Risk and Protective Factors of Suicidality in New Zealand Young Adult Males

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**Glossary**

**Exposure to Suicide.** Knowing someone personally who has died by suicide.

**Suicide.** When someone has intentionally taken their own life (as determined by coronial ruling).

**Suicidality.** A person who is actively thinking about suicide, demonstrates suicidal behaviour or has made previous attempts on their life.

**Suicidal Behaviour.** Behaviours that may occur as a result of suicidal distress, including suicide attempts and completed suicide.

**Suicidal Ideation.** Thoughts about suicide.
Abstract

For the past three decades New Zealand’s suicide rates have continued to grow. Young adult males are disproportionally represented in these statistics, particularly in those from rural areas (Beautrais, 2018; Pearce et al., 2007). Psychological risk factors of suicide have been widely documented in the current literature, however, they have often failed to enhance our understanding of the underlying mechanisms that perpetuate and protect against suicidal ideation and behaviour (suicidality). Hopelessness, in particular, has been consistently demonstrated as strong predictor of suicidality. An emerging protective factor, called grit, has been demonstrated to weaken this relationship between hopelessness and suicide (Pennings et al., 2015). The aims of the present study were to examine psychological risk and protective factors associated with suicidality and explore the similarities and differences among these factors between rural- and urban-based individuals. The study further examined the effect of grit on the relationship between hopelessness and suicidality. A total of 440 young adult males who self-identified as either urban (N=333) or rural (N=107) completed an online questionnaire assessing factors associated with suicidality. Hopelessness and grit were significantly positively and negatively associated, respectively with suicidality in the sample as a whole and amongst the subgroup of urban individuals. However, these associations were not seen amongst rural individuals. The results also further provided support for grit as a protective buffer on the relationship between hopelessness and suicidality. Tentatively, though insignificant, the rural subgroup’s results suggested high levels of grit may possibly have the opposite effect that is intended on the relationship between hopelessness and suicidality. Overall, these findings provide further insight into the complex interrelationships between grit, hopelessness and suicidality and a move towards strength-based approaches of suicide intervention.
Introduction

Suicide – A Global Phenomenon

Each year over one million people are estimated to die by suicide, accounting for 1.4% of all deaths worldwide. These statistics are described as the “tip of the iceberg”. To continue the analogy, what lies below the water are the countless other people that have thoughts of suicide, people that have made failed attempts, and many of the ambiguous deaths that are labelled as accidental death (Värnik, 2012; WHO, 2016). Every death by suicide also has a ripple effect, devastating family, friends and the wider community. It is estimated that 4.5 million people are adversely effected by the loss of a loved one to suicide yearly (Mcglothlin, 2006).

The World Health Organisation estimates that suicide rates have increased over the past 50 years by roughly 60% worldwide (WHO, 2016). Epidemiological statistics suggest that a number of psychosocial factors contribute to suicide and suicide risk, helping to explain the large variation in suicide rates across different countries. For example, among European countries, Southern European countries (e.g., Italy) have the lowest rates and Central European and Scandinavian countries have the highest (e.g., Denmark) (Diekstra, 1996; WHO, 2016). It is suggested that one reason for these different rates is that rates of mental illness and access to subsequent treatment may also vary across countries (Bertolote et al., 2003; Cantor, 2008; Hawton & Van Heeringen, 2008).

With respect to gender, the global suicide rate in males is 13.5 per 100,000, related to 7.7 per 100,000 for females (WHO, 2016). Such findings indicate that males are at greater risk for suicide compared to females. In addition, youth and young adults appear to show growing rates of suicide. Globally, suicide is the 18th leading cause of death across the lifespan. For youth and young adults (15-29 years of age), however, it is the 2nd leading cause of death (WHO, 2016). Over recent years, research and prevention efforts aimed at decreasing suicide
amongst males and youth and young adults have increased dramatically. Even with this increased effort, there is little evidence that suicide rates have changed substantially since 1990 (Kessler et al., 2005; WHO 2016).

In the current literature review, given the country specific rates and psychosocial factors, the review will first outline suicide in Aotearoa New Zealand. This review will encompass specific populations, such as males, Māori, youth, and people living in rural areas, all of which appear to show an increased risk for suicide in Aotearoa New Zealand. Second, demographic risk factors of suicide will be reviewed. Third, existing studies into psychological risk and protective factors of suicide will be outlined. Fourth, existing empirical literature examine the relationship between known risk factors (e.g., hopelessness) and suicide, and moderating protective factors (e.g., grit) will be reviewed. Fifth, current suicide prevention efforts in Aotearoa New Zealand will be summarised. Lastly, the aims and hypotheses of the present study will be outlined.

**Suicide in Aotearoa (New Zealand)**

Over the past three decades, suicide rates in Aotearoa New Zealand have continued to increase. The Ministry of Health (2017) estimates the economic costs of the 508 suicides in 2013 was over $250,000,000 (i.e., ~$450,000/suicide). In addition, the intangible costs, including the immense grief and bereavement of family and friends add to these direct economic costs. Given that, in 2018, the number of suicides in Aotearoa New Zealand increased to 668 (rate of 13.87/100,000), the cost of suicide continues to climb (Ministry of Health, 2017)

In parallel with global trends, higher rates of suicide are seen in young male populations. Male’s make up an estimated 75% of suicides in Aotearoa New Zealand and suicide ranks as the number one leading cause of death for males between the ages of 15-24
years (Ministry of Health, 2016). One reason for the higher rates in males is that they tend to use more lethal methods (e.g., firearm) than females (Beautrais, 2000).

In addition to gender and age, ethnicity is also a strong predictor of suicide in Aotearoa New Zealand, with Māori (the indigenous people of Aotearoa New Zealand) displaying disproportionately high rates. Recently, the suicide rate among Māori males was 23.72 per 100,000 in 2018, compared to 13.94 per 100,000 in European or other males (Coronial Services of New Zealand, 2019).

To understand the etiological predictors of suicide, numerous studies have examined the rates of suicide according to ethnicity. These are generally measured by contrasting ethnic majority groups with those in ethnic minority groups, for example in Aotearoa New Zealand, comparing Māori and Non-Māori. In addition, a number of studies have been conducted with specialist psychiatric and primary care populations, making similar comparisons between Māori and Non-Māori, without first considering other factors, such as specific cultural variables that do not align with standard Western approaches to assessment and diagnosis (Durie, 2017; Tapsell & Mellsop, 2007).

Further, recent longitudinal research demonstrated that differences between Māori and Non-Māori in terms of mental health difficulties (e.g., depression) are largely explained by sociodemographic factors such as family adversity and socioeconomic status (Gillies et al., 2017). These findings call into question the utility of ethnic-group comparisons, which themselves may have a negative impact on the populations being compared.

**Suicide in Rural Areas**

New Zealand’s rural population is estimated at 14% of the total population, with “rural” being defined by geographical location and population (Statistics New Zealand, 2006). There appears to be a growing gap between rural and urban suicides, with consistent increases in rural suicide rates since the 1990s (Beautrais, 2018; Gallagher et al., 2008; Hirsch & Cukrowicz,
2014; Kapusta et al., 2008; Ministry of Health, 2007; Pearce et al., 2007). More recently, the Ministry of Health (2016) reported a suicide rate of 20.3 per 100,000 in rural dwelling males, compared to 16.6 per 100,000 in urban dwelling males.

In New Zealand and Australia, rural suicide is largely due to elevated rates of suicide of males working in specifically farm-related occupations (Gallagher et al., 2008; Kennedy et al., 2014). This is an important distinction, as it provides greater specificity than solely relying on one’s address to determine their rural status. Researchers in New Zealand found that one of the highest percentage of suicides in men who were employed, were men working in farm and forestry industries (e.g., dairy farm workers, farm managers), indicating that there is an opportunity for suicide intervention based in this industry (Suicide Mortality Committee, 2016).

Similar to nationwide trends, recent research statistics by the Rural Health Alliance of New Zealand found that suicide rates are especially high for males within rural communities and indicated that of the 185 farm-suicides from 2007-2016, over 90% were male and a third of these were under 30 years old (Beautrais, 2018). The main factors that contribute to suicide risk in rural areas, although not exhaustive, include geographical and interpersonal isolation, poor access to support services and mental health care, rural ideologies (e.g., stigmatized view of mental health), unsustainable work ethic, uncertainty in agriculture, and easy access to means (e.g., firearms) (Beautrais, 2018; Hirsch & Cukrowicz, 2014; Kennedy et al., 2014).

Among the risk factors specific to those living in rural areas, several contextual factors have been suggested to increase the risk of suicidal behaviour in young males. Indeed, for many rural young men who have taken their life in New Zealand, common factors included relationship losses, acute alcohol intoxication, and ready access to a firearm (Beautrais, 2018; Pearce et al., 2007). Alongside disproportionate suicide statistics, the Ministry of Health (2007) reported that scores on the General Health and Mental Health scales (measuring both physical
and mental health difficulties) were higher among rural males than urban males, and that rural males were significantly more likely to see a GP with an injury or poisoning than urban males. The Mental Health Inquiry further outlined the significant difficulty in accessing mental health services in rural dwelling New Zealanders, and the need for rural, or farm specific, targets for suicide prevention (Government Inquiry into Mental Health and Addiction, 2018).

Overall, the aforementioned information indicates rural populations in New Zealand are often under-served and overlooked in regard to the identification and treatment of mental health issues and suicidal behaviour and highlight the need for rural specific efforts for suicide prevention.

**Risk Factors of Suicide**

Research literature in New Zealand and Australia frequently sight several key demographic and psychological risk factors for young males including psychiatric illness, substance misuse, unemployment, lower socioeconomic status, rural residence, exposure to suicide, and single relationship status (Beautrais, 2000; Hirsch & Cukrowicz, 2014; Pitman et al., 2012; Suicide Mortality Review Committee, 2016). Specifically, the New Zealand Suicide Morality Committee (2016) found in their review of the 1797 suicide deaths between 2007 and 2011, that 30% of men and 40% of mental health users were unemployed at the time of their deaths.

In addition, exposure to suicide is a significant demographic risk factor of suicide. Research is varied on the exact number of people that are severely affected by the loss of someone to suicide, however, it is estimated anywhere from five to one hundred people may be adversely affected. Knowing someone who has taken their life (i.e., “exposure to suicide”) significantly increases the risk of suicidal ideation, behaviours, and attempts. (Beautrais et al., 2006; Cerel & Campbell, 2008).
Furthermore, stress has been demonstrated to increase risk of suicidal behaviours. A stress-diathesis model is a common component of models of mental health, where the combination of a diathesis (vulnerability) and stressor can trigger the onset of a mental health (O’Connor et al., 2016, 2017). In a similar vein, recent studies have indicated that suicidal behaviour is the result of an interaction between acutely stressful events and a susceptibility to suicidal behaviours (O’Connor, Gartland, & O’Connor, 2020). A meta-analysis of the cortisol-suicide literature, indicated in those under 40 years of age, cortisol was positively associated with suicide attempts, whereas for those over 40 years of age the association was negative, indicating the importance of age-dependent intervention targets (D. B. O’Connor et al., 2016).

In addition, research has further indicated that psychiatric patients who score higher on suicide risk scales, were found it more difficult to de-emphasise the importance of a source of stressful life event and resolve it, than non-suicidal patients, highlighting they are more likely to make a “mountains out of a molehills” of their current life circumstances (Horesh et al., 1996).

Psychiatric illness is also predictive of suicidal risk. More specifically, Major Depressive Disorder as defined by DSM-V (American Psychiatric Association, 2013) is characterised by persistent sadness and a lack of interest or pleasure in previously rewarding or enjoyable activities, and is the most common psychiatric disorder presented in a person who has died by suicide (Cavanagh et al., 2003; Garlow et al., 2008; Hawton et al., 2013; R. C. O’Connor et al., 2009). It is important to note, however, that not all people who have died by suicide have shown to have mental health difficulties (e.g., depression), or have undergone psychiatric treatment. Recent statistics in New Zealand have shown that less than 50% of those who take their life have received psychiatric care or had a mental health diagnosis. Some suggest that a high percentage of these people may have an undetected disorder, while others argue that suicide is often not directly linked to mental illness or mental health difficulties at all (Suicide Mortality Review, 2016).
Hopelessness Theory of Suicide

Defined as a feeling or state of despair, hopelessness is a key psychological factor in several psychiatric disorders, including depression. In brief, the hopelessness theory of depression postulates that exposure to an aversive or uncontrollable situation, leads to a sense of helplessness regarding the situation and, as a result, depression (Beck et al., 1993; Liu et al., 2015). Patients high in hopelessness tend to react poorly to life stressors, and hopelessness then acts as a mediator between this psychological distress and suicidal behaviours (Dixon et al., 1991; Lew et al., 2019)

This traditional theory of hopelessness with respect to depression has now been extended to a specific “theory of suicide” (Abramson et al., 1989) and is now a well-documented theory for understanding the psychological processes of suicidal ideation, behaviours, and attempts (Abramson et al., 2006; Kuo et al., 2004; Wetzel, 1976). Indeed, hopelessness reliably predicts suicide in psychiatric patients. Greater hopelessness has also been shown to differentiate individuals who have engaged in suicidal behaviour on a single occasion versus individuals that have had multiple suicide attempts (Beck et al., 1989; Hawton et al., 2013). Furthermore, Beck, Kovacs and Weissman (1974) found that hopelessness was a key variable in the suicidal behaviour of hospitalised patients. Similarly, Beck et al. (1990) found that outpatients who scored high on the Beck Hopelessness Scale were 11 times more likely to die by suicide than the other outpatients. In addition to clinical studies, hopelessness predicts suicidal ideation, suicide behaviour, attempts and completed suicide in non-clinical populations (Kuo et al., 2004).

Further, studies have consistently identified that the psychological construct of hopelessness is significantly stronger and more consistent predictor of suicidality than depression alone, and may encapsulate the individuals that no not have depression, but chose to take their life (Beck et al., 1974, 1993; Kuo et al., 2004; Wetzel, 1976). Although
hopelessness is associated with heightened suicide risk, less is known about the underlying mechanisms between feelings of hopelessness and suicidal thoughts or behaviours (Kleiman & Anestis, 2015).

Although evidence demonstrates a clear link between adverse life experiences, psychiatric illness, hopelessness and suicidality, these risk factors do not automatically lead to suicidal ideation or behaviours, suggesting that there may be resiliency factors influence the relationship between these factors and suicidality (Blalock et al., 2015; Hirsch et al., 2009; Kleiman & Anestis, 2015).

**Psychological Protective Factors of Suicide**

Research has been frequently focused on identifying risk factors of suicidality (e.g., hopelessness), while limited research has focused on understanding protective factors (Franklin et al., 2017). Recently, positive psychology research has suggested a shift away from targeting risk-based factors, and a focus on possible protective factors that might diminish the risk of suicidal ideation, attempts and behaviours (Hirsch, et al., 2019).

Several theories of suicide risk conceptualise the function of resilience-based protective factors as guarding against the negative influences of known risk factors, these are commonly referred to buffering factors. The prospect of successful strength-based interventions is an attractive model to both practitioners and policy makers, and resilience-based targets are frequently mentioned in strategy documents from the Ministry of Health (Atkinson et al., 2009). The conceptualisation of resilience, however, varies widely and is often used interchangeably with several other terms (Atkinson et al., 2009; Fletcher & Sarkar, 2013).

Typically, in the psychology literature, resilience is defined as “the role of mental processes and behaviour in promoting personal assets and protecting an individual from the potential negative effect of stressors” (Fletcher & Sarkar, 2013 p.15). A brief review of the literature reveals that higher levels of resilience have been repeatedly shown to be protective
factor for a wide range of psychiatric disorders and symptomology in the face of adverse life experiences (e.g., trauma) (Atkinson et al., 2009; Besser et al., 2015; Collazzoni et al., 2020; Rutter, 1993, 2006).

Further, resilience is frequently noted as a protective factor against feelings of hopelessness (Campbell-Sills & Stein, 2007; Gooding et al., 2012). More recently, researchers have started to explore the direct relationship between suicidal behaviour and resilience. For example, Roy and colleagues (2007) investigated this relationship with psychiatric patients and found that resilience scores were significantly lower in those who had attempted suicide than those patients who had never attempted suicide. In order to create specific, targeted resilience-based interventions, it is vital to be specific about the factor we are attempting to both measure and target (Roy et al., 2007). A specific resiliency factor that has been generating some interest in research is grit.

Grit is a relatively new construct and is typically defined as perseverance through adversity or failure. Unlike general psychological resilience, however, grit is further defined as the tendency to sustain interest in and effort towards very long-term goals (Duckworth et al., 2007; Duckworth & Quinn, 2009). This an important differentiation, grit is not just having pliability in the face of failure, but also having a deep commitment to a specific future or goal. In addition, grit is advantageous over resilience as a measurable construct that is more clearly defined (Duckworth et al., 2007).

Recent research has suggested a need to move away from main effect models, and investigate more complex moderation models, that help us understand the mechanisms of suicidal thinking and behaviour in a more nuanced manner (Glenn & Nock, 2014; Kleiman & Anestis, 2015). A recent review of studies investigating moderators of suicide indicated that a variety of psychological factors may confer resilience to suicidality and suicide interventions should incorporate the development of these buffering factors (Johnson et al., 2011).
Research has demonstrated that higher levels of grit may serve as a protective factor for suicidal ideation (White et al., 2017). For example, individuals who reported high levels of grit had the highest reduction of suicidal ideation over a 4-month period, to nearly absent levels (Kleiman et al., 2013). Grit has also been shown to buffer against the relationship between adverse life events and suicidal ideation. For example, high levels of grit acted as a buffer between adverse life events (e.g., relationship break-up) and suicidal ideation (no significant relationship), with individuals lower in grit displaying the standard relationship between adverse life events and suicidal ideation (Blalock et al., 2015).

In addition, researchers have found that grit moderates the pathway between post-traumatic stress disorder (PTSD) (Marie et al., 2019), depression symptoms (Kim, 2015), and suicidal ideation in individuals, suggesting that higher levels of grit are associated with reduced severity of suicidal ideation in the presence of psychiatric symptoms.

Critically, grit not only buffers suicidal ideation, but also suicidal behaviours (e.g., plans or attempts of suicide). Pennings and colleagues (2015) demonstrated that grit served as a moderator in the relationship between hopelessness and suicidal ideation and suicidal behaviours (i.e., resolved plans and preparations for suicide), in a sample of U.S. military personnel. Specifically, the relationship between hopelessness and suicidal ideation reduced in size at higher levels of grit. At high levels of grit, suicidal behaviour was inversely associated with hopelessness, suggesting possibly that those who have high grit and hopelessness, make a conscious effort to not plan or prepare for suicide (Pennings et al., 2015).

**Suicide Prevention in New Zealand**

In New Zealand, most of the research on suicide focuses on bereaved family and friend’s recollections and psychiatric populations, which limits our understanding on key suicidal thinking processes. Further, it is also important to consider that a majority of suicide research mentioned in this literature review, is mortality-based information from coroner’s
records. Additionally, as coronial data is not gathered for the purpose of research, there are varied details and consistency.

Understandably, there has been increasing public and policy concern about the issue of youth suicide (particularly in males, Māori, and rural populations) in New Zealand, and the need to develop targeted strategies to reduce these rates. Recently, the Mental Health Inquiry recommended an urgent national suicide prevention strategy, with a target of a 20% reduction in suicide rates by 2030 (Ministry of Health, 2019). More recently, the government has given a $40 million boost to suicide prevention services over the next four years.

In New Zealand, suicide prevention efforts have centralised around mental health problem” or raising awareness of mental health (Ministry of Health, 2011). Recent initiatives from the Ministry of Health include programmes such as “Like Minds, Like Mine”, which worked to counter stigma and discrimination associated with mental health (Ministry of Health, 2018) Although promising results have been identified on the effect on increased awareness and understanding of mental illness (Thornicroft et al., 2014; Vaughan & Hansen, 2004), there is a lack of evidence to suggest campaigns such as these have a significant effect on suicide.

In addition, due to an international surge in community based multilevel interventions for suicide prevention (MISP) showing promising results, a 25-month New Zealand MISP was designed and assigned to randomised controlled hospital regions. The intervention included, for example, workshops of mental health issues, recognition training of suicide risk factors and distribution of print material/ web-based resources. Despite previous success internationally, the MISP-NZ intervention did not have an effect on suicidal behaviours (Collings et al., 2018).

To approach suicide prevention effectively, it is vital to expand our understanding on specific, targeted psychological risk and protective factors to our at-most risk groups in New Zealand, and move away from generalised approaches or solely mental health targeted approaches (Gluckman, 2017). To do this, we need to understand these groups that have
previously overlooked. In addition, research on exclusively main effect models (risk or protective factors associated with suicide risk), are limited in their ability to explain the complexity of suicidal thinking and behaviour processes.

The Present Study

In light of the gap within the suicide literature, three primary aims were established. The first aim of the present study was to examine both traditional and novel risk and protective factors associated with suicidality in a sample repeatedly shown to be at risk for suicide, young males. The literature cited above commonly highlighted key demographic risk factors for young men, including psychiatric illness, rural residence, single relationship status, unemployment and exposure to suicide, which will be included in the analysis (Pitman et al., 2012).

Additionally, the present study aims to explore the similarities and differences in these relationships between individuals identifying as rural and urban. In the current study, self-identification was chosen over “dwelling” specifics. To our knowledge, few reports exist concerning young adult male suicide in urban and rural areas specifically in the New Zealand literature. Furthermore, in light of the gaps in the more complex models of suicide, the present study aims to investigate a moderation model of suicide; specifically the effect of grit on the relationship between hopelessness and suicidality in a New Zealand young male sample.

As previously mentioned, it is also reasonable to assume that between-groups comparisons (Māori vs Non-Māori) provide little value to our understanding of suicide in indigenous populations, without first considering and controlling for key sociodemographic factors and cultural differences (e.g., employment). Therefore, the present study will not use between group comparisons with “Māori” versus “Non-Māori”.
Hypotheses

The following hypotheses were generated in consideration of the above-mentioned aims of the current study.

Hypothesis 1. On the basis of the Hopelessness Theory of Suicide (Abramson et al., 2006), it was predicted that psychological risk factors (hopelessness, depression symptoms, stress symptoms) would be positively associated with suicidality. These associations would be over and above the influence of well-known demographic risk factors and suicide.

Hypothesis 1a. Due to higher levels of suicide rates in rural areas, it was predicted that the rural group would have significantly higher scores in the risk factors of suicide than the urban group.

Hypothesis 2. It was predicted that protective psychological factors, grit and resilience, would be negatively associated with suicide risk.

Hypothesis 2a. Due to higher levels of suicide rates in rural areas, it was predicted that the rural group would have significantly lower scores in the protective factors of suicide when compared to the urban group.

Hypothesis 3. On the basis of the findings of Pennings and colleagues (2015), it was predicted that our study with New Zealand young adult males would find similar findings. We hypothesise that grit will moderate the relationship between hopelessness and suicidality, such as that this relationship would be strongest at lower levels of grit.

Exploratory Analysis. In addition to the above hypotheses, this study will explore trends in the moderating effect of grit on the relationship between hopelessness suicidality in the rural and urban samples separately.
Method

Participants

The online survey was completed by 440 participants who self-identified as a male (or other, e.g., transgender male), ranging in age from 18 to 30 years ($Mean (M) = 22.74, Standard Deviation (SD) = 3.46$). Any participants who identified as “female” were excluded from the study. 333 participants (75.7%) self-identified as “Urban”, and 107 participants (24.3%) self-identified as “Rural”. Their demographic data is summarised in Table 1. All procedures for the online survey were approved by the University of Canterbury Human Ethics Committee (see Appendix B).

Participants were recruited and directed to the Qualtrics survey via social media and community noticeboards. Images and messages containing the outline of the study and survey link were posted to a mixture of university student-based general notice pages, New Zealand based well-being groups (e.g., Movember), and other unique companies with a significant male demographic (e.g., Mainfreight Transport). The survey also targeted rural-based groups (e.g., New Zealand Young Farmers). Physical fliers were posted at the University of Canterbury, Canterbury-based libraries, and various health centres across Aotearoa. Participants could submit their contact details at the end of the survey to enter a prize draw to win one of eight gift vouchers (valued from $50 to $400). Participants were assured that their contact details were not linked to their survey answers and would be kept confidential.

Procedure

Potential participants followed a secure link provided on the online or posted advertisement (see Appendix A). The link took individuals to an online questionnaire developed in Qualtrics, where they were provided with further information about the study (see Appendix C). After reading the information sheet, individuals were asked to complete a consent
form. In the consent form, participants were able to opt into the lucky draw, which was the chance to win one of eight gift cards.

Once participants had agreed to all statements and signed the consent form, they were taken to a separate link to complete the self-report questionnaire which took approximately 20 minutes to complete. After completing the questionnaires, participants were provided a resource sheet with a list of New Zealand helplines, well-being resources, and a list of skills if they were feeling overwhelmed or distressed (see Appendix F). They also had the choice to have a copy of the survey emailed to them via a separate link.

**Measures**

**Demographics.** The present study used a self-report measure of group identification with the following question: “Do you identify as urban or rural”. Participants completed a brief demographic questionnaire on age, gender, ethnicity, education level, employment status, relationship status and mental health status (Appendix E). Age and education level were recorded as continuous variables, while all other variables were categorical e.g., “In a current relationship” was coded into “yes” or “no” categories.

**Exposure to suicide** was measured to establish whether the participants had previously been exposed to suicide through the completion of a friend or family member, participants were asked to respond yes or no to two items (see Appendix E): “Do you personally know anyone who has died by suicide?” and “Has anyone close to you ever completed suicide?”. Total scores for exposure range from 0 to 2. This similar methodology has previously been used as a measure of exposure to suicide (O’Connor et al., 2009, 2012)

**Depressive and Stress Symptoms.** The Depression Anxiety Stress Scale (DASS-21) is a 21-item quantitative measure of distress across 3 domains of depression, anxiety and stress (Lovibond & Lovibond, 1995). Each subscale has seven items, with participants being asked to consider how much the statement applied to them over the past week. For the present
analysis, two subscales associated with suicide risk were used. Firstly, depression was assessed by symptoms of dysphoria [e.g., “I couldn’t seem to experience any positive feeling at all] and hopelessness [e.g., “I felt that life was meaningless]. Total scores for the depression scale range from 0 to 21, with higher levels indicating higher levels of depression severity. According to the DASS scoring criteria, a sum score >11 indicates severe level of depressive symptoms relative to the normed sample. Secondly, stress was assessed by chronic, non-specific arousal [e.g., “I found it hard to wind down”; “I tended to over-react to situations “]. Total scores for the stress scale range from 0 to 21, with higher levels indicating higher levels of stress severity (e.g., score >17 indicated severe level of stress symptoms relative to the population). The DASS-21 depression and stress sub-scales respectively have been shown to demonstrate good internal consistency (Henry & Crawford, 2005). In the present study, the Cronbach’s alpha coefficient was .92 for the Depression Scale and .90 for the Stress Scale respectively.

Suicidality. The Suicide Severity Rating Scale (SRSS) is a 5-item modified web-based, self-report version (Mortier et al., 2018) of the Columbia-Suicide Severity Rating Scale (C-SRSS), which has been shown to demonstrate good reliability and validity (Posner et al., 2011). This modified scale (see Appendix E) was used to identify tendencies towards suicidal ideation [e.g., “In your lifetime, have you ever wished you were dead or would go to sleep and never wake up?"], planning [e.g., “In your lifetime, have you had thought about how you might kill yourself?"], and past attempts [e.g., “In your lifetime, have you made a suicide attempt (i.e. purposely hurt yourself with at least some intention to die? ”]. Total scores for suicide risk ranged from 0 to 5, with a score of 5 indicating both ideation and past suicide behaviour. In the present study, the Cronbach’s alpha coefficient was .82.

Hopelessness. The Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974) is a 20-item questionnaire with true or false items designed to assess participant’s feelings hopelessness within the past week, as defined by thoughts focused on
negative future expectancies. Participants are asked to either endorse or deny a pessimistic statement [e.g., “I might as well give up because there is nothing I can do about making things better for myself”] or an optimistic statement [e.g., “I look forward to the future with hope and enthusiasm”], with a total score ranging from 0 to 20. Extensive research has reported on the reliability and validity of the scale (Steed, 2001). In the present study, the Cronbach’s alpha coefficient was .91.

**Grit.** The Short Grit Scale (Angela Lee Duckworth & Quinn, 2009) is an eight-item questionnaire measures trait-level perseverance [e.g., “Setbacks don’t discourage me”] and passion for long-term goals [e.g., “I have been obsessed with a certain idea or project for a short time, but later lost interest”]. The Grit–S retains the 2-factor structure of the original Grit Scale (Duckworth, Peterson, Matthews, & Kelly, 2007) with 4 fewer items and improved psychometric properties. Items are scored on a scale ranging from 1 (very much like me) to 5 (not at all like me), with greater scores indicating a greater ability to sustain interest in and effort toward long-term goals. In the present study, the Cronbach’s alpha coefficient was .79.

**Resilience.** The Connor-Davidson resilience revised scale (CD-RISC-10) is a 10-item questionnaire, based on the original CD-RISC (Connor & Davidson, 2003). This revised scale was shown to have strong psychometric properties amongst a university population (Campbell-Sills & Stein, 2007) and measures several components of resilience, for example the participant’s ability to cope with stress [e.g., “Having to cope with stress can make me stronger”] and deal with what comes along [e.g. “Tend to bounce back after illness or hardship”]. Items were scored on a scale ranging from 0 (not true at all) to 4 (true nearly all the time). In the present study, the Cronbach’s alpha coefficient was .87.

**Analytic Strategy**

Missing data (highest missing 6% of the sample) were imputed at the item-level, 10 iterations in line with recommendations (Graham, 2009; Schafer & Graham, 2002) using the
multiple imputation process in SPSS version 25 (IBM Corp., 2017). Data was analysed using the Statistical Package for Social Sciences (IBM SPSS Statistics 25).

Independent samples t-tests and chi-square analyses were conducted to examine differences in key descriptive variables as a function of group identification. In order to examine the relationship between identified psychological risk and protective factors, in relation to suicide risk, a series of hierarchal linear regressions were conducted. Key descriptive variables were entered in step 1, psychological risk factors in step 2 psychological protective factors were entered in step 3, and the interaction term (grit x hopelessness) was calculated and entered in step 4 (see Figure 1). Significant interactions were then examined using a 2-way linear interaction effect (Dawson, 2014; Dawson & Richter, 2006).

In order to examine suicide risk as a function of identified descriptive and psychological variables, hierarchical linear regressions were conducted with the whole sample and independently with rural and urban individuals. All the predicted variables were mean-centred before regression analysis. Threshold for statistical significance was set at the $p = < .05$ level for all analyses.

![Diagram](image)

*Figure 1. Moderation Model of Interaction between Hopelessness and Grit on Suicidality*
Results

Demographics

Pearson Chi-Square analyses yielded no significant differences between the rural and urban groups in age, employment status (employed/unemployed), relationship status (currently in a relationship=yes/no), or the presence of mental health diagnosis (Table 1). An independent samples t-test indicated that the education level was significantly higher in the urban group than the rural group $t(440) = 2.89, p = 0.004$. Cohen’s effect size value ($d = 0.32$) revealed a small practical significance. Taken together, results of these analyses suggest that the urban and rural groups were relatively equal with respect to demographic characteristics.

Table 1

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Urban (n=333)</th>
<th>Rural (n=107)</th>
<th>TOTAL (N=440)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (SD)</td>
<td>22.65 (3.41)</td>
<td>23.05 (3.61)</td>
<td>22.74 (3.46)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>331 (99.40%)</td>
<td>107 (100%)</td>
<td>438 (99.5%)</td>
</tr>
<tr>
<td>Other (e.g., Transgender Male)</td>
<td>2 (0.60%)</td>
<td>0 (0%)</td>
<td>2 (0.5%)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New Zealand European</td>
<td>285 (85.6%)</td>
<td>99 (92.5%)</td>
<td>384 (87.3%)</td>
</tr>
<tr>
<td>Māori</td>
<td>30 (9.0%)</td>
<td>10 (9.3%)</td>
<td>40 (9.1%)</td>
</tr>
<tr>
<td>Samoan</td>
<td>3 (0.9%)</td>
<td>0 (0%)</td>
<td>3 (0.7%)</td>
</tr>
<tr>
<td>Cook Islands Māori</td>
<td>1 (0.3%)</td>
<td>0 (0%)</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>Tongan</td>
<td>1 (0.3%)</td>
<td>0 (0%)</td>
<td>1 (0.2%)</td>
</tr>
<tr>
<td>Chinese</td>
<td>8 (2.4%)</td>
<td>2 (1.9%)</td>
<td>10 (2.3%)</td>
</tr>
<tr>
<td>Indian</td>
<td>5 (1.5%)</td>
<td>1 (0.9%)</td>
<td>6 (1.4%)</td>
</tr>
<tr>
<td>Other (e.g., Dutch)</td>
<td>46 (13.8%)</td>
<td>7 (6.5%)</td>
<td>53 (12%)</td>
</tr>
</tbody>
</table>

Currently in a Relationship
## Risk and Protective Factors of Suicidality

Yes  138 (41.4%)  44 (41.1%)  182 (41.4%)  
No   195 (58.6%)  63 (58.9%)  258 (58.6%)  

### Relationship Status Defined

<table>
<thead>
<tr>
<th>Status</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married</td>
<td>14 (4.2%)  5 (4.7%)  19 (4.3%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>1 (0.3%)  0 (0%)  1 (0.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Separated</td>
<td>6 (1.8%)  1 (0.9%)  7 (1.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In a de facto relationship</td>
<td>23 (6.9%)  4 (3.7%)  27 (6.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In a relationship (e.g., girlfriend)</td>
<td>101 (30.3%)  35 (32.7%)  136 (30.9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single, never married</td>
<td>188 (56.5%)  62 (57.9%)  250 (56.8%)</td>
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<td></td>
</tr>
</tbody>
</table>

### Education Level

<table>
<thead>
<tr>
<th>Level</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>No schooling completed</td>
<td>1 (0.3%)  0 (0%)  1 (0.2%)</td>
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<td></td>
</tr>
<tr>
<td>Some high school, no NCEA Certificate</td>
<td>3 (0.9%)  4 (3.7%)  7 (1.6%)</td>
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<td></td>
</tr>
<tr>
<td>NCEA Level 1</td>
<td>5 (1.5%)  6 (5.6%)  11 (2.5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCEA Level 2</td>
<td>7 (2.1%)  7 (6.5%)  14 (3.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCEA Level 3/ UE</td>
<td>71 (21.3%)  24 (22.4%)  95 (21.6%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Some tertiary credit, no degree</td>
<td>90 (27.0%)  25 (23.4%)  115 (26.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade/ technical/ vocational diploma</td>
<td>24 (7.2%)  12 (11.2%)  36 (8.2%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate Degree</td>
<td>1 (0.3%)  1 (0.9%)  2 (0.5%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor's Degree</td>
<td>106 (31.8%)  21 (19.6%)  127 (28.9%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Master's Degree</td>
<td>20 (6.0%)  5 (4.7%)  25 (5.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Degree</td>
<td>4 (1.2%)  2 (1.9%)  6 (1.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctorate Degree</td>
<td>1 (0.3%)  0 (0%)  1 (0.2%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Currently Employed

<table>
<thead>
<tr>
<th>Status</th>
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<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>309 (92.8%)</td>
<td>101 (94.4%)</td>
<td>410 (93.2%)</td>
</tr>
<tr>
<td>No</td>
<td>24 (7.2%)</td>
<td>6 (5.6%)</td>
<td>30 (6.8%)</td>
</tr>
</tbody>
</table>

### Employment Status Defined

<table>
<thead>
<tr>
<th>Status</th>
<th>Yes</th>
<th>No</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed for wages, full-time</td>
<td>101 (30.3%)</td>
<td>55 (51.4%)</td>
<td>156 (35.5%)</td>
</tr>
<tr>
<td>Employed for wages, part-time</td>
<td>84 (25.2%)</td>
<td>17 (15.9%)</td>
<td>101 (23%)</td>
</tr>
<tr>
<td>Self-employed</td>
<td>21 (6.3%)</td>
<td>8 (7.5%)</td>
<td>29 (6.6%)</td>
</tr>
<tr>
<td>Out of work, and looking for work</td>
<td>22 (6.6%)</td>
<td>7 (6.5%)</td>
<td>29 (6.6%)</td>
</tr>
</tbody>
</table>
Test of Hypothesis 1b & 2b: Urban vs Rural Differences in Measures

As can be seen in Table 2, an independent samples t-test revealed no significant differences between rural and urban group’s suicidality, hopelessness, depression symptoms and stress symptoms. However, both the grit, $t(440) = -2.669$, $p = 0.008$, and resilience scores, $t(440) = -1.983$, $p = 0.047$, were significantly higher in the rural group than the urban group.
Table 2

Psychological Risk and Protective Factors Across Groups

<table>
<thead>
<tr>
<th>Measure</th>
<th>Urban (n=333) M (SD)</th>
<th>Rural (n=107) M (SD)</th>
<th>TOTAL(n=440) M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hopelessness</td>
<td>6.03 (5.20)</td>
<td>5.44 (5.02)</td>
<td>5.89 (5.16)</td>
</tr>
<tr>
<td>Depression Symptoms</td>
<td>14.62 (11.84)</td>
<td>14.73 (12.13)</td>
<td>14.64 (11.90)</td>
</tr>
<tr>
<td>Stress Symptoms</td>
<td>11.23 (10.11)</td>
<td>9.58 (9.69)</td>
<td>10.83 (10.02)</td>
</tr>
<tr>
<td>Grit</td>
<td>3.03 (0.68)</td>
<td>3.23 (0.61)</td>
<td>3.08 (0.67)</td>
</tr>
<tr>
<td>Resilience</td>
<td>26.12 (7.26)</td>
<td>27.70 (6.60)</td>
<td>26.51 (7.13)</td>
</tr>
<tr>
<td>Suicidality (Outcome Measure)</td>
<td>2.35 (1.75)</td>
<td>2.32 (1.76)</td>
<td>2.35 (1.75)</td>
</tr>
</tbody>
</table>

Test of Hypothesis 1a &2a: Risk and Protective Factors Associations with Suicide Risk

Results of the hierarchal multiple regression analysis predicting suicidality in the overall sample (N=440) are presented in Table 3. Among risk factors, hopelessness and stress were significantly associated with suicidality over and above the effects of age and exposure. In this model, employment, relationship status, and depression were not significantly associated with suicidality. In addition, there was a significant negative association with suicidality and grit. There was no significant association with resilience within this model.

With regards to demographic factors, age and exposure was significantly positively associated with suicidality before and after the introduction of risk and protective factors. Education was negatively associated with suicidality across the model, indicating that a higher education was a protective demographic.
Table 3  
*Regression of Total Sample (N=440)*

<table>
<thead>
<tr>
<th>Steps</th>
<th>Measures</th>
<th>Unstandardized Coefficients</th>
<th>95% Confidence Intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>3.80</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.06</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>Exposure</td>
<td>0.41</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-0.17</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>-0.45</td>
<td>0.32</td>
</tr>
<tr>
<td></td>
<td>Relationship</td>
<td>-0.28</td>
<td>0.17</td>
</tr>
<tr>
<td>2</td>
<td>(Constant)</td>
<td>2.79</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.05</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Exposure</td>
<td>0.34</td>
<td>0.09</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-0.12</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>0.03</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>Relationship</td>
<td>0.03</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td>Hopelessness</td>
<td>0.13</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td>3</td>
<td>(Constant)</td>
<td>2.76</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.05</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Exposure</td>
<td>0.35</td>
<td>0.09</td>
</tr>
<tr>
<td></td>
<td>Education</td>
<td>-0.12</td>
<td>0.04</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>0.03</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>Relationship</td>
<td>0.03</td>
<td>0.15</td>
</tr>
<tr>
<td></td>
<td>Hopelessness</td>
<td>0.13</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td>0.02</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>Grit</td>
<td>-0.27</td>
<td>0.13</td>
</tr>
<tr>
<td></td>
<td>Resilience</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>4</td>
<td>(Constant)</td>
<td>2.89</td>
<td>0.43</td>
</tr>
<tr>
<td></td>
<td>Age</td>
<td>0.05</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>Exposure</td>
<td>0.34</td>
<td>0.09</td>
</tr>
</tbody>
</table>
RISK AND PROTECTIVE FACTORS OF SUICIDALITY

<table>
<thead>
<tr>
<th>Factor</th>
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<th>SE</th>
<th>t</th>
<th>p</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>-0.12</td>
<td>0.04</td>
<td>-3.16</td>
<td>0.00**</td>
<td>-0.19</td>
<td>0.05</td>
<td>-0.36</td>
<td>0.72</td>
</tr>
<tr>
<td>Employment</td>
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<td>0.28</td>
<td>0.05</td>
<td>0.96</td>
<td>-0.53</td>
<td>0.05</td>
<td>-0.19</td>
<td>0.85</td>
</tr>
<tr>
<td>Relationship</td>
<td>0.05</td>
<td>0.15</td>
<td>0.33</td>
<td>0.75</td>
<td>-0.24</td>
<td>0.33</td>
<td>0.33</td>
<td>0.55</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>0.14</td>
<td>0.02</td>
<td>6.39</td>
<td>0.00**</td>
<td>0.10</td>
<td>0.18</td>
<td>0.33</td>
<td>0.01</td>
</tr>
<tr>
<td>Depression</td>
<td>0.01</td>
<td>0.01</td>
<td>1.34</td>
<td>0.18</td>
<td>-0.01</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Stress</td>
<td>0.02</td>
<td>0.01</td>
<td>2.28</td>
<td>0.02*</td>
<td>0.00</td>
<td>0.04</td>
<td>0.00</td>
<td>0.04</td>
</tr>
<tr>
<td>Grit</td>
<td>-0.25</td>
<td>0.13</td>
<td>-1.89</td>
<td>0.06</td>
<td>-0.51</td>
<td>0.55</td>
<td>-0.51</td>
<td>0.55</td>
</tr>
<tr>
<td>Resilience</td>
<td>0.01</td>
<td>0.01</td>
<td>0.85</td>
<td>0.40</td>
<td>-0.01</td>
<td>0.04</td>
<td>-0.01</td>
<td>0.04</td>
</tr>
<tr>
<td>Hopelessness x Grit</td>
<td>0.49</td>
<td>0.02</td>
<td>2.29</td>
<td>0.02*</td>
<td>0.01</td>
<td>0.09</td>
<td>0.01</td>
<td>0.09</td>
</tr>
</tbody>
</table>

*p<.05; **p<.01

Note: Imputed results are pooled across 10 analyses. As such, standardized betas and $r^2$ change are not presented. While imputation does not generate pooled results for assessing model fit, all ANOVAs across the 10 imputation iterations were significant (all $p < .001$)

**Figure 2. Simple Slopes Analysis Evaluating the Relationship between Hopelessness and Suicidality at Different Levels of Grit in the Total Sample**
Test of Hypothesis 4: Grit as a Moderator

As shown in Table 3, the grit x hopelessness interaction was significant in the overall sample (N=440), after controlling for demographic variables, and the introduction of risk and protective factors. Figure 2 illustrates that grit moderates the relationship between hopelessness and suicidality in the overall sample. An Analyses of simple slopes suggested that the association between hopelessness and the suicidality was significant and positive at low levels of grit (simple slope= 0.108, t(4.917), p<.001) and high levels of grit (simple slope=0.174, t(6.066), p<.001).

Urban Sample Results

Results of the hierarchal multiple regression analysis predicting the suicidality in the Urban sample (N=333) are presented in Table 4. Across all 4 steps in the model, the results revealed a significant positive association with suicidality and hopelessness. Contrary to the findings reported in the overall sample, stress was not significantly positively associated in suicide risk in the analysis. In addition, and in keeping with the analysis using the entire sample, there was a significant negative association with suicidality and grit, but no significant association with resilience.

Similar to the total sample, age, exposure was significantly positively associated with the suicidality before and after the introduction of risk and protective factors (in step 4 Age fell short of significance p=0.06). Education was negatively associated with suicidality across the model. Employment and relationship status was not significantly associated with the suicidality in any of the steps.

Comparable to the overall sample, the grit x hopelessness interaction was significant. Figure 3 illustrates that the pattern of findings was consistent with our total sample, demonstrating that grit moderates the relationship between hopelessness and suicidality, such that higher grit protects against suicidality in those experiencing hopelessness. This was further
supported by the analyses of simple slopes suggested that the relationship between hopelessness and suicidality was significant and positive at both low levels of grit (simple slope= 0.100, \( t(3.847), p < .001 \)) and high levels of grit (simple slope=0.177, \( t(4.909), p < .001 \)).

Table 4
Regression of the Urban Sample (\( N=333 \))

<table>
<thead>
<tr>
<th>Steps</th>
<th>Measures</th>
<th>Unstandardized Coefficients</th>
<th>95% Confidence Intervals</th>
</tr>
</thead>
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<tr>
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</tr>
<tr>
<td></td>
<td>Education</td>
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<td>Employment</td>
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<td>0.32</td>
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</tr>
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<tr>
<td></td>
<td>Exposure</td>
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<td>0.10</td>
</tr>
<tr>
<td></td>
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<td>Hopelessness</td>
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<td>0.03</td>
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<td>Depression</td>
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<td>Stress</td>
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### Risk and Protective Factors of Suicidality

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<th>t-Value</th>
<th>p-Value</th>
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</table>

* *p<.05; **p<.01

Note: Imputed results are pooled across 10 analyses. As such, standardized betas and r² change are not presented. While imputation does not generate pooled results for assessing model fit, all ANOVAs across the 10 imputation iterations were significant (all p <.001)
Figure 3. Simple Slopes Analysis Evaluating the Relationship between Hopelessness and Suicidality at Different Levels of Grit in the Urban Sample

Rural Sample Results

Results of the hierarchal multiple regression analysis predicting suicidality in the Rural sample (N=107) were presented in Table 5. Similar to the overall and urban sample, across all 4 steps, the results revealed a significant positive association with the suicidality and hopelessness, whereas stress and depression symptoms were not significantly positively associated the suicidality in the analysis.

Similar to the overall and urban sample, exposure was positively associated with suicidality, and education negatively associated, before and after the introduction of psychological and protective factors, and age, employment, and relationship status were not significantly associated with suicidality.

As shown in Table 5, the grit x hopelessness interaction was not significant, contrary to the results of the total sample and urban sample. Although the interaction was not significant, the results demonstrated a trend (p=0.08). Figure 4 illustrates a pattern of findings suggesting
that the relationship between hopelessness and suicidality was positive at low levels of grit, similar to the overall and urban findings. Dissimilar to the total and urban sample, the results also tentatively indicated that at high levels of grit, hopelessness was inversely associated with the suicidality.

**Table 5**

*Regression of the Rural Sample (N=107)*

<table>
<thead>
<tr>
<th>Steps</th>
<th>Measures</th>
<th>Unstandardized Coefficients</th>
<th>95% Confidence Intervals</th>
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<td>0.05</td>
<td>1.70</td>
</tr>
</tbody>
</table>

\*p<.05; **p<.01

*Note: Imputed results are pooled across 10 analyses. As such, standardized betas and \( r^2 \) change are not presented. While imputation does not generate pooled results for assessing model fit, all ANOVAs across the 10 imputation iterations were significant (all \( p < .001 \)).*
**Discussion**

**Overview**

The aims of the present study were threefold. Firstly, the aim of the present study was to examine psychological risk and protective factors associated with suicidality in a sample repeatedly shown to be at risk for suicide, young males (and specifically young males from rural areas). Secondly, the study aimed to explore the similarities and differences in these relationships between individuals identifying as rural or urban. Thirdly, the study aimed to investigate the effect of grit on the relationship between hopelessness and suicidality in a New Zealand young male sample. In addition to the above hypotheses, this study explored trends in the moderating effect of grit on the relationship between hopelessness suicidality in the rural and urban samples.
Hypothesis 1a was partially support, as the overall sample results demonstrated a significant positive association with suicidality and hopelessness, as well as stress. In our model unexpectedly there was no significant association with depression. Further Hypothesis 2a was partially supported, as the overall sample results demonstrated a significant negative association with suicidality and grit. Though, contrary to expectations resilience was not significantly associated with the suicidality in the analysis.

There was no significant difference between rural and urban groups on all risk factors of suicide, failing to provide support for Hypothesis 1b. Contrary to our predictions, the rural group was significantly higher than the urban group on key protective factors of suicide, failing to also provide support for Hypothesis 2b. Further, Hypothesis 3 was supported in the overall sample’s findings, which indicated that grit significantly moderated the relationship between hopelessness and suicidality. The subsequent discussion outlines detailed interpretations of these findings, integrated with existing theoretical and empirical literature.

Risk and Protective Factors of Suicidality

Consistent with previous research, across all three samples, hopelessness was positively associated with suicidality. This association was seen over and above the association of significant demographic factors. Depression was not significantly positively associated with suicidality in all three samples. As hopelessness is a symptom of depression these measures were likely correlated. However, it is notable in this model that hopelessness as a construct was the strongest and most dependable predictor of suicidal thoughts and behaviours overall (Beck et al., 1993; Kuo et al., 2004; Wetzel, 1976).

Notably, high levels of stress was a predictive factor of higher suicidal ideation and behaviour in the overall sample, but not in the rural and urban samples. A possible explanation for this could be our measure of stress was time-limited and acute (the participants experience over the past two weeks), and therefore failed to capture long-term stressors, or life adversity.
Overall, there was no significant difference between rural and urban groups on all risk factors of suicide, contrary to our expectations given higher levels of suicide in these areas (Ministry of Health, 2016; Beautrais, 2018; Gallagher et al., 2008; Hirsch & Cukrowicz, 2014; Kapusta et al., 2008; Pearce et al., 2007).

Consistent with previous research, across all the overall and urban and samples, grit was negatively associated with suicidality. These results add to the growing body of literature that suggests grittier individuals, or those who have higher levels of passion and perseverance towards long-term goals, have lower levels of suicidal ideation and behaviours (Kleiman et al., 2013; Marie et al., 2019; Pennings et al., 2015; White et al., 2017). Unexpectedly, there was no significant association with resilience within this model across all three samples, contrary to previous research (Roy, et al., 2007; Campbell-Sills & Stein, 2007). Similar to hopelessness and depression, grit and resilience are correlated. However, it is notable that grit, but not resilience, was found to be the strongest protective factor of suicidality in our present study.

Contrary to expectations the rural sample demonstrated higher levels of grit and resilience than the urban sample. As there is a dearth of research in this at-risk population, it is unclear why these differences were present in this study. Possible explanations may include response bias, issues pertaining to recruitment (e.g., rural support groups) or the existence of social and cultural constructs that foster these protective factors. Replication studies using a similar sample are necessary before these possible explanations can be interpreted with confidence.

Several demographic factors had strong risk and protective properties for all sample groups (overall, urban and rural) before and after the introduction of risk and protective factors in the model, consistent with previous demographic research. Firstly, exposure was significantly positively associated with suicidality, indicating that of those who knew someone close to them who had died by suicide, their suicide risk increased. In addition, education was
negatively associated with suicidality across the model, indicating that a higher education was a strong protective factor (Beautrais, 2000; Hirsch & Cukrowicz, 2014; Pitman et al., 2012; Suicide Mortality Review Committee. 2016).

**Effect of Grit on the Association between Hopelessness and Suicidality**

In both the overall urban samples our findings indicated that both low and high grit moderates the relationship between hopelessness and suicidality. These results add to the considerable body of literature of research on the associations between hopelessness and suicidal ideation and behaviour. An argument could be made that individuals that demonstrate flexibility in the face of failure and have a commitment to future goals, may be motivated to make a conscious effort not to plan to act on suicidal thoughts or behaviours when they are experiencing hopelessness. similar to previous findings (Kleiman et al., 2013; Marie et al., 2019; Pennings et al., 2015; White et al., 2017).

These results indicate that grit is a more effective on the diminishing the relationship between hopelessness and suicidality at low levels of hopelessness versus high levels of hopelessness. Thus, suggesting that implementing grit as an intervention target is likely more effective in those experiencing lower levels of hopelessness. This is understandable, as high levels of hopelessness are likely indicative of a high mental health distress, warranting an effective mental health targeted approach to intervention.

Surprisingly, in the rural sample, the grit and hopelessness interaction was not significant, in that grit did not significantly influence the relationship between hopelessness and suicidality. To further explore these findings, we plotted the relationship between grit and hopelessness, 1 SD above and below the mean. Interestingly, in the rural sample our results indicated a trend suggesting that hopelessness was possibly inversely associated with suicidality at high levels of grit, implying that high levels of grit coupled with high hopelessness may actually increase suicidality.
As aforementioned, those with high grit levels, are also expected to exhibit high levels of perseverance. Perseverance, as defined by (Duckworth et al., 2007) as the ability to persist for a long-time towards a task or goal, has been interpreted by some authors as a risk factor to suicidal behaviour in those who exhibit non-suicidal self-injury and exhibit escape motives (Anestis & Selby, 2015). Recent research conducted in a college sample found that of the students who reported previous suicide attempts, contrary to majority of suicide and grit research, greater grit scores actually anticipated more frequent suicide attempts with strong lethal intent. It could be theorised that when plans are developed, or become a long-term goal, grit may actually facilitate this outcome (Anestis & Selby, 2015). Given our measure of suicidality included “have you made a suicide attempt?” this theory is a plausible explanation of our rural sample’s findings, however as the interaction was not significant this should be interpreted with caution and merits further replication.

Limitations and Directions for Future Research

An important limitation of the present study is that it was a cross-sectional design, therefore it does not allow for causal inference on the impact of hopelessness and/or grit on suicidality. Nevertheless, hopelessness has been demonstrated to be a strong predictor of suicidal risk in several longitudinal studies (David Klonsky et al., 2012; Mazza & Reynolds, 1998; Qiu et al., 2017), therefore it is conceivable that a similar sequential relationship occurred in the present study. It is however widely recognised, that psychological variables and the relationship between these variables change systematically over time, which cross-sectional designs fail to address (Bowen & Wiersema, 1999).

However, though the present study was a cross-sectional sample, it had several notable strengths. Firstly, the sample used in this study was drawn from young adult males in across New Zealand and included specifically rural-identifying individuals. Thus, our study addresses risk and protective factors, and more complex moderation models in a high-risk population that
is underrepresented in the current literature. In addition, the individuals had a wide range of demographic variables, demonstrating a diverse section of young adult males in New Zealand.

The exposure to suicide measure was restricted to friends and/or family, or those personally known to them that had died by suicide. Although research has indicated an importance in risk assessment of suicide to ask about knowing someone personally who may have died by suicide (Berman, 2011), a person can also be adversely impacted from a death by suicide when they do not know them on a personal level e.g., first-line responders, media (Andriessen, 2009). Therefore, future research should look to explore a wider measure of exposure that encapsulates these factors and explore any similarities or differences between these intensities of exposure.

Furthermore, a promising alternative to the Hopelessness Theory of Suicide (HT) that is widely established, is the Interpersonal Psychological Theory of Suicide (IPTS). IPTS theorises that thwartness belongingness (social isolation) and perceived burdensomeness (being a burden to others) were key proximal causes of suicidal risk (Joiner et al., 2009; Joiner & Silva, 2012). Van Orden, Barmonti, King and Duberstein (2012) found that the perception that one is a burden to others and low thwarted belongingness, or not feeling accepted by others was predictive of suicidal ideation. Further, these authors suggested perceived burdensomeness predict decreased meaning in life, as a path to suicidal behaviour.

Recently, an integration of the two main theories of suicide (HT and IPTS) has been proposed. Specifically, researchers suggest that HT variables (hopelessness, e.g., pessimistic view of the future) could be considered a stable, distal risk factor of suicide, whereas variables of IPTS serve as proximal variables. Tested on a group of college students, researchers found that IPTS variables mediated the relationship between suicidal ideation and HT variables (Kleiman et al., 2014).
Moreover, research has indicated the importance of attending to multiple predictors over singular predictors. Recently, the combination of grit, meaning of life, and gratitude, has been demonstrated as a protective factor against hopelessness (Kleiman et al., 2013). In addition, researchers examined the relationship between adolescent’s gratitude and suicidal ideation and attempts. They found suicidal ideation and suicide attempts were lower in adolescents who scored higher on gratitude (White et al., 2017). Thus, it is possible the grit is a stronger protective factor of suicide when interacting with other factors.

In similar vein to the IPTS, protective factors of social support and a sense of belonging have been demonstrated to protect against the association between depression and suicidal ideation in rural-dwelling males in Australia, such that those high in these protective factors weaken the depression-suicidal ideation relation (McLaren & Challis, 2009). Given geographical isolation, therefore subsequent social isolation, is a key issue for those in rural areas, it is plausible that targeting IPTS factors for suicide prevention would be efficacious in rural young adult males specifically and justifying the need for further investigation in this area (Hirsch, 2006; Hirsch & Cukrowicz, 2014).

In addition to further exploring known at risk groups, such as young adult males (with emphasis on rural individuals), it is important to for future research to investigate risk and protective factors in other at-risk groups within New Zealand. Emerging research has highlighted cultural distinctiveness (or possessing a strong cultural identity) is a major protective factor for Māori against suicide risk. Exploration of cultural identity, among other potential risk and protective factors are important for further investigation specifically in young Māori adult populations where disproportionate suicide deaths occur (Durie, 2017).

**Theoretical and Practical Implications**

Although grit is seen as a positive trait several groups of individuals demonstrated by both previous research and the present study, it may also confer increased risk toward suicidal
behaviours, as possibly seen in the rural group experiencing high levels of hopelessness in the present study. These differing results between those who identify as urban versus rural, highlight the way in which one responds to an emotional situation, can be dependent on the context of the situation, their environment and the individual themselves, thus the need for specific, individualised interventions for suicide (Aldao, 2013; Anestis & Selby, 2015).

Likely due to the relatively new nature of grit, there is lack of interventions that specifically targeting grit as known by the author. However, specific aspects of grit have been shown to be successfully targeted. For example, perseverance which can be considered the “opposite” of impulsivity, can be targeted with emotional regulation skills (Aldao, 2013). Moreover, suicide-based interventions could incorporate long-term goals of the future (discussions of the future 1, 5, and 10 years ahead), another key principle of grit. An example of a well-established strength-based suicide target that focuses on the importance of the future, is the Linehan Reasons for Living Intervention (LRFL), which assumes that adaptive beliefs and expectations can serve as buffers for adult suicide behaviour (Linehan et al., 1983; Malone et al., 2000). Nevertheless, the overall gap in the literature for grit-based targeted interventions highlights an important area for future research, and advance suicide prevention efforts.

In addition, as our results reflect higher exposure to suicide was associated with increased suicidality, combined with Ministry of Health’s reported high rates of suicide in young adult males, adequate care and support services for those who have lost someone to suicide is imperative. Recently, Bowden (2017) explored the experiences of young males in New Zealand who had lost a close friend to suicide. Key themes that emerged was that the young men tended to be discreet and silent about their emotional experiences of grief, therefore may go unnoticed by others (Bowden, 2017). This highlights the importance of specific postvention care targeting young adult males needs, for example by promoting positive social relationships and connectedness (McKenzie et al., 2018).
Summary and Conclusion

The findings of the present study indicate that hopelessness and grit are important risk and protective factors of suicidality respectively. Consistent with Pennings and colleagues (2015) findings, the current results of the overall and urban sample also provide support for grit as a buffer on the relationship between hopelessness and suicidality, thus decreasing suicide risk in those experiencing low and high levels hopelessness. Specifically, in the rural sample, the results suggest that high levels of grit may have the opposite effect that is intended on the relationship between hopelessness and suicidality, however this requires further replication before such interpretations can be considered in confidence.

The present study’s provides further insight into the need for nuanced analyses to better understand the relationship between hopelessness and suicidality, and the protective effect of grit on this relationship. Given the results of the present study, it is also important to however first 1) establish the level of hopelessness endorsed by the individual, and 2) consider the impact of individual characteristics, such as identifying as “rural”.

Overall, grit is a promising intervention target of suicide, particularly in those experiencing hopelessness for young adult males in New Zealand. As quoted by the former Chief Science Advisor for the Prime Minister of New Zealand, “youth suicide remains a multifaceted, complex challenge. A focus on mental health, although important, has been recently identified as insufficient” (Gluckman, 2017, p.10). The results of the present study align with this interpretation, and suggest a move away from deficit, or mental-health based targets and towards a strength-based model of suicide prevention.
References


events and suicide ideation. *Crisis, 30*(1), 48–53. https://doi.org/10.1027/0227-5910.30.1.48


*Journal of the American Medical Association*, 293(20), 2487–2495.

https://doi.org/10.1001/jama.293.20.2487


https://doi.org/10.1016/j.jrp.2013.04.007


https://doi.org/10.1016/j.comppsych.2013.10.015


https://doi.org/10.1371/journal.pone.0217372


Mortier, P., Cuijpers, P., Kiekens, G., Auerbach, R. P., Demyttenaere, K., Green, J. G.,
thoughts and behaviours among college students: A meta-analysis. Psychological
Medicine, 48(4), 554–565. https://doi.org/10.1017/S0033291717002215

International Review of Neurobiology, 152, 101–103.

Cortisol levels and suicidal behavior: A meta-analysis. Psychoneuroendocrinology, 63,

Cortisol reactivity and suicidal behavior: Investigating the role of hypothalamic-
pituitary-adrenal axis responses to stress in suicide attempters and ideators.
Psychoneuroendocrinology, 75, 183–191.
https://doi.org/10.1016/j.psyneuen.2016.10.019

O’Connor, R. C., Rasmussen, S., & Hawton, K. (2009). Predicting Deliberate Self-Harm in
Adolescents: A Six Month Prospective Study. Suicide and Life-Threatening Behavior,

O’Connor, R. C., Rasmussen, S., & Hawton, K. (2012). Distinguishing adolescents who think
about self-harm from those who engage in self-harm. British Journal of Psychiatry,
200(4), 330–335. https://doi.org/10.1192/bjp.bp.111.097808


http://archive.stats.govt.nz/browse_for_stats/Maps_and_geography/Geographic-areas/urban-rural-profile-update.aspx#gsc.tab=0


Appendix A: Advertising Poster

PARTICIPANTS NEEDED

NZ YOUNG MALES WELL-BEING PROJECT

FOR A 20 MINUTE ONLINE QUESTIONNAIRE

DO YOU IDENTIFY AS A MALE?
ARE YOU BETWEEN 18-30 YEARS OLD?

If so please take part in our research looking at well-being in young males.
Our research seeks to investigate factors associated with hopelessness.
All information will be kept in the strictest confidence.

GO INTO THE DRAW TO WIN 1 OF 8 PREZZY CARDS WORTH UP TO $400

If you are interested in participating go to
http://canterbury.qualtrics.com/jfe/form/SV_9tzvit1I2QrcoS1
or scan the QR code below

For more information please contact: taylor-jane.cox@pg.canterbury.ac.nz
Ethics Approval Ref: HEC 2019/69
Appendix B: Ethics Approval Letter

HUMAN ETHICS COMMITTEE

Secretary, Rebecca Robinson
Telephone: +64 3 369 4688, Extn 94588
Email: human.ethics@canterbury.ac.nz

Ref: HEC 2019/69 Amendment 1

11 October 2019

Taylor-Jane Cox
Psychology
UNIVERSITY OF CANTERBURY

Dear Taylor-Jane

Thank you for your request for an amendment to your research proposal ‘Young Males’ Wellbeing Project: Risk and Resilience’ as outlined in your email dated 2nd October 2019.

I am pleased to advise that this request has been considered and approved by the Human Ethics Committee.

Yours sincerely

[Signature]

Dr Dean Sutherland
Chair, Human Ethics Committee
Appendix C: Information Sheet for Research Volunteers

School of Psychology, Speech and Hearing
Researcher: Taylor-Jane Cox
Telephone: +64 33692633
Email: taylor-jane.cox@pg.canterbury.ac.nz
HEC Ref. 2019/09

Young Male’s Wellbeing Project: Risk and Resilience
Information Sheet for Research Volunteers

Kia ora,

You are invited to participate in a research study conducted by Taylor-Jane Cox, Masters Student and Seth Harty, PhD, who is a faculty member in the Department of Psychology. We are interested in young male’s mental health from both urban and rural areas, and factors associated with hopelessness and suicidal thoughts.

Please read the information below which outlines what is involved in this research study. If you would like to complete this study, which will take approximately 20 minutes, you can give your consent by ticking the consent box below.

PURPOSE
This project seeks to investigate novel risk and protective factors associated with hopelessness, an established risk factor of suicide. The information gained from these processes will result in the identification of significant factors contributing to and protecting against feelings of hopelessness, and the underlying mechanisms of suicidal ideation in young adult males.

PROCEDURE
If you choose to take part in this study, your involvement in this project will be as a survey participant. If you agree to take part in this study, you will digitally sign a form giving your consent. You will then complete a series of self-report forms that measure your general psychological functioning. The questionnaire should take approximately 20 minutes to complete. By taking part in this study, you will be re-directed to another page, and will have the opportunity to enter into a lucky draw, to be conducted at the end of the study, for a chance to win one of eight prezy cards (valued from $50 to $400). Please note your questionnaire responses will be anonymous, and your answers will not be linked to your email address.

POTENTIAL RISKS AND DISCOMFORTS
The study protocol may involve some minor discomfort. As we are asking a variety of questions about mental health, and in particular suicidal thoughts, there may be some discomfort around individual disclosure of information. While this study requires that participants provide some identifying information in the form of an email address, this study will hold your information in confidence and will never share your information. If, during the course of this online survey, you wish to stop, you can stop at any time with no negative consequence.

If you find that you are experiencing high levels of sadness or distress after completing the questionnaire, it is recommended that you contact one of the following support services. More support services and information can be provided if requested.

- Need to talk? 1737 Free call or text 24/7- Talk with a trained counsellor, anytime
• Lifeline: 0800 543 354 - Provides 24-hour telephone counselling
• Youthline: 0800 376 633 or free text 234 - Provides 24-hour telephone and text counselling services for young people

BENEFITS
Although there are no immediate benefits, your participation is important as it helps the scientific community better understand this topic of study. After signing the consent form and as demonstrating of our appreciation, you can choose to take part in a lucky draw for the chance to win 1 of 8 prezzey cards (valued from $50 to $400). The drawing will take place at the end of the study recruitment, and winners will be notified through the email address provided in the consent.

CONFIDENTIALITY
The researchers are very mindful of the need to protect participant’s interests. Any information that you provide will be treated as confidential. Only the principal research and named co-investigators, who have signed a formal confidentiality agreement, will have access to the raw data, which will be destroyed after ten years. Your name will not be linked to your questionnaire report or performance on experimental measures. Under no circumstances will any data you supply be disclosed to a third party in any way that could reveal who the source was. The study data will be stored on a password-protected computers and locked file cabinets in secured locations in the University of Canterbury Psychology department.

The results of the project may be published, and as this research involves confidential questionnaires, you can be assured that your name or identifying information will not be revealed in any reports of publications generated by this study. A thesis is a public document and will be available through the UCLibrary.

PARTICIPATION AND WITHDRAWAL
Participation is voluntary and you have the right to withdraw at any stage without penalty by closing your browser. You may ask for your raw data to be returned to you or destroyed at any point. If you withdraw, I will remove information relating to you. However, once analysis of raw data starts on, it will become increasingly difficult to remove the influence of your data on the results.

You may receive a copy of the project results by checking the appropriate box at the end of the questionnaire.

The project is being carried out as a requirement for a Master of Science degree by Taylor-Jane Cox (who can be contacted at taylor-jane.cox@pg.canterbury.ac.nz), under the supervision of Seth Harty, PhD, who can be contacted at seth.harty@canterbury.ac.nz. Either Seth or Taylor-Jane would be pleased to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the University of Canterbury Human Ethics Committee, and participants should address any complaints to The Chair, Human Ethics Committee, University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

If you agree to participate in the study, you are asked to complete the consent form. You can have time to consider this information and use the link to the survey if you decide to continue. The link will remain active for the duration of the study.

Whakawhetai ki a koe
Appendix D: Research Volunteer Consent Form

School of Psychology, Speech and Hearing
Researcher: Taylor-Jane Cox
Telephone: +64 33692633
Email: taylor-jane.cox@pg.canterbury.ac.nz
HEC Ref: 2019/69

Young Male’s Wellbeing Project: Risk and Resilience

Consent Form for Research Volunteers

VOLUNTARY PARTICIPATION
By clicking the button below, you acknowledge that your participation in the study is voluntary, you are 18 years of age, and that you are aware that you may choose to terminate your participation in the study at any time, and for any reason prior to pressing the Submit button at the end of the questionnaire.

You can withdrawal by simply closing the browser before completing the questionnaires and hitting Submit. Data will not be recorded until the Submit button.

☐ I understand that any information or opinions I provide will be kept confidential to the researcher and researcher team involved in this study, and that any published or reported results will not identify the participants. I understand that a thesis is a public document and will be available through the UC Library.

☐ I understand that all data collected for the study will be kept in locked and secure facilities and/or in password protected electronic form and will be destroyed after five years.

☐ I understand that I can contact the researcher Taylor-Jane Cox (taylor-jane.cox@pg.canterbury.ac.nz) or supervisor Seth Harty (seth.harty@canterbury.ac.nz) for further information. If I have any complaints, I cancontact the Chair of the University of Canterbury Human Ethics Committee, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz)

☐ I am aware of the support services that are available.

Signed:_________________________________________
Appendix E: Online Survey

The present study’s online survey was administered using Qualtrics and could be completed on the researcher’s PC or the participant’s phone. See below for some examples of the Qualtrics formatting on a mobile view. Of note, only demographic questions and unpublished questionnaires are included in the following Appendix E.

Please complete the following items:

Gender:  M  F Other (Please specify) ____________

Do you identify as Urban or Rural? (Please chose one)

Age: ____________

Please indicate which ethnic group or groups you identify to:

- New Zealand European
- Māori
What is the highest degree or level of school you have completed? If currently enrolled, highest degree received:

- No schooling completed
- Preschool to year 8 / Intermediate
- Some high school, no NCEA / School Certificate
- NCEA Level 1 / School Certificate Some college credit, no degree
- NCEA Level 2 / Sixth Form Certificate
- NCEA Level 3 / Bursary / University Entrance or the equivalent
- Some tertiary credit, no degree
- Trade/technical/vocational diploma
- Associate degree
- Bachelor’s degree
- Master’s degree
- Professional degree
- Doctorate degree

Current employment status- check all that apply:

- Employed for wages part-time
- Employed for wages full- time
- Self-employed
- Out of work and looking for work
- Out of work but not currently looking for work
- A homemaker
- A student
- Military
- Retired
• Unable to work

**Which of the following best describes your relationship status?**

- Married
- Widowed
- Divorced
- Separated
- In a de facto relationship
- In a relationship (e.g., girlfriend, boyfriend)
- Single, never married

**Psychiatric history/current status:**

Instructions: Please complete the items below. Please circle one choice (Yes or No) for each item. Have you, now or in the past, either as an adult or in childhood, been diagnosed with any of the following?

<table>
<thead>
<tr>
<th></th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attention deficit hyperactivity disorder</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2. Specific Learning Disorder such as dyslexia or dyscalculia</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>3. Any Substance Use Disorder</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>4. Oppositional Defiant Disorder</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>5. Conduct Disorder</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>6. Tourette’s Syndrome</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>7. An Anxiety Disorder (e.g. General Anxiety Disorder, Obsessive Compulsive Disorder)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>8. A Depressive Disorder (e.g. Major Depressive Disorder)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>9. Bipolar Disorder</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>10. A Personality Disorder (e.g. Borderline or Narcissistic Personality Disorder)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>11. A perceptual disorder such as Schizophrenia</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
Exposure to Suicide

Please respond to the following statements as truthfully and accurately as you can.

1. “Has anyone close to you ever completed suicide?”
2. “Do you personally know anyone who has died by suicide?”

Suicide Severity Rating Scale- Modified (Mortier et al., 2018)

Please read the statements carefully one by one. If the statement describes your thoughts from your lifetime chose "YES" in the column next to the statement. If the statement does not describe your thoughts from your lifetime choose "NO" in the column next to the statement.

1. “In your lifetime, have you ever wished that you were dead or would go to sleep and never wake up?”
2. “In your lifetime, have you had thoughts of killing yourself?”
3. “In your lifetime, have you thought about how you might kill yourself?”
4. “In your lifetime, have you had thoughts about killing yourself and had some intention of acting upon them?”
5. “In your lifetime, have you made a suicide attempt (i.e. purposefully hurt yourself with at least some intention to die?”
WELL-BEING RESOURCES

If you find that you are experiencing high levels of sadness or distress after completing the questionnaire, it is recommended that you contact one of the following support services.

The Young Male Wellbeing project cannot accept responsibility for any of the services provided by these or any other organisations, but they are well regarded in New Zealand. Please remember you are never alone and there will always be someone who is willing to listen.

New Zealand helplines & resources

- Need to talk? 1737 Free call or text 24/7 - Talk with a trained counsellor, anytime
- Lifeline: 0800 543 354 - Provides 24-hour telephone counselling
- Samaritans: 0800 726 666 - Provides 24-hour telephone counselling
- Youthline: 0800 376 633 or free text 234 - Provides 24-hour telephone and text counselling services for young people
- Tautoko Suicide Crisis Helpline: 0508 828 865 (0800 TAUTOKO) - provides support, information and resources to people at risk of suicide, and their family, whanau and friends
- Rural Support: 0800 787 254 - for people in rural communities dealing with financial or personal challenges
- Tough Talk: short documentaries and tools focused on men’s mental wellbeing- toughtalk.nz
- The Low Down: Free text 5626 or email team@thelowdown.co.nz.
- SPARX: Online e-therapy tool.
- Depression Helpline- 0800 111 757 or free text 4202
- Healthline – 0800611116
- OUTLine – sexuality & gender 0800 688 5463 (0800 OUTLINE)
- Men’s Health Trust- menshealthnz.org.nz
- Mental Health Foundation- mentalhealth.org.nz
Support Services at the University of Canterbury

**Student Care**

The Student Care Team is available to give advice on the issues affecting you and can direct you to ongoing support if needed.

Level 2  
Central Library  
Puaka-James Hight Building  
Phone: +64 3 369 3388  
Email: studentcare@canterbury.ac.nz

**UC Health Centre**

The UC Health Centre offers free counselling to UC students.

The Health Centre is located in the UCSA carpark adjacent to the Ilam school boundary.  
Phone: +64 3 369 44 44  
healthcentre@canterbury.ac.nz

**Māori Development Team**

The Māori Student Development Team (MSDT) provides targeted developmental and support initiatives that enhance the Māori student experience to optimise their personal social and academic success.

Te Ao Marama building,  
Arts Road  
Phone: +64 3 369 3868  
maoridevelopment@canterbury.ac.nz

**Pacific Development Team**

The Pacific Development Team provides a number of support services for Pasifika students.

37 Creyke Road, Ilam Christchurch.  
Phone: +64 3 369 3554 ext 93554  
Email: pasifika@canterbury.ac.nz

Additional support services can be found at: [http://www.canterbury.ac.nz/support/get-support/](http://www.canterbury.ac.nz/support/get-support/)
Support Services at the Lincoln University

**Lincoln University Students Association (LUSA)**

The Student Care Team is available to give advice on the issues affecting you and can direct you to ongoing support if you need.

Forbes Building

Ground Floor

LINCOLN UNIVERSITY

Phone: +64 3 423 0578

Email: student.support@LUSA.org.nz

**Student Health and Support**

Contact Student Health and Support

Phone reception on 03 325 3835

**Māori Support**

Te Awhioraki represents all Māori students on campus; providing social, cultural, and academic support. It also organises social events, wananga, and workshops to support and enhance Māori identity on campus.


**Pasifika Support**

The Pasifika Support Team provides a number of support services for Pasifika students

[http://www.lincoln.ac.nz/Future-Students/Pasifika-Students/](http://www.lincoln.ac.nz/Future-Students/Pasifika-Students/)

Additional support services can be found at: [http://www.lincoln.ac.nz/student-life/student-support/](http://www.lincoln.ac.nz/student-life/student-support/)
If you’re feeling overwhelmed:

- Remind yourself of what you are fighting for.
- Have a list of people in your phone that you can contact immediately.
- Write a letter to your future FREE self.
- Have a list of distractions.
- Go outside and get some fresh air.
- BREATHE
- Plant your feet on the ground and imagine that roots are holding you down. Focus on that feeling.
- Cold Flannel on your forehead.
- Stress ball or fidget spinner. (Something to keep yourself busy)
- Exercise.
- Imagine you’re in a peaceful place. Talk yourself through that scenario.
- 5 things task… say out loud 5 things you see, hear, and feel.
- Have a shower or bath.
- Something positive to focus on.
- Routine gives security.