The relationship between reasons for living and suicidal ideation

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Abstract

Suicide and suicide-related behaviours are widely acknowledged as a major public health issue and the acute nature of suicidal behaviour makes it significant in human consciousness. However, the various causes of suicidal thoughts and behaviour are convoluted and not fully understood. Recommendations stemming from research advocate for a better understanding of the suicidal process, specifically suicidal ideation, as this could enhance efforts in the reduction and impact of suicidal behaviour. Research has shown that Reasons for Living explains variance in suicidal ideation that is not explained by recognised risk factors. The aim of this study was therefore to augment our understanding of suicidal ideation in terms of the extent to which reasons for living predicts suicidal ideation after accounting for specific risk factors: depression, hopelessness, thwarted belongness and perceived burdensomeness. This study also sought to explore the extent to which reasons for living potentially moderates the effects of depression on suicidal ideation.

Data was gathered via an anonymous online survey questionnaire in a convenience sample of 577 Australian and New Zealand adults. Hierarchal multiple regression models estimated using ordinary least squares were used to determine whether reasons for living was a significant negative predictor of suicidal ideation, and whether the relationship between depression and suicidal ideation is weaker for people with more reasons for living, while controlling for depression, hopelessness, perceived burdensomeness and thwarted belongingness. Results show that reasons for living is a significant negative predictor of suicidal ideation. The results also show that depression predicts higher suicide ideation, and this effect is moderated by reason for living. Structural Equation Modelling (SEM) was applied, with all study variables treated as latent to allow for the effects of measurement error to be explicitly modelled and accounted for. Results showed that although the SEM model was not considered a good fit to the data, the coefficients across the SEM and OLS techniques were comparable. Both models found reasons for living, depression and perceived burdensomeness to be significant predictors of suicidal ideation.

The findings of this research could have meaningful clinical relevance in the assessment and evaluation of suicide risk. Specifically, identifying variations in suicidal ideation via reasons for living could guide clinicians in the application of strategies aimed at suicide prevention.

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Abbreviations

3ST	The Three-Step Theory of suicide.
BRFL	Brief Reasons For Living Scale; a 12-item inventory with 6 subscales of 2 items each
CAMS	Collaborative Assessment and Management of Suicide risk
CBT	Cognitive Behaviour Therapy
DBT	Dialectical Behaviour Therapy
DPR	Depression
DSI-SS	Depressive Symptom Index – Suicidality Subscale; a scale intended to measure frequency and intensity of suicidal ideation and impulses
INQ-15	Interpersonal Needs Questionnaire; a scale assessing Perceived Burdensomeness and Thwarted Belongingness.
IPT	Interpersonal Theory of suicide
IMV	Integrated Motivational-Volitional model of suicide
MM	Motivational Moderators
OLS	Ordinary Least Squares
PB	Perceived Burdensomeness; the belief that one is a burden on others or society
PHQ-9	The Patient Health Questionnaire – Depression Module; a scale assessing participants' severity of depressive symptoms
RFL	Reasons For Living: a range of life-oriented, adaptive beliefs and expectancies
RFLI	Reasons For Living Inventory
RMSEA	The root mean square error of approximation
SASII	Suicide and Self-Injury Interview
SEM	Structural Equation Modelling: a set of statistical techniques used to measure and analyse the relationships of observed and latent variables.
SHS	State Hope Scale; a scale measuring levels of hopelessness
SI	Suicidal Ideation: also known as suicidal thoughts, cognitive processes that can fluctuate between transitory beliefs about the worthlessness of life, wishing for death, making firm plans for killing oneself and being fixated on self-destruction (Hintikka et al., 2001).
SITBI	Self-Injurious Thoughts and Behaviours Interview
SGM	Sexual and Gender Minority
SPSS	Statistical Package for the Social Sciences; for complex statistical data analysis.
SRMR	The standardised root mean square residual
TB	Thwarted Belongingness: psychologically painful mental state that results when the fundamental need for connectedness is unmet.
TSM	Threats to Self-Moderators
VM	Volitional Moderators
WHO	World Health Organisation
WLSM	Weighted Least Squares Mean estimation

Introduction

A successful suicide demands good
organisation and a cool head,
both of which are usually incompatible
with the suicidal state of mind.

-Susanna Kaysen (1993)

Suicide is the act of a person deliberately ending their own life. The term 'suicidal behaviour' has become a common expression to refer to thoughts, communications and behaviours associated with individuals who make conscious attempts at taking their own life (Van Orden et al., 2010). The word "suicide" has roots in Latin from 'sui' (of oneself) and 'cidium' (killing/murder) and first appeared in 17th century Europe (Lester, Kimbrell, Shrivastava, 2012). Prior to this, suicide was referred to as 'self-homicide' or 'self-murder', with various opinions, views and judgements about its justifiability, primarily within the religious and criminal context (Lester et al., 2012). However, the adoption of the word 'suicide' in Europe initiated a change in perception of 'self-killing' towards a more secular and human perspective (Lester et al., 2012). Worldviews on suicide have been influenced by broad philosophical and existential themes like religion, honour, and the meaning of life. Opinions about suicide have ranged from the act being immoral, unethical, an abomination, criminal, an unforgivable sin and totally pathological, through to it being viewed as honourable, or evidence of genuine freedom of choice and autonomy (Eckstein, 2007). A present-day web search conducted by the author using the term 'suicide' produced 745 million results, showing the attention on the topic from a global perspective.

At present, suicide and suicide-related behaviours are widely acknowledged as a major public health issue and the acute nature of suicidal behaviour makes it significant in human consciousness. However, the various causes of suicidal thoughts and behaviour are still not fully understood. According to the World Health Organisation, approximately 800,000 to 1 million people worldwide die by suicide each year, with approximately 79% occurring in low- and middle-income countries (Bakhiyi, Calati, Guilaume, Courtet, 2016; Cwik et al., 2017; WHO, 2018). This annual worldwide rate of suicides equates to one person every 40 seconds. Suicide is also the second leading cause of death among 15-29 year-olds globally (WHO, 2018). Suicide was the 18th primary cause of death globally in 2016, accounting for 1.4% of all mortality (WHO, 2018). It is also conceivably one of the causes of death most directly affected by psychological factors, as individuals make a conscious choice to end their own life (O'Connor & Nock, 2014). A systematic analysis conducted in 2016 used estimates from the Global Burden of Disease Study

(2016) to show patterns of suicide mortality globally and regionally for 195 countries and territories by age, sex, and socio-demographic index, between 1990 and 2016 (Naghavi, 2019). Utilising a ranking system to explore leading causes of suicide deaths by age standardised mortality rates, the results showed that suicide was in the leading 10 causes of death across eastern Europe, central Europe, high-income Asia-Pacific, Australasia, and high-income North America (Naghavi, 2019). For age standardised years of life lost rates, suicide was the top cause in high-income Asia-Pacific and was among the top 10 leading causes in Eastern Europe, central Europe, Western Europe, central Asia, Australasia, southern Latin America, and high-income North America. However, the study found that rates of suicide had decreased by a third between 1990 and 2016, as the global suicide rate dropped from 16.6 deaths per 100,000 in 1990 to 11.2 deaths per 100,000 in 2016, although the reasons for this decline could not be established and warrants further research (Naghavi, 2019).

The most used method of suicide varies between countries and is partially linked to the availability of effective means. Ingestion of pesticide, hanging and firearms are among the most common methods of suicide globally, while jumping from a height and other methods of poisoning (i.e. largely poisoning by drugs) are key alternative methods (WHO, 2008). Certain countries appear to have higher instances of certain types of suicide. For example, firearm suicides in the United States of America and the use of pesticides in Asian countries, while hanging is the primary method of suicide when there are no other major alternative methods available (WHO, 2008). It could be argued that societal patterns of suicide methods could be influenced by fundamental concepts like social tolerance of the method (i.e., culture and beliefs) and the accessibility (i.e. opportunity), amongst other factors (WHO, 2008).

Correlates of Suicidal Behaviour and Suicide Attempts

Research clearly shows that suicidal thoughts and behaviour stem from the multifaceted interaction between numerous risk and other factors, but these factors on the whole do not explain why individuals commit suicide. In their review, O'Connor and Nock (2014) posited that factors linked to suicide risk could be classified into four groups as key psychological risk and protective factors for suicidal ideation and suicidal behaviour. The four groups proposed were: personality and individual differences, cognitive factors, social factors, and negative life events. These factors were selected because they feature in all the modern theoretical models of suicide and have received attention in the literature or could be prominent factors for future research. While the review by O'Connor and Nock could not describe how these factors may interact to affect suicidal behaviour, it was suggested that each of these factors has the potential to contribute to the materialisation of suicide risk independently, or in combination with other factors (e.g.,

some factors are linked to suicidal ideation, while others amplify the chances of suicidal thoughts being acted upon).

Moreover, correlates and risk factors of suicidal behaviour have shown to vary across countries and regions. Findings from World Mental Health surveys in 17 countries propose key sociocultural and ethnic differences in rates of suicidal behaviours. The results found certain risk factors for suicidal behaviour that are consistent across developed and developing countries, and included being female, having a mental disorder, younger age, less educated, and being unmarried (Nock et al., 2008, 2009). Also, mood disorders presented the highest risk in high-income countries, as opposed to impulse control disorders in low-and middle income countries (Nock et al., 2008, 2009). And A review of the psychological correlates of suicidal behaviour (Giner, Blasco-Fontecilla, De La Vega, & Courtet, 2016) explored the cognitive, emotional, temperament, and personality correlates related to suicidal behaviour. The factors reviewed included cognitive, inflexibility, problem-solving, coping, rumination, thought suppression, decision-making, autobiographical memory, working memory, language fluency, burdensomeness, belongingness, fearless, pain insensitivity, impulsiveness, aggressiveness, and hopelessness. The personality correlates examined were primarily based on the personality theories of Cloninger, Costa and McCrae, and Eysenck (Giner et al., 2016). Research within an Australian community-based sample of twin pairs (Statham et al., 1998) examined the combination of genetic and environmental factors potentially influencing suicidality (i.e., reporting persistent suicidal thoughts or a plan or suicide attempt). The factors examined included psychiatric history, familial history of suicide attempts, and certain traumatic life events as predictors of suicidal thoughts and behaviour. This study found that the risk of constant suicidal thoughts and suicide attempts is determined by an intricate relationship between psychiatric history, neuroticism, traumatic life experiences, genetic vulnerability and sociocultural factors.

The latest statistics for suicide rates show that in 2019 the global age-standardised suicide rate was 2.3 times higher in males (12.6 per 100 000) than in females (5.4 per 100 000) (WHO, 2019). Gender and age trends appear to vary across countries. Globally, suicide rates are *highest* in people aged 70 years and older and suicides globally follow a standard pattern of the older the age group, the higher the death rate (WHO, 2019). The prevalence of lifetime suicidal ideation, suicide plans and attempts appear to be higher in females and adolescents than males and adults respectively, although males are still more likely to complete suicide. (Kessler, Borges & Walters., 1999; Nock et al., 2008, 2013). The prevalence of non-fatal suicidal behaviour also varies by country, age, gender and sexual orientation (Klonsky et al., 2016). While the link between suicide and mental disorders (in particular, depression and alcohol use disorders) is well established in high-income countries, many suicides happen impulsively in moments of crisis with a

breakdown in the ability to deal with life stresses, such as financial problems, relationship break-up or chronic pain and illness (WHO, 2019). In addition, experiencing conflict, disaster, violence, abuse, or loss and a sense of isolation are strongly associated with suicidal behaviour. Suicide rates are also high amongst vulnerable groups who experience discrimination, such as refugees and migrants; indigenous peoples; lesbian, gay, bisexual, transgender, intersex (LGBTI) persons; and prisoners. By far the strongest risk factor for suicide is a previous suicide attempt (WHO, 2019).

Theories of Suicide

Early psychological theories of suicide

Psychological theories of suicide were vital in developing frameworks for insight into the complexity of factors influencing suicidal behaviours in individuals. Several early theorists tried to explain suicide in terms of individual psychological factors; for example, suicide as a response to overwhelming pain (i.e., psychache; Shneidman, 1998); suicide as an escape from a negative (painful self-awareness) state of mind (Baumeister, 1990); the role of hopelessness (Abramson et al., 2002).

Shneidman (1987) proposed the Cubic model of suicide, implying that a combination of stress, pain (psychache), and distress (trepidation) result in suicidal behaviours. Shneidman's theory is based on the belief that various factors underpin suicidal behaviour (e.g., biological, socio-cultural, interpersonal, cognitive, affective, and unconscious) and posited that the common purpose of suicide is to seek a solution to intolerable psychological pain and hopelessness via the cessation of consciousness. Shneidman's theory thus expressed suicidal ideation as thoughts in the mind of the suicidal person about taking their own lives as the route to termination of suffering unbearable psychological pain and feelings of hopelessness. The theory also briefly explores how a lack of connectedness to others potentially contributes to a suicidal state of being but implies that connectedness does not necessarily alleviate suicidal risk, because psychache would first have to be reduced before the suicidal individual could reconnect with others. However, the theory falls short of possible explanations for why some individuals who do suffer unbearable psychological pain do not attempt to take their own lives. Shneidman proposed that only a reduction of suffering could afford the suicidal individual the opportunity to choose to live.

Escape theory (Baumeister, 1990) suggests that suicide arises from an intensification of the individual's desire to avoid meaningful awareness of current life difficulties and their inferences about the self. Suicide is thus caused by a motivation for an individual to escape from aversive self-awareness, caused by a state of cognitive deconstruction (e.g., constricted temporal focus, concrete thinking, cognitive rigidity, rejection of meaning). According to Baumeister, the cognitive deconstruction causes irrationality

and impulsivity, prevents meaningful self-awareness and emotion, thus allowing extreme measures (suicide) to appear appropriate. Escape theory postulates that there are six steps in the process leading to a suicide attempt, with each step being a prerequisite for the next. Step one involves an intense feeling that present consequences, stemming from idealistically elevated beliefs or recent difficulties, fall well short of expectancies. Second, these unsatisfactory results leads to self-blaming through an internal attribution process that generates adverse connotations about the self. Third, the person's negative perceptions of themselves as inadequate, incompetent unattractive, or guilty are reinforced by comparisons to set expectations (potentially unrealistic) and a state of higher self-awareness. Fourth, the deleterious comparison of current self with desired outcomes leads to negative affect. The fifth step involves a reaction of cognitive deconstruction in an attempt to escape and avoid any meaningful thought processes. However, this process is largely unsuccessful, and the individual therefore wishes for more effective ways to end the negative thoughts and feelings. Finally, diminished inhibitions caused by cognitive dissonance potentially lead to heightened readiness and motivation to attempt suicide. Suicide may therefore occur as a progression of the individual's desire to escape from negative thoughts and feelings about the self, caused by a perceived inability to meet unrealistically hight personal standards, or deal with failures, setbacks or undesirable consequences. One of the highlights of this theory is the suggestion that suicide attempts would not occur unless each step in the model produces a specific outcome conducive to the next. This implies that if issues or setbacks are managed satisfactorily by the individual without perceptions of self-incongruities, then the escape theory process development would be disrupted and not lead to a suicide attempt. Interestingly, Baumeister mentions potential moderator variables that could determine progress at each step in his theory as an area for further study, implying that for example, therapeutic interventions accentuating positive affect, optimism and enhanced self-esteem, and using effective coping mechanisms may assist in suicide prevention if applied to his causal chain model. In terms of the current study and implications for therapeutic interventions, reasons for living will be explored as a moderator of depression in people with suicidal ideation and also as a direct negative predictor of suicidal ideation.

The hopelessness theory of suicidality (Abramson et al., 2002) proposes that suicidality is a fundamental symptom of hopelessness depression on a continuum from suicidal ideation to completed suicide. According to this theory, hopelessness depression is caused by the belief that highly desired outcomes will not happen (negative outcome expectancy), that there is nothing one can do to change this situation (helplessness expectancy). The term and concept of hopelessness depression stems from the Hopelessness Theory of Depression, which is a vulnerability-stress model that describes the aetiology of a subtype of depression—"Hopelessness Depression"—in terms of the operation of cognitive vulnerabilities

and the occurrence of negative life events (Abramson, Metalsky, & Alloy, 1989). The hopelessness theory of suicide subsequently proposed that cognitive vulnerability arises from the process of ascribing negative outcomes to stable, global causes, reasoning that negative consequences will result from present negative experiences, and beliefs that the prevalence of adverse consequences means that the self is defective. Consequently, cognitive vulnerability and hopelessness depression caused by these expectancies would lead an individual to become suicidal. However, the theory fell short of exploring the role of negative life events or protective factors in examining the relationship between suicidality and cognitive vulnerability. It did however suggest that there was a continuum from suicidal thoughts to completed suicide and that people who become hopeless should become suicidal (Abrahamson et al., 2002).

Diathesis-stress models of suicide attempt to frame suicidal behaviour as a result of the interaction between pre-exiting vulnerabilities (diathesis) and the stress caused by life experiences (O'Connor & Nock, 2014). The term *stress* implies psychiatric, psychological, or biological experiences after undesirable occurrences, while *diathesis* relates to a susceptibility or persistent vulnerability that could be explained in psychological or biological terms (e.g., attentional biases, perceptions of hopelessness, feelings of entrapment; van Heeringen, 2000). The implication is that the diathesis could predispose individuals to the frequency of stressful life events, or that the incidence of stressful life experiences could have an adverse effect on the existing diathesis.

It is quite apparent that psychological theories of suicide are significant, as they offer a framework to comprehend how a complex interaction of factors associate to increase risk of suicide. However, most of these early theories fall short of providing insight into the distinction between suicidal thoughts and suicidal attempts in various contexts, or being able to explain why most people who experience suicidal ideation do not attempt to take their own lives (Nock et al., 2008). This distinction between suicidal ideation and actual suicide attempts is vital, given the very high rates of global suicides, and our limited ability to predict processes leading to suicidal ideation and subsequent suicide attempts (Klonsky & May, 2014; Nock et al., 2008).

Ideation-To-Action theories of suicide

A significant advance in suicide theory transpired when Joiner (2005) proposed his Interpersonal Theory of suicide (IPT) that provided a framework for suicidal ideation (SI) and suicide attempts to be seen as separate processes with their own sets of risk factors and explanations (Klonsky & May, 2014). Klonsky and May (2014) subsequently proposed an "ideation-to-action" framework to guide suicide theory, research and prevention. In broad terms, the framework is based on the premise that predictors and

reasons for suicide should be classified separately on the basis of whether they speak to: (a) risk of SI, (b) risk of suicide attempts among those with ideation, or (c) both (Klonsky & May, 2014).

Ideation-to-action theories also attempt to outline the various psychological factors that correlate with suicidal ideation and behaviour, e.g., elevated levels of perceived burdensomeness and thwarted belongingness (Joiner et al., 2009; Van Orden et al., 2010); perceived hopelessness, defeat and entrapment and negative self-perceptions, etc. (Klonsky & May, 2015); perceptions of defeat, entrapment and sensitivity to emotional pain (O'Connor & Kirtley, 2018) elevated levels of perceived burdensomeness and thwarted belongingness that combine to bring about desire for suicide (Joiner et al., 2009; Van Orden et al., 2010). and depression (Holman & Williams, 2020).

Joiner's Interpersonal Theory is seen as the first ideation-to-action theory of suicide and was later expanded on by Van Orden et al., (2010), followed by O' Connor's (2011) Integrated Motivational-Volitional model (IMV; O'Connor, Platt & Gordon, 2011) that also suggests separate explanations for SI and suicide attempts. Klonsky and May (2015) subsequently proposed a third theory within the ideation-to-action framework, known as the Three-Step Theory (3ST) of suicide. Like the IPT and IMV, the 3ST model proposes separate explorations of (a) the development of SI and (b) the progression from SI to attempts (Klonsky & May, 2015).

The Interpersonal Theory of suicide. The IPT suggests that suicidal ideation materialises from elevated levels of perceived burdensomeness and thwarted belongingness that combine to bring about desire for suicide (Joiner et al., 2009; Van Orden et al., 2010). This ideation combined with acquired capability for suicide (action) facilitates potentially fatal suicide attempts (Joiner et al., 2009; Van Orden et al., 2010). The IPT thus posits that an individual needs to simultaneously have both the wish to die by suicide and the capability to do so in order to commit suicide (Joiner et al., 2009; Van Orden et al., 2010). Since its introduction, the IPT has prompted numerous empirical examinations into the etiologies of SI, attempts, and fatalities, across a diverse range of population samples from various global locations (Chu et al., 2017). A major concept of the IPT is its focus on showing why most people who have suicidal thoughts do not proceed to make a suicide attempt (Klonsky et al., 2016b; Klonsky & May, 2014; Parkhurst, Conwell, Van Orden., 2016).

The Three-Step Theory (3ST) of suicide. Klonsky and May (2015) proposed and explained SI and suicide attempts in terms of four factors: pain, hopelessness, connectedness, and suicide capacity. The theory was tested through self-report measures of 950 U.S. adults and the results appeared to support the

theory's fundamental tenets. These central hypotheses were: (a) SI stems from the combination of pain (typically psychological pain) and hopelessness; (b) connectedness is a critical protective factor against escalating ideation in individuals with elevated levels of pain and hopelessness; (c) progression from SI to attempts transpires when dispositional, acquired, and practical factors create adequately elevated capacity to face the pain and dread innate in attempting suicide (Klonsky & May, 2015). The many sources of pain typically stem from a variety of adverse thoughts, emotions, sensations and experiences, e.g., social isolation, physical suffering, perceived burdensomeness, thwarted belongingness, defeat and entrapment, negative self-perceptions, etc. (Klonsky & May, 2015). The theory suggests that the initial step toward SI starts with pain, irrespective of the source. Hopelessness arises out of the belief that the pain will not diminish, and this combination of pain and hopelessness leads to the development of SI (Klonsky & May, 2015). Connectedness is a broad concept that could refer to various forms of attachments that have a perceived function giving an individual purpose in life, e.g., work, personal relationships, responsibility (Klonsky & May, 2015). The theory posits that suicidal ideation will stay moderate (e.g., "sometimes I think I might be better off dead") rather than strong (e.g., "I would kill myself if I had the chance") when individuals perceive their connectedness as a protective factor in managing their levels of pain. Unlike the IPT & IMV, the 3ST is very specific about the category of variables that contribute to suicide capacity. Klonsky and May (2015) argued that progression from SI to attempts only transpires when dispositional, acquired, and practical factors create adequately elevated capacity. Dispositional refers to variables that are motivated principally by genetics, such as levels of pain sensitivity; acquired refers recurring exposure to painful and/or terrifying experiences, resulting in habituation and, consequently, a higher tolerance for pain and a fearlessness of injury and death; Practical refers to existing, material factors like knowledge and access to lethal means that make it easier for individuals to act on SI (Klonsky & May, 2015).

The Integrated Motivational-Volitional model of suicide. The IMV conceptualises suicide as a behaviour (rather than a derivative of mental disorders) and explores the emergence of SI and suicidal behaviour and specifically: in specific biopsychosocial contexts (pre-motivational phase), the factors leading to the surfacing of SI (motivational phase) and the factors that facilitate the conversion from SI to suicide attempts/death by suicide (volitional phase) (O'Connor & Kirtley, 2018). It aims to identify central constructs that could explain: why and how SI develops; the conversion from ideation to attempt; and factors potentially moderating this transition (O'Connor et al., 2011; O'Connor & Kirtley, 2018). The IMV proposes that perceptions of defeat and entrapment are key drivers of SI, and that a group of factors, called volitional moderators (VMs) facilitate the transition from SI to suicidal behaviour (O'Connor & Kirtley,

2018). Entrapment in this context refers to external or internal factors causing the individual to experience a perception or feeling of being trapped, leading to potential anxiety. Internal factors include feeling trapped by pain being caused by internal thoughts and feelings, while external entrapment refers to the motivation to escape from events or experiences in the outside world (O'Connor & Kirtley, 2018).

The IMV incorporates predominant features from other psychosocial models including the 'arrested flight' model (Williams, 2001), the diathesis-stress model (Schotte & Clum, 1987) and the theory of planned behaviour ((Ajzen, 1991; Branley-Bell et al., 2019; O'Connor & Kirtley, 2018; Wetherall, Robb, & O'Connor, 2019). The premotivational phase represents a diathesis–environment–life events triad (O'Connor & Nock, 2014; Turecki & Brent, 2016), where diatheses manifest as biological, genetic or cognitive vulnerability factors or variations in individual characteristics that amplify risk of suicide (O'Connor & Kirtley, 2018). The premotivational stage therefore addresses the environmental context wherein SI may develop (e.g., adverse life events, heredity, vulnerabilities, and deficiencies) (O'Connor & Kirtley, 2018; Wetherall et al., 2019). One example of a prominent vulnerability according to the IMV is socially prescribed perfectionism (unrealistically high expectations we believe others have of us). It has been suggested that this heightens sensitivity to negative signals in the environment, leading to perceptions of defeat and sensitivity to emotional pain (O'Connor & Kirtley, 2018). Examples of environmental factors related to heredity, life events and deficiencies include: socio-economic inequality and recessions; early life adversity causing potential epigenetic changes in genes, cortisol dysregulation and attachment relationship issues (O'Connor & Kirtley, 2018). The broad assertion of the IMV model is that the premotivational factors influence suicide risk through their effect on the constructs within the motivational and volitional phases (O'Connor & Kirtley, 2018).

The motivational phase identifies factors facilitating the formation of SI, inclusive of moderators that regulate the shift from feelings of defeat to perceptions of entrapment to SI. The IMV suggests that appraisals of defeat and humiliation from which there is no perceived escape activate a sense of entrapment that could be internal (emotional pain) or external (experiences in external world) and heavily influenced by the presence or absence of Threats to Self-Moderators (TSMs; O'Connor & Kirtley, 2018). Examples of these TSMs that are believed to stem from coping and problem resolution processes include autobiographical memory biases, rumination and ineffective social problem-solving. The presence of either protective or negative Motivational Moderators (MMs) governs the transition from entrapment to SI. Protective MMs against SI include attainable positive future thinking, belongingness, connectedness, adaptive goal pursuit and reasons for living (O'Connor & Kirtley, 2018). Equally, negative interpersonal states (i.e., perceived burdensomeness and thwarted belongingness), having little or no social support and

depleted resilience with less negative attitudes about suicide could increase the chances of entrapment converting into SI (O'Connor & Kirtley, 2018). The final volitional phase of the model delineates the factors that augment or reduce the probability that an individual acts on their suicidal thoughts; these volitional phase factors include access to means, planning, exposure to suicide, impulsivity, levels of physical pain sensitivity, fearlessness about death, imagery, past behaviour and acquired capability for suicide (O'Connor & Kirtley, 2018).

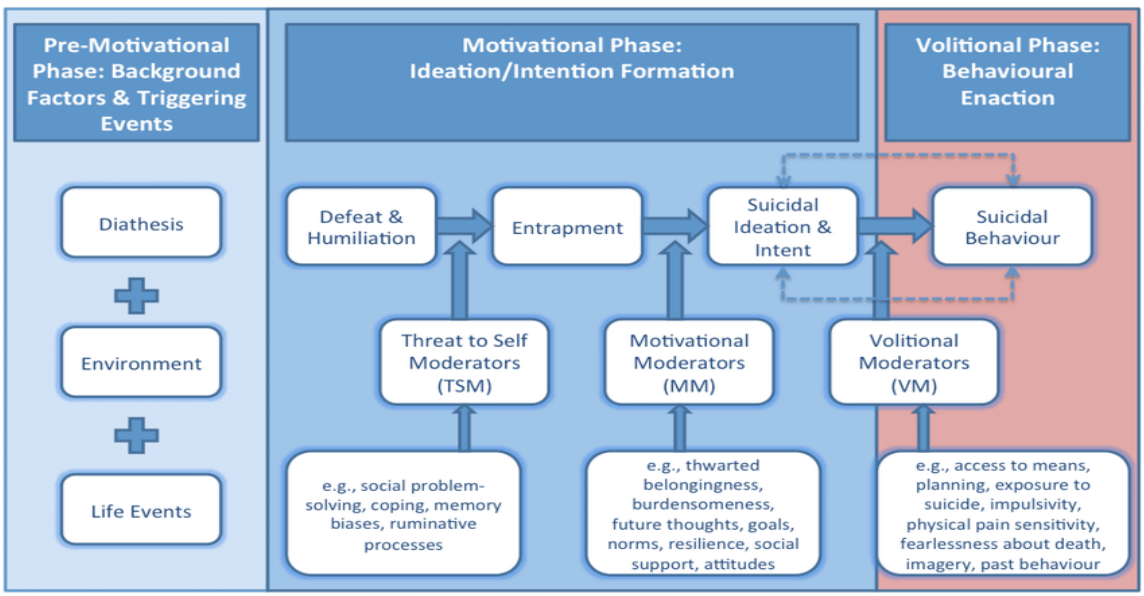

Figure 1. Integrated motivational-volitional model of suicidal behaviour (Adapted from "The Integrated Motivational– Volitional Model of Suicidal Behaviour," by O'Connor & Kirtley, 2018, *Philosophical Transactions of the Royal Society B-Biological Sciences, 373*, p. 2, CC BY-NC-ND).

Suicidal Ideation

Many believe that a fundamental reason for the limited success in reducing suicide rates is insufficient knowledge, especially about why, how and when suicidal thoughts develop and convert into potentially fatal suicide attempts. Existing research and the ideation-to-action theories indicate that the development of suicidal ideation and the subsequent progression into a suicide attempt are two distinctive processes (Law, Jin, & Anestis, 2018). Suicidal ideation is thus a major component of suicidal behaviour and has been identified as precursor of serious suicidal outcomes like suicide attempts and completed suicide (Ten Have et al., 2009).

While the ideation-to-action theories are valuable, and it's important to study the factors that cause people to transition from SI to suicidal action, it nevertheless remains crucial to study the causes of SI, since SI is a necessary condition for suicide attempts, even if it doesn't always lead there. Also known as suicidal thoughts, suicidal ideation could be defined in terms of cognitive processes that can fluctuate between transitory beliefs about the worthlessness of life, wishing for death, making firm plans for killing oneself and being fixated on self-destruction (Hintikka et al., 2001). In simpler terms, suicidal ideation implies thinking about, considering, or planning suicide and could range from fleeting thoughts, to extensive thoughts, to detailed planning (Klonsky, May, & Saffer, 2016).

Research has shown that severity of suicidal ideation for individuals at its worst point in their lives is a significant predictor of eventual death by suicide (Beck, Brown, Steer, Dahlsgaard, & Grisham, 1999; Law, Jin, & Anestis, 2018). The study by Beck et al. (1999) on suicide ideation at its worst point as a predictor of eventual suicide highlighted the importance of evaluating the severity of historical suicidal ideation in the clinical assessment of suicidality. Significantly, it was found that individuals with historical suicide ideation who were currently experiencing SI at its worst point in their lives were significantly more at risk of attempting suicide (Beck et al., 1999). Similar research found that the existence of firm plans and procedures for suicide at the worst point of suicidal ideation contribute to a history of suicide attempts and eventual death by suicide (Joiner et al., 2003). Furthermore, fantasising and daydreaming about suicide as a form of mood regulation or dysregulation was found to increase suicidal tendencies and the capability to engage in suicidal behaviour in the long-term (Selby, Anestis, & Joiner, 2007). Examples of daydreams and fantasies include contemplating future suicidal plans, visualising previous suicide attempts and considering how others may react to their death. There have also been suggestions that an individual's vivid and ongoing fixation with their own suicide may perpetuate a type of mental practice for suicide, especially if the fantasies are brutal and explicit in nature (Selby et al., 2007).

Studies of suicidal ideation within the general (non-clinical) population have found that the risk of premeditated suicide attempts increase with recurrent suicide-related thoughts and behaviours (Hintikka et al., 2001; Kessler et al., 1999). A survey of almost 85,000 adults in 17 countries showed that after suicidal ideation onset, 60% of those who transitioned through planning to suicide attempt did so within the first year (Nock et al., 2008). These results would support other research findings suggesting that the majority of suicidal thoughts and experiences do not develop over an extended period of time with gradually escalating intensity (De Leo, Cerin, Spathonis, & Burgis, 2005; Ten Have et al., 2009). Results of the study by De Leo et al. (2005) found evidence in only a few cases (20%) that suicidal thoughts and behaviours had developed over an extended period of time with gradually escalating intensity. Largely, results showed

that suicidal inclinations and levels of severity oscillated over time, depending on factors like states of depression; having personally known someone who completed suicide; various psychiatric disorders; and reckless behaviour, especially in males (De Leo, Cerin, Spathonis, & Burgis, 2005).

Other research findings have suggested that continual suicidal ideation is linked to the increased likelihood of premeditated suicide attempts (Kessler et al., 1999). Research across various age groups has indicated that long-term psychological or mental health issues could also be a leading cause of suicidal ideation (Hintikka et al., 2001). Varied findings about suicidal ideation and its link to future suicidal behaviour point to the need for further research into the development and persistence of the suicidal ideation process. This could augment our understanding of and inform our approach to predicting the onset of suicidal ideation. To this end, planned suicide attempts might be more preventable through early recognition of suicidal thoughts and predicting which individuals will go on to complete suicide.

Prevalence of suicidal ideation

The majority of findings in suicide research are consistent with the ideation-to-action continuum approach (O'Connor & Nock, 2014). Modern suicide theories posit that the development of suicidal ideation and the ensuing progression into a suicide attempt are two separate processes, and research shows that most individuals who have suicidal thoughts do not go on to make suicide attempts (De Leo et al., 2005; Kessler et al., 1999; Ten Have et al., 2009). Overwhelming evidence thus shows that suicidal ideation is a multifaceted process that can differ in intensity, inception, extent and content. Established predictors of suicidal behaviour, like psychiatric disorders, depression and hopelessness have proven to be limited in their overall predictive capacity (Branley-Bell et al., 2019) and thus typically fail to differentiate between those who consider suicide and those who make attempts (Klonsky & May, 2014). From a research and clinical practice perspective, it is therefore crucial to identify and clarify processes involved in SI, in order to identify who is at highest risk of making a suicide attempt.

Compared to earlier theories of suicide, the ideation-to-action framework attempts to inform and enhance processes like suicide prevention and suicide risk assessment. This is apparent in the way that ideation-to-action framework distinguishes predictors of ideation from predictors of the progression from ideation to behaviour, compared to the unitary construct used in earlier approaches. For example, variables such as depression, hopelessness, thwarted belongingness & perceived burdensomeness, defeat & entrapment have proven to be strong correlates of suicide ideation (Klonsky & May, 2015; O'Connor et al., 2011; Van Orden et al., 2010), but not necessarily predictors of individuals who may attempt suicide.

Equally, identifying and targeting factors causing progression from ideation to attempts would enhance risk assessment practices. Factors such as acquired capacity and capability for suicide, impulsivity, planning, access to means, imitation, dispositional, and practical are some of the identified contributors to increased risk of suicide attempts (Klonsky et al., 2016b). Being able to show a distinction between suicidal ideation and a progression to potential attempts at suicide is crucial in suicide education, prevention, risk assessment and intervention programmes in outpatient and clinical settings. An advantage of this approach is being able to identify suicide ideators who have never attempted suicide for appropriate therapeutic or other interventions before they possibly progress to a suicide attempt.

As mentioned briefly before, findings from studies on worst point suicide ideation revealed that there is a significant relationship between lifetime worst point ideation and suicide attempts (Beck et al., 1999; Law et al., 2018). The study by Beck and colleagues on worst point suicide ideation revealed the importance of effective clinical assessment of suicidal ideation in suicide prevention, in that there was found to be a greater probability of a history of suicide attempts with current presentations of higher intensity worst point ideation. In this study, suicidal ideation was found to be a significant predictor of eventual suicide completion and the research emphasised the importance of evaluating the severity of past suicide ideation instead of depending exclusively on the severity of ideation on the day of an assessment. From a clinical perspective, this finding is particularly valuable for clinicians who evaluate or treat psychiatric outpatients, who may not necessarily experience similar levels or intensity of suicide ideation at the time of assessment compared to the past. In a similar vein, the various aspects of suicide ideation also play an important role when it comes to evaluation of suicidal individuals. Examples of these factors within their analyses of worst point suicidal ideation were identified by Law (2018) and colleagues: age of an individual's initial episode of suicidal ideation, lifetime frequency of suicidal ideation, and average intensity of suicidal ideation. However, it was posited that the intensity of worst point ideation was the only variable that significantly differentiated between ideators and attempters.

Epidemiological research into the various aspects of suicidal behaviour across countries found the following regarding lifetime occurrence: suicidal ideation (9.2%), suicide plans (3.1%), and non-lethal suicide attempts (2.7%) (O'Connor & Nock, 2014). Deficient or dysfunctional cognitive factors or thought processes were identified by O'Connor and Nock (2014) as factors that that could potentially increase the risk of suicidal ideation and behaviour. Variables hypothesised to increase the risk of suicidal ideation according to the O'Connor and Nock study included: cognitive rigidity, rumination, thought suppression, perceptions of thwarted belongingness and burdensomeness, future thinking and goal adjustment, perceptions of defeat & entrapment. The study also found that prevalence varied extensively by country,

but that suicidal behaviour remained consistent across different countries once present (O'Connor & Nock, 2014). Examples of this consistency were: increases in SI during adolescence in every country studied; and a third of people who think about suicide will attempt it, with more than 60% of these attempts occurring within the first year of initial suicidal thoughts (O'Connor & Nock, 2014). A study conducted in Finland showed that suicidal ideation is frequent and persistent at the general population level (Hintikka et al., 2001). Results from this study suggested that persistent suicidal ideation is related to a significantly increased chance of planned suicide attempts and yet most people who have experienced suicidal ideation tend not to seek professional help for depression with suicidal tendencies. (In the USA, it was found that 34% of individuals with suicidal ideation form solid suicidal plans and 72% of those with suicidal plans make suicide attempts (Aiba, Matsui, Kikkawa, Matsumoto, & Tachimori, 2011).

Correlates of suicidal ideation

Dodemaide and Crisp (2013) found that individuals experiencing suicidal thoughts are diverse and vary extensively in their scope of experiences, beliefs, and opinions about the causes of suicidal ideation. This study highlighted the level of insight individuals with first-hand experience of suicidal thoughts might have, including not transitioning onto suicide attempts. The various correlates and risk factors for suicidal ideation that have been identified through empirical research include those mentioned in the ideation-to-action theories of suicide, as well as variables from research specifically into suicidal ideation, and historically established predictors like depression and hopelessness. The prominent risk factors already mentioned in the exploration of the IPT, IMV and 3ST include perceived burdensomeness, thwarted belongingness, pain (psychache), and defeat & entrapment. Factors that moderate the effects of prominent risk factors are typically depleted resilience, hopelessness, depression, lack of social support, ineffective coping and problem resolution processes, and diminished or lack of reasons for living. Furthermore, the environmental contexts wherein suicidal ideation may develop include biological, genetic, or cognitive vulnerability factors or variations in individual characteristics. Examples of adverse environmental factors include socio-economic inequality and recessions; early life adversity, trauma and attachment relationship issues, that when combined with negative signals in the environmental, could amplify risk of suicidal thoughts and behaviour (O'Connor & Kirtley, 2018). For example, one study revealed how maternal closeness (respondents were asked whether they felt close to their mother, and whether they talked to their mother frequently) was a significant predictor of suicidal ideation among females and how the relationship between maternal closeness and lifetime smoking among females was shown to be mediated by suicidal ideation (Gilreath, King, Graham, Flisher, & Lombard, 2009).

Further research has investigated and identified numerous other factors influencing suicide ideation, like age differences, gender differences and accessing suicide sites (Aiba et al., 2011). Other correlates of suicidal ideation that have been identified include ethnicity, cohabitation status, employment situation, level of education, psychiatric morbidity (Aslan, Hocaoglu, & Bahceci, 2019; Bakhiyi et al., 2016; Ghazinour, Mofidi, & Richter, 2010). For instance, according to various studies, there is an excessively high rate of SI in sexual and gender minority adults compared to heterosexual adults (Salentine, Hilt, Muehlenkamp, & Ehlinger, 2020). It has been suggested that this unusually high occurrence of SI in sexual and gender minority individuals could be linked to prejudice in the form of stigma, victimisation, and rejection resulting from personal relationships, public attitudes, or policies that vilify or alienate sexuality (Goldblum et al., 2012; House, Van Horn, Coppeans, & Stepleman, 2011; Tebbe & Moradi, 2016). Salentine et al. (2020) found that in SMG individuals, higher levels of discrimination were related to recurrent suicidal ideation at their worst point as an indirect result of hopelessness regarding thwarted belongingness. Chu et al. (2019) used the cultural theory and model of suicide to explore cultural suicide ideation pathways. They found multiple direct and indirect pathways to suicidal ideation through inspecting associations involving cultural (family conflict, minority stress, cultural suicide sanctions), general distress (depression, hopelessness), and cultural expressions of distress factors, as predictors of suicidal ideation.

Reasons for Living

The suicide debate hypothesis (Kovacs & Beck, 1977) proposes that suicidal individuals often experience an "internal suicide debate" whereby they consider reasons for dying as well as reasons for living. However, research points toward a trend in the field of suicidology to concentrate on risk factors for suicide and suicidal ideation, at the expense of identifying life-maintaining beliefs and expectations of people contemplating suicide (Cwik et al., 2017). For example, risk factors like depression, hopelessness and perceived burdensomeness have been used to predict suicidal ideation in clinical and non-clinical populations, but with limited success (Bakhiyi et al., 2016). Conversely, research has also identified protective factors against suicidal ideation that include attainable positive future thinking, belongingness, connectedness, adaptive goal pursuit and reasons for living (Linehan, 1983; O'Connor & Kirtley, 2018). These protective factors are similar to those identified by researchers when investigating the adaptive, life-maintaining characteristics of people who had survived the Nazi concentration camps during the Second World War. These early investigations focused specifically on how many these incarcerated individuals maintained their will to live, despite their horrific circumstances. Results from these studies suggested that

many individuals survived severe conditions, life stress, pain and suffering by having positive beliefs about life (e.g., beliefs that no matter what form life takes, it is still worth living and relishing), and expectations for the future (e.g., beliefs that there was something meaningful to do in life) (Linehan et al. 1983). The outcomes of this research also highlighted the function of cognitive patterns, such as beliefs, expectations and ability as important mediators of suicidal behaviours.

Subsequently, Linehan and colleagues (1983) examined the life-oriented facet of the suicide debate hypothesis, based on the research undertaken with Nazi concentration camps survivors. Their research was based on a cognitive-behavioural perspective of suicidal behaviour, suggesting that the content of an individual's belief systems is what separates suicidal from non-suicidal people. The implication is that suicidal individuals differ from non-suicidal individuals in the extent to which they attach importance to a set of life-oriented, adaptive beliefs and expectancies (reasons for living). The Linehan et al. (1983) research comprised two studies conducted independently with a general and clinical population and sought to investigate the range of adaptive beliefs and expectancies held by non-suicidal individuals, compared to those who contemplated suicide or had made actual suicide attempts. They hypothesised that suicidal individuals would ascribe less importance to the various potential life-oriented beliefs and expectations that could potentially mitigate against suicidal ideation and suicide attempts.

In developing the actual inventory to be used in the study, item generation for the data collection was empirically produced through surveys from a diverse population of citizens in the United States, comprising both genders and a broad age range. The respondents were asked to list: (a) their reasons for not killing themselves at the point in their lives when they had most seriously considered killing themselves; (b) reasons why they would not now kill themselves; and (c) the reasons they believed kept other people from killing themselves (Linehan et al. 1983). Initially, a total of 343 reasons for living were identified. These were eventually reduced to 72 statements, after identical responses were eliminated and similar explanations articulating a similar idea were combined (Linehan et al. 1983). Subsequently, two separate factor analyses were conducted to establish whether or not the reasons could be correctly abridged by summing responses across sets of items. This took the form of the 72 items being arranged into an inventory and administered to two separate populations. Participants were asked to rate each item in terms of its importance, both currently and in past difficult times, on 6-point Likert type scales. The analyses showed very similar factor structures and item loadings, with the following six distinct clusters of reasons for living materialising: (a) Survival and Coping Beliefs (e.g., "I believe I can find other solutions to my problems" and "I have the courage to face life"); (b) Responsibility to Family (e.g., "My family depends on me and needs me"); (c) Child-Related Concerns (e.g., "The effect on my children would be harmful"); (d)

Fear of Suicide (e.g., "I am afraid of the 'act' of killing myself [the pain, the blood and violence]"); (e) Fear of Social Disapproval (e.g., "Other people would think I am weak and selfish"); (f) Moral Objections related to suicide (e.g., "My religious beliefs forbid it") (Linehan et al. 1983). The resulting analyses reduced the 72 items to 48 items consisting of six scales representing the six original categories. Each of the 48 items is rated on a 6-point Likert-type scale ranging from 1 *(not at all important)* to 6 *(extremely important).* Estimates of internal consistency were computed for individually for each scale using the Cronbach Alpha statistic, showing that the scales had moderately high internal consistency reliability, with alphas from .72 to .89 (Linehan et al. 1983).

The two separate studies conducted using the 48 item Reasons for Living Inventory found that in both general and clinical populations, individuals reporting prior suicidal behaviour also reported fewer important reasons for living when considering suicide. Respondents completing the questionnaire were required to rate how important each reason would be for living and not committing suicide based on six subscales: Survival and Coping Beliefs; Responsibility to Family; Child-Related Concerns; Fear of Suicide; Fear of Social Disapproval; and Moral Objections. Since the original study by Linehan and colleagues, the Reasons for Living Inventory is a well-documented, reliable and validated tool (Cwik et al., 2017; Linehan et al., 1983; Osman et al., 1993; Zhang et al., 2011) that has been employed in a variety of settings: clinical samples (Osman et al., 1996; Demyttenaere, Desaiah, Raskin, Cairns, & Brecht, 2014; Malone et al., 2000); community groups: adults ((Miller, Segal, & Coolidge, 2001; Osman et al., 1999), college students (Osman et al., 1993) adolescents (Osman et al., 1996) and older adults (Miller et al., 2001; Segal and Needham, 2007). The research evidence suggests that the six reasons for living subscales are correlated negatively with suicidal ideation and behaviours. The original research by Linehan et al. (1983) also showed that certain subscales of the RFLI can distinguish between suicidal and non-suicidal individuals in a general population: those who were never suicidal scored higher on Survival and Coping Beliefs, Responsibility to Family, and Child-Related Concerns, and lower on Fear of Suicide, than those with a history of suicidal ideation or suicide attempts. Subsequent studies have shown that RFL protects against suicidal behaviour, although RFL does tend to fluctuate across the lifetime (Miller et al., 2001; Wang, Richard Lightsey, Pietruszka, Uruk, & Wells, 2007). A psychometric evaluation of the Reasons for Living Inventory by Osman et al., (1993) offered considerable support for the psychometric properties of the RFL by validating the factor structure, providing supplementary non-clinical data, and identifying a subset of subscales that could be important in clinical assessment, among others.

One of the additional versions that were validated is the Brief Reasons for Living Inventory (BRFL). The Brief Reasons for Living Inventory was developed by Ivanoff, Jang, Smyth, & Linehan

(1994) as a shortened version of the original 48-item Reasons for Living Inventory, with the original six subscales of the RFLI, primarily to predict suicidal ideation. Total scores for both measures are highly correlated (r = .94) and the BRFL was shown to be a significant predictor of suicide ideation even when hopelessness and depression were simultaneously accounted for (Cwik et al., 2017). Results from the study by Cwik and colleagues suggested that reasons for living were negatively associated with depression, suicidal ideation, and perceived burdensomeness, and positively correlated with more social support and positive mental health, with variations in associations found in the subscales. They further concluded that this 12-item measure was as effective as either the Beck Hopelessness Scale or Beck Depression Inventory in predicting suicidal ideation. The advantage of the BRFL is that it has wider potential utility in larger screening and assessment settings, with a much shorter timeframe for completion of the questionnaire. In 2017, research by Cwik et al. validated the German version of the BRFL that served to reinforce the original factor structure and overall findings proposed by Ivanoff et al. (sufficient internal consistency and good convergent and divergent validity). The results from this study supported earlier findings showing that RFL explains variance in suicidal ideation that is not explained by recognised risk factors like depression. What also became apparent was that reasons for living significantly predicted suicidal ideation while moderating the relationship between depression and suicidal ideation extensively (Cwik et al., 2017). This is considered as preliminary evidence that the BRFL may be reliable and valid measure of adaptive reasons for living that could be used in research and clinical settings.

Predictors and Correlates of Reasons for Living

It is quite apparent from the literature that there are numerous potential factors and predictors involved in the reasons why people choose to live and not convert their suicidal ideation into suicide attempts. By the same token reasons for living could impact the development suicidal ideation itself, as individuals who have several reasons for living may not experience suicidal ideation in the first instance. Similarly, ethnographical variances that shape aspects of an individual's values, religious and moral beliefs and worldviews, could influence factor structures in the reasons for living inventory (Lee and Oh, 2012). Lee & Oh subsequently proposed culture-responsive approaches in research and practice to understand the variances in suicide rates within diverse communities, by validation of the RFL across various groups. Research has identified the more common variables that appear to have an effect on reasons for living scores that include: age, gender, religion, core beliefs and values, life events, ethnicity, social support, cultural affiliation, and psychopathology, among others (Bakhiyi et al., 2016; Lee & Oh, 2012).

According to McLaren (2011), age and gender variations and their influences on subscales of the RFLI depend on the specific reason for living being explored, and that gender was not a significant predictor of reasons for living in general. Older age has been correlated with higher total RFL scores (Edelstein et al., 2009; McLaren, 2011). Research by Miller et al. 2011 showed elevated scores in specific subscales like Child-related Concerns and Moral Objections for older adults compared to younger adults. This finding highlighted that there does appear to be age-related differences in reasons for not committing suicide, although there was no clear distinction in the manifestation of suicidal ideation between younger and older adults. It could be reasoned that the identification of explicit reasons that discourage individuals from committing suicide may be clinically valuable and offer some support in suicide prevention efforts.

Gender appears to display variances in reasons for living scores and in specific subscales. Linehan et al. (1983) found gender differences on two scales in their studies with a general and clinical population, those being Fear of Suicide and Moral Objections. However, this study merely pointed out that this type of variation could be useful when differentiating various groups. A later study conducted with college students by Ellis and Jones (1996) showed that women scored higher on Fear of Suicide and Responsibility to Family subscales and did not perceive themselves as suicide ideators as often as male respondents. Further research supported these findings, when Ellis and Lamis (2007) found noteworthy differences in adaptive characteristics between men and women respondents. It was found that females scored higher on specific subscales: Survival and Coping Beliefs, Responsibility to Family, Child-Related Concerns, and Fear of Suicide, while there were no marked differences in suicidal behaviour between genders. However, as mentioned previously, research has clearly shown that males are still more likely to complete suicide (Kessler, Borges & Walters., 1999; Nock et al., 2008, 2013) and that the global age-standardised suicide rate was 2.3 times higher in males (12.6 per 100 000) than in females (5.4 per 100 000) (WHO, 2019). Research has also raised questions about gender-specific roles that may affect RFL scores. Identifying gender variations in reasons for living could possibly provide valuable information about the research, preparation and implementation of specific preventative measures for suicidal behaviour, adaptive characteristics of both genders, as well as how coping skills are perceived and applied.

Gender-age relationships with reasons for living have also been documented. It has been posited that variations in reasons for living subscales and total scores among both genders tend to diminish with age, although older men remain at highest risk (Segal & Needham, 2007). It remains uncertain why increasing age in both genders increases parity in reasons for living, given that there are significant gender variations among younger people. Potentially, this could be because of increased reasons for living in one gender and a decrease in the other over time. As mentioned previously, gender-distinct roles could possibly

have an effect on adaptive characteristics and coping capabilities, which in turn could change over time and with increased age. Due to the lack of research in age-gender associations with reasons for living, this remains an important area for further study.

The role of personality characteristics and disorders in evaluating reasons for living might be significant, as personality characteristics could affect the way people perceive themselves and their environment, thus potentially affecting their ability to adapt, cope and handle life difficulties. There is some evidence indicating that there could be a symbiotic relationship between mental health and reasons for living and that psychopathology and personality traits may affect RFL. Studies have identified the following disorders that all correlated with fewer reasons for living: Psychiatric comorbidities (comorbid depressive disorder with obsessive-compulsive disorder) (Diaconu & Turecki, 2009); anxiety disorders (Lee, Liverant, Lowmaster, Sloan, & Gradus, 2014), alcohol use disorder (Innamorati, Pompili, Tatarelli, Girardi, & Lester, 2008) and depressive personality disorder (Segal, Marty, Meyer, Coolidge, & Gottschling, 2015). Research focused on personality disorders have postulated that therapies like Dialectical Behaviour Therapy could bolster reasons for living and decrease the chances of an individual engaging in suicidal behaviour (Linehan et al., 2015).

Childhood trauma and other negative life events have been shown to predict decreased reasons for living in adults (Segal et al., 2015; Segal, 2009). However, different cognitive abilities and functioning would have an influence on perceptions of life events and also reasons for living potentially related to specific incidents. Therefore adverse life events may not explain suicidal behaviour or variations in reasons for living, because of the diversity of cognitive capacities and perceptions of individuals under similar and differing life circumstances (Oquendo et al., 2004).

There is evidence to suggest that cultural factors could explain the variations in reasons for living across different ethnic groups (Lee & Oh, 2012; Oquendo et al., 2005; Walker, Alabi, Roberts, & Obasi, 2010). Walker et al. (2010) in their research found that cultural worldview moderated the relationships for (a) depressive symptoms and reasons for living and (b) hopelessness and reasons for living in African Americans, but not European Americans. Similarly, the research by Oquendo et al. (2005) in a patient population found that self-identification as Latino may be linked with embracing cultural constructs that mediate protective effects against suicidal behaviour. Specific constructs identified in the RFLI that potentially protect Latinos from acting on suicidal thoughts, were moral objections to suicide and survival and coping beliefs. The study by Lee and Oh (2012), found a pattern of lower levels of RFL in a Korean college population, specifically Moral Objections and Responsibility to Family and Friends, compared to those reported in Asian American and European American students.

The implication is that there are significant differences in meanings, definitions of suicide, semantics and conceptualisation of suicidal behaviour in terms of ethnic and cultural normative values, standards and expectations across ethnicities and cultures. However, even though the literature is clear that there are regional differences in most aspects of suicidal behaviour, it appears that the cultural & ethnic element has not received as much attention as other facets of research into suicide (Lester, 2011). Identifying ethnic and cultural variations in reasons for living could possibly provide valuable information about the research, preparation and implementation of specific preventative measures for suicidal thoughts and behaviour, adaptive characteristics of specific cultures, as well as how coping skills are perceived and applied. It could be reasoned that the identification of explicit reasons that discourage individuals from committing suicide in specific ethnic or cultural settings may be clinically valuable and offer some support in suicide prevention efforts.

Social support has been linked to variations in reasons for living and is associated with higher reasons for living scores. The results of a study by Matlin, Tebes & Molock (2011), showed that more than one third of the variability in reasons for living was predicted by community connectedness, peer and family support. They further reported that a large percentage of African American adolescents experience depressive symptoms, suicidal ideation and suicide attempts compared to the general population. Matlin and colleagues proposed that the results of their study had implications for research and interventions for African American adolescents in particular, as they believed that cognitive factors measured by the RFL could protect against future suicide attempts by youth. Similar research found that family connectedness and living with others played a major role in decreasing suicidal ideation (Heisel et al., 2012). Kissane & McLaren (2006) found that an elevated sense of belonging, especially to a group, correlated with high reasons for living scores overall and in particular the subscales of Survival & Coping Beliefs, Responsibility to Family and Child-Related Concerns. These results highlight the possible value in evaluating interpersonal relationships during suicide assessments of depressed, middle-aged and/or older adults. Social support is also associated with having moderating effects on depressive symptoms (Holman & Williams, 2020; Kleiman & Liu, 2013; Kleiman, Riskind, Schaefer, & Weingarden, 2012; Matlin et al., 2011).

One advantage of identifying predictors and variations in RFL scores would be that clinicians could potentially institute remedial strategies to focus on factors that moderate or interact with reasons for living (e.g., mental disorders, coping skills, personality, social support) in order to mitigate suicidal behaviour. Suicide research and prevention need accurate evaluation of suicide phenomena and thus reliable, valid, and thorough assessments are crucial. Examples of established evidence-based clinical assessments

currently in use for these types of assessment include the Suicide and Self-Injury Interview (SASII; (Linehan, Comtois, Brown, Heard, & Wagner, 2006), which is a structured interview composed of 31 items designed to assess the intent, context, and structure of non-suicidal and suicidal behaviours; and the Self-Injurious Thoughts and Behaviours Interview (SITBI), developed by (Nock, Holmberg, Photos, & Michel, 2007), that comprehensively assesses both non-suicidal and suicidal self-harming behaviours.

Another positive effect of identifying predictors and variations in RFL scores would be that thresholds for different age and gender could be established for standardising evaluation processes, based on age-gender RFL variations. For example, research into gender differences related to RFL has shown that women score much higher than men on total RFL as well as on specific subscales of the RFL: moral objections, survival and coping beliefs, responsibility to family, child-related concerns, and fear of suicide (Dobrov & Thorell, 2004; Rieger et al., 2015; Segal & Needham, 2007). Further studies in this vein suggest that individuals with fewer reasons for living were at greater risk for developing suicidal thoughts (Zhang, Law, & Yip, 2011a).

Another advantage of identifying and understanding predictors of reasons for living and suicidal behaviour is that psycho-education programmes could be formulated for families and friends of suicidal individuals to assist them in offering support in preventing suicidal behaviour (Bakhiyi et al., 2016). There is also evidence suggesting that certain medications (e.g., antidepressants) and brief therapeutic interventions (e.g., Teachable Moment Brief Intervention; Cognitive Behaviour Therapy) may have enhanced RFL and strengthened coping abilities over short periods of time (Demyttenaere et al., 2014; O'Connor et al., 2015).

Reasons for Living and suicidal ideation

Recommendations stemming from research advocate for a better understanding of the suicidal process, specifically suicidal ideation, as this could enhance efforts in finding more effective solutions to reduce occurrence, impact and consequences of suicidal behaviour. The results from the study by Bakhiyi et al. (2016) supported earlier findings showing that RFL explains variance in suicidal ideation that is not explained by recognised risk factors like depression and hopelessness. However, the literature review for the current study hints at limitations in methods, especially statistical analysis previously used to test hypotheses in this regard, possibly stymieing their capacity to account for potential issues like measurement error for example. Findings in this area of research could have significant clinical relevance in the assessment and evaluation of suicide risk and should therefore be as robust as reasonably possible when using a cross-sectional design. Specifically, identifying variations in suicidal ideation could help to

guide clinicians in the various approaches related to identifying suicide protective and risk factors and the application of remedial strategies aimed at suicide prevention (E. D. Klonsky et al., 2016a). This process could also address various methodological limitations in suicide research. For example, the application of additional statistical approaches to compliment and test results from hierarchical regression models (e.g., Structural Equation Models), could possibly account for parameter bias caused by measurement error when using multiple regression models (Westfall & Yarkoni, 2016).

Reasons for living is mentioned in the IMV theoretical model as one of the potential protective motivational moderators that could moderate the transition from entrapment to suicidal ideation, the others being attainable positive future thinking, belongingness, connectedness, and adaptive goal pursuit (O'Connor & Kirtley, 2018). Furthermore, there have been questions about whether positive life-sustaining characteristics, like responsibility to family and survival and coping beliefs, or fears of suicide, social disapproval, and moral beliefs make the difference for suicidal individuals in choosing to live. Research on reasons for living and suicidal ideation by Bakhiyi et al. (2016) revealed that reasons for living correlated with low levels of suicidal ideation in various sample populations: adults, adolescents, the elderly and clinical samples (mood disorders & schizophrenia). The findings in these cross-sectional studies were supported by research that produced parallel findings (Demyttenaere et al., 2014; Zhang et al., 2011). There is also evidence to suggest that high reasons for living score may discern the level of severity of suicidal ideation in individuals (Malone et al., 2000; Oquendo et al., 2005). A recent study with adolescents (Din, Amit, Abdul Kadir, & Halim, 2018) found that reasons for living total scores correlated negatively with suicidal ideation, while there was a positive relationship between reasons for living and various coping strategies. Results showed that in this sample of adolescents, suicidal ideation decreased with increased reasons for living, especially on the subscales of concern for the future, moral objection, responsibility to friends and family, fear of suicide, and fear of social disapproval. This finding supports previous studies with younger adults (Lee, 2011; Lee & Oh, 2012; Linehan et al., 1983). It also highlighted the importance of how the interpretation of suicide and suicidal thoughts hinges on cultural values, as participants' subscale scores tended to reflect the cultural and moral values and expectations of their Malaysian society, i.e., robust survival and coping beliefs, higher levels of responsibility to their family, fear of social disapproval and forceful moral and religious objections (Che Din, Amit, Abdul Kadir, & A Halim, 2018). A study by Miller et al. (2001) showed that there are age-related differences in reasons for not committing suicide in younger and older adults. Although there was no obvious difference between the two groups regarding suicidal ideation, there were higher readings for moral objections and child-related concerns among the older adults for not committing suicide.

Cognitive functioning may also have an influence on the relationship between suicidal ideation and reasons for living. Research has suggested that coping skills associated with reasons for living could possibly affect suicidal thoughts and behaviours (Marty, Segal, & Coolidge, 2010; Rietdijk, van den Bosch, Verheul, Koeter, & van den Brink, 2001; Wang et al., 2007), because coping abilities correlated with elevated scores on the Survival and Coping Beliefs scale of the reasons for living inventory in these studies. Based on these results, it could be theorised that strengthening of coping abilities could potentially prevent or minimise suicidal thoughts and behaviour. This may be an area for future research.

Potential Moderating effects of Reasons for Living on Suicidal Ideation

The view that reasons for living protects against suicidal thoughts and behaviours after controlling for established suicide risk factors like depression and hopelessness is supported by the literature (Bakhiyi et al., 2016; Cole, 1989; Galfalvy et al., 2006; Lizardi et al., 2008; O'Connor & Kirtley, 2018; Oquendo et al., 2004; Rietdijk et al., 2001). It has also been suggested that reasons for living may moderate the association between stressors, coping abilities and suicidal behaviour (Bagge, Lamis, Nadorff, & Osman, 2014; Wang et al., 2007), correlate with resilience factors (Johnson, Wood, Gooding, Taylor, & Tarrier, 2011), as well as predict suicidal ideation (Che Din et al., 2018; Cwik et al., 2017; Galfalvy et al., 2006; Goldston et al., 2001; Rich & Bonner, 1987). Research in the area of moderating effects has suggested that reasons for living may in effect weaken the association between risk factors like depression, suicidal thoughts and behaviours by acting as a buffer (Bakhiyi et al., 2016). Results from the study by Bagge et al. (2014) revealed that reasons for living moderated the relationships between current suicidal ideation and the risk factors depression and hopelessness. The same study also showed that total RFL wholly mediated the relationship between hopelessness and past-year suicide attempt, and partly mediated the depressive symptoms-suicide attempt relationship over the same time. A study by Cwik et al (2017) showed that reasons for living was a significant moderator of the depression-suicide ideation relationship. Those respondents who reported more reasons for living were less likely to experience suicide ideation even at the highest severity of depressive symptoms, compared to participants who reported low reasons for living.

Research conducted recently (Holman & Williams, 2020) explored how risk and protective factors for suicide interact with each other, in order to establish which factors were most central to a network of these factors. The results suggest that interventions targeting depression may be particularly beneficial in reducing suicide risk and revealed the value of examining protective factors as well as risk factors when determining an individual's suicide risk. Supporting these results, reasons for living is mentioned in the IMV theoretical model as one of the potential protective motivational moderators that could shield against

the development if suicidal ideation and intent, other examples being: attainable positive future thinking, belongingness, connectedness, and adaptive goal pursuit (O'Connor & Kirtley, 2018). A study by Wang et al. (2007) revealed that reasons for living predicted suicidal ideation directly, as well as indirectly via an inverse relationship with depression. Wang and colleagues argued that the results from their study highlighted the possibility for clinicians to focus on interventions that included task-oriented coping skills and using reasons for living to clearly emphasise and promote positive factors with their clients.

In general, the literature supports the belief that intensity of depressive symptoms as predictors of suicidal ideation was extensively mitigated by the degree of reasons for living (Bagge et al., 2014; Cwik et al., 2017; Dobrov & Thorell, 2004; Lee, 2011). However, there have also been discrepancies in similar research. For example, one study showed that high reasons for living scores increased hopelessness in a sample of depressed elderly respondents, resulting in suicidal ideation (Britton et al., 2008). The manner in which reasons for living protects against suicidal ideation and suicide attempts or moderates risk factors like depression is therefore still unclear and further research in this area is thus warranted.

Aim and Objectives of the Current Study

The aim of this study is to explore the extent to which reasons for living predicts suicidal ideation after accounting for traditional risk factors like depression, hopelessness and perceived burdensomeness. A further objective is to explore potential moderating effects of reasons for living on depression, which is a risk factor normally associated with suicidal ideation. Research in this area could have significant clinical relevance in the assessment and evaluation of suicide prevention and risk assessment and data analysis should therefore be as robust as reasonably possible. In this regard, the literature review for this current study hints at limitations in methods, specifically how only hierarchical regression analyses were used to test hypotheses, thereby possibly hindering their capacity to account for potential issues (e.g., measurement error). It is therefore critical to address any potential questions around the integrity, reliability and validity of research results via the application of additional statistical approaches that could test results from hierarchical regression models. The use of Structural Equation Models in the current study could thus possibly account for parameter bias caused by measurement error when using multiple regression models, as regression assumes predictors are measured without error (Westfall & Yarkoni, 2016).

Theory and research producing psychological explanations for the inception of suicide risk have concentrated traditionally on the role of negative cognitive and emotional states in the aetiology of suicide thoughts and behaviour. These include variables such as depression and hopelessness. Subsequently, aetiologic explanations for suicide risk have been expanded to include other factors, like interpersonal

difficulties (e.g., thwarted belongingness & perceived burdensomeness; Joiner, 2005; Van Orden et al., 2010) and research findings support relationships among these and indicators of negative emotional and cognitive factors (Heisel, Neufeld, & Flett, 2016). Risk factors such as depression, hopelessness, thwarted belongingness & perceived burdensomeness have proven to be strong correlates of suicide ideation but limited in their overall predictive capacity and thus typically fail to differentiate between those who contemplate suicide and those who progress from ideation to attempts.

There is therefore a need for research investigating positive psychological factors, including adaptive and affirming perceptions of reasons for living, aimed at fostering psychological resiliency and preventing the onset or aggravation of suicide risk. Linehan and colleagues (1983) hypothesised that, similar to the way that negative beliefs might contribute to the development of suicide thoughts and behaviour, adaptive beliefs should decrease the likelihood of this and conceptualised the RFL construct within the context of suicide prevention in research and clinical practice (Linehan et al., 1983). Subsequent research findings show that reasons for living explains variance in suicidal ideation that is not explained depression, hopelessness, thwarted belongingness & perceived burdensomeness, amongst others. Reasons for living could therefore have significant clinical relevance in the assessment and evaluation of suicide risk. Specifically, identifying variations in suicidal ideation could help clinicians in identifying who is at highest risk of going from thinking about suicide to making a suicide attempt. The nature of the relationship between reasons for living, suicidal ideation and suicide risk factors could also inform the application of current interventions and remedial strategies aimed at suicide prevention.

Therefore, the study would test the following hypotheses in an Australian and New Zealand general population, and specifically if:

1. Reasons for Living total score is a significant negative predictor of suicidal ideation, after controlling for depression, hopelessness, thwarted belongingness and perceived burdensomeness.
2. The relationship between depression and suicidal ideation is weaker for people with more reasons for living, after controlling for depression, hopelessness, thwarted belongingness and perceived burdensomeness.

Method

Participants and Procedure

This study used a cross-sectional survey design with a convenience sample. A cross-sectional research design was chosen for the sake of practicality, convenience, and financial constraints. This design allowed for the collection of data from many different individuals at a single point in time, in this case a sample of the Australia and New Zealand adult population. The results would therefore provide the opportunity to gauge how well the results generalise to the Australian and New Zealand populations. The use of an electronically distributed survey questionnaire allowed for convenience, non-probability sampling and data collection without undue influence by the researcher. Participants were recruited via Prolific and completed a survey constructed using Qualtrics. Participants were paid GBP1 each (at the time, equating to approximately AUD1.88; Prolific is located in the United Kingdom, hence the denomination of payments in pounds). Our inclusion criteria were as follows:

- Participants had to be aged 18 or over (only individuals over the age of 18 can sign up for Prolific).
- Participants had to be residents of Australia or New Zealand (this was specified as a pre-screening criterion on Prolific).

A target sample size of 587 participants was specified in Prolific. This target was determined by using a power analysis specified for a significance test for a single coefficient within a multiple regression, with a small effect size of Cohen's $f^2 = 0.02$. This power analysis suggested that a sample size of 528 would be required to achieve power of 90% with a 2-tailed test and an alpha level of 0.05. However, given that some participants may have completed the study but subsequently would have to be excluded (e.g., due to substantial quantities of missing data), a target sample size of 587 was specified in Prolific. This meant that up to 10% of responses could be removed without the sample size falling below the target.

Within the final sample, the modal age bracket was 18-24 (47.9%), 33.6% of participants were male, 64.5% female, and 1.9% gender diverse. 42.9% were single and 33.3% were living with relative(s) other than children. 32.6% of participants were employed full-time, while 26.2% identified as students. The modal ethnic group identified was Australian European (48.1%). Socio-demographic characteristics of survey participants are presented in Table 1.

This study was preregistered (https://osf.io/5upqs), thus providing a few advantages compared to studies that are not. One advantage is that the hypotheses and analysis have been stated in advance of data collection, creating the distinction between the stage of hypothesis generation and the stage of hypothesis testing (Wagenmakers, Dutilh, & Sarafoglou, 2018). This distinction allows researchers to safeguard

against the invasive effects of hindsight bias and confirmation bias (e.g., Nuzzo, 2015). Preregistration also prevents inadvertent presentation of an exploratory finding as if it had been confirmatory (Earp & Everett, 2015). Access to the deidentified data and syntax for this study can be viewed on the OSF website here (https://osf.io/5upqs/files/osfstorage). Rules, criteria and protocols for inclusion in this study are specified in the *Data Exclusions* section below.

Ethical considerations

Prior to the commencement of data collection, this project was reviewed and approved by the Massey University Southern B Ethics Committee. The ethics application included a cultural consultation on potential cultural sensitivities and appropriateness of this study was also undertaken with and independent consultant. Approval was obtained for this study from the Massey Human Ethics Committee (HEC: Southern B 21/21). All participants were provided with information for receiving help in case of acute suicidality. Information about the national crisis hotline and other support services for suicidality or mental health issues was given for both Australia and New Zealand.

Table 1 *Demographic information for study sample*

Variable		Frequency	Sample %
Age	18 - 24	278	47.9
	25 - 34	151	26
	35 - 44	86	14.8
	45 - 54	42	7.2
	55 - 64	16	2.8
	65 or older	7	1.2
Gender	Male	195	33.6
	Female	374	64.5
	Non-binary/gender diverse	11	1.9
Relationship status	Single	249	42.9
	Defacto/In a relationship	202	34.8
	Married	111	19.1
	Divorced	13	2.2
	Separated	5	.9
Living situation (living with)	Spouse/partner	122	21
	Child(ren) & spouse/partner	90	15.5
	Child(ren) only	10	1.7
	Relative(s) other than children	193	33.3
	Friend(s)	69	11.9
	Alone	59	10.2
	Other	37	6.4

Employment status	Full-time	189	32.6
	Part-time	150	25.9
	Unemployed (looking for work)	48	8.3
	Unemployed (not looking)	18	3.1
	Retired	10	1.7
	Student	152	26.2
	Other	13	2.2
Ethnicity	Māori	8	1.4
	NZ European	108	18.6
	Australian European	279	48.1
	Other European	43	7.4
	Australian Aboriginal	5	.9
	Torres Strait Islander (TSI)	0	0
	Aboriginal & TSI	0	0
	Pacific peoples	5	.9
	Asian	132	22.8
	Mid-Eastern/African/S American	17	2.9
	Other	20	3.4
	Prefer not to say	4	.7

Measures

The study questionnaire comprised items for the specific measures of the key study variables (suicidal ideation, reasons for living, depression, hopelessness, perceived burdensomeness, and thwarted belongingness). Measures for these included the Depressive Symptom Inventory – Suicidality Subscale (DSI-SS; Joiner, Pfaff, & Acres, 2002), Brief Reasons for Living Inventory (BRFL; Ivanoff et al., 1994), Patient Health Questionnaire – Depression Module (PHQ-9; Spitzer, Williams, & Kroenke, 1999), State Hope Scale (SHS; Snyder et al., 1996), and the Interpersonal Needs Questionnaire – Perceived Burdensomeness & Thwarted Belongingness (INQ-15; Van Orden, Cukrowicz, Witte, & Joiner, 2012). Table 2 in the "Results" section shows the full set of survey items, excluding demographic data items. The full set of survey items is shown in Appendix 1.

The Depressive Symptom Inventory – Suicidality Subscale (Cwik et al., 2017; Joiner, Pfaff, & Acres, 2002).

The Depressive Symptom Inventory – Suicidality Subscale (DSI-SS) is a 4-item self-report questionnaire that asked respondents about the frequency and intensity of suicidal ideation and impulses in the two weeks preceding the survey. The measure consists of four groups of statements that contain four statements each, (e.g., "I am having thoughts about suicide and have formulated a definite plan"; "I always have thoughts of killing myself"; "In some situations I have impulses to kill myself"; "I am having thoughts about suicide, and I am considering possible ways of doing it"). Participants were required to

choose only one statement from each group. Scores on each item range from 0 to 3, with higher scores indicating greater severity of suicidal ideation. Responses for each participant were summed to obtain a suicidal ideation score with a possible range of 0 to 12, with higher scores indicating greater severity of suicidal ideation. An initial validation study of this measure found good internal consistency for the scale (von Glischinski, Teismann, Prinz, Gebauer, & Hirschfeld, 2016), while assessments using McDonald's coefficient omega (ω) found good internal consistency in an online (ω = .89) and clinical sample (ω = .94) (Cwik et al., 2017). This questionnaire was used to establish discriminant validity of BRFL and showed that there were significant negative associations between the BRFL and DSI-SS (Cwik et al., 2017).

The Brief Reasons For Living Inventory (Ivanoff et al., 1994)

RFL was measured using the Brief Reasons for Living Inventory (BRFL), which is a 12-item self-report instrument used to assess adaptive beliefs and expectations for living. The original 48-item RFL inventory was not used for this study due its extensive length that would have limited its utility in this instance.

The BRFL has 6 subscales with two items in each (fear of suicide, responsibility to family, survival and coping beliefs, child-related concerns, moral objections, and fear of social disapproval) with two items in each subscale. In this study, RFL was treated as a single variable and therefore individual subscales were not used in the analyses. Although individual BRFL subscale scores could offer more specific information for why individuals do not commit suicide on six different dimensions, the decision was made to use a total score instead. The rationale for this was to limit the potential complexity and scope of the study in terms of how each of the six individual subscales of the BRFL may interact with SI and the other variables.

Participants were asked the following question: How influential have each of the following factors been in shaping your own thoughts about reasons for living instead of committing suicide? Twelve items on the BRFL self-report measure followed this question exploring adaptive beliefs and expectations for living (e.g., I believe I can find a purpose in life, a reason to live; My family depends upon me and needs me; The effect on my children could be harmful; I am afraid of death; My religious beliefs forbid it). Responses are measured on a 6-point Likert scale (1 = Not at all important, 2 = Low importance, 3 = Slightly important, 4 = Moderately important, 5 = Very important, 6 = Extremely important). Responses were summed to obtain a total reasons for living (RFL) score with a possible range of 12 to 72. Higher scores are typically indicative of higher levels of beliefs and expectations in relation to reasons for living. Inventory items as they appear in the study questionnaire are available in Table 2 (Descriptive statistics for

survey items). The psychometric investigation by Cwik et al. (2017) established that the BRFL had good convergent and divergent validity, demonstrated clinical utility, as it could distinguish between participants with or without suicide ideation, and was a reliable and valid measure of adaptive reasons for living that can be used in clinical and research settings.

Patient Health Questionnaire – Depression Module (PHQ-9; *Spitzer, Williams, & Kroenke, 1999)*

The PHQ-9 assessed participants' severity of depressive symptoms and asked: In the past two weeks, how often have you experienced any of the following problems? Nine items on the PHQ-9 self-report measured followed this question exploring the occurrence of depressive symptoms according to the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 2013) within the previous 2 weeks (e.g., Little interest or pleasure in doing things; Feeling down, depressed, or hopeless; Feeling tired or having little energy; Poor appetite or overeating). Responses were measured on a 4-point Likert scale (0 = Not at all, 1 = Several days, 2 = More than half the days, 3 = Nearly every day). Responses were summed to obtain a total depressive symptom score with a possible range of 0 to 27. Higher scores are an indication of higher severity of depressive symptoms. The PHQ-9 has been shown to have good sensitivity and specificity (Muñoz-Navarro et al., 2017) as well as good internal consistency: Cronbach's $\alpha \geq .86$ (Kroenke, Spitzer, & Williams, 2001). Cwik et al. (2017) used this questionnaire to establish discriminant validity of BRFL and established that internal consistency was $\omega = .86$ in the online sample and $\omega = .85$ in the clinical sample of their study.

State Hope Scale (SHS; Snyder et al., 1996)

The 6-item SHS self-report questionnaire measured levels of hope on two subscales: pathways or agency thinking (agency refers to the motivation to reach a goal; pathways are workable routes to reach the goal). However, for this study the total score was used for analysis. Six items followed the question: How true or false is each of these statements when it comes to how you think about yourself right now? Examples of items include "There are lots of ways around any problem that I am facing now", "Right now, I see myself as being pretty successful". Responses were measured on an 8-point Likert scale (1 = Definitely true, 2 = Mostly true, 3 = Somewhat true, 4 = Slightly true, 5 = Slightly false, 6 = Somewhat false, 7 = Mostly false, 8 = Definitely false), with higher scores indicating elevated levels of hopelessness. Response options were reverse coded from the original scale so that it measures the level of hopelessness (negative), as opposed to measuring levels of hope (positive). Scores were summed to obtain a total hopelessness score for each participant, with a range from 6 to 48. Higher scores represent higher levels or perceptions of hopelessness. The measure has been found to be statistically valid and reliable in various

population samples (Martin-Krumm, Delas, Lafrenière, Fenouillet, & Lopez, 2015; DiGasbarro, Midden, Meeks, Mast, & Van Haitsma, 2020).

The Interpersonal Needs Questionnaire – Perceived Burdensomeness & Thwarted Belongingness (INQ-15; Van Orden, Cukrowicz, Witte, & Joiner, 2012).

The INQ-15 assessed Perceived Burdensomeness (PB) & Thwarted Belongingness (TB). This measure includes six items (1-6) to measure Perceived Burdensomeness (e.g., "These days I think I am a burden on society") and nine items (7-15) to assess Thwarted Belongingness (e.g., "These days, I feel disconnected from other people") and are preceded by the question: How much do you agree or disagree with the following statements? Although PB & TB are scored as subscales on the instrument, they were not combined to form one measure for both concepts and thus remain individual variables for this study. The perceived burdensomeness subscale score of the INQ-15 was obtained by adding the scores for items 1 to 6. Scores on this subscale can range from 6 to 42 and higher scores indicate higher levels of perceived burdensomeness. The thwarted belongingness subscale score was obtained by adding scores for items 7 to 15. Scores on this subscale can range from 9 to 63, with higher scores indicate higher levels of perceived thwarted belongingness. Items 7, 8, 10, 13, 14, and 15 are negatively worded and were reverse coded before creating scores. Cwik et al. (2017) established the measure showed good internal consistency, with $\omega = .89$ in their online sample and $\omega = .94$ in the clinical sample. The INQ-PB was also used to establish discriminant validity of BRFL and showed that there were significant negative associations with the BRFL (Cwik et al., 2017).

Demographic and general items

Participants were sked to provide basic demographic information that was not used in the confirmatory analyses, but are included here for completeness: religion/spirituality (level of influence in life), age (18-24, 24-34, -35-44, 45-54, 55-64, 65+), gender (male, female, non-binary/gender diverse), relationship status (single, married, widowed, divorced, separated, defacto relationship), living situation (i.e., living with – spouse/partner, child(ren) & spouse/partner, child(ren) only, relative(s) other than child(ren), friend(s), alone, other), employment status (full time, part-time, unemployed looking for work, unemployed not looking for work, retired, student, other), ethnicity/cultural group (Māori, New Zealand European, Australian European, Other European, Aboriginal not Torres Strait Islander, Torres Strait Islander not Aboriginal, Both Aboriginal and Torres Strait Islander, Pacific peoples, Asian, Middle Eastern/Latin American/African, Prefer not to answer).

Data Analysis

Analysis plan

Data analysis: computation

Analyses were performed using SPSS 23.0 for correlations, reliability, descriptive statistics and hierarchical multiple regression analyses H1 & H2, Process v3.3 macro (Hayes, 2017) in SPSS for H2 moderation analysis, R version 4.1.3 (lavaan module) for structural equation modelling (SEM) and G*Power version 3.1.9.7 for statistical power analysis to determine sample size.

Single scale analyses

In the first set of analyses, the primary scales in the study (DSI-SS, BRFL, PHQ-9, SHS & INQ-15) were examined. The following analyses were completed.

- Calculation of descriptive statistics for items and scales/subscales (mean, median, mode, standard deviation, range, skewness and kurtosis).
- Tests for reliability of all primary scales, subscales and items using Cronbach's alpha.

Multiple scale analysis

In this study, there are two main sets of analyses that allowed for examination of two reasonable alternative ways of testing the relevant hypotheses. In the first set of confirmatory analyses, hypotheses 1 and 2 was tested using regression models in which the predictor and outcome variables are treated as directly observed (except to the extent that random measurement error in the outcome variable is always implicitly modelled in an OLS regression model). The inclusion of both sets of analyses allows for examination of two reasonable alternative ways of testing the relevant hypotheses. For hypothesis 1, a hierarchal multiple regression model estimated using ordinary least squares was used to determine whether reasons for living is a significant negative predictor of suicidal ideation, while controlling for depression, hopelessness, perceived burdensomeness, and thwarted belongingness. For hypothesis 2, a hierarchal multiple regression model estimated using ordinary least squares was used to determine whether the relationship between depression and suicidal ideation is weaker for people with more reasons for living, after controlling for depression, hopelessness, perceived burdensomeness, and thwarted belongingness.

In a second analysis, hypothesis 1 was tested via a structural equation model (SEM) in which reasons for living, suicidal ideation, depression, hopelessness, perceived burdensomeness & thwarted belongingness are treated as latent variables. The main reason for using this statistical approach was to account for parameter bias caused by measurement error when using the multiple regression model in H1

(regression assumes predictors are measured without error; Westfall & Yarkoni, 2016). H2 was not tested using SEM, due to the potential complexities that are beyond the scope or capacity of this study, i.e., while it is possible in theory to specify SEM models involving latent variable interactions, doing so is highly complex and not readily available in most statistics software packages (Moulder & Algina, 2002). Parceling was used only for the 12-item reasons for living latent variable. The parcels for this variable consisted of 6 subscales with 2 items each. Parceling was required for the RFL scale because response to the items within each subscale are likely to have common variance not accounted for by a single underlying factor. An alternative approach could have been calculating a higher-order model with a factor for each subscale (six factors) and a higher-order reasons for living factor, but such a model would not have been identifiable with only 2 items per factor. Perceived burdensomeness and thwarted belongingness were considered as individual latent variables even though they're measured in one questionnaire (INQ-15).

SEM estimation will be completed using diagonally weighted least squares estimation, with robust standard errors and a Satorra-Bentler scaled test statistic Weighted Least Squares Mean (WLSM) estimation. This estimation method helps to account for the fact that the data will be collected using discrete rating scale items and will thus not be drawn from a multivariate normal distribution. Scaling of the variance of latent variables will be accomplished by setting the factor loading of the first indicator of each latent variable to 1 (the "marker variable approach). The following SEM fit statistics will be reported at a minimum:

- The Satorra-Bentler scaled chi-square statistic and its associated p value.
- The root mean square error of approximation (RMSEA)
- The standardised root mean square residual (SRMR)

Data exclusions

For this study, the preregistration stipulated specific rules regarding data exclusions:

1. Only participants who answer "Yes" to the study consent question will be permitted to participate. Respondents who answer "No" will be directed out of the survey using survey flow settings, and their responses discarded.
2. Participants must be current residents of Australia or New Zealand (i.e., to be current resident of Australia or New Zealand = yes in Prolific Academic, as per a pre-screening criterion).

3. Participants who have not activated the Qualtrics status Finished = TRUE will be excluded during data processing.
4. Outliers would not be excluded, as all of the items used in the main analyses in this study are measured on response scales with a restricted range, with administration in Qualtrics, and as such there is little chance of a univariate outlier occurring due to a data entry error.
5. Responses that are identified as 1 (preview), 2 (test), 8, 9 or 12 (possible spam / duplicate responses) by Qualtrics will be excluded during data processing.

The only criteria that necessitated any exclusions were participants who had not activated the Qualtrics status Finished = TRUE. These four respondents were excluded during data processing. Total exclusions based on these criteria meant that there was a total of 580 survey respondents. Within the final sample used for analysis, there were two participants who omitted specific items in the BRFL related to child-related concerns: item 5 on the BRFL "The effect on my children could be harmful" and item 6 "I want to watch my children as they grow" (and who were automatically excluded from the analysis when using SPSS). The only other omission was one participant who did not provide a response to the question about spirituality/religion (and who was not excluded from analysis because this demographic variable was not key or used as a predictor).

Missing data

For those participants who are included in the final sample, listwise deletion per analysis was used. Listwise deletion (complete-case analysis) removes all data for a case that has one or more missing values.

Results

The results section includes descriptive statistics, assumption testing, reliability testing and analyses for H1 and H2 via regression analysis. H1 was further tested via an SEM model (SEM) to allow for the effects of measurement error to be explicitly modelled and accounted for.

Descriptive Statistics

Descriptive statistics for the responses to survey items (except demographic variables) are displayed in Table 2. Most participants (61%) reported that they did not have thoughts of suicide and did not perceive themselves as a burden to others (34%). Five items on the reasons for living inventory with particularly high means were BRFL 1 ("I believe I can find a purpose in life, a reason to live"); BRFL 2 ("I

do not want to die”); BRFL 3 (“My family depends upon me and needs me”); BRFL 4 (“I love and enjoy my family too much and could not leave them”) and BRFL 7 (“I am afraid of the actual "act" of killing myself (the pain, blood, violence)”). The means for BRFL items mentioned above were: BRFL 1 was 4.84, BRFL 2 was 4.76, BRFL 3 was 4.64, BRFL 5 was 4.81, and BRFL 7 was 4.43. Descriptive statistics for the indices/composite variables are displayed in Table 3.

Table 2

Descriptive statistics for survey items

Item	*M*	*SD*
DSI-SS A	1.31	.558
DSI-SS B	1.29	.562
DSI-SS C	1.37	.640
DSI-SS D	1.20	.461
BRFL 1 - I believe I can find a purpose in life, a reason to live	4.84	1.233
BRFL 2 - I do not want to die	4.76	1.400
BRFL 3 - My family depends upon me and needs me	4.64	1.482
BRFL 4 - I love and enjoy my family too much and could not leave them	4.81	1.415
BRFL 5 - The effect on my children could be harmful	3.57	2.243
BRFL 6 - I want to watch my children as they grow	3.74	2.212
BRFL 7 - I am afraid of the actual "act" of killing myself (the pain, blood, violence)	4.43	1.601
BRFL 8 - I am afraid of death	3.93	1.710
BRFL 9- I would not want people to think I did not have control over my life	3.13	1.677
BRFL 10 - I am concerned about what others would think of me	3.11	1.704
BRFL 11 - My religious beliefs forbid it	1.90	1.605
BRFL 12 - I consider it morally wrong	2.51	1.710
DPR 1 - Little interest or pleasure in doing things	2.10	.933
DPR 2 - Feeling down, depressed, or hopeless	2.06	.957
DPR 3 - Trouble falling or staying asleep, or sleeping too much	2.44	1.102
DPR 4 - Feeling tired or having little energy	2.61	1.046
DPR 5 - Poor appetite or overeating	2.17	1.096
DPR 6 - Feeling bad about yourself, or that you're a failure or have let you or your family down	2.07	1.058
DPR 7 - Trouble concentrating on things, such as reading the newspaper or watching television	2.07	1.067
DPR 8 - Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	1.43	.800
DPR 9 - Thoughts that you would be better off dead or of hurting yourself in some way	1.43	.773
SHS 1 - If I should find myself in a jam, I could think of many ways to get out of it	2.79	1.455
SHS 2 - At the present time, I am energetically pursuing my goals	3.74	1.920
SHS 3 - There are lots of ways around any problem that I am facing now	3.22	1.584
SHS 4 - Right now, I see myself as being pretty successful	4.13	2.069
SHS 5 - I can think of many ways to reach my current goals	3.47	1.749
SHS 6 - At this time, I am meeting the goals that I have set for myself	4.02	2.014
PB 1 - These days, the people in my life would be better off if I were gone	2.22	1.479
PB 2 - These days, the people in my life would be happier without me	2.15	1.459
PB 3 - These days, I think I am a burden on society	2.36	1.722
PB 4 - These days, I think my death would be a relief to the people in my life	1.83	1.384
PB 5 - These days, I think the people in my life wish they could be rid of me	1.90	1.387
PB 6 - These days, I think I make things worse for the people in my life	2.35	1.716
TB 1 - These days, other people care about me	2.50	1.516
TB 2- These days, I feel like I belong	3.53	1.728
TB 3 - These days, I rarely interact with people who care about me	3.04	1.786

TB 4 - These days, I am fortunate to have many caring and supportive friends	3.08	1.721
TB 5 - These days, I feel disconnected from other people	4.14	1.923
TB 6 - These days, I often feel like an outsider in social gatherings	4.31	1.892
TB 7 - These days, I feel that there are people I can turn to in times of need	2.98	1.640
TB 8 - These days, I am close to other people	3.30	1.725
TB 9 - These days, I have at least one satisfying interaction every day	3.21	1.822

Note. DSI-SS = Depressive Symptom Index measuring Suicidal Ideation; BRFL = Brief Reasons for Living Inventory; DPR = Depression measured on PHQ-9; SHS = State Hope Scale; PB = Perceived Burdensomeness measured on INQ-15; TB = Thwarted Belongingness measured on INQ-15.

Table 3

Descriptive statistics for indices/composites

Variable	Items	Possible Range	Mean	Std. Deviation
Suicidal Ideation	dsi_a – dsi_d	4 - 15	5.18	2.01
Reasons for Living	rfl_1 – rfl_12	20 - 72	45.36	11.359
Depression	dpr_1 – dpr_9	9 - 36	18.39	6.75
Hopelessness	shs_1 – shs_6	6 - 48	21.35	9.03
Perceived Burdensomeness	inq_1 – inq_6	6 - 42	12.82	8.17
Thwarted Belongingness	inq_7 – inq_15	9 - 62	30.07	11.79

Figure 2 is a histogram showing frequency distribution of the suicidal ideation variable described in Table 3 above. As can be seen, there is a big positive skew, due to a large proportion of the sample having the lowest possible score on SI (n = 384) representing 61% of respondents reporting having no suicidal ideation. Despite this this variable was retained for analysis, as it was not directly assumed that the dependent variable is normally distributed. In their research addressing misconceptions in multiple regression, (M. N. Williams, Gomez Grajales, & Kurkiewicz, 2013) concluded that multiple regression models estimated using ordinary least squares necessitate the assumption of normally distributed errors in order to facilitate reliable interpretations, but not the assumption of normally distributed response or predictor variables.

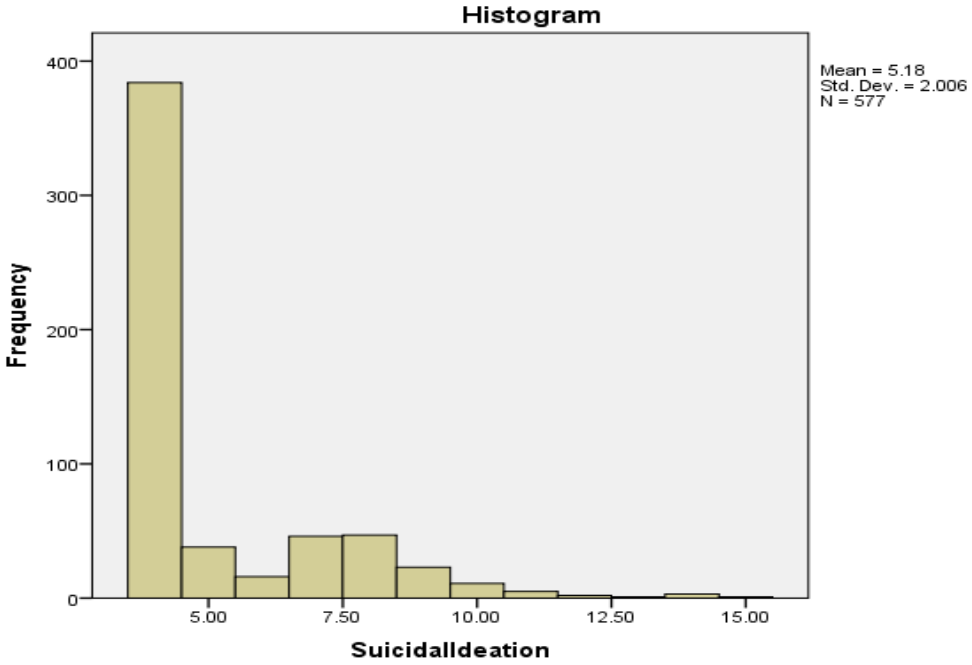

Figure 2. Histogram showing distribution of suicidal ideation variable

Reliability

Assessment of internal consistency reliability for each of the measures was completed using Cronbach's alpha on SPSS (Table 4). Cronbach's alpha presumes that items are tau-equivalent (i.e., equally linked to the underlying latent factor) and that measurement errors for specific items are uncorrelated. Where tau-equivalence does not hold, alpha underestimates reliability (Lord & Novick 1968; Raykov, 1997), while correlated measurement error can lead to either over-or underestimation of reliability (Raykov, 2001). While not assuming continuous data, the conventional Cronbach's alpha reliability calculation has three key assumptions pertinent to the current study: scale unidimensionality tau-equivalence of items, and absence of correlated measure error. This measure therefore provides an approximation of the true score reliability of a measure, or the degree to which item variation can be accounted for by a single, underlying factor as opposed to measurement error unique to individual items.

Results for the internal consistency reliability of the 4-item suicidality scale (DSI-SS) indicated that the alpha for the total scale was .92 and therefore considered to have excellent internal consistency. Examination of individual item statistics suggested that elimination of only one item would increase the reliability of the scale to .94. This item was listed as DSI-SS D in Table 2 and related to impulses to commit suicide, containing four options for respondents to choose one from. The four options were: "I am not having impulses to kill myself", "In some situations I have impulses to kill myself". "In most situations I have

impulses to kill myself", "In all situations I have impulses to kill myself". Individual item scores were all consistently close to the overall alpha.

The alpha score for the 12-item reasons for living scale (BRFL) was .801. Further examination revealed that a higher overall alpha would not be achieved by the elimination of any one of the 12 items on the scale and the final reliability for the 12-item scale was thus considered as good. Individual item scores were all consistently close to the overall alpha. Reliability for the 9-item depression scale (PHQ-9) scored .91. Removal of any of the individual items on this scale did not improve the overall alpha score and individual item scores were all consistently close to the overall alpha. The alpha score for the 6-item Hopelessness scale (SHS) was considered excellent at .91. Further examination revealed that a higher overall alpha would not be achieved by the elimination of any one of the six items on the scale and individual item scores were all consistently close to the overall alpha. The perceived burdensomeness scale (INQ-15) consisting of 6 items was found to be highly reliable with an alpha of .95. Removal of any of the individual items on this scale did not improve the overall alpha score and individual scores were all consistently close to the overall alpha.

Results for the internal reliability of the 9-item thwarted belongingness scale (INQ-15) indicated that the alpha for the total scale was .901 and therefore considered to have good consistency. Examination of individual item statistics suggested that elimination of only one item would increase the reliability of the scale marginally to .902. This was item nine on the scale: "These days, I rarely interact with people who care about me", which was retained in accordance with the preregistered analysis. Individual item scores were all consistently close to the overall alpha.

Table 4

Reliability statistics for indices/composites (Cronbach's alpha)

Variable	Number of items	Cronbach's alpha
Suicidal Ideation	4	.920
Reasons for Living	12	.801
Depression	9	.908
Hopelessness	6	.910
Perceived Burdensomeness	6	.947
Thwarted Belongingness	9	.901

Correlations

Pearson's correlations between the study variables are illustrated in Table 6 and show that all of the correlations in the table are significant. Importantly, there was a significant negative correlation between SI and RFL $r(577) = -.411$. Depression $r(577) = .567$ and perceived burdensomeness $r(577) = .621$ both had significant positive relationships with SI, and significant negative correlations with RFL respectively $r(577) = -.314$; $r(577) = -.341$. There were weak positive correlations between SI with both hopelessness and thwarted belongingness: $r(577) = .445$; $r(577) = .456$. respectively. Similarly to depression and PB, hopelessness and TB showed significant negative correlations with RFL: $r(577) = -.341$; $r(577) = -.344$; $r(577) = -.317$ respectively.

RFL, Depression and PB appear to show the most significant correlations, while Hopelessness and TB show varying levels of correlations with other variables. For example, Hopelessness and Depression were positively correlated $r(577) = .631$, as was Hopelessness and TB $r(577) = .666$, while Hopelessness had a weaker relationship with PB $r(577) = .564$. TB appeared to have strong correlations with all composite variables except suicidal ideation: Depression $r(577) = .601$; PB $r(577) = .619$; as well as RFL and Depression mentioned previously.

Table 5

Intercorrelations between variables

	1	2	3	4	5	6
1. SI	-	.57*	.45*	.46*	.62*	-.41*
2. Depression		-	.63*	.60*	.63*	-.31*
3. Hopelessness			-	.67*	.56*	-.34*
4. TB				-	.62*	-.32*
5. PB					-	-.34*
6. RFL						-

Note. SI = Suicidal Ideation; TB = Thwarted Belongingness; PB = Perceived Burdensomeness; RFL = Reasons for Living Total Score.

*$p < .001$.

Hypothesis 1: OLS regression model

Table 6 displays the results of the hierarchal OLS multiple regression with suicidal ideation as the outcome variable and the predictors being reasons for living (total score), depression, hopelessness, and perceived burdensomeness and thwarted belongingness. A

hierarchical multiple regression model was used so that variables could be added in separate steps of the analysis to observe the effect on the outcome variable. Normally this process shows whether adding a variable or variables significantly improves a model's ability to predict the outcome variable over and above the other variables in the model. Hierarchical multiple regression also allows for an investigation of a potential moderating effect of a variable (i.e., does one variable impact the relationship between two other variables?).

In this analysis, the variables PB, TB, hopelessness and depression accounted for a significant 43.9% of variance in SI, $R^2 = .44$, $F(4, 572) = 111.78$, $p < .001$ at Step 1. At Step 2, reasons for living was added into the model to observe the effect on suicidal ideation, while controlling for the variables in step 1. The inclusion of RFL explained an additional 3.3% of unique variance in the model, $\Delta R^2 = .03$, $\Delta F(1, 571) = 35.42$, $p < .001$, with the full model accounting for 47.2% of variance, $R^2 = .47$, $F(5, 571) = 101.89$, $p < .001$. An inspection of the regression coefficients, as illustrated in Table 8, indicated that at Step 1 depression and perceived burdensomeness were significant positive predictors of SI, with hopelessness and thwarted belongingness non-significant predictors despite their significant zero-order positive correlation. With the inclusion of RFL at Step 2, depression and PB remained significant positive predictor of SI, with RFL a significant negative predictor. Hopelessness and TB remained non-significant predictors of SI at Step 2. Inspection of the residual histogram (Figure 4) indicated that normality of residuals was met, and inspection of the regression standardised predicted value by standardised residual indicated that the assumptions of linearity and homoscedasticity of residuals were met.

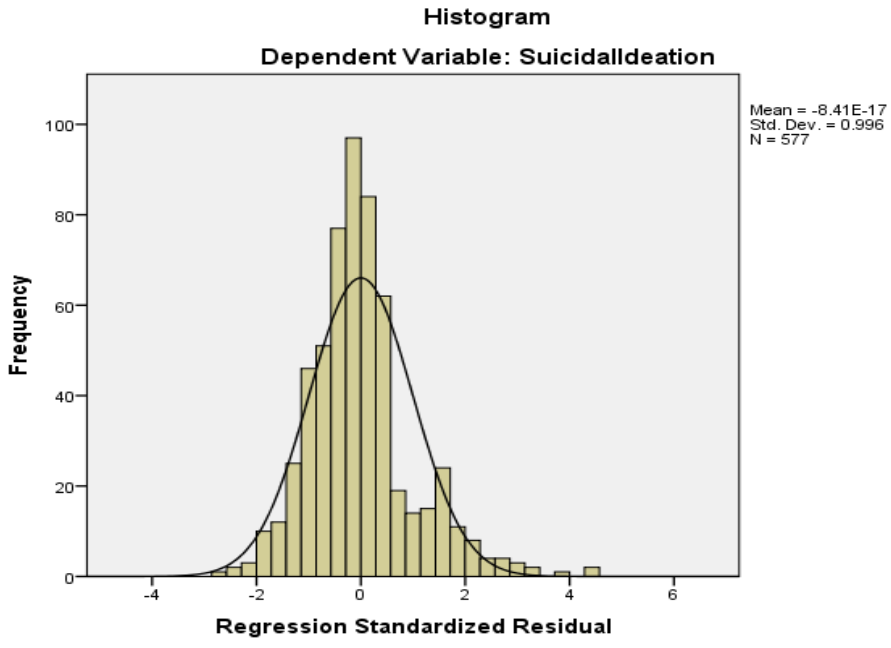

Figure 3. Regression standardised predicted value by standardised residual

Table 6

Regression coefficient results for 2-step hierarchal regression predicting SI

Variables	*B*	*SE*(*B*)	β	*t*	95% CI(*B*)	sr^2
Step 1						
Constant	2.15	.20				
Depression	.08*	.01	.28	6.25*	[.06, .11]	.04
Hopelessness	.01	.01	.02	0.45	[-.02, .03]	< .001
TB	.00	.01	.01	.17	[-.01, .02]	< .001
PB	.11*	.01	.43	9.76*	[.08, .13]	.10
Step 2	4.13	.39				
Depression	.08*	.01	.27	6.12*	[.05, .11]	.03
Hopelessness	.00	.01	.01	-.27	[-.02, .02]	< .001
TB	.00	.01	-.01	-.11	[-.02, .01]	< .001
PB	.10*	.01	.40	9.21*	[.08, .12]	.08
RFL	-.04*	.01	-.20	-5.95*	[-.05,-02]	.03

Note. TB = Thwarted Belongingness; PB = Perceived Burdensome; RFL = Total Reasons for Living Score; *B* = the unstandardized beta (value represents the slope of the line between the predictor variable and the dependent variable); *SE (B)* = standard error for the unstandardised beta; β = standardised beta (correlation coefficient range from 0-1, higher beta values indicate stronger the association between variables); *t* = *t* test statistic; 95% CI(*B*) = 95% confidence interval is a range of values that you can be 95% certain contains the true mean; sr2 = unique amount of variance the predictor variable brings to the model

*$p < .001$.

Hypothesis 2: OLS regression model

A hierarchical multiple regression model was used to determine if RFL moderated the effect of depression on SI, while controlling for hopelessness, PB and TB. This model allowed for variables to be added into the model at various stages to establish whether RFL did have an impact on the relationship between depression and suicidal ideation. This model involved three steps compared to the two for testing hypothesis 1.

At Step 1, hopelessness, PB and TB accounted for a significant 40% of variance in SI, $R^2 = .40$, $F(3, 572) = 127.762$, $p < .001$. At Step 2 the addition of Depression and RFL added a significant 7.7% of variance to the model, $\Delta R^2 = .07$, $\Delta F(2, 570) = 41.990$, $p < .001$. Step 3 involved the addition of a composite variable representing the interaction between depression and RFL which explained a further 5.3% of variance, illustrating that a moderation effect was present, $\Delta R^2 = .05$, $\Delta F(1, 569) = 60.763$, $p < .001$. Full model regression coefficient results

are illustrated in Table 9, showing that Depression and PB were both significant predictors of SI, and RFL was a significant negative predictor.

Table 7

Full model regression coefficients for moderation model predicting SI

	B	*SE*(*B*)	β	*t*	95% CI(*B*)
Constant	4.006	.271			
Depression	.079*	.012	.268	6.451*	[.055, .104]
RFL	-.040*	.006	-.226	-7.179*	[-.051, .-029]
Depression*RFL	-.006*	.001	-.232	-7.795*	[-.007, -.004]
Hopelessness	-.003	.009	-.015	-0.359	[-.021, .019]
PB	.088*	.010	.357	8.815	[.068, .107]
TB	-.001	.010	-.004	-0.098	[-.021, .019]

Note. RFL = Total Reasons for Living Score; PB = Perceived Burdensome; TB = Thwarted Belongingness. *$p < .001$.

PROCESS v3.3 is an observed variable OLS and logistic regression path analysis modelling tool, used to conduct observed-variable moderation. Illustrated in Figure 5 are the simple slopes of the conditional effects of depression on SI, at -1SD, mean and +1SD levels of RFL. Results of the conditional effects indicated that depression was a significant positive predictor of SI when RFL was at low ($B = .14$, $SE = .01$, $p < .001$, 95% CI [.11, .17] and mean levels ($B = .08$, $SE = .01$, $p < .001$, 95% CI [.05, .1], but depression had no significant effect on SI when RFL was at high levels ($B = .01$, $SE = .01$, $p = .383$, 95% CI [-.02, .04].

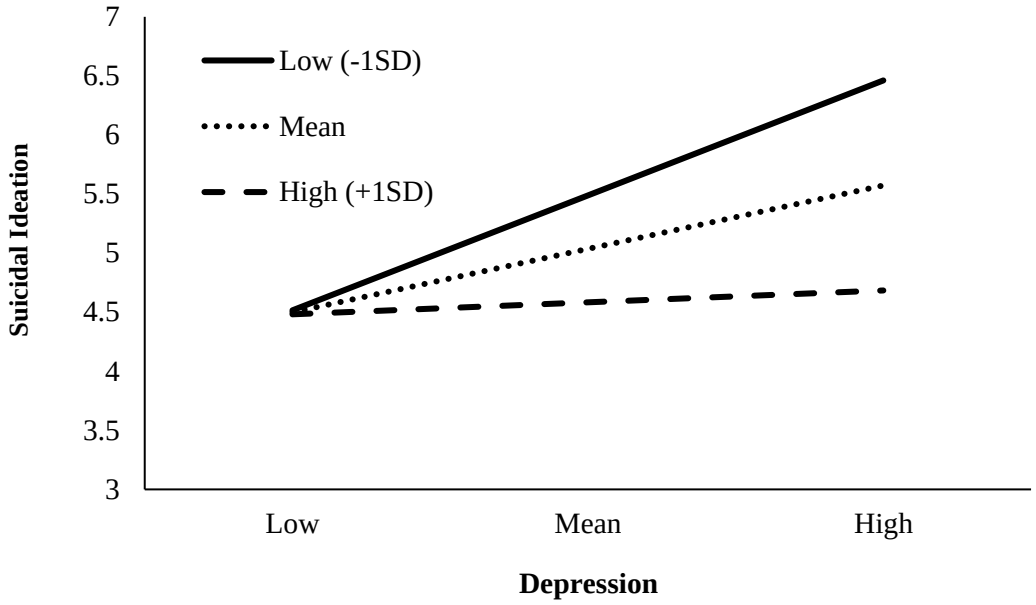

Figure 4. Simple slopes of reasons for living moderating the effect of depression on SI

Note: Low, Mean and High relate to levels of RFL

Structural Equation Model

The SEM path diagram and direct effects between pathways are presented in Figure 6. Overall model fit results (see Table 8) indicated a good fit, as all values were inside the minimum acceptable level and the indices illustrated that the model was a good fit to the data. However, the model was found to be a poor fit to the data, as indicated by results from the goodness of fit test – maximum likelihood statistic, $X^2(615) = 47380.38$, $p < .001$, and user model fit statistic, $X^2(725) = 1187.38$, $p < .001$. As can be seen in this analysis, the other goodness-of-fit statistics are a function of the model chi-squared statistic and reported adjusted versions of each of these statistics. Also to be noted is that Akaike's and Bayesian information criterion are not provided as no comparisons were made with competing models (Lin, Huang, & Weng, 2017).

Table 8

SEM model fit indices

Model Indices	Model Fit Statistic	Fit Indices Guidelines	Indices Interpretation
RMSEA	.040	.06[a]	Good fit
CFI	.988	.95[b]	Good fit
TLI	.987	.95[b]	Good fit
SRMR	.062	.08[c]	Good fit

Note. RMSEA = Root mean squared error of approximation; CFI = Comparative fit index; TLI = Tucker-Lewis index

[a] Values *below 0.06* indicate a good fit (Xia & Yang, 2019), with values above 0.10 unworthy of serious consideration (Browne & Cudeck, 1992).

[b] Values *above 0.95* indicate a good fit (West, Taylor, & Wu, 2012).

[c] Values *below 0.08* indicate a good fit (Hu & Bentler, 1999).

Satorra-Bentler fit statistic (Satorra & Bentler, 1994)

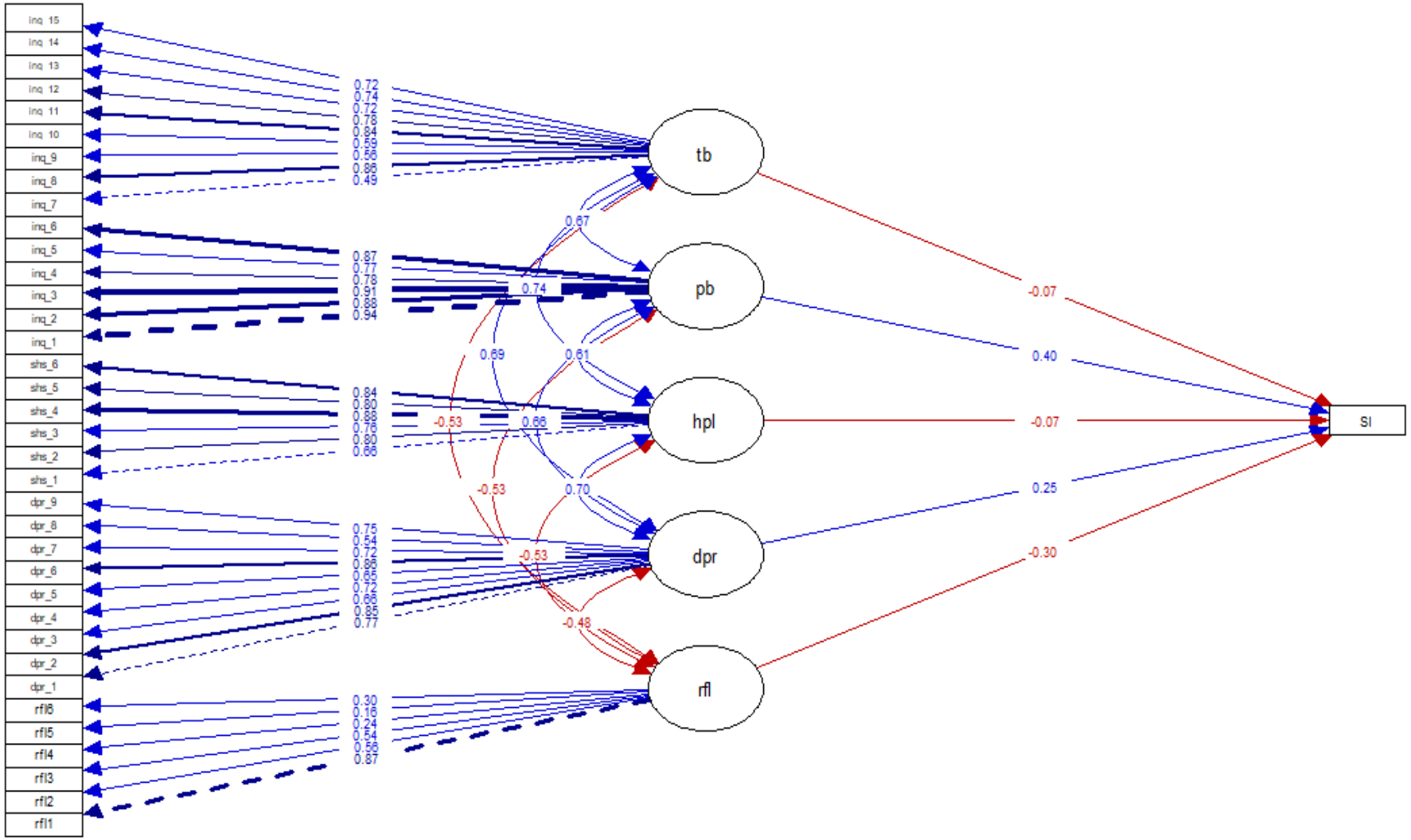

Figure 5. Structural Equation Model predicting Suicidal Ideation

Note: rfl = Reasons For Living; dpr = Depression; hpl = Hopelessness: pb = Perceived Burdensomeness; tb = Thwarted Belongingness; SI = Suicidal Ideation

Table 9 presents the standardised coefficient loadings of the five latent predictor variables against the latent dependent variable (SI) for both the SEM and OLS regression model. A comparison of the coefficients indicates that although the SEM model was not considered a good fit to the data, the coefficients across the SEM and OLS techniques are comparable. Most importantly, H1 is supported in both the OLS and the SEM. Both models found RFL to be the strongest negative predictor of suicidal ideation, β(OLS) = -.20; β(SEM) = -.63, $p < .001$. Depression was the strongest positive predictor of suicidal ideation in β(SEM) = .70, $p < .001$, while PB was the strongest positive predictor of SI in the OLS model β(OLS) = .40 and second to depression in the SEM model β(SEM) = .57, $p < .001$. Hopelessness was not a significant predictor of suicidal ideation within either of the models β(OLS) = .01; β(SEM) = -.14, $p < .001$ and TB similarly did not stand out as a significant predictor in either model β(OLS) = -.01; β(SEM) = -.18, $p < .001$

Table 9

Standardised regression coefficient comparisons between OLS regression and SEM Predicting SI

Predictor	β(OLS)	β(SEM)	*p*(OLS)	*p*(SEM)
Depression	.27	.70	< .001	< .001
Hopelessness	.01	-.14	.99	.29
TB	-.01	-.18	.14	.31
PB	.40	.57	< .001	< .001
RFL	-.20	-.63	< .001	< .001

Note. TB = Thwarted Belongingness; PB = Perceived Burdensome; RFL = Total Reasons for Living Score.

Discussion

The primary purpose of this study was to explore and inspect the role of reasons for living in the prediction of suicidal ideation and whether reasons for living moderates the effect of depression on suicidal ideation. The marked difference in the nature of the predictive relationship of RFL and that of traditional risk factors with suicidal ideation is how RFL assesses protective factors while the others evaluate risk. Measures of depression, hopelessness, thwarted belongingness and perceived burdensomeness have been and continue to be used in mainstream social and other environments to assess suicide risk in individuals. Conversely, this study aimed to show how assessments and identification of protective factors (RFL) could play a significant role in preventative actions of individuals at risk of suicide or self-harm. Results from the analyses showed that RFL predicted SI after

accounting for control variables of depression, hopelessness, thwarted belongingness and perceived burdensomeness. However, it cannot be concluded that RFL accounts for the connections between these control variables and SI, as certain variables still predicted SI significantly even when RFL was introduced into the model. The results also confirmed both hypotheses and potentially contributed to our understanding of suicidal ideation in relation to reasons for living and historical risk factors depression, hopelessness, perceived burdensomeness and thwarted belongingness.

This section consists of a detailed discussion of the results for H1, H2 and the SEM of this study with reference to current literature on this subject. Limitations of the current study and directions for future research follows, with the conclusion encompassing a discussion of the key implications of this study for research and practice.

H1: RFL total score as a significant negative predictor of suicidal ideation

The results of the current study showing that RFL is a significant negative predictor of SI is an endorsement of previous studies that found similar results in various sample populations (Demyttenaere et al., 2014; Heisel, Neufeld, & Flett, 2016; Zhang et al., 2011). In this study, it appears as if respondents tended to have less suicidal thoughts when they had more reasons for living, which is a finding supported by previous studies (Lee, S. Y., 2011; Lee & Oh, 2012; Linehan et al., 1983; Wang et al., 2007). The specific themes of suicidal ideation and reasons for living in this and other similar studies highlights the complexity and extent of the factors that could influence an individual's thoughts, feelings and behaviours not to commit suicide. One assumption that could be drawn from this evidence is that RFL could explain variance in suicidal ideation that is not necessarily addressed by recognised risk factors like depression and hopelessness. Research to support this claim found unique variance in suicide ideation in addition to other variables and measures of depressive symptom severity (Heisel, Neufeld, & Flett, 2016). The results of the aforementioned study suggested that RFL and other positive psychological factors provide protection against suicide risk factors and were not just the polar opposite of psychological risk factors like depression and hopelessness. Similarly, there is research (Wang et al., 2007) suggesting that reasons for living along with other variables identified in the IMV model (e.g., attainable positive future thinking, belongingness, connectedness, adaptive goal pursuit), that play significant preventive roles in predicting suicidal ideation and behaviour.

Based on the results of this study and the supporting literature, it could be argued that identifying variance in suicidal ideation could help to guide clinicians in using protective

factors more often in the application of therapeutic strategies aimed at suicide prevention. Amongst other approaches, clinicians could focus on and encourage RFL, positive and other protective factors with clients to help counter potential cycles of negative automatic thoughts and contributing beliefs systems often present as key factors in depression and suicidal ideation. There is evidence suggesting that brief therapeutic interventions (e.g., Teachable Moment Brief Intervention; Cognitive Behaviour Therapy) may have enhanced RFL and strengthened coping abilities over short periods of time (Demyttenaere et al., 2014; O'Connor et al., 2015). Established evidence-based clinical assessments include the Suicide and Self-Injury Interview (SASII; (Linehan, Comtois, Brown, Heard, & Wagner, 2006), which is a structured interview composed of 31 items designed to assess the intent, context, and structure of non-suicidal and suicidal behaviours; The Self-Injurious Thoughts and Behaviours Interview (SITBI), developed by (Nock et al., 2007), is another example of a structured interview that comprehensively assesses both non-suicidal and suicidal self-harming behaviours. It assesses characteristics associated with suicidal ideation, plans, gestures, and attempts including their frequency, severity, methods used, function, perceived cause, and age of onset.

A better understanding of the protective role of RFL in suicidal thoughts and behaviour could also assist therapists and clinicians to develop specific therapeutic strategies and targeted personalised interventions to deter suicidal ideation and enhance care management of suicidal patients or high-risk suicidal individuals. Dialectical Behavior Therapy (DBT; (Linehan, 1993) is a multimodal treatment that combines behavioural and acceptance-based strategies. DBT was specifically developed for populations with extensive histories of self-injurious and suicidal behaviours, especially in individuals with borderline personality disorder. The collaborative assessment and management of suicide risk (CAMS; Jobes 2006) uses a collaborative, non-judgmental approach and focuses on developing a robust therapeutic patient relationship as the basis for working with patients to design and implement a treatment plan to reduce suicidality. This approach has been found to have viable treatment gains 12 months after treatment and may therefore be an effective treatment strategy for SI (Comtois et al., 2011).

Therefore, based on the current literature, it could be reasoned that the evaluation of positive psychological, protective factors combined with assessing negative risk factors could enhance assessment and planning of therapeutic services for individuals experiencing suicidal thoughts (Heisel et al., 2016). While there may be varied opinions about the merit of traditional versus RFL approaches to suicide risk assessment, it is becoming clearer through

research that an eclectic approach to research and practice may yield positive outcomes (Heisel et al., 2016).

The identification of explicit reasons that discourage individuals from committing suicide may address various methodological limitations in suicide research. Further research in this area producing conceptual models could have significant clinical relevance in clarifying psychological processes related with either encouraging or averting paths toward suicide, especially the prediction of suicidal ideation. For example, research has shown that severity of suicidal ideation for individuals at its worst point in their lives is a significant predictor of eventual death by suicide (Beck et al., 1999; Law et al., 2018). The study by Beck et al. (1999) on suicide ideation at its worst point as a predictor of eventual suicide highlighted the importance of evaluating the severity of historical suicidal ideation in the clinical assessment of suicidality.

Results from the current study show that there are significant intercorrelation relationships between RFL and the other risk factor measurements in this study. Reasons for living were negatively associated with depression, suicidal ideation thwarted belongingness and perceived burdensomeness, as found in previous research (Cwik et al., 2017). Depression, hopelessness, thwarted belongingness & perceived burdensomeness, were all strong correlates of suicide ideation, which is supported by current literature (Klonsky & May, 2015; O'Connor et al., 2011; Van Orden et al., 2010). These results also align with the IPT model of suicide which suggests that suicidal ideation materialises from elevated levels of perceived burdensomeness and thwarted belongingness that combine to bring about desire for suicide (Joiner et al., 2009; Van Orden et al., 2010). However, results from this study shows that only PB was a significant predictor of SI in both the OLS and SEM models. Furthermore, depression and perceived burdensomeness were significant positive predictors of suicidal ideation, with and without RFL included in the analysis. This result is supported by previous research that depression appears to be one of the strongest predictors of suicidal ideation (May & Klonsky, 2016). Interestingly, the 3ST theory of suicide proposed that hopelessness was a more significant predictor in the development of suicidal ideation than other variables like perceived burdensomeness and thwarted belongingness. However, the results of the current study show that hopelessness did not feature as a significant predictor of suicidal ideation. Similar results has been found in previous research (Wang et al. 2007) that directly contradict earlier studies suggesting that hopelessness was a better predictor of suicidal ideation than depression (Schotte & Clum, 1987).

Structural Equation Model: Test of H1 with all study variables treated as latent.

Hypothesis 1 (OLS multiple regression) was also tested via a structural equation model (SEM) in which reasons for living, suicidal ideation, depression, hopelessness, perceived burdensomeness & thwarted belongingness are treated as latent variables. This analysis allowed for the effects of measurement error to be explicitly modelled and accounted for, and was based on findings that in many cases that measurement unreliability and inappropriate model specification have a major detrimental effect on parameter estimates and related error rates when covariates are entered into regression-based models (Westfall & Yarkoni, 2016). The primary purpose for using this statistical approach was therefore to account for potential parameter bias caused by measurement error when using the multiple regression model in H1. The SEM analysis could also clarify whether RFL explains additional variance in SI.

Significantly, the results of the SEM show that H1 was supported, as coefficients across the SEM and OLS techniques were comparable. It could thus be argued that measurement error and unreliability were negated in this study, as the incremental validity of the study variables was supported by results from the SEM analysis. The use of a Structural Equation Model (SEM) for the current study could be considered an innovative contribution to this area of research, as previous studies of this nature did not account for the effects of measurement error on study variables (e.g., Bagge et al., 2014; Britton et al., 2008; Heisel, Neufeld, & Flett, 2016; Lee & Oh, 2012). To put this into context, it is well established that statistical analysis in the social sciences primarily aims to make interpretations about the relationships of different variables with an outcome variable. As a result, many conclusions are drawn about the incremental validity of variables via regression analyses without taking possible measurement error into account (Westfall & Yarkoni, 2016). For example, when a predictor variable in a multiple regression model has a coefficient that varies significantly from zero, conclusions may be made that the variable has a "unique" influence on the outcome variable. Based on this research, it has been suggested that a huge proportion of incremental validity claims in several disciplines are potentially incorrect (Westfall & Yarkoni, 2016). Naturally, these types of skewed results could have disadvantages implications for research and practice. It would therefore be prudent for researchers in the social sciences to mitigate the risks of incorrect conclusions and ensure the robustness of incremental validity assumptions, by employing analytical options like SEM to support results and conclusions.

Significantly, H1 was supported in both the OLS and the SEM models. Both found RFL to be the strongest negative predictor of suicidal ideation, and depression to be the

strongest positive predictor of suicidal ideation. Intriguingly, thwarted belongingness proved to be a strong positive predictor of suicidal ideation in the SEM model, whereas it was not a significant predictor in the OLS mode and perceived burdensomeness was not a strong positive predictor of suicidal ideation in the SEM model compared to the OLS model. Hopelessness was not a predictor of suicidal ideation within either of the models, refuting earlier studies suggesting that hopelessness was a more significant predictor of suicidal ideation than depression (Klonsky et al., 2016b; Schotte & Clum, 1987).

Reasons for living moderates the effects of depression on suicidal ideation

Hypothesis 2 predicted that the relationship between depression and suicidal ideation would be weaker for people with more reasons for living, after controlling for reasons for living, depression, hopelessness, thwarted belongingness and perceived burdensomeness. Results from the analysis for H2 of this study showed that the hypothesis was supported. Depression was a significant predictor of suicidal ideation, and this relationship was moderated by reasons for living. Results show that as RFL scores rise, the effect of depression on SI gets weaker, implying that if an individual has very high levels of RFL, then experiencing depression symptoms may not lead them to experience SI. These results are supported by earlier findings showing that the intensity of depressive symptoms as predictors of suicidal ideation was extensively mitigated by the degree of reasons for living (Bagge et al., 2014; Cwik et al., 2017; Lee, 2011).

The results of the analysis for H2 have significant clinical relevance. For one, it has the potential to help clarify the associations between reasons for living, depression and suicidal ideation, that may result in the development of enhanced therapeutic strategies for depression while also decreasing suicidality among depressed individuals. For example, identifying and exploring the connection between depressive symptoms, suicidal thoughts and the reasons why people choose to live despite this, may prove to be beneficial for the application of suicide prevention initiatives and interventions. Clinicians could assist their clients by identifying and encouraging reasons for living and other positive reinforcers as protective factors that could undermine the relationship between depression and suicidal ideation.

Arguably, the research on the moderating effects of reasons for living on depression in people experiencing suicidal thoughts suggest that RFL confers resilience under those circumstances (Johnson et al., 2011). In this regard, suicide resilience should be regarded as a psychological construct, such as a capability or perceived capacity of the person to overcome problems, or a set of optimistic beliefs (RFL) or personal resources which can protect the individual from adversity (Johnson et al., 2011; Osman et al., 2004; Rutter et

al., 2008). Similarly, Wang et al. (2007) found depression to be a stronger predictor of suicidal ideation than hopelessness, which supports results of the current study.

Generally, literature supports the findings of this study that RFL may protect against suicidal ideation while producing a prognostic estimate for suicidal ideation (Bakhiyi et al., 2016). Results from the current and other research also suggest that RFL may confer or correlate with resilience factors while moderating the effects of depression. This study thus supports other research that shows the significance of evaluating suicide risk and protective factors (Bagge et al., 2014). Further longitudinal research in this area could produce results that shed more light on the development of depression in contrast to levels of reasons for living within the context of stressful life events, resilience and coping capacity. Results could assist clinicians to improve therapeutic interventions and strategies aimed at enhancing RFL and other protective factors (e.g., enhanced coping techniques and resilience) while simultaneously reducing the effects of depression and other negative factors, thus reducing the risk of suicidal ideation developing. Examples of therapeutic approaches include Dialectical Behaviour Therapy (DBT), Cognitive Behavioural Therapies (CBT) and other person-centred, trauma-informed approaches (Bakhiyi et al., 2016).

Limitations and Directions for Future Research

Burless & De Leo (2001) suggested that differences and variations in methodologies and definitions in suicide research using surveys in the general population potentially limits our ability to legitimately compare results stemming from community studies. Although the current study contributes to the literature examining the relationships between reasons for living, traditional risk factors and suicidal ideation, there are limitations that merit comment and proposed areas for future research.

The current study was limited through the use of only an online self-report survey questionnaire to collect data. The use of an electronic survey was primarily necessitated by geographical, environmental and other factors prevalent at the time (e.g., COVID-19 pandemic, isolation protocols), thus severely limiting options for data gathering. While results showed excellent estimations of internal consistency, and associations between study variables were within the anticipated direction, the results may not accurately generalise to the general population of Australians and New Zealanders, because the sample was a convenience sample collected via Prolific. Validated structured interviews to assess diagnostic features within theoretical relations, could potentially answer questions around the temporal ordering of constructs (Bagge et al., 2014), although interviews on their own could not achieve this. A longitudinal or experimental design could in turn provide a stronger basis

for causal inferences. Replication of this study using multiple modes of assessment methods could thus shed light on the validity and reliability of current results.

Results show that a larger proportion of participants were younger (48% were 18-24 years) and female (64.5%), and reduced variability in the dependent variable is notable, as 61% of respondents reported that they did not have thoughts of suicide. However, there is no particular reason to suspect that these aspects would reduce power in this study. A power analysis was used beforehand to mitigate any potential concerns around the accuracy of conclusions drawn from results. The power analysis specified statistical power at 90%, and a significance level of 5%. The recommended sample size generated was 528, but this was increased by 10% to account for any exclusions, and the final sample size specified and achieved was 580, thus increasing the overall statistical power of the study. Assessment of internal consistency and scale reliability for each of the measures was completed using Cronbach's alpha and all study measures showed excellent internal consistency (between 0.8-0.9), as reported in *Results* above.

This study only used a single measure for suicidal ideation for the preceding two weeks. Future studies could benefit from a multiple item assessment or multiple measures to assess suicidal ideation. The potential benefits include being able to further explore the relationship between severity of past suicide ideation, lifetime worst point suicide ideation, current suicidal ideation and reasons for living. Similarly, in a cross-sectional online survey study design, questions around suicidal ideation, emotional and mental states and reasons for living may not be seen by or apply to respondents as reflecting current or lived experience. Therefore, for individuals who have hardly ever or never contemplated suicide, responding to a BRFL scale may well be seen as a more theoretical exercise. As such, other measures that are potentially more inclined to capture actual/real experience (e.g., Meaning in Life Questionnaire/MLQ; Steger, Frazier, Oishi, & Kaler, 2006), used in conjunction with reasons for living inventories, could have potential benefits for analysing and interpreting relationships with suicidal ideation and suicide risk factors (Heisel, Neufeld, & Flett, 2016).

What was not explored in this study were the six subscale items in the BRFL as individual predictors compared to RFL total score, as well as demographic variables (e.g., age, gender) and their specific role as individual predictors and/or moderators of suicidal ideation. Future research might benefit from exploring subscales items of the BRFL along with demographic features (e.g., age, gender) in a multi-modal process of data collection (e.g., structured face-to-face interviews and self-report measures) to assess these relationships. Variations in total reasons for living and subscale scores could also be examined through this process.

Of course, legitimate deductions about a cause-and-effect relationship between study variables exclusively on the basis of an observed association or correlation between them is unable to be established in this study. Future longitudinal, replication and experimental studies would be important and necessary to confirm posited causal links in various samples.

Despite these limitations, the current study maintains important empirical and clinical implications. Empirically, this study is one of a very few examinations of RFL as a predictor of suicidal ideation while accounting for well-established risk factors. The use of a SEM analysis was unique to this type of research model and was critical in supporting results from the hierarchical multiple regression model in H1. The SEM estimation thus accounted for any potential parameter bias caused by measurement error when using the multiple regression model. Regarding clinical implications of this study, a deeper awareness and appreciation of the role of RFL in suicidal ideation could inform the application of more personalised therapeutic interventions for high-risk individuals.

Conclusion

The results obtained from the analyses of the current study imply a theoretical process by which RFL predicts and protects against suicide ideation while moderating the relationship between depression and suicidal ideation. These findings add to a growing body of literature suggesting merit in the use of the reasons for living inventory by clinicians in the application of proactive preventative strategies and predicting suicidal ideation. A focus on RFL, along with an emphasis on positive factors, and countering the cycle of negative automatic thoughts and beliefs could be an effective technique of inculcating both positive cognitions and positive affect that may lead to reduced suicidal symptoms and promote therapeutic change in vulnerable individuals.

Further research into identifying RFL and related protective and positive psychological variables and correlates in relation to suicidal ideation could have numerous benefits. Potential advantages include informing suicide prevention efforts in various populations, and optimal design and development of appropriate conceptual research models and data collection techniques for specific populations. While there may be varied opinions about the merits or limitations of evaluating traditional risk factors versus RFL and other protective approaches to suicide risk assessment, it is becoming clearer through research that appropriately informed and designed research models related to suicidal ideation and behaviour may yield critical information for clinical and research settings.

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Appendix 1: Prolific Advert for Respondents and Study Questionnaire

Prolific Survey Information/Advert for Respondents

Warm greetings to the diverse range of people and communities in Australia and New Zealand! My name is Bruce Jaftha, and I am currently completing a Masters degree by thesis through Massey University, New Zealand. I currently live in Australia and work in the social welfare & community services sector. The research I'm conducting involves collecting information for research purposes and I would hereby like to invite you to take part in this study.

The primary aim of the research is to examine the relationship between reasons for living and suicidal ideation, by addressing specific research questions relevant to this relationship (e.g., the degree to which reasons for living predicts suicidal ideation). This research could identify and evaluate variations in reasons for living that could contribute information that we don't get by looking at known suicide risk factors like depression and hopelessness. It could also help to identify variations in suicidal ideation and suicidal behaviours and suicide risk factors. This type of study could contribute to: understanding in more depth why people choose to live instead of taking their own lives; the prediction and identification of various risk factors for suicidal behaviours; informing the application of strategies for the prevention of potential suicidal thoughts and behaviours, among other potential benefits.

As a participant in this study, you will be asked questions about your mental health and emotional well-being, including questions about suicide. Please note that some questions are of a potentially distressing nature, and you will be asked questions about their own suicidal thoughts/inclinations. If you expect that answering these type of questions could be upsetting for you, we suggest that you do not take part. If you do choose to participate in this study, you will be asked to answer 47 multiple-choice questions. Each question would require you to tick a box or boxes when choosing your response. There are also 6 additional questions pertaining to socio-demographic information (e.g., age, gender, etc.) that would require the same procedure when choosing your response. Completing the entire survey should only take about 5-6 minutes.

The relationship between Reasons for Living and suicidal ideation

INFORMATION SHEET

Warm greetings to the diverse range of people and communities in Australia and New Zealand! My name is Bruce Jaftha, and I am currently completing a Masters degree by thesis through Massey University, New Zealand. I currently live in Australia and work in the social welfare & community services sector. The research I'm conducting involves collecting information from people via an online survey questionnaire and I would hereby like to invite you to take part in this study. Before you decide, you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully and decide whether or not to take part.

What this study is about

This research project will explore various aspects potentially influencing suicidal thoughts and behaviour in the Australian and New Zealand adult population. The primary aim of this study is to examine the relationship between reasons for living and suicidal ideation by addressing specific research questions relevant to this relationship (e.g., the degree to which reasons for living predicts suicidal ideation). This research could also identify and evaluate variations in reasons for living that could contribute information that we don't get by looking at known suicide risk factors like depression and hopelessness. Participants 18 years and over will be recruited using Prolific - a crowd sourcing platform for academic research.

What are the possible risks and benefits that could derive from the study

As a participant in this study, you will be asked questions about your mental health and emotional well-being, including questions about suicide. Please note that some questions are of a potentially distressing nature and participants will be asked questions about their own suicidal thoughts/inclinations. This research could help to identify variations in suicidal ideation and suicidal behaviours, reasons for living and suicide risk factors. It could also assist with understanding in more depth why people choose to live instead of taking their own lives; the prediction and identification of various risk factors for suicidal behaviours; and inform the application of strategies for the prevention of potential suicidal thoughts and behaviours, among other potential benefits.

Confidentiality and anonymity of data

The data we collect will initially only be accessible to the project team. Once the data has been analysed, we will remove any information in the data set that might indicate who you are. Other researchers and members of the public will be able to access this anonymous data in the open-access online repository www.osf.io

Project Procedures

If you choose to participate in this study, you will be asked to answer 46 multiple-choice questions relating to your thoughts and feelings. Each question would require you to tick a box or boxes when choosing your response. There are also 6 questions pertaining to socio-

demographic information (e.g., age, gender, etc.) that would require the same procedure when choosing your response. Completing the entire survey should only take about 5-6 minutes.

Support Services Recent published work examining the potential effects of participating in suicide research supports findings that suicide screening programs do not lead to increases in suicidal ideation and distress. However, if this study has raised any concerns for you please do not hesitate to contact the following support services:

New Zealand - Suicide Helplines
Tautoko - Need to talk? (1737 – free call or text)
Suicide Crisis Helpline - 0508 828 865
Casper - 0508 227 737
The Depression Helpline - 0800 111 757
Lifeline - 0800 543 354 or Text 4357
Samaritans - 0800 726 666/0800 211 211
Alcohol Drug Helpline - 0800 787 797 or Text 8691
Websites
https://www.lifeline.org.nz/
https://www.healthed.govt.nz/resource/helplines-and-mental-health-services
https://www.mentalhealth.org.nz/get-help/in-crisis/helplines/
https://www.tpk.govt.nz/en/whakamahia/rangatahi-suicide-prevention

Australia - Suicide Helplines
First Nations Suicide Hotline - 1800 370 747 Lifeline - 13 11 14
Beyond Blue - 1300 224 636
Samaritans - 135 247
Suicide Line - 1300 651 251
Suicide Call Back Service - 1300 659 467
Websites
https://www.lifeline.org.au/; 13 11 14
https://www.suicidecallbackservice.org.au/; 1300 659 467
https://www.gogentleaustralia.org.au/suicide_help
https://standbysupport.com.au/

Participant's Rights
Completion and return of the questionnaire implies consent. You have the right to decline to answer any particular question.

Project Contacts Research student: Bruce Jaftha – Bruce.Jaftha.1@uni.massey.ac
Supervisor: Dr. Matt Williams - M.N.Williams@massey.ac.nz
Please contact the researcher and/or supervisor in the first instance if you have any questions about the project.

This project has been reviewed and approved by the Massey University Ethics Committee: Southern B, Application SOB 21/21. If you have any concerns about the conduct of this research, please contact Dr Gerald Harrison, Chair, Massey University Human Ethics Committee: Southern B, telephone 06 356 9099 x 83570, email humanethicsouthb@massey.ac.nz

Consent Form

Having read and understood this information sheet, do you consent to participate in this study?

- ○ Yes
- ○ No

Country of residence In what country do you currently reside?

- ○ Australia
- ○ New Zealand
- ○ Other

Prolific ID Please enter your Prolific ID

_____

Suicidal Ideation

DSI-a

Pick out one statement that describes you best for the past TWO WEEKS.

- ○ I do not have thoughts of killing myself
- ○ Sometimes I have thoughts of killing myself
- ○ Most of the time I have thoughts of killing myself
- ○ I always have thoughts of killing myself

DSI-b

Pick out one statement that describes you best for the past TWO WEEKS.

- ○ I am not having thoughts about suicide
- ○ I am having thoughts about suicide but have not formulated any plans
- ○ I am having thoughts about suicide and am considering possible ways of doing it
- ○ I am having thoughts about suicide and have formulated a definite plan

DSI-c

Pick out one statement that describes you best for the past TWO WEEKS.

- ○ I am not having thoughts about suicide
- ○ I am having thoughts about suicide but have these thoughts completely under my control
- ○ I am having thoughts about suicide but have these thoughts somewhat under my control
- ○ I am having thoughts about suicide but have little or no control over these thoughts

DSI-d

Pick out one statement that describes you best for the past TWO WEEKS.

- ○ I am not having impulses to kill myself
- ○ In some situations I have impulses to kill myself
- ○ In most situations I have impulses to kill myself
- ○ In all situations I have impulses to kill myself

BRFL – Reasons for Living

How influential have each of the following factors been in shaping your own thoughts about reasons for living instead of committing suicide?

	Not At All Important	Quite Unimportant	Somewhat Unimportant	Somewhat Important	Quite Important	Extremely Important
I believe I can find a purpose in life, a reason to live	○	○	○	○	○	○
I do not want to die	○	○	○	○	○	○
My family depends upon me and needs me	○	○	○	○	○	○
I love and enjoy my family too much and could not leave them	○	○	○	○	○	○
The effect on my children	○	○	○	○	○	○

could be harmful						
I want to watch my children as they grow	○	○	○	○	○	○
I am afraid of the actual "act" of killing myself (the pain, blood, violence)	○	○	○	○	○	○
I am afraid of death	○	○	○	○	○	○
I would not want people to think I did not have control over my life	○	○	○	○	○	○
I am concerned about what others would think of me	○	○	○	○	○	○
My religious beliefs forbid it	○	○	○	○	○	○
I consider it morally wrong	○	○	○	○	○	○

DPR -Depression

In the past TWO WEEKS, how often have you experienced any of the following problems?

	Not at all	Several days	More than half of the two-week period	Nearly every day
Little interest or pleasure in doing things	○	○	○	○
Feeling down, depressed, or hopeless	○	○	○	○
Trouble falling or staying asleep, or sleeping too much	○	○	○	○
Feeling tired or having little energy	○	○	○	○
Poor appetite or overeating	○	○	○	○
Feeling bad about yourself — or that you are a failure or have let yourself or your family down	○	○	○	○
Trouble concentrating on things, such as reading the newspaper or watching television	○	○	○	○
Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been	○	○	○	○

moving around a lot more than usual				
Thoughts that you would be better off dead or of hurting yourself in some way	○	○	○	○

SHS – Hopelessness

How true or false are each of these statements when it comes to how you think about yourself right now?

	Definitely True	Mostly True	Somewhat True	Slightly True	Slightly False	Somewhat False	Mostly False	Definitely False
If I should find myself in a jam, I could think of many ways to get out of it	○	○	○	○	○	○	○	○
At the present time, I am energetically pursuing my goals	○	○	○	○	○	○	○	○
There are lots of ways around any problem that I am facing now	○	○	○	○	○	○	○	○
Right now, I see myself as being pretty successful	○	○	○	○	○	○	○	○
I can think of many	○	○	○	○	○	○	○	○

ways to reach my current goals								
At this time, I am meeting the goals that I have set for myself	○	○	○	○	○	○	○	○

INQ-15 – Perceived Burdensomeness & Thwarted Belongingness

How much do you agree or disagree with the following statements?

	Strongly disagree	Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Agree	Strongly agree
These days, the people in my life would be better off if I were gone	○	○	○	○	○	○	○
These days, the people in my life would be happier without me	○	○	○	○	○	○	○
These days, I think I am a burden on society	○	○	○	○	○	○	○
These days, I think my death would be a relief to the people in my life	○	○	○	○	○	○	○
These days, I think the people in my life wish they	○	○	○	○	○	○	○

could be rid of me							
These days, I think I make things worse for the people in my life	○	○	○	○	○	○	○
These days, other people care about me	○	○	○	○	○	○	○
These days, I feel like I belong	○	○	○	○	○	○	○
These days, I rarely interact with people who care about me	○	○	○	○	○	○	○
These days, I am fortunate to have many caring and supportive friends	○	○	○	○	○	○	○
These days, I feel disconnected from other people	○	○	○	○	○	○	○
These days, I often feel like an outsider in social gatherings	○	○	○	○	○	○	○
These days, I feel that there are people I can turn to in times of need	○	○	○	○	○	○	○

These days, I am close to other people	○	○	○	○	○	○	○
These days, I have at least one satisfying interaction every day	○	○	○	○	○	○	○

Religiosity

How much influence does religion or spirituality have in your life?

- ○ None at all
- ○ A little
- ○ A moderate amount
- ○ A lot
- ○ A great deal

Age

Please indicate your age

- ○ 18 - 24
- ○ 25 - 34
- ○ 35 - 44
- ○ 45 - 54
- ○ 55 - 64
- ○ 65 or older

Gender

Please indicate your gender

- ○ Male
- ○ Female
- ○ Non-binary / gender diverse

Relationship status

Please indicate your relationship status

- ○ Single
- ○ In a relationship/defacto
- ○ Married
- ○ Widowed
- ○ Divorced
- ○ Separated

Living situation

Please tell us about your current living situation

- ○ Living with spouse/partner
- ○ Living with child(ren) & partner/spouse
- ○ Living with child(ren) only
- ○ Living with relative(s) other than child(ren)
- ○ Living with friend(s)
- ○ Living alone
- ○ Other

Employment

Please indicate your current employment status

- ○ Employed full time
- ○ Employed part time
- ○ Unemployed looking for work
- ○ Unemployed not looking for work
- ○ Retired
- ○ Student
- ○ Other

Ethnicity

Please indicate your ethnicity/cultural group

- ☐ Māori
- ☐ New Zealand European
- ☐ Australian European
- ☐ Other European
- ☐ Aboriginal not Torres Strait Islander
- ☐ Torres Strait Islander not Aboriginal
- ☐ Both Aboriginal and Torres Strait Islander
- ☐ Pacific peoples
- ☐ Asian
- ☐ Middle Eastern / Latin American / African
- ☐ Another ethnicity
- ☐ Prefer not to answer

Summary Would you like to receive a summary of findings when this research is completed? If you answer "Yes", the summary will be sent via the Prolific messaging system when the study is completed (late 2021 or early 2022).

- ○ Yes
- ○ No

Emergency Support

Display This Question:

If Pick out one statement that describes you best for the past TWO WEEKS. = I am having thoughts about suicide and have formulated a definite plan

Or Pick out one statement that describes you best for the past TWO WEEKS. = I am having thoughts about suicide and am considering possible ways of doing it

Or Pick out one statement that describes you best for the past TWO WEEKS. = I am having thoughts about suicide but have little or no control over these thoughts

Or Pick out one statement that describes you best for the past TWO WEEKS. = In all situations I have impulses to kill myself

Or Pick out one statement that describes you best for the past TWO WEEKS. = I always have thoughts of killing myself

Or Pick out one statement that describes you best for the past TWO WEEKS. = Most of the time I have thoughts of killing myself

Or Pick out one statement that describes you best for the past TWO WEEKS. = In most situations I have impulses to kill myself

Emergency Support Emergency Support Services

Because you have answered a question that indicates a high level of suicide risk, this is a special message for you to contact the following crisis helpline for assistance:

New Zealand
Tautoko - Need to talk? (1737 – free call or text)
Suicide Crisis Helpline - 0508 828 865
Casper - 0508 227 737
The Depression Helpline - 0800 111 757
Lifeline - 0800 543 354 or Text 4357
Samaritans - 0800 726 666/0800 211 211
Alcohol Drug Helpline - 0800 787 797 or Text 8691

Australia
First Nations Suicide Hotline - 1800 370 747
Lifeline - 13 11 14
Beyond Blue - 1300 224 636
Samaritans - 135 247
Suicide Line - 1300 651 251
Suicide Call Back Service - 1300 659 467

Display This Question:

If Emergency Support Services Because you have answered a question that indicates a high level of su... Is Displayed

Support services Support Services Information

If this study has raised any concerns for you please do not hesitate to contact the following support services:
New Zealand Tautoko - Need to talk? (1737 – free call or text)
Suicide Crisis Helpline - 0508 828 865
Casper - 0508 227 737
The Depression Helpline - 0800 111 757
Lifeline - 0800 543 354 or Text 4357
Samaritans - 0800 726 666/0800 211 211
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