previous suicide attempts are reported by up to seventy percent of adolescents who have a history of self-harm (Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006).

Of concern is that international research indicates that the prevalence of self-harm has been increasing in adolescents and adults (Haskings, Andrews & Martin, 2012; Hawton, Harriss, Hall, Bale & Bond, 2003). Considering the changing nature of self-harm behaviours and difference in cultural contexts, local research is required (Skegg, 2005). Research into self-harm has proven challenging due to the secretive and episodic nature of the behaviour (Laye-Gindhul & Schonert-Reichl, 2005), creating difficulties in the ability to collect accurate and reliable data. For this reason, few previous studies of self-harm behaviour have been able to adequately examine risk factors which contribute to self-harm events. Nevertheless, it remains important to identify those at a high risk of self-harm and suicide. Suicide ideation, the experience of thoughts about killing oneself is a common antecedent of suicide attempts (Nock, 2010; Nock, Borges, Bromet &
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Anslo et al., 2008). Individuals who self-harm and experience co-morbid suicide ideation (Lloyd-Richardson, Perrine, Dierker & Kelley, 2007; Martin, Swannell, Hazell, Harrison & Taylor, 2010), are a sub-population who are at an even greater risk of future suicide attempts, compared to individuals who self-harm but do not experience suicidal thoughts (Brausch, & Gutierrez, 2010; Muehlenkamp & Gutierrez, 2004).

In a mental health setting, mental health patients presenting with self-harm and suicide ideation represent a further subgroup of self-harm patients who are heightened risk of suicide. The increased suicide risk associated with the experience of suicide ideation therefore, highlights an urgent need to determine and manage the influences associated with suicide ideation in self-harm patients. Therefore, the current study will focus on the identification of factors associated with an increased risk of suicide ideation in clinical populations who present with self-harm. A greater understanding of these factors will help foster a better understanding of self-harm behaviour in the general population; improve recognition of particular sub-populations and/or individuals who are at greater suicide risk, and inform treatment options and risk, and inform treatment options and prevention/intervention strategies.

Definitional Issues

Research into self-harm behaviours has been hampered by inconsistent definitions of the behaviour (Nock, 2010). A variety of terms have been used interchangeably in the literature including self-harm, deliberate-self-harm (DSH), self-injury, non-suicidal self-harm, self-mutilation, suicide attempt, and parasuicide (Muehlenkamp, Claes, Havertape, & Plener, 2012; Nock, 2010). The definitional issues
existing in the self-harm literature has contributed to inconsistent findings and the inability to compare results (Messer & Fremouw, 2007; Nock 2010). For example, when self-harm is defined irrespective of suicidal intent, results indicate that females have a higher prevalence rate of self-harm than males (Hawton, & Harris, 2007; Haw et al., 2001; James, Stewart, Wright & Bowers, 2012; Mitrou et al., 2010; Wilkinson et al., 2002). However, research into self-harm without suicidal intent has been mixed. Some research has found higher rates in females (Martin et al., 2010; Perry et al., 2012), while others found no gender differences (Briere & Gil, 1998; Nock & Prinstein, 2004).

Despite common factors associated with self-harm and suicidal behaviour the epidemiology and theoretical underpinning are vastly different (Nock, 2010), and in order to advance the field it is necessary to distinguish risk factors associated with self-harm based on the presence of suicidality.

Deliberate self-harm (DSH), a deliberate, non-fatal act initiated with the intent of causing self-harm irrespective of suicidal intent (De Leo & Heller, 2004), is the prominent term appearing in Australian literature (Muehklenkamp et al., 2012). However, it is necessary to distinguish the suicidality of patients who self-harm at a more fundamental level; suicide ideation. For the purpose of this paper, three terms will be employed, in order to classify self-harm patients based on the absence or presence of suicide ideation. Self-harm and DSH will be used to refer to all forms of self-harm behaviour, regardless of suicidal ideation or intent. Self-injury is defined as the direct and deliberate bodily harm in the absence of suicide ideation or intent (Nock, 2010). Suicide ideation is not behavior orientated, but is the presence of thoughts about suicide, while suicide intent is the degree an individual is motivated to cause death by suicide
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Self-harm with suicidality is any deliberate, non-fatal act, initiated with the intent of causing self-harm, by patients who are suicidal. Patients were deemed suicidal if there was any indication of intent to die (Nock, 2010), which could include verbal or nonverbal communication about suicide ideation, suicide plans, and attempted suicide (Nock, 2010; Wasserman, 2001). Individuals in the study sample which showed a minimum level of suicidality (suicide ideation) were included in the self-harm with suicidality group.

It has been pointed out by Mars (2014), that there is a long held position in the literature that a clear distinction can be made between self-harm which occurs with intent to die, and without such suicidal intent. However, the reliability of assessment tools to measure degree of suicidal intent have received much criticism (Mars, 2014). This is part due to the fact that past research focusing on suicidal intent has predominantly used retrospective self-report measures (Nock, 2010). Such measures require individuals to recall thoughts and emotions, however this is not the most accurate way to measure suicide intent as memory is susceptible to errors. In particular, research findings can be biased by the participant’s current affective state, which is known to influence responding (Nock, 2010). It has also been found that retrospective accounts tend to have a lower proportion of patients reporting self-harm with suicide intent compared to level of intent associated with the actual self-harm event (Mars, 2013), indicating that either current mood state or other biases have influenced responding. Further, individuals have reported a higher level of suicide intent at testing (when they did not actually want to end their life), or deny intent due to shame or to avoid hospitalization (Mars, 2014; Nock, 2010; Stefansson, 2012). In fact, a nationwide
psychological autopsy study in Finland, (Isometsa, 1995) found that only 22% of patients who later died by suicide had communicated suicide intent at their last appointment with a health care professional.

Ambivalence, confusion and intoxication can also contribute to recall bias about suicidal intent (Mars, 2014; Nock, 2010; Stefansson, 2012), and what classifies as intent varies between clinicians and patients (Ougrin, Zundel, Kyriakopoulos & Banarsee, 2012), which may lead to further inaccuracy. It is thought that different degrees of suicide intent exist, ranging from suicide ideation to the formation of suicide plans, gestures and attempts (Whall, 1987; Havens, 1969). It is not so much the presence of intent, but the seriousness of the action which determines the degree of suicide intent (Havens, 1969). In clinical settings, the method of self-harm and its medical lethality are often used to determine the degree of suicide intent in DSH patients (Haw, Hawton, Houston & Townsend, 2003; Sapyta et al., 2012). However, lethality of DSH may not be the best indicator of suicide intent as not all patients are aware of the danger associated with the chosen method (Haw et al., 2003). In clinical practice, when suicide intent cannot be determined or remains questionable (e.g., overdose) any evidence of suicidality must be regarded as suicide intent, so suicide risk is not underestimated (Ougrin et al., 2012). Due to the heightened risk of suicide in clinical populations who self-harm, it is important to determine risk factors which are associated self-injury in general, and suicide ideation in these patients.

Self-harm

Theoretical framework. Self-harm behaviour is at odds with the principle of self-preservation inherent in all animals, as it puts health and longevity at risk (Nock,
According to Nock’s (2010) integrated theoretical model, self-injury and suicidal behaviour are distinct phenomena. Firstly, according to Nock’s model, self-injury is primarily a mechanism to regulate affect, cognitions, and interaction with the social environment. This model has gained much empirical support, including an Australian study by Martin et al., (2010). The Martin et al., study revealed that many individuals report engaging in self-harm behaviours to regulate affect, communicate distress and influence the behaviours of others, with individuals who experience heightened psychological distress and negative affect being at a higher risk of self-harm behaviour.

Secondly, Nock’s (2010) model would suggest that difficulties using adaptive strategies to regulate affect, cognitions or the social environment (e.g., hyperarousal to stress, poor communication skills) act as general risk factors for self-injury. Therefore, it is not surprising that there is a higher documented prevalence of self-injury in patients experiencing mental illnesses characterized by problems with affect (e.g., depression) (Haw et al., 2001) or environmental regulation (MacLaren & Best, 2010). Thirdly, Nock would suggest that other behaviours, such as alcohol use may fulfill the same regulating function as self-injury (Nock, 2010; Tait, Brinker, Moller & French, 2004). In fact, in a previous study, Nock (2009) found that when thoughts of self-harm occur, simultaneous thoughts of substance use are present approximately 15%-35% of the time. The co-occurrence of substance use and self-harm thoughts are therefore supportive of a common underlying function (Nock, 2010). Lastly, specific risk factors, such as the modeling of self-harm behaviour by peers, increase the chance of engaging in self-injury as opposed to other maladaptive coping strategies.
Epidemiology. Despite the high prevalence of self-harm in clinical populations (Briere & Gil, 1998), research into the epidemiology of self-harm behaviour has only recently begun to proliferate. In order to gain a clear understanding of self-harm behaviours, it is important to examine the patterns and course of the behaviour. Self-injury can occur as an isolated incident or may be repetitive and chronic in nature (Laye-Gindhul & Schonert-Reichl, 2005). The onset of self-injury behaviour typically occurs during adolescence, but often continues into young adulthood (Haw, Houston, Townsend, & Hawton, 2001), and occasionally endures into later adulthood (Messer & Fremouw, 2007). The most common method of self-harm reported is cutting of the skin (Klonsky et al., 2003; Nock & Prinstein, 2004). Although self-injury is not initiated with the intent to cause death, accidental death can result (Nock, & Kessler, 2006). Self-injury can therefore be conceptualized as existing on a continuum of self-injurious behaviour, with suicide as the endpoint (Brausch & Gutierres, 2010).

Prevalence. Approximately 13-45% of adolescents (Lloyd-Richardson et al. 2007; Ross & Heath, 2002) and 4% of adults in the community report having self-harmed at least once in their lifetime (Briere & Gil, 1998; Klonsky et al, 2003). However, the frequency and severity of self-harm depend on the population of interest (Nock, 2010), for example, rates of self-harm have been found to be higher in clinical samples than community samples (Briere & Gill, 1998). Research has consistently reported a high occurrence of self-harm behaviour in clinical populations, with approximately 25% of adult psychiatric patients engaging in such behaviour (Briere & Gil, 1998; Nock & Prinstein, 2004). In a community study of adolescents, a population with a high rate of self-harm, it was found that individuals who engaged in severe self-
harm behaviour were more likely to seek medical treatment, have a history of inpatient and outpatient psychiatric treatment, psychiatric hospitalization, suicide attempts and current suicide ideation (Lloyd-Richardson’s et al., 2007). Despite the heightened risk of suicide in self-harm patients, clinicians often underestimate this risk (Stanley, Gameroff, Michelsen & Mann, 2001).

**Risk Factors for Self-harm**

Deliberate self-harm, a deliberate, non-fatal act initiated with the intent of causing self-harm irrespective of suicide intent (De Leo & Heller, 2004), is a complex behaviour which is associated with a wide variety of factors (Nock, 2010). These factors can be classified as stable (e.g., age, gender, socio-economic status), or amendable (e.g., mood, alcohol use). Stable factors may aid in identifying individuals at risk of DSH. Although a 10 year longitudinal self-harm study of hospital presentations in Oxford, found fluctuations in the factors associated with DSH (Hawton et al., 2003), in general, female gender, young age (e.g., adolescents), socio-economic deprivation, psychological distress and mental illness (e.g., depression, anxiety, substance misuse) have been found to increase the risk of engaging in DSH (Haw et al., 2001; Klonsky et al., 2003; Martin et al., 2010). As such, a main objective of the current study is to explore whether gender, age, socio-economic status (SES), acute alcohol use, and affective states (deflated mood, anxiety) at the time of presentation are associated with self-harm.

**Gender.** Research regarding sex differences in the prevalence rate of DSH has been inconclusive, and different definitions of self-harm further contribute to the inconsistency. Several studies have found that females have higher rates of DSH
compared to males (James et al., 2012; Martin et al., 2010; Perry et al., 2012), while other studies have found no significant difference in the prevalence rates (Briere & Gil, 1998; Lloyd-Richardson et al., 2007). Further, Ougrin et al., (2012) found higher rates of both self-injury and suicide attempts in females. Although it appears that females may be more likely to engage in DSH, these findings may reflect type and age of samples studied (Hawton, & Harris, 2007; Nock, 2010). For example, as clinical samples are likely to contain individuals engaging in more severe DSH (Lloyd-Richardson et al., 2007), the sex ratio may differ compared to community samples (Madge et al., 2008). Further, adolescents have been found to engage in DSH at a higher rate than older age groups (Martin et al., 2010). Thus, when determining a gender-based prevalence rate of self-harm behaviour, a diverse age range is a necessary requirement of the sample.

Age. Self-harm behaviour is most prevalent in adolescents (Haw et al., 2001) and young adults, with the prevalence generally decreasing with age (Hawton et al., 2007; Messer & Fremouw, 2007). In fact, Hawton et al. (2007), found 62.9% of presentations in England for self-harm occurred in patients younger than 35 years of age. A recent Australian community study found that the peak age for self-injury occurred in females aged 15-19 years (4%), and males aged 10-14 (2.3%) (Martin et al., 2010). Similarly to self-injury, suicidal behaviour typically begins in adolescence (Nock, Borges, Brome & Chal, et al., 2008). Although suicidal behaviours are less common than self-injury in adolescence, the rate of suicidal behaviours is greater than other age groups (Nock, Borges, Brome & Chal, et al., 2008; Hawton, Saunders & O’Connor, 2012). The increased prevalence of self-injury and suicidal behaviour in adolescence may be due to increased risk taking, sensitivity to social events and underdeveloped affect regulation
abilities (Blakemore, 2008; Hawton et al., 2012; Sebastian, Viding, Williams & Blackemore, 2010). Neurodevelopmental changes which occur during adolescence are also thought to influence these issues, causing an increased vulnerability to emotional disorders (Blakemore, 2008). In addition, it is during adolescence when young people have less interaction with family and the influence of societal factors becomes paramount (Smetana, Campione-Barr & Metzger, 2006).

**Socio-economic status.** Past research indicates that individuals who are socio-economically disadvantaged are at an increased risk of DSH (Curtis et al., 2013; Haw et al., 2001; Martin et al., 2010; Toprak, Cetin, Guven, Can & Demirac, 2011). Socio-economic deprivation is thought to contribute to self-harm and suicidal behaviour due to its association with life stressors, low self-esteem, limited access to health care and other resources, decreased educational opportunities and poor housing conditions (Curtis et al., 2013; Haw et al., 2001). In fact, a recent Australian community study found those who have ever self-harmed scored significantly lower on the Index of Relative Socio-Economic Disadvantage than those who had not (Martin et al., 2010). Haw et al., (2001) found that DSH patients classified by areas of socio-economic disadvantage were more likely to have housing problems and, experience isolation and financial difficulties. Thus, it may not be socio-economic status itself, but rather social fragmentation which accompanies these areas that contributes to increased risk of self-harm (Haw et al., 2001). Given that socio-economic influence on self-harm varies across cultures (Messer, & Fremouw, 2007; Purselle, Heninger, Hanzlick, & Garlow, 2009) and the sample studied, it is not clear whether the relationship between socio-economic disadvantage and self-harm is present in Australian clinical samples. In the Mitrou et al.,
(2010) Australian study there was no association between SES and hospital admission for self-harm, even though self-harm patients admitted to hospital are likely to represent the most severe cases. Further research is required in order to establish whether socio-economically disadvantaged individuals are at a heightened risk of self-harm in an Australian clinical population.

**Psychological Characteristics**

**Alcohol.** Alcohol use disorders are commonly diagnosed in patients who engage in self-harm and suicidal behaviour (Haw et al., 2001; Nock et al., 2006). At this time, research into self-harm and acute alcohol use is limited (Kaplan, et al. 2013). Alcohol use commonly precedes both self-harm and suicidal behaviour (Hawton et al., 2003). In fact, alcohol use is more commonly associated with young adults who engage in self-harm than individuals who do not (Hasking, Momeni, Swannel & Chia, 2008). Further, a recent Australian community study found participants who engaged in self-harm behaviours were more likely to ‘drink to get drunk’ than those who did not self-harm (45% vs. 21.1%) (Martin et al., 2010). Acute alcohol use has been suggested to be an independent risk factor for self-harm behaviours, over and above chronic patterns of use because it is thought to directly contribute to a DSH event (Kaplan et al., 2013). Therefore, it is essential to explore the role of acute alcohol consumption in the hours leading up to, and after, a self-harm event (Kaplan et al., 2013).

Acute alcohol consumption is likely to be a facilitating factor for self-harm behaviours for three reasons. First, alcohol can exacerbate negative affect in individuals who have previously engaged in self-harm (Sinclaire & Green, 2005), and self-harm
may then be enacted to decrease the resulting negative affect. Secondly, alcohol may disinhibit self-control (Sinclaire & Green, 2005). Lastly, alcohol misuse can lead to protective coping strategies being ineffective. For example, a recent Australian study by Williams and Hasking, (2010) found that adaptive coping strategies (i.e., problem focused, avoidant coping) protected against self-harm in psychologically distressed young adults. However, these protective effects were not found in participants who misused alcohol.

The influence of alcohol as an independent contributor to self-harm is unclear. This is because alcohol use is associated with particular socio-demographic variables, which have also been identified as risk factors for self-harm (i.e., age, gender) (ABS, 2013). Additionally, the methodology employed in earlier research on self-harm has not allowed for such factors to be controlled for (e.g., Haw et al., 2001; Klonsky et al., 2003). It is therefore unclear whether alcohol is independently associated with self-harm.

**Negative affect.** Past research has focused on the association between mental illness and self-harm behaviours, but knowledge regarding the emotional states of patients surrounding acts of self-harm is more limited. Negative affect includes feelings of depression, anxiety, anger, loneliness and frustration (Haw et al., 2001; Klonsky et al., 2003; Laye-Gindhul & Schonert-Reichl, 2005), and such feelings are not isolated to individuals with mental illness. Depression and anxiety disorders are especially characterized by high negative affect and difficulties in emotional regulation (Berking, Wirtz, Svaldi & Hofmann, 2014; Hofman, Sawyer, Fang & Asnaani, 2012). According to Nock’s (2010) integrated model, individuals who self-harm often do so to regulate
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affect and decrease negative emotions or cognitions. Therefore, research findings indicating a high co-morbidity of self-harm and suicidal behaviour with mood disorders is not surprising (Haw et al., 2001; Hawton et al., 2003), because negative affect and general psychological distress often precedes both self-harm and suicidal behaviour (Klonsky et al., 2003; Laye-Gindhul & Schonert-Reichl, 2005). Moreover, when Mars, (2014) compared individuals with non-suicidal self-harm and those who had self-harmed with suicide ideation, the latter group had an increased risk of depression (OR=3.50 [95% CI 1.64, 7.43]) and anxiety disorder (OR=3.50 [95% CI 1.72, 7.13]).

The relationship between alcohol use and misuse and depressive symptoms has been found to be moderately strong (Boden & Fergusson, 2011). Although it has been argued that depression and anxiety can lead to alcohol use as a means of self-medication (Grant, Stewart & Mohr, 2009), a recent review of the literature (Boden & Fergusson, 2011) suggests that alcohol has a causal influence on depressive symptoms, rather than depression leading to alcohol use. Due to the influence of alcohol on mood, it is important to determine whether mood is in fact an independent risk factor for self-harm after acute alcohol consumption has been controlled.

Suicidal Behaviours

Suicidal behaviours include five distinct classifications including suicide ideation, plans, gestures, attempts and completion (Nock, Borges, Brome & Chal, et al., 2008; Silverman et al., 2007). Firstly, suicide ideation is a form of suicidal behaviour which has a lifetime prevalence of 3-15.9% in the general population (Nock, Borges, Brome & Chal, et al., 2008; Nock, Borges, Bromet & Alonso, et al., 2008). It is defined
as ‘thoughts of engaging in a behaviour which is intended to end the individual’s life’
(Nock, Borges, Brome & Chal, et al., 2008; Silverman et al. 2007), however, desires,
wishes and imagining concerning suicide are often involved. Research has demonstrated
that socio-demographic factors including female gender, young age, a family history of
psychiatric illness, and being single status are associated with suicide ideation (Bae et
al., 2013; Nock, Borges, Bromet & Alonso, et al., 2008). Suicide ideation has been
commonly found in individuals diagnosed with mental illness, including mood, impulse,
anxiety, and substance use disorder (Bae et al., 2013; Muehlenkamp & Gutierrez, 2004;
Nock, Borges, Bromet & Alonso, et al., 2008). Secondly, during suicide ideation, a
suicide plan, the formulation of a specific plan (including the method and circumstances
by which the individual intends to cause their own death), may arise (Nock, Borges,
Brome & Chal, et al., 2008). Research would suggest that of all individuals who
experience suicide ideation, approximately a third (33.6%), will go on to develop a
suicide plan, and 29% will make a suicide attempt (Nock, Borges, Bromet & Alonso, et
al., 2008). Although not all individuals who experience suicide ideation attempt suicide,
suicide ideation is a strong predictor of attempted suicide (Bae et al., 2013;
Muehlenkamp & Gutierrez, 2004; Nock, Borges, Bromet & Alonso, et al., 2008).

Unlike suicide ideation or plans, the third form of suicide-related behaviour,
suicide gestures, are an overt behaviour in which one may threaten suicide, or engage in
an act of self-harm with the intention of giving the appearance of a suicide attempt
(Nock & Kessler, 2006; Silverman et al., 2007). Individuals engaging in suicide gestures
are likely to be perceived as suicidal, although suicide ideation or intent is not inherent
(Nock & Kessler, 2006). In contrast the fifth type of suicidal behaviour, a suicide
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attempt, is the engagement in a non-fatal, self-harming behaviour with some evidence of intent to cause death (Nock, Borges, Brome & Chal, et al., 2008; Silverman et al., 2007). Research has consistently shown that females and young people are at a heightened risk of suicide attempts and suicidal behaviours (Klonsky et al., 2003; Muehlenkamp & Gutierrez, 2004; Nock, Borges, Brome & Chal, et al., 2008), while males of any age, particular age groups (adolescent or older adult), social disadvantage (unemployment, lower educational attainment) and psychiatric disorders (ABS, 2010; Nock, Borges, Brome & Chal, et al., 2008; Nock et al., 2006) have been found to be associated with completed or fatal suicide. The gender differences between suicidal behaviour and completed suicide is attributed to the high use of lethality methods compared to females, and increased risk taking behaviour of males (Chapple & Johnson 2007; Nock, 2010; Nock, Borges, Brome & Chal, et al., 2008).

**Self-harm and suicidality**

Suicide ideation is fundamental in the formulation of suicide intent because it is often during the mental processing of suicide ideation when the actual suicidal behaviour is contemplated, suicide plans and desires are developed, and suicide intent arises (McAuliffe, 2002). Suicidal individuals often experience suicide ideation, but while also experiencing contradictory motivations to live, creating ambivalence at the time of self-harm (Maddock, Carter, Murrell, Lewin, & Conrad, 2010). Ambivalence is one of the most important predictors of suicide completion, and it is during the process of suicide ideation in which ambivalence about death may be decreased (Beck, Kovacs & Weissman, 1979; Bebbington et al., 2010). For these reason, it is important to determine the presence of ideation in order to establish suicide intent.
Suicide intent is not always easy to assess, however McAuliffe (2002) argues that the presence of suicide ideation implies a minimum level of suicide intent. As such, patients engaging in self-harm who experience suicide ideation are at a heightened risk of suicide due to inherent intent. Further, individuals who communicate suicidal ideas have been found to have higher levels of intent (Zhou & Jia, 2012). Despite the role of suicide ideation in facilitating self-harm behaviours, research on the risk factors of suicide ideation in self-harm patients has been overlooked. If the presence of suicide ideation is more easily assessed than intent, then it may be a valuable alternative to determine suicide risk. Moreover, as suicide ideation is a common antecedent of suicide attempts (Nock, Borges, Brome & Chal, et al., 2008; Liu & Mustanski, 2012; Bergen et al., 2012), the identification of suicide ideation may prove to be an early prevention strategy (McAuliffe, 2002). Further, the risk factors associated with such behaviour can help identify individuals who may be ambivalent or otherwise deny ideation (McAuliffe, 2002).

**Current Study**

Although recent media coverage in Australia has led to a greater awareness of self-harm, research into self-harm in clinical populations has predominantly been conducted overseas. Further, research into the correlates of self-harm in clinical populations in Western Australia is very limited, so it is necessary to determine if risk factors for DSH found in other clinical settings are applicable to psychiatric patients in WA. This is especially important to better assist health professionals in determining levels of self-harm and suicide risk, as well as guiding the development of assessment tools and interventions to prevent, minimize and treat this behaviour.
Self-harm is often a private, episodic act (Nock, 2010), for which few individuals seek medical or psychological support (Martin et al., 2010). Additionally, research employing retrospective or self-report measures may yield inaccurate or biased results (Nock, 2010). Due to these issues, audits of self-harm presentations to medical facilities can provide further insight into these behaviours. While past research has focused on the risks associated with self-harm and suicide attempts (Messer & Fremouw, 2007), few studies have investigated the factors associated with suicide ideation in self-harm patients. The current study therefore aims to add to the existing literature in four ways. First, the current study will aim to determine the prevalence, and associated risk factors associated with patients presenting with self-injury and self-harm with suicide ideation to a mental health facility. This will determine whether the association between particular socio-demographic variables and self-harm found in previous research also exists in the current context. Second, the independent effect of alcohol use on self-harm behaviour will be explored to confirm the association between self-harm and alcohol use found in previous research (Martin et al. 2010). As past research methodology has not investigated the association between self-harm and affective states independently of socio-demographic variables, the third aim of current study will be to determine whether affective states are independently associated with self-harm after socio-demographic variables and alcohol use are controlled. Finally, the current study will determine whether self-injury and self-harm with suicidality can be differentiated based on gender, age, socio-economic status, alcohol, mood deflation and anxiety.

Based on the previous literature, it is expected that stable factors (i.e., female gender, young age, socio-economic disadvantage), and amendable factors (i.e., alcohol
use, deflated mood and anxiety) will be associated with an increased risk of both self-injury and self-harm with suicidality (Ougrin et al., 2012; Hawton et al., 2007; Haw et al., 2001; Martin, et al. 2010). Further, compared to self-injury, self-harm patients with suicide ideation are expected to present with a greater frequency with alcohol consumption, deflated mood and anxiety symptoms (Bae et al., 2013; Nock, Borges, Bromet & Alonso, et al., 2008).

Method

Participants and Procedure

Permission to conduct an audit of patient presentations was granted by the head psychiatrist of a large metropolitan psychiatric clinic in Western Australia. The clinic in question is a government organization which primarily provides health services to adults, aged 18-64, with severe and disabilitating mental illness. Emergency Department/Triage review forms with the demographic, symptom and presentation details of 1146 patients from 2012 to 2014 were made available. Ethics approval was granted by Murdoch University Research Ethics Committee (MUHREC No.2013/180).

Initial analyses were conducted to determine the frequency of repeat cases and missing data. Of the 1146 review forms 111 (9.71%) repeat presentations were identified. Repeat presentations were then removed to prevent the inclusion of within-person variance. A further 343 (33.1%) of cases were excluded due to missing socio-economic data. Exact age was not available for 499 (48.2%) of the original cases. In order to maintain analytic power, cases with exact age, as specified in an amended form version, were converted to an age bracket for compatibility with the original form.
version. Age data was missing from 110 (10.6%) cases, which were subsequently removed.

Of the remaining 675 presentations, 349 (51.7%) were female and 326 (48.3%) were male. The sample included 88 (13%) patients under the age of 18 years, 233 (34.5%) were between 18-30 years, 165 (24.4%) were aged 31-40 years, 110 (16.3%) were aged 41-50 years and 79 (11.7%) were aged 51 years or above. Presentations from the most disadvantaged socio-economic status areas, based on the ABS, (2011) accounted for 216 (32%) of the sample, with 69 (10.2%) from middle class areas, and 390 (57.8%) from the most advantaged areas. The majority of the sample was born in Australia (n=577; 82.5%), compared to 118 individuals born overseas (17.5%), and 43 individuals (6.4%) of indigenous origin. Overall, 170 presentations (25.2%) were employed, 88 (13%) lived alone, 216 (32%) were in a relationship, and 176 (26.1%) were parents. Frequencies of patient demographics and characteristics of each group are shown in Table 1.

Materials

The patient review forms were constructed by the chief psychiatrist and the multidisciplinary team at the clinic on the basis of their clinical experience. The forms were used for the purpose of identifying trends in patient presentations. The review forms contain a summary of information transferred from patient files, compiled during the presentation and treatment process of the patient at the adjoining hospital or psychiatric clinic. Each review form was completed by a multidisciplinary team including nurses, doctors, and other allied mental health professionals employed at the psychiatric clinic. Form completion was done within two weeks of the presentation date. Patients gave consent for the use of personal information for future research at the time.
of presentation. The review forms were de-identified by removing the names and contact information prior to collection by the researchers. Hospital identification numbers were retained for the purpose of identifying repeat presentation which occurred between 2012 and 2014. Two versions of the review form were combined and analysed for this study, the original review form and its updated successor. See review forms (Appendices A and B). The current study involved the analysis of information on patient demographics and presenting symptoms. The sample was divided into four groups for analysis: (1) neither self-harm nor suicidality (control group), (2) suicidal only, (3) self-injury, (4) self-harm with suicidality.

**Patient Demographics.** Demographic information collected included the patient’s age, gender, suburb and post code. The first version of the form only contained age categories (<18, 18-30, 31-40, 41-50 and 51+), while the exact age of patients was noted in the later version.

**Socio-economic status.** SES was based on the 2011 Australian Bureau of Statistics Census data. The suburb of each patient was matched to the corresponding ABS Census Collection District. The Index of Socioeconomic Advantage and Disadvantage (IRSAD) one index of the Socio-Economic Indexes for Areas (SEIFA), was used to determine socio-economic advantage and disadvantage, defined by the ABS in terms of people’s access to materials, social resources, and ability to participate in society (ABS, 2011). IRSAD is a general measure of advantage and disadvantage which summarizes information about economic and social conditions of people and households within an area, not the individual. The IRSAD provided the decile of each suburb within Western Australia. In order to allow interpretation as a measure of advantage and disadvantage, the patient’s suburb was allocated a decile based on the IRSAD
Suicide Ideation and Self-harm in Clinical Populations

(ABS, 2011). The decile was then transformed into quintiles. Due to the distribution, quintiles 1 and 2 were pooled to form the lower SES group (31.9% of the sample), which represents those who are most disadvantaged, and quintiles 4 and 5 were pooled to form the higher SES group (57.3% of the sample), the most advantaged, with quintile 3 (10.7%) used to represent the middle SES.

**Presenting Symptoms.** Presenting symptoms were originally determined by patient history, evaluations (e.g., Mental Status Exam or Mental Health Assessment), and patient observation. According to the chief psychiatrist if the clinic (personal communication, 16th of May 2014), only symptoms which were current and relevant to the patient’s presentation on that date were recorded. Symptoms could be classified as affective (deflated mood, anxiety, suicidal), substance use (alcohol) or behavioural (self-harm), as follows:

i) **Affective:** a) Deflated mood refers to the presence of negative affect, or lack on positive emotions b) Anxiety, patient is anxious, c) Suicidal refers to the presence of suicide ideation, plan or attempt.

ii) **Substances:** Alcohol: under the influence of alcohol at time of presentation.

iii) **Behavioural:** Self-harm: presented with a self-inflicted injury, regardless of suicide intent or ideation.

**Statistical analysis**

In all regression models, demographic variables (age, gender, SES) were added in Step 1, Alcohol in Step 2, and affective state (deflated mood and anxiety) in Step 3. Two separate hierarchical logistic regressions were conducted with group membership (self-injury vs. control,
self-harm with suicidality vs. control) to determine the risk factors associated with each self-harm group. A third logistic regression was conducted to determine factors associated with suicide ideation in self-harm patients. An odds ratio with 95% confidence intervals was used to test significance of associations.

**Results**

**Descriptives**

In total, 1035 patient presentations to the mental health facility were analysed. The most common symptom presentation was mood deflation (53.5%), followed by suicidality (39%), self-harm (28.3%), anxiety (26.8%) and alcohol use (24%). Females were significantly more likely to present with mood deflation than males \(X^2(1, N=1035)=10.986, \ p=.001\), while males were significantly more likely to present with alcohol consumption \(X^2(1, N=1035)=24.636, \ p<.001\). Anxiety presentation was not associated with gender \(p>.05\). Age was significantly associated with mood deflation \(X^2(4, N=1035)=13.961, \ p=.007\), with patients under the age of eighteen most likely to present with deflated mood (69.3%), followed by those aged 51-65 years (59.8%), and 41-50 (54.9%). Age was also associated with alcohol use \(X^2(4, N=1035)=17.100, \ p=.002\), with those aged 18-30 more likely to present with alcohol consumption (27.5%), followed by patients 31-40 years (25.7%), and 41-50 years (25.5%). Patients under the age of 18 were less likely to consume alcohol than any other age group (7.9%). Age was not found to be significantly associated with anxiety presentation \(p>.05\).
The presentations which were included in the logistic regression analyses included 22.7% of patients who were suicidal, 12.6% with self-injury, 15% of patients with self-harm and co-morbid suicidality and 49.8% presented with neither suicide or self-harm. Of the 26.6% who engaged in self-harm, 48.33% had presented with suicidal ideation. The characteristics of patient presentation are shown in Table 1.

**Self-injury Risk Factors**

A logistic regression model was conducted using 421 patient presentation cases to determine the variables associated with self-injury. The full logistic regression model is shown in Table 2. The Step 2 model was significant compared to the constant only model $X^2(8, N=421)=52.728, p<.001$, and Step 1 model (Block $X^2=(1, N=421)=4.367, p=.037$). Nagelkerke’s $R^2$ of .186. The full model accuracy was 81.2% (96.4% control, 21.2% self-injury). Step 3 variables did not significantly improve the model and were dropped, Block $X^2(2, N=421)=5.167, p=.076$. In Step 1, the Wald criteria indicated that gender and age significantly contribute to the accuracy of group prediction. SES was not associated with group membership ($p>.05$). Compared to the control group, self-injury patients were over three times and a half times more likely to be female (OR=3.511). Patients over the age of 18 years were significantly less likely to self-harm (18-30 OR=.339, $p=.006$, 31-40 OR=.124, $p<.001$, 41-50 OR=.140, $p<.001$, 51+ OR=.139, $p<.001$). Self-injury patients were over twice as likely to have consumed alcohol (OR=2.025, $p=.033$) than control patients. Mood deflation and anxiety were not associated with self-injury after socio-demographics and alcohol consumption were controlled for. Further analysis revealed that mood deflation (OR=1.865, $p=.014$) and
Table 1

**Demographics and Characteristics of Patient Presentations 2011-2014**

<table>
<thead>
<tr>
<th>Variable</th>
<th>None</th>
<th>Suicidal</th>
<th>Self-injury</th>
<th>Suicidal Self-harm</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(N, %)</td>
<td>(n=336, 49.8)</td>
<td>(n=153, 22.7)</td>
<td>(n=85, 12.6)</td>
<td>(n=101, 15)</td>
<td>(n=675)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>176 (52.4)</td>
<td>87 (56.9)</td>
<td>22 (25.9)</td>
<td>41 (40.6)</td>
<td>326 (48.3)</td>
</tr>
<tr>
<td>Female</td>
<td>160 (47.6)</td>
<td>66 (43.1)</td>
<td>63 (74.1)</td>
<td>60 (59.4)</td>
<td>349 (51.7)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;18</td>
<td>20 (6)</td>
<td>22 (14.4)</td>
<td>20 (23.5)</td>
<td>26 (25.7)</td>
<td>88 (13)</td>
</tr>
<tr>
<td>18-30</td>
<td>103 (30.7)</td>
<td>52 (34)</td>
<td>35 (41.2)</td>
<td>43 (42.6)</td>
<td>233 (34.5)</td>
</tr>
<tr>
<td>31-40</td>
<td>97 (28.9)</td>
<td>42 (27.5)</td>
<td>13 (15.3)</td>
<td>13 (12.9)</td>
<td>165 (24.4)</td>
</tr>
<tr>
<td>41-50</td>
<td>63 (18.8)</td>
<td>26 (17)</td>
<td>9 (10.6)</td>
<td>12 (11.9)</td>
<td>110 (16.3)</td>
</tr>
<tr>
<td>51+</td>
<td>53 (15.8)</td>
<td>11 (7.2)</td>
<td>8 (9.4)</td>
<td>7 (6.9)</td>
<td>79 (11.7)</td>
</tr>
<tr>
<td>SES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>114 (33.9)</td>
<td>43 (28.1)</td>
<td>43 (28.1)</td>
<td>30 (29.7)</td>
<td>216 (32)</td>
</tr>
<tr>
<td>Middle</td>
<td>34 (10.1)</td>
<td>15 (9.8)</td>
<td>10 (11.8)</td>
<td>10 (9.9)</td>
<td>69 (10.2)</td>
</tr>
<tr>
<td>Upper</td>
<td>188 (56)</td>
<td>95 (62.1)</td>
<td>46 (54.1)</td>
<td>61 (60.4)</td>
<td>390 (57.8)</td>
</tr>
<tr>
<td>Mood deflated</td>
<td>141 (42)</td>
<td>103 (67.3)</td>
<td>46 (54.1)</td>
<td>66 (65.3)</td>
<td>356 (52.7)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>102 (30.4)</td>
<td>28 (18.3)</td>
<td>18 (21.2)</td>
<td>32 (31.7)</td>
<td>180 (26.7)</td>
</tr>
<tr>
<td>Alcohol</td>
<td>66 (19.6)</td>
<td>52 (34)</td>
<td>19 (22.4)</td>
<td>28 (27.7)</td>
<td>165 (24.4)</td>
</tr>
</tbody>
</table>
anxiety (OR=.528, p=.034) were associated with self-injury when demographics were not controlled for (p>.05) (See Appendix C).

Table 2

Comparison of Patients Presenting with Self-injury vs. Neither Self-harm or Suicidality

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>seB</th>
<th>Wald</th>
<th>Exp(B)</th>
<th>95%CI for OR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female***</td>
<td>1.256</td>
<td>.290</td>
<td>18.737</td>
<td>3.511</td>
<td>1.988-6.201</td>
</tr>
<tr>
<td>&lt;18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-30**</td>
<td>-1.081</td>
<td>.394</td>
<td>7.541</td>
<td>.339</td>
<td>.157-.734</td>
</tr>
<tr>
<td>31-40***</td>
<td>-2.085</td>
<td>.454</td>
<td>21.105</td>
<td>.124</td>
<td>.051-.303</td>
</tr>
<tr>
<td>41-50***</td>
<td>-1.969</td>
<td>.496</td>
<td>15.783</td>
<td>.140</td>
<td>.053-.369</td>
</tr>
<tr>
<td>51+***</td>
<td>-1.971</td>
<td>.512</td>
<td>14.828</td>
<td>.139</td>
<td>.051-.380</td>
</tr>
<tr>
<td>SES</td>
<td></td>
<td>.404</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower</td>
<td>.157</td>
<td>.287</td>
<td>.296</td>
<td>1.169</td>
<td>.666-2.054</td>
</tr>
<tr>
<td>Middle</td>
<td>.200</td>
<td>.431</td>
<td>.215</td>
<td>1.211</td>
<td>.524-2.843</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol*</td>
<td>.706</td>
<td>.331</td>
<td>4.533</td>
<td>2.025</td>
<td>1.058-3.879</td>
</tr>
<tr>
<td>Constant</td>
<td>-.966</td>
<td>.418</td>
<td>5.348</td>
<td>.381</td>
<td></td>
</tr>
</tbody>
</table>

Note. SE= standard error; OR=odds ratio; CI=confidence interval.

*p<.05, **p<.01, ***p<.001
Risk Factors for self-harm with suicidality

The logistic regression model was conducted on 437 patient presentations to predict presentation type (self-harm with suicidality vs. control). The Step 3 model was significant compared to the constant only model, $X^2(10, N=437)=66.556$, $p<.001$. The Step 3 model also was significant compared to the step 2 model, Block $X^2(2, N=437)=12.598$, $p=.002$. Nagelkerke’s $R^2$ of .214. The overall accuracy of the model was 78.7% (94.6% for self-harm with suicidality, 25.7% for the control group). The analysis revealed that patients over the age of 18 years were significantly less likely to present with self-harm with suicidality than patients under 18 years of age (Wald statistic=37.508, $p<.001$). Gender and SES were non-significant ($p>.05$). Alcohol was significantly associated with self-harm with suicidality (OR=2.223, $p=.007$) after socio-demographics were controlled for. Patients presenting with deflated mood were over twice as likely to present with self-harm with suicidality than without self-harm or suicidal behaviour (OR=2.457, $p=.01$) after alcohol was controlled. Anxiety was non-significant irrespective of whether demographic characteristics were controlled for ($p>.05$) (See Appendix D).

Self-injury vs. Self-harm with suicidality

A logistic regression was conducted to predict group membership (self-injury, self-harm with suicidality) of 186 patient presentations. Although, compared to females, males were significantly more likely to present with self-harm with suicidality than self-injury (OR=2.220, $p=.018$), this association did not significantly improve the model, $X^2(7, N=186)=7.326$, $p=.396$, indicating that the socio-demographic variables did not
reliably distinguish between self-harmers based on suicide ideation. The addition of Step 2 and Step 3 did not significantly improve the model, Block $X^2(1, N=186)=.319$, $p=.572$; Block $X^2(2, N=186)=5.193$, $p=.075$. The final model has an overall accuracy of 60.8% (48.2% self-injury, 71.3% self-harm with suicidality). (For models see Appendix E).
Table 3

Comparison of Patients Presenting with Self-harm with Suicidality, and Patients with Neither

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>seB</th>
<th>Wald</th>
<th>Exp(B)</th>
<th>95% CI for OR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female &lt;18</td>
<td>.452</td>
<td>.261</td>
<td>3.003</td>
<td>1.572</td>
<td>.942-.2621</td>
</tr>
<tr>
<td>18-30**</td>
<td>-1.0545</td>
<td>.367</td>
<td>7.732</td>
<td>.352</td>
<td>.168-.735</td>
</tr>
<tr>
<td>31-40***</td>
<td>-2.193</td>
<td>.444</td>
<td>24.403</td>
<td>.112</td>
<td>.047-.266</td>
</tr>
<tr>
<td>41-50***</td>
<td>-1.952</td>
<td>.453</td>
<td>18.562</td>
<td>.142</td>
<td>.058-.345</td>
</tr>
<tr>
<td>55+***</td>
<td>-2.312</td>
<td>.517</td>
<td>20.00</td>
<td>.099</td>
<td>.036-.273</td>
</tr>
<tr>
<td>SES Lower</td>
<td>-.160</td>
<td>.277</td>
<td>.333</td>
<td>.852</td>
<td>.495-1.467</td>
</tr>
<tr>
<td>SES Middle</td>
<td>-.051</td>
<td>.424</td>
<td>.014</td>
<td>.951</td>
<td>.414-2.182</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol**</td>
<td>.082</td>
<td>.297</td>
<td>7.302</td>
<td>2.230</td>
<td>1.246-3.988</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mood**</td>
<td>.899</td>
<td>.263</td>
<td>11.690</td>
<td>2.457</td>
<td>1.468-4.113</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.002</td>
<td>.276</td>
<td>.000</td>
<td>.998</td>
<td>81-1.713</td>
</tr>
<tr>
<td>Constant</td>
<td>-.641</td>
<td>.400</td>
<td>2.573</td>
<td>.527</td>
<td></td>
</tr>
</tbody>
</table>

*Note. SE= standard error; OR=odds ratio; CI=confidence interval; Mood= mood deflated.

*p<.05, **p<.01, ***p<.001
Discussion

The current study had four main objectives: (1) to determine the prevalence and patient characteristics associated with self-injury and self-harm with suicidality, (2) to determine if acute alcohol consumption was associated with self-injury and self-harm with suicidality after socio-demographic factors were controlled, (3) to determine if affective state was independently predictive of self-injury and self-harm with suicidality, (4) to determine if socio-demographic and psychological characteristics could reliably predict the presence of suicidality in self-harm patients.

The findings of the current study revealed that self-harm and suicide ideation are common issues in Western Australian psychiatric patients. Prevalence rates of DSH in the study were comparable to previous research with clinical samples (e.g., Briere & Gil, 1998). In addition, the findings that almost half of the patients who had engaged in self-harm were also suicidal provides robust support for Nock (2010).

Gender. Consistent with previous Australian research (e.g., Martin et al., 2010) females were over three and a half times more likely to engage in self-injury (vs. not), than males. Research from the UK has typically found that female gender is not only associated with self-injury, but also with suicide ideation and suicide attempts (Nock, Borges, Bromet & Alonso, et al., 2008; Mars, 2014), but in the current study, no main gender difference was found to be associated with self-harm with suicidality. To date, only a limited number of studies have reported a lack of gender difference in self-harm behaviours (Briere, & Gil, 1998; Klerk et al., 2011; Lloyd-Richardson, et al. 2007; Nock, & Prinstein, 2004). A possible explanation for this discrepancy in the gender
difference findings might be found in the nature and similarity of the classification systems that were used. For example, Klerk et al., (2011), and the current study used a similar classification system. In both studies, patients were specifically classified as engaging in self-harm with suicidality if there was any indication of suicide ideation. This classification of self-harm was likely to include patients engaging in suicidal gestures. In both studies, the lack of a gender difference may reflect a higher proportion of women in community samples but not clinical samples, engaging in suicidal gestures (Nock & Kessler, 2006). For these reasons, it is necessary to determine specific risk factors for different types of self-harm and suicidal behaviours to increase predictability and accuracy of such results. Further, as clinical samples likely contain individuals engaging in more severe self-harm behaviour (Lloyd-Richardson et al., 2007), such samples may have a different sex ratio compared to community samples (Madge et al., 2008). These current findings indicate that further research regarding the presence of a gender difference in self-harm patients is warranted.

The comparison between self-injury and self-harm with suicidality patients revealed that, compared to females, males were more likely to present with self-harm with suicidality than self-injury. Although the association did not significantly improve the models predictability, the relationship between gender and suicidality in self-harm is informative. Past research has predominately found that males are less likely than females to engage in both types of self-harm (Ougrin et al., 2012). It is thought that these findings are because females are more likely to internalize than males, (Crick & Zahn-Waxler, 2003) thus females are more likely to self-injure when emotionally distressed (Laye-Gindhul & Schonert-Reichl, 2005). The current study results indicate
that when males do engage in self-harm, it is more likely to coincide with suicide ideation or intent than not. Comparatively, Females are more likely to engage in both behaviours: self-injury and self-harm with suicidality, therefore, female gender is a general risk factors for both types of self-harm.

**Age.** Patients presenting under the age of eighteen were significantly more likely to engage in self-injury and self-harm with suicidality than all other age groups. A larger proportion of DSH patients were under the age of eighteen, compared to the control group. These findings are consistent with international research (Nock, Borges, Brome & Chal, et al., 2008), and Australian research (Martin et al., 2010). It is interesting to note that nearly half of the self-harm patients were in the next age category of 18 to 30 years, although this was not predictive of self-harm behaviour The comparative analysis did not reveal any significant differences between age group and suicidal status. While young age (<18) is a general risk factor for self-harm behaviour in the current study and previous research (e.g., Martin et al., 2010), the results indicate that age alone is not predictive of suicidality in self-harm patients.

**Socio-economic status.** SES was not significantly associated with self-injury or self-harm with suicidality. However, these finding require careful scrutiny. The relationship between SES and self-harm may reflect both the sample and the measure employed. For example, Martin et al.’s., (2010) Australian study of the general population found a higher life time prevalence of self-injury in the most socio-economic disadvantaged participants. However, the Martin et al., (2010) study also relied on retrospective and/or self-report measures and as a consequence, it is possible that particular methological limitations influenced their findings and those in other previous
research recognizing SES. In the current study, a patient’s self-harm was determined through clinical observation, and was a more objective measure of self-harm. In addition, there may be no relationship between SES and self-harm behaviour in clinical samples, or alternatively, any relationship between SES and self-harm behaviour may only exist at the level of the general population in less serious cases. Some supportive evidence for this position and the current study findings comes from Mitrou, et al.’s, (2010) Western Australian study that also found no association between adolescent socio-economic status and hospital admission for self-harm. However, the Mitrou et al., study did not distinguish patients based on suicidal ideation. The present research has demonstrated that the most disadvantaged patients are not more likely to present with self-injury or self-harm with suicidality than middle or most advantaged SES in this clinical population. Further analysis revealed that SES also did not predict suicidality of self-harm patients. In the only previous study that has explored this area of self-harm, Mars (2014) UK community study, found that lower SES was associated with suicide ideation in individuals who engaged in self-harm. As discussed, the association may not be significant in clinical population.

However, the measure of SES in the current study may have influenced these findings. While this study used the IRSAD, which is a more general measure of socio-economic advantage and disadvantage (ABS, 2011), past research has primarily been focused on the socio-economic disadvantage of geographic areas, or used alternative measures of individual SES (e.g., income). Further, while the IRSAD assesses socio-economic advantage and disadvantage based on the area, the resulting measure of SES may not be consistent with individual SES. For example, if it is the social fragmentation
which accompanies lower SES areas which contribute to increased risk of self-harm (Haw et al., 2001), individuals experiencing socio-economic deprivation may be protected through residing in a higher SES area. Further, patient’s in the current study resided in a relatively small geographical area, in a part of the country that is generally higher in SES. For the IRSAD, there is no standard procedure to group area rankings (e.g., most disadvantaged), therefore the way in which these were classified may have influenced the findings. For example, analysis of IRSAD rankings by the ABS (ABS, 2011) shows that the rankings are negatively skewed, thus individuals in the most disadvantaged group are likely more variable in resources, while the middle and most advantaged groups appear to be less variable. Future research would benefit from the use of multiple measures of SES including broad measures (e.g., IRSAD), larger ranges of SES classifications, and specific SES measures (i.e., income level).

**Alcohol.** The prevalence rates of acute alcohol use by patients presenting with self-injury and self-harm with suicidality are consistent with previous research (Hawton et al., 2003; Haw et al., 2001). Individuals who engage in DSH often engage in risky levels of alcohol consumption (Mars, 2014; Martin, et al. 2010). In the current study acute alcohol use was associated with DSH independent of socio-demographic variables. Patients presenting with acute alcohol use were more than twice as likely to have engaged in self-harm than to have presented without suicidal or self-harm behaviour. Alcohol is a known behavioural inhibitor, thus individuals who have consumed alcohol may be more likely to engage in acts of self-harm including self-injury, while in the case of self-harm with suicidal ideation alcohol may be used as part of a suicide attempt. Further, alcohol may facilitate DSH through increasing negative affect. While the
additional analysis revealed that acute alcohol use was not a specific risk factor for suicidality in self-harm patients, the association between alcohol use and negative affective states was less clear. Due to the nature of the current study it could not be determined whether this association was due to acute alcohol use alone, or subsequent to chronic alcohol use.

**Negative affect.** Over half of the self-injury and self-harm with suicidality patients were found to present with a deflated mood. Deflated mood was associated with self-injury when socio-demographic variables were not controlled for, but became non significant after controlling for such variables, indicating they share a common variance. As such, a deflated mood was not an independent risk factor for self-injury. As alcohol exacerbates negative affective states, the higher rate of mood deflation in self-injury patients may have been a result of acute alcohol use or its association with socio-demographic variables (e.g., female gender). However, patients presenting with a deflated mood were over twice as likely to present with self-harm with suicidality, and, consistent with Klert et al., (2011), depressive symptomology was associated with self-harm with suicidality. The question arises as to why patients presenting with self-injury did not show a similar association with mood deflation. Nock (2010), suggests that individuals may engage in self-injury as opposed to other coping mechanisms to decrease emotional distress because they have observed the behaviour in others around them, do so to punish themselves, or hold implicit associations concerning self-harm. Although depressed mood is known risk factors for suicide attempts (Bae et al., 2013; Nock, Borges, Bromet & Alonso, et al., 2008), individuals who engage in self-injury may be less likely to show depressive symptomology at presentation because they cope
via self-injury, while suicide attempters are less likely to use coping strategies. Nevertheless, the current study contributes further through finding an association between mood deflation and self-harm with suicidality that was independent of alcohol consumption and socio-demographic variables. Further analysis revealed that mood deflation was not a specific risk factor for suicide ideation in self-injury patients independent of socio-demographic variables and alcohol use. Affective disorders, characterized by mood distortions are commonly diagnosed in patients engaging in self-harm (Haw et al., 2001), thus these results may be generalizable to self-harm patients diagnosed with such disorders as well as patients experiencing current emotional distress.

Anxiety symptoms were most prevalent in self-harm with suicidality patients, followed by the control group, and those presenting with self-injury. The findings indicate that anxiety symptoms were not predictive of self-injury or self-harm with suicidality independent of alcohol and socio-demographic characteristics. Past research on the association between anxiety and self-harm has been inconsistent (Mars, 2014). The lack of association between anxiety symptoms and self-harm in the current study may have been due to two reasons. First, anxiety may not be an independent predictor of self-harm after demographic characteristics and alcohol use is accounted for. Further analysis of self-injury revealed that anxiety was significantly associated with self-injury when the socio-demographic variables were not controlled for, thus anxiety shares the variance which is explained by the demographic variables in the model, while anxiety was not related to self-harm with suicidality irrespective of the socio-demographic variables. Secondly, although negative affective states precede self-harm, anxiety may
be reduced after engaging in acts of self-harm (Martin, et al. 2010). Therefore, patients presenting immediately after self-harm may not present with anxiety. In addition, anxiety was not found to be associated with suicidality amongst self-harm patients.

**Self-harm and suicidality.** It was hypothesized that suicide ideation in self-harm patients would be present with the psychological characteristics conditions at a greater frequency than those not experiencing suicide ideation. The results are supportive, revealing that self-harm patients with suicidality presented with acute alcohol use, mood deflation and anxiety at a greater frequency than self-injury patients. These differences did not reach statistical significance, and the small sample size might have limited the statistical power of the analysis.

Contrary to expectation, the socio-demographic (age, gender, SES), acute alcohol use and affective states (deflated mood, anxiety) did not predict suicide ideation in self-harm patient. The one exception was that, compared to females, males were significantly more likely to present with self-harm with suicidality than self-injury, but gender did not significantly increase the predictability of the model. It might be argued that the findings resulted as a consequence of the nature of the data collection and the subsequent terminology employed in the study, because previous research indicates that differences in socio-demographic and psychological characteristics are associated with particular self-harm behaviours (Claes et al., 2009). For example, it is known that the self-harm with suicidality group is likely to encapsulate three distinct subgroups; self-injury patients with suicide ideation, suicide attempts, and suicide gestures. Claes et al., (2009) has determined that differences exist between patients who present with self-injury and suicide attempts and Mars, (2014) found that of adolescents engaging in self-
harm, 22% experienced suicide ideation at the time of self-harm, but did not identify the action as a suicide attempt. Similarly, differences exist between individuals who attempt suicide and those who engage in a suicide gesture (Nock & Kessler, 2006) Nearly half (42%) of Nock and Kessler’s (2006) patients who engaged in suicide attempts later reported no intent to die. It is likely that the mood state of individuals at the time of interview might have influenced their reported suicide intent (Mars, 2014). The lack of difference between the two groups might also due to the inclusion of suicide gestures as suicidal behaviour.

Individuals experiencing self-injury are at risk of future suicide (Nock, Borges, Bromet & Alonso, et al., 2008). Therefore, it is important not to underestimate the risk of suicide in self-injury patients. Self-injury is a dangerous behaviour which requires substantial research and clinical attention (Nock & Kessler, 2006). However, suicide ideation and attempts might be better indicators of later suicide than self-injury. The current study classified suicide gestures as a form of suicidal behaviour. A suicidal gesture can involve an act of self-harm with the intention of giving the appearance of a suicide attempt in order to influence the individual’s social environment (Nock & Kessler, 2006). Thus, suicidal gestures and self-injury are functionally similar in that they are enacted due to their regulatory capabilities. Additionally, suicide gestures are at a lower medical risk of lethality than those engaging in suicide attempts (Nock & Kessler, 2006). Therefore, it is suggested that suicide gestures are better classified as a form of self-injury, rather than a suicidal behaviour. The nature of the current data collection did not allow for such a differentiation to be made, it is suggested that future
research should investigate whether the reclassification of suicide gestures as self-injury would advance understanding of suicide itself.

As discussed, the inability to differentiate between self-injury and self-harm with suicidality may reflect the heterogeneous nature of the latter group. The diversity in the make-up of the self-harm with suicidality group highlights the need for more precise and consistent terminology regarding self-harm and suicidal behaviour. Ideation can develop into serious intent in a short period of time (McAuliffe, 2002). Suicide ideation should be explored in all patients presenting with self-harm because it remains a valuable predictor of future suicide (Brausch & Gutierrez, 2010; Muehlenkamp & Gutierrez, 2004). Various other measures can provide further insight and help identify self-harm patients who are at the most risk. In particular, determining the intent of self-harm is a necessary distinction in research and clinical practice. While acknowledging the limitations of assessing suicidal intent (McAuliffe, 2002; Nock, 2010), such a distinction can aid in identifying those engaging in the different types of self-harm. Additional information that has been found to aid in the identification of self-harm types and suicide risk includes the severity, duration, method and intensity of self-harm and suicidal behaviour (Mars, 2014; Ougrin et al., 2012). However, the classification and measurement of self-harm and suicidal behaviour is in need of further research and review. Minimally, future research should endeavou to employ multiple measure of self-harm and suicidal behaviour.
Strengths, Limitation and Future Directions

It should be noted that there are several limitations of the current study. Despite findings that differences exist between those who self-harm with ideation and those who do not (Mars, 2014), the self-harm with suicidality group likely included three subgroups. Therefore, caution should be exercised when interpreting the findings involving the self-harm with suicidality group. Future research into the relationship between self-harm and suicide ideation is necessary.

The sample was of moderate size, and sufficient to conduct the analysis required. However, just over a third of the case presentation had to be excluded due to missing data. Future research into self-harm may be enhanced through more complete data collection at patient presentation (e.g., age and residential area) and should aim to capture a larger sample. Further, the current study relied on information gathered from a single hospital. Therefore, the results may not be generalizable to patients of other facilities in the area. Future research should involve patient cases from multiple facilities, in order to obtain a more representative sample from Western Australia.

For a large proportion of the patient presentations the exact age of the patient was not recorded. While the assignment of exact ages to age categories may have enabled age analysis that otherwise would not have been possible, the grouping of the ages is not without issues. The age categories used were uneven in the numbers of years spanned and may have impacted on the robustness of the findings related to age. Past research using alternative age categories (Martin et al. 2010) has found higher rates of self-harm for 15-19 year olds than 20-24 year. Thus, in the current study the
significantly lower rate of self-harm found in those 18-30 years of age compared to those under eighteen years of age might be strongly represented by the much younger members of the 18-30 year of age bracket, perhaps mirroring the developmental differences between late adolescence and emerging adults. Changes in brain development and maturation of emotional regulation occurring in late adolescence and early adulthood (Blakemore, 2008) may explain the decrease in self-harm in young adulthood found by Martin et al., 2010. Thus, future research into self-harm would be more informative through the use of more precise data collection and appropriate age categories.

Strengths of the study include the nature of the sample and the method by which the information regarding self-harm was acquired. Objective measures of self-harm employed in the study minimized the problems associated with retrospective and self-report methods. Additionally, through sampling patient presentations the characteristics associated with more severe self-harm patients were able to be identified, and important information about the mood state surrounding acts of self-harm was able to be gathered. Understanding of self-harm presentations to psychiatric clinics would benefit from a deeper exploration of the relationships between symptoms at presentation and other variables such as psychiatric diagnosis, patterns of alcohol use, age, multiple measures of SES, as well as the method, severity and intent of self-harm.

**Practical Implications**

The current study highlights the need to identify alcohol use and misuse in patients presenting with self-harm behaviour. Alcohol is likely to facilitate self-harm
behaviours, thus treatment should aim to minimize alcohol consumption in these individuals. Brief intervention or education regarding alcohol consumption and self-harm behaviours could be incorporated as part of the ongoing monitoring/referral process for patients presenting to a hospital or mental health facilities.

**Conclusion**

In conclusion, in a clinical sample of patients presenting to a psychiatric clinic, the current study determined the risk factors associated with self-injury and self-harm with suicidality. Females, young age (<18) and acute alcohol consumption were associated with an increased risk of self-injury. Self-harm with suicidal ideation was associated with patients of a young age (<18), acute alcohol use and depressed mood. Only male gender was predictive of suicidal ideation in self-harm patients. Knowledge about these factors may help identify patients at risk of self-harm and suicide. The overall findings indicate that treatment for self-harm should not be restricted to treatment of co-existing mental illness. Additional strategies targeting the antecedents of self-harm behaviour, such as negative affective states and alcohol consumption, should be employed. Specific treatments regarding these findings should be further studied. Finally, there is a need for more consistent and informative definitions of self-harm and suicidal behaviour.
References


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Journal of Youth and Adolescents, 34, 447-457. doi: 10.1007/s10964-005-7262-z


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Appendix A

E.D. / TRIAGE CASE REVIEW

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| PSYCH M.O. Yes |                     |
| PSYCH CONS Yes |                    |
| DUTY OFFICER Yes |                 |
| SOCIAL WORKER Yes |               |
| ALO Yes |                        |
| Other Yes |                      |

| REFERRAL SOURCE: POLICE Yes |         |
| G.P. Yes |                        |
| AMBULANCE Yes |                     |
| SELF Yes |                         |
| N.G.O. Yes |                      |
| PRIVATE PSYCH Yes |                |
| E.D. Yes |                          |
| COMM.TEAM Yes |                      |
| FAMILY Yes |                        |
| OTHER SERVICE Yes |                   |

| M.H.A. AT REFERRAL Yes |         |
| AT OUTCOME Yes |                    |

| BED ISSUE: Yes |         |
| RECENT ADMISSION (3/12): Yes |                   |
| EVER ADMITTED: Yes |                 |
| ON MEDICATION: Yes |                   |
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### Appendix B

**E.D. / TRIAGE CASE REVIEW**

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<th>M / F</th>
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<td>Y / N</td>
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<td>LIVES ALONE</td>
<td>Y / N</td>
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<tr>
<td>IN RELATIONSHIP</td>
<td>Y / N</td>
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<tr>
<td>EMPLOYED</td>
<td>Y / N</td>
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<tr>
<td>BORN OVERSEAS</td>
<td>Y / N</td>
</tr>
<tr>
<td>INDIGENOUS</td>
<td>TRIAGE / E.D. / CATT/COMMUNITY</td>
</tr>
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**SEEN BY:**

- E.D. MEDICAL
- EDPLN
- PSYCH M.O.
- PSYCH CONS

**REFERRAL SOURCE**

- POLICE
- AMBULANCE
- SELF
- N.G.O
- GP
- E.D.
- COMM.TEAM
- FAMILY
- PRIVATE PSYCH
- OTHER SERVICE

**M.H.A**

- AT REFERAL
- AT OUTCOME

| BED ISSUE: | Y / N |
| RECENT ADMISSION: | Y / N |
| EVER ADMITTED: | Y / N |
| ON MEDICATION: | Y / N |
| **FAMILY HISTORY:**  | Y | / | N |
| **HAS G.P.:**        | Y | / | N |
| **REVIEW CONCERNS:** | Y | / | N |
| **S/W CONCERNS:**    | Y | / | N |

**CURRENT COMM. SERVICES:**
- COMM.
- ACTT
- EEP
- FOAHMS
- CAHMS

**SYMPTOMS:**
- MOOD ELEVATED
- MOOD DEFLATED
- PSYCHOSIS
- ORGANIC/PHYSICAL
- AMPHETAMINES
- ETOH
- THC
- COGNITION
- SOCIAL/FISCAL
- ACCOMMODATION
- PERSONALITY
- SLEEP
- FORENSIC
- SECURITY/RESTRAINT
- ANXIETY
- EATING
- SUICIDAL
- DSH
- VIOLENCE
- INDIGENOUS ISSUES

**ADMITTED:**
- Y | / | N

**VOLUNTARY:**
- Y | / | N

**OTHER HOSPITAL**
- Admitted
- Referred
**FOLLOW UP:**

<table>
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<th>PRIVATE ADMIT</th>
<th>PRIVATE O/P</th>
<th>NGO</th>
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Appendix C

Table C1

Comparison of Patients Presenting with Self-injury, and Patients with Neither Self-harm or Suicidal Behaviour

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>seB</th>
<th>Wald</th>
<th>Exp(B)</th>
<th>95%CI for OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>.155</td>
<td>.298</td>
<td>.268</td>
<td>1.167</td>
<td>.650-2.095</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mood*</td>
<td>.623</td>
<td>.252</td>
<td>6.100</td>
<td>1.856</td>
<td>1.137-3.060</td>
</tr>
<tr>
<td>Anxiety*</td>
<td>-.638</td>
<td>.301</td>
<td>4.499</td>
<td>.528</td>
<td>.293-.953</td>
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<td>Constant</td>
<td>-1.542</td>
<td>.195</td>
<td>62.781</td>
<td>.214</td>
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</tr>
</tbody>
</table>

Note. SE= standard error; OR=odds ratio; CI=confidence interval. Mood= mood deflated.

*p<.05, **p<.01, ***p<.001
Appendix D

Table D1

Comparison of Patients Presenting with Self-harm with Suicidality vs. Neither Self-harm or Suicidality

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
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<th>Exp(B)</th>
<th>95%CI for OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>.486</td>
<td>.268</td>
<td>3.291</td>
<td>1.626</td>
<td>.962-2.751</td>
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<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mood***</td>
<td>1.003</td>
<td>.243</td>
<td>17.002</td>
<td>2.727</td>
<td>1.693-4.394</td>
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<tr>
<td>Anxiety</td>
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<td>.256</td>
<td>.341</td>
<td>.861</td>
<td>.521-1.422</td>
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<td>-1.810</td>
<td>.206</td>
<td>77.286</td>
<td>.164</td>
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</table>

Note. SE= standard error; OR=odds ratio; CI=confidence interval. Mood= mood deflated.

*p<.05, **p<.01, ***p<.001
Appendix E

Table E1

Logistic Regression Analysis of Self-injury vs. Self-harm with Suicidality: Model 1

<table>
<thead>
<tr>
<th>Predictor</th>
<th>B</th>
<th>seB</th>
<th>Wald</th>
<th>Exp(B)</th>
<th>95%CI for OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Male*</td>
<td>.797</td>
<td>.338</td>
<td>5.554</td>
<td>2.220</td>
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<tr>
<td>&lt;18</td>
<td></td>
<td></td>
<td>1.494</td>
<td></td>
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<tr>
<td>18-30</td>
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<td>.386</td>
<td>.240</td>
<td>.828</td>
<td>.389-1.763</td>
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<tr>
<td>31-40</td>
<td>-.552</td>
<td>.516</td>
<td>1.144</td>
<td>.576</td>
<td>.209-1.583</td>
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<tr>
<td>41-50</td>
<td>-.256</td>
<td>.551</td>
<td>.216</td>
<td>.774</td>
<td>.263-2.279</td>
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<td>51+</td>
<td>-.521</td>
<td>.611</td>
<td>.727</td>
<td>.594</td>
<td>.179-1.967</td>
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<td></td>
<td></td>
<td>1.524</td>
<td></td>
<td></td>
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<tr>
<td>Lower</td>
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<td>.338</td>
<td>1.293</td>
<td>.681</td>
<td>.351-1.321</td>
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<tr>
<td>Middle</td>
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<td>.500</td>
<td>.565</td>
<td>.687</td>
<td>.258-1.829</td>
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<tr>
<td>Constant</td>
<td>.301</td>
<td>.332</td>
<td>.822</td>
<td>1.351</td>
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Note. SE= standard error; OR=odds ratio; CI=confidence interval.

*p<.05, **p<.01, ***p<.001
Table E2

*Logistic Regression Analysis of Self-injury vs. Self-harm with Suicidality: Model 2*

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<th>95%CI for OR</th>
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<td><strong>Step 1</strong></td>
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<tr>
<td>Male*</td>
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<td>.343</td>
<td>5.007</td>
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<td>1.100-4.213</td>
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<td>&lt;18</td>
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<td>1.706</td>
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<tr>
<td>18-30</td>
<td>-.239</td>
<td>.396</td>
<td>.364</td>
<td>.788</td>
<td>.363-1.711</td>
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<td>.523</td>
<td>1.330</td>
<td>.547</td>
<td>.196-1.525</td>
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<td>.556</td>
<td>.283</td>
<td>.744</td>
<td>.250-2.212</td>
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<td>.872</td>
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<td>.706</td>
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*Note. SE= standard error; OR=odds ratio; CI=confidence interval.*

*p<.05, **p<.01, ***p<.001*
Table E3

Logistic Regression Analysis of Self-injury vs. Self-harm with Suicidality: Model 3

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<td>Step 1</td>
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<td>Male*</td>
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<td>.350</td>
<td>5.744</td>
<td>2.313</td>
<td>1.165-4.593</td>
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<td>18-30</td>
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<td>.172</td>
<td>.845</td>
<td>.381-1.874</td>
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<td>1.434</td>
<td>.526</td>
<td>.184-1.506</td>
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<td>.721</td>
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<td>.330-1.288</td>
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<td>.713</td>
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<td>.301</td>
<td>1.229</td>
<td>.589-2.565</td>
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Note. SE= standard error; OR=odds ratio; CI=confidence interval; Mood= mood deflated.

*p<.05, **p<.01, ***p<.001