

Strengthening the Community's Response to Peer Suicide Risk: Evaluating the Efficacy
of Technology-Based Bystander Intervention Model-Informed Tools

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Dedication

This dissertation is dedicated to families who have been affected by suicide. May the efforts of all who have supported this research pave the way to a greater understanding of how we, as a community, can identify and support persons at risk of suicide.

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Abstract

Suicide is a global epidemic. Prevention efforts are making limited headway as rates continue to rise. This thesis aimed to review current suicide prevention programs to identify potential gaps in efficacy and trial new, innovative methods to improve outcomes. Key gaps identified in the research include: 1) limited education for the community compared to professionals; 2) substantial variability in the types of theories informing education material and limited consideration of theories related to bystander intervention; 3) limited availability of validated measures assessing community bystander intervention in scenarios of suicide risk; and 4) limited accessible delivery methods of education material (expensive, time-consuming workshops). Two randomised controlled trials were conducted to address these gaps. The first ($n=281$) tested the impact of a theory-informed factsheet compared to an active control on community bystander intervention readiness, confidence, and intent. The second ($n=628$) tested the impact of a theory-informed video compared to an active control on bystander suicide risk assessment and protective intervention ability assessed through action plans, one step closer to actual helping behaviour. Key results included: a Bystander Intervention Model (BIM)-informed factsheet and video significantly increased community readiness, confidence and intent to detect and respond to suicide risk, and suicide risk assessment and protective intervention ability. Validity testing of an adapted measure to assess community readiness to detect and respond to suicide risk showed good reliability and concurrent, divergent and predictive validity. This thesis presented the first known studies to utilise the BIM in designing community suicide prevention material and testing their efficacy. As BIM-informed tools led to significantly higher scores on outcome variables with moderate-to-large effect sizes in experimental groups compared to active controls, this model has potential significance in developing future community suicide prevention material, and may improve intervention from the community and thus, prevent suicide.

Statement of Authorship

We, the undersigned, declare that except where reference is made in the text of the thesis, this thesis contains no other material published elsewhere or extracted in whole or in part from a thesis accepted for the award of any other degree or diploma. No other person's work has been used without due acknowledgment in the main text of the thesis. This thesis has not been submitted for the award of any degree or diploma in any other tertiary institution. All research procedures reported in the thesis were approved by the relevant Ethics Committee. The PhD candidate's contribution to papers in submission and/or in press is outlined in each respective chapter.

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Karien Hill – PhD Candidate

Date: 25 May 2020

Declaration of Published Papers

Included in this thesis are three papers (Chapters 5, 7, and 11) submitted to journals and at various stages of review. The details for these papers are outlined below.

Chapter 5

Hill, K., Somerset, S., Schwarzer, R., Armstrong, D., & Chan, C. (*under review*). Saving lives: A Systematic Review of theory-based suicide prevention programs.

This paper is currently under review in the *Community Mental Health Journal*.

The paper was also presented as an individual poster presentation at the Australasian Society of Behavioural Health Medicine conference, Sydney (February 2020).

Chapter 7

Hill, K., Somerset, S., Schwarzer, R., & Chan, C. (*in press*). Promoting the community's ability to detect and respond to suicide risk through an online Bystander Intervention Model-informed tool: A Randomised Controlled Trial. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*. doi: 10.1027/0227-5910/a000708.

This paper is currently in press in *Crisis: The Journal of Crisis Intervention and Suicide Prevention* and was accepted for publication on 8 March 2020. This version of the article may not completely replicate the final authoritative version published in the journal at 10.1027/0227-5910/a000708. It is not the version of record and is therefore not suitable for citation. Please do not copy or cite without the permission of the authors.

Chapter 11

Hill, K., Somerset, S., Schwarzer, R., & Chan, C. (*under review*). Enhancing community suicide risk assessment and protective intervention action plans through a

Bystander Intervention Model-informed video: A Randomised Controlled Trial

This paper is currently under review in *Crisis: The Journal of Crisis Intervention and Suicide Prevention*. This paper was also accepted as an individual poster presentation at the Society of Behavioural Medicine conference, San Francisco (April 2020), however due to university and government COVID-19-related travel restrictions, I was unable to attend.

Chapter 1. Introduction to Thesis

Aim

Despite continued prevention efforts, suicide remains a leading cause of death around the world. Suicide has been deemed a global epidemic, and prevention research is an international public health priority (World Health Organisation, 2019a). The overall aim of this thesis is to identify what the current trends are in suicide rates and how suicide prevention strategies are targeting and addressing these rates. Based on these findings, the thesis also aims to address areas of inefficacy by developing and implementing new, innovative strategies to address suicide prevention which are evidence- and theory-based.

Rationale

Suicide is the number one cause of death in Australians aged 15-44 years and fourth leading cause of death for persons aged 45-65 years (Australian Bureau of Statistics, 2015). The significant years of productive life lost, justifies an investigation into what is being done to prevent this major cause of death for Australians and address any gaps. Furthermore, suicide and suicide attempts have a major cost to society as a whole. Suicide attempts can cause permanent disability in up to 17% of people (Kinchin & Doran, 2017). Furthermore, suicide and suicide attempts have a large flow-on effect on the lives of others including family, friends, colleagues, first responders and coronial staff who often suffer intense and conflicted emotional distress (Kinchin & Doran, 2017). Additionally, suicide and suicide attempts have significant economic costs in the loss of productivity in the workforce (Kinchin & Doran, 2017). One third of suicide fatalities are people who are employed. Suicide attempts cause an estimated \$6.73 billion per annum in economic cost, borne 97% by the government, which includes absenteeism, lost income, lost taxes and welfare payments (Kinchin & Doran, 2017). Overall, suicide has a large social and economic cost in the community, with rates not showing any significant reductions, warranting a strong focus on prevention. Finally, a focus on suicide prevention is in line with La Trobe University's mission of: 'promoting positive change and addressing the major issues of our time through being connected, inclusive and excellent'.

Global Suicide Rates and Trends

Approximately one million people die worldwide by suicide every year, meaning at an alarming rate of one person every 40 seconds (Jones & Cipriani, 2016; World Health Organisation, 2019b). The total number of deaths from suicide increased globally by 6.7% between 1990 and 2016 (Naghavi, 2019). In terms of age standardised years of

life lost, suicide was the leading cause of death in high income Asia-Pacific countries, third leading cause in eastern Europe and Australasia, fourth in central Europe, Western Europe, and high income North America, sixth in southern Latin America and eighth in central Asia (Naghavi, 2019). Furthermore, suicide adds to economic burden where one suicide has been estimated to cost \$1,329,553 USD from loss in productivity and medical treatment in the United States of America (Florence, Haegerich, Simon, Zhou, & Luo, 2015). Every \$1.00 spent on suicide preventative strategies has been found to save \$2.50 in the cost of suicides (Florence et al., 2015). Globally, suicide rates are remaining relatively stable compared to other rates of major causes of death such as heart disease, cancer and HIV/AIDS which are showing reductions (Schaffer & Sinyor, 2016). Although the age standardised mortality rate for suicide has shown reduction since 2011, the World Health Organisation stated, 'despite progress, one person still dies every 40 seconds from suicide as it has been for over a decade' and the targets for reducing suicides by 2020 will not be reached (World Health Organisation, 2019b).

Australian Suicide Rates and Trends

In Australia, approximately 3,000 people die by suicide every year (Australian Bureau of Statistics, 2015; Krysinska et al., 2015). This means eight people die by suicide every day (Krysinska et al., 2015). A further 65,000 people attempt suicide every year, meaning approximately 175 people per day (Krysinska et al., 2015). Between 2011 and 2015, suicide rates increased by 25% in Australia and reached a 10-year high (Australian Bureau of Statistics, 2015). These rates exceeded the rates of the UK, Netherlands, Spain and Switzerland (Krysinska et al., 2015). Suicide has even overtaken motor vehicle accidents as the leading cause of death among people aged 15-44 years in Australia, yet suicide prevention only receives half the funding of road accident prevention (Australian Bureau of Statistics, 2015; Christensen & Petrie, 2013). Further, more people die by suicide than from skin cancer (Australian Bureau of Statistics, 2015; Christensen, 2015), showing the high prevalence of the problem.

A Global Call to Action

As can be seen from these alarming rates, suicide is a major public health issue and should be a concern of international priority. A cautionary statement regarding the interpretation of these rates, however, should be included. Suicide rates are based on mortality rate statistics and information provided on death certificates (Palmer, 2014). Suicide rates could be an underestimation as many deaths such as car accidents are unknown whether they were self-inflicted (Bertolote & Fleischmann, 2015; Palmer,

2014). Furthermore, declaring suicide rates may be increasing could be inaccurate as the rising rates may be due to population increases (Barker, Pistrang, & Elliot, 2016). However, based on the overall increasing suicide rates, Shim and Compton (2010) put forth a global call to action to advance the science of and develop international strategies for suicide prevention. The World Health Organisation has also declared that reducing suicide rates is a global imperative (Turecki & Brent, 2016). To achieve this, current program methodologies need to be evaluated to inform and strengthen suggestions for future directions to reduce suicide (Jones & Cipriani, 2016). The aim of the current thesis is therefore a response to this call for action by reviewing and identifying gaps in the efficacy and delivery of suicide prevention strategies according to research. This is covered through a literature review in Chapters 2-3 and systematic review in Chapter 5. Furthermore, this thesis aims to develop and test the efficacy of an innovative evidence- and theory-based strategy. This is performed through two randomised controlled trials reported in Chapters 7 and 11.

Terms and Definitions

This thesis will contain the following terminologies: suicide, suicide attempt, suicide ideation, suicide intent, suicide plan, and deliberate self-harm. Suicide is defined as ‘self-inflicted death with evidence that the person intended to die’ (Palmer, 2014). Suicide attempt, also referred to as non-fatal suicidal behaviour, is defined as ‘self-injurious behaviour with a nonfatal outcome accompanied by evidence that the person intended to die’ (Palmer, 2014). Suicide ideation is defined as ‘thoughts of serving as the agent of one’s own death’ (Palmer, 2014). Suicide intent is defined as ‘subjective expectation and desire for a self-destructive act to end in death’ (Palmer, 2014). Suicide plan will refer to the occurrence where a person has thought of a method, means, location and time to complete a suicide. Deliberate self-harm, also referred to as non-suicidal self-injury, is defined as ‘wilful self-inflicting of painful, destructive, or injurious acts without intent to die’ (Palmer, 2014).

This thesis will refer to suicide warning signs which according to research include for example, hopelessness, anger, recklessness, impulsivity, dramatic mood changes, anxiety, agitation, perceived burdensomeness, feeling trapped, lack of purpose in life, lack of reasons for living, preparations for suicide (giving away possessions, putting affairs in order, letter writing, redoing a will or insurance plan, researching methods on the internet) and increased alcohol and substance abuse (Rudd, 2014). Risk factors to suicide have been found to include a psychiatric diagnosis, history of suicidal behaviour,

recent discharge from inpatient psychiatric treatment, living alone, minority sexual orientation, male or minority gender orientation, sleep disturbance, history of abuse (sexual, physical or emotional), recent loss (financial, interpersonal relationship, professional, identity, health), intense shame or guilt, depressive symptoms, bipolar disorder, anxiety, schizophrenia, borderline and antisocial personality disorder, hopelessness, suicide ideation, suicide plan, availability of means to complete suicide, lethality of means, active suicidal behaviour and suicide intent (Rudd, 2014; Turecki & Brent, 2016). Protective factors against suicide include social support, problem-solving skills, employment, physical health, coping skills, participation in treatment, hopefulness, children present in home, pregnancy, religious commitment, life satisfaction, fear of social disapproval and fear of suicide or death (Rudd, 2014; Turecki & Brent, 2016).

A person's overall suicide risk will also be referred to. By looking at a person's warning signs, risk factors and protective factors, research suggests a person can be flagged as presenting with potential suicide risk or not. Mild risk of suicide represents mild psychiatric symptoms, suicidal thinking, no suicidal intent and no suicidal behaviour (Rudd, 2014). Moderate risk of suicide is said to be characterised by escalated psychiatric symptoms, warning signs emerging and subjective suicide intent being present (Rudd, 2014). High risk of suicide is said to be present when serious psychiatric symptoms are present as well as active, subjective and/or objective suicide intent, warning signs and limited protective factors (Rudd, 2014). Furthermore, research suggests to adequately intervene one must establish level of suicide risk and act protectively accordingly.

'Helping behaviour' or 'intervention behaviour' refers to a person's awareness of suicide risk in a peer and taking protective action by assessing their level of risk and taking appropriate measures to keep the person safe. 'Help-seeking behaviour' refers to suicidal persons conveying their suicidality to others and asking for help. 'Community' will refer to the general public and both of these terms will be used throughout the thesis interchangeably. Finally, 'technology-based' interventions refer to any intervention delivered through non-face-to-face modalities including videos, websites, smart phone applications, social media, and factsheets.

Summary

This chapter has presented the current alarming suicide rates and trends in Australia and around the world, signifying the relevance and importance of this thesis. These rates justify a global call to action to increase and improve suicide prevention

measures to cut the worldwide economic, social and psychological impact of suicide on communities.

Chapter 2. Current Efforts in Suicide Prevention

Before starting any new work in suicide prevention, it is important to review what current research suggests are the best ways to prevent suicide and how these methods are already being addressed. The following chapter will outline current strategies in suicide prevention.

Contemporary research on suicide prevention suggests a multi-system, multi-level approach to suicide prevention by the following nine approaches: reducing access to lethal means which can be used to suicide, responsible media reporting on suicide, community awareness programs, gatekeeper training, school-based suicide prevention programs, training of general practitioners (GPs) to detect depression, suicide warning signs, and risk factors, training of frontline staff in intervention, evidence-based psychotherapy for those at risk and follow-up for individuals with a recent suicide attempt (see Figure 1) (Hegerl & Wittenburg, 2015; Hickie et al., 2014; Krysinaka et al., 2015; Werner-Seidler, Perry, & Christensen, 2016). Below is a brief outline of the efforts and evidence of efficacy in each of these areas.

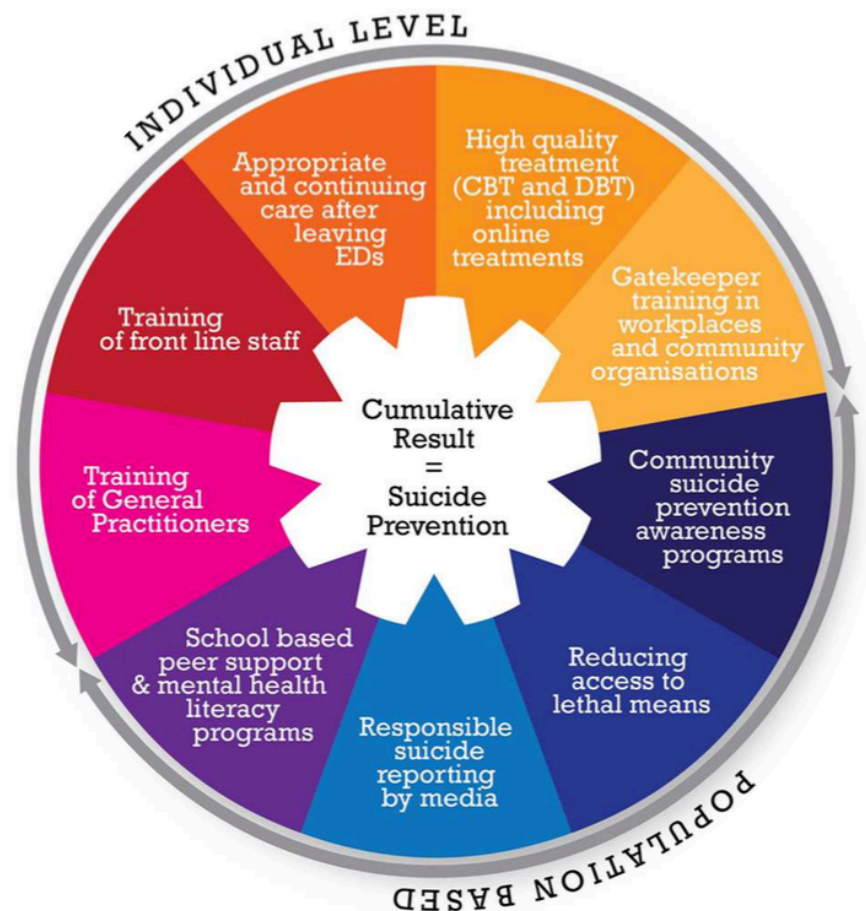


Figure 1. Multi-level approach to suicide prevention

Source: (Werner-Seidler et al., 2016)

Note. Individual level refers to strategies targeting specific individual groups and persons (GPs, front line staff, patients) and population-based strategies pertains to reaching larger groups as a whole (general public).

Reducing Access to Lethal Means

Restricting access to methods of suicide is a well-established strategy for suicide prevention (Law, Svetcic, & De Leo, 2014; World Health Organisation, 2019b). This includes for example, building safety barriers on bridges and locking away sharp objects, poisons and medication (Law et al., 2014). In Brisbane, Australia for example, after the installation of barriers on a certain bridge (unable to identify what bridge as reporting on particular locations increases risk in others), the number of suicides in that location was reduced by 53% over a 4-year period (Law et al., 2014). Analysis at the time revealed that there was no evidence of a shift in locations for suicide occurring following the installation of these barriers (Law et al., 2014). A systematic review found further evidence of this strategy being effective in suicide rate reduction (Mann et al., 2005). This method of suicide prevention seems to be effective and important, forming a vital part of the overall system to prevent suicide.

Responsible Media Reporting

Research has found evidence that sharing graphic details of individual suicides and information about methods and locations of death can increase the risk of vulnerable persons to think seriously about suicide (Black Dog Institute, 2016; Pirkis, Blood, Sutherland, & Currier, 2010; Sisask & Värnik, 2012). It is therefore vital to have safe conversations about suicide to ensure it does no harm, builds awareness and provides information on where to go for help (Black Dog Institute, 2016). Australia is said to lead the world in the application of this method of suicide prevention, carefully reporting on suicide through careful language selection and providing support information (Black Dog Institute, 2016).

Gatekeeper Training

Gatekeeper training is the teaching of suicide prevention strategies to clinical (e.g., mental health clinicians, doctors, nurses) and non-clinical (e.g., school teachers, university lecturers, company management staff, first responders) professionals (Christensen & Petrie, 2013; Cimini et al., 2014; Gould, Cross, Pisani, Munfakh, & Kleinman, 2013; Harned, Lungu, Wilks, & Linehan, 2016; Hashimoto et al., 2016; Jones et al., 2013; Jones et al., 2015; Klimes-Dougan, Klingbeil, & Meller, 2013; Krysinska et

al., 2015; Lancaster et al., 2014; Lipson, Speer, Brunwasser, Hahn, & Eisenberg, 2014; Sareen et al., 2013; Werner-Seidler et al., 2016). One of the most commonly and widely used programs is the ‘Question, Persuade, Refer’ (QPR) training workshop which has been found to improve gate-keepers’ skills (Cimini et al., 2014). The other common program is the Mental Health First Aid (MHFA) program, established in Australia (Kato et al., 2010; Kitchener & Jorm, 2008). This course provides 12 hours of lectures through a workshop and is found to be effective in improving knowledge and skills to intervene (Kato et al., 2010). Other forms of gatekeeper training which have been implemented worldwide include the Applied Suicide Intervention Skills Training (ASIST), LivingWorks and Yellow Ribbon International (YR) (Sareen et al., 2013). Systematic reviews of studies evaluating the efficacy of gatekeeper training found these to be effective in improving knowledge, attitudes and skills, which seemed to have a flow on effect on reducing suicide in the areas they were implemented (Clifford, Doran, & Tsey, 2013; Isaac et al., 2009). Overall, this seems to be a widely implemented suicide prevention strategy with positive outcomes.

School-Based Programs

School-based programs involve training school students (usually secondary school) in recognising suicide risk in peers and referring them to professional help or personal help-seeking (Black Dog Institute, 2016). Research has found many of these programs to be effective in raising awareness, increasing help-seeking and reducing suicide ideation. One systematic review of studies assessing the efficacy of school-based suicide prevention training with students lacked evidence that it increased intervention behaviours (Klimes-Dougan et al., 2013). However, four other systematic reviews found the opposite, where knowledge, attitudes, helping behaviour, and help-seeking behaviour improved while suicide ideation, suicide attempts and suicide deaths were reduced (Cusimano & Sameem, 2011; Isaac et al., 2009; Katz et al., 2013; Robinson, Callear, & Bailey, 2018). Discrepancies in efficacy may be due to risk status of participants. Klimes-Dougan et al.’s (2013) found that 80% of individuals with a previous suicide attempt were reluctant to seek help. This may be due to stigma or previous negative experiences with emergency departments. Overall, it seems there is a relatively wide implementation of this strategy with established efficacy in most studies.

General Practitioner Training

Research has found many people with suicidal thoughts who visit their GPs, often do not mention their suicide ideation (Black Dog Institute, 2016). Reportedly, those who

do state their suicide ideation to their GPs, often do not receive the care they need (Black Dog Institute, 2016). This has been said to be due to fear, stigma, and time pressure (Black Dog Institute, 2016). Another strategy to prevent suicide is to provide better training to GPs in recognising, assessing and providing referral pathways for suicidal patients (Black Dog Institute, 2016). Recognising depressive symptoms and referral for treatment by GPs has been suggested to contribute to suicide prevention (Mann et al., 2005). Furthermore, the Nuremburg and European Alliance Against Depression, established in 2001 and 2004, were monumental in training and increasing GP recognition of depressive symptoms and intervening as an early intervention to suicide which has been found to reduce suicide rates (Hegerl et al., 2010; Hegerl & Wittenburg, 2015). Overall, this technique is a well-established method to effective suicide prevention and gaining momentum in continued implementation and training of medical professionals.

Training of Frontline Staff

Frontline staff such as police, paramedics, and emergency department hospital staff play a vital role in suicide prevention. Research suggests the interactions persons with suicide ideation have with these staff can influence their decision to seek help through validation and support (Black Dog Institute, 2016). These staff need to be trained in how to recognise, assess, and arrange appropriate care for person experiencing suicide ideation. Teller, Munetz, Gil, and Ritter (2006) found a mental health training program for police significantly increased their recognition of warning signs of mental illness and transportation to emergency departments to gain access to treatment. Frontline staff are also often included in gatekeeper training and as previously stated, these programs have been found to increase knowledge and skills in suicide preventative behaviours (Baber & Bean, 2009; Bean & Baber, 2011). Furthermore, Chan, Chien, and Tso (2008) found confidence, attitudes and professional skills in nurses responding to patients with suicidal intent improved significantly following a training workshop on suicide prevention and management. Overall, although this group seems to have less of a focus in suicide prevention programs, possibly as their qualifications involve mental health and suicide prevention training, the strategies which exist appear to be effective.

High Quality Treatment

It is essential for mental health professionals to be trained in evidence-based treatment for suicidality. Suicidal behaviour is often related to mental illness, which can be identified and treated with evidence-based treatments (Fawcett, 2014). Treatment

available for suicidal behaviour include referrals to psychologists, psychiatrists, social workers and emergency departments (Tarrier, Taylor, & Gooding, 2008). Evidence-based treatments for suicidal behaviour includes Dialectical Behaviour Therapy, Cognitive Behaviour Therapy (CBT) and pharmacotherapy (Turecki & Brent, 2016). While evidence suggests suicide cannot accurately be clinically predicted, suicide risk can be assessed based on risk and protective factors and warning signs displayed in behaviour (Fawcett, 2014). Furthermore, while in general approximately 60% of suicide victims are said to have evidence of a diagnosable mental illness, it is said to occur in up to 90% of cases which can be treated through psychotherapy and psychopharmacology (Bachmann, 2018; Cavanagh, Carson, Sharpe, & Lawrie, 2003; Fawcett, 2014). Turecki and Brent (2016) suggested strong evidence exists that suicide is preventable through psychotherapy. Tarrier et al.'s (2008) meta-analysis and systematic review found individual CBT to be highly effective in reducing suicidal behaviour. Furthermore, a systematic review of pharmacotherapy for suicide prevention found lithium is an effective treatment for reducing suicide risk in people with mood disorders (Cipriani, Hawton, Stockton, & Geddes, 2013). It was suggested that Lithium may reduce relapse of mood disorders and decrease impulsivity, leading to lowered suicide risk. Overall, it appears research and evidence in this area is well-established as an important way to prevent suicide. Again, intervention studies may not be as common as education is included in mental health practitioners' qualification training programs.

Continuity of Care after Leaving Emergency Departments

A previous suicide attempt is the strongest risk factor for future attempts (Turecki & Brent, 2016). This means care following presentation to an emergency department (ED) after a suicide attempt is vital, especially in the first week to three months. Vaiva et al. (2006) compared persons who presented to ED following a suicide attempt and received a follow-up call one month after discharge to a control group. Control patients received treatment as usual, in most cases a referral back to their GP. They found participants contacted at one month were less likely at follow-up to report having reattempted suicide. Luxton, June, and Comtois (2013) completed a review of studies evaluating the efficacy of follow-up post ED discharge. Contact methods in studies included phone, postal letter, postcards, in-person and technology-based methods (e-mail and texting). They found 9 of the 11 studies (with varied contact methods) at follow-up showed a preventative effect. Overall, this method of suicide prevention seems to be effective and becoming more widely implemented.

Community Programs

Community programs in the form of awareness campaigns for the public is another form of suicide prevention. The main current form in Australia appears to be ‘RUOK? Day’ which encourages recognising when someone is ‘not okay’ and referring people to professional help (Black Dog Institute, 2016). A lack of evidence exists for its reach (number of people educated) and efficacy. A review of the literature identified ‘The National Suicide Prevention Line’ has wallet cards available for purchase for the general public with warnings signs of suicide and how to support someone at risk (Rudd, Goulding, & Carlisle, 2013). The level of efficacy and adoption, however, are unknown. Dumesnil and Verger (2009) conducted a review of 15 public campaigns from 8 different countries which aimed to increase awareness about suicide and assess their efficacy. They reported that attitudes were improved, and knowledge increased. The ASIST and MHFA courses outlined above, most often delivered to professionals, are at times available to the public however at a large cost (approximately \$300-\$800 AUD) and only offered in major cities at a few specific times each calendar year (Living Works Australia, 2016). Overall limited programs and efficacy studies that are community-specific exist.

Furthermore, it has been found that the community seem to lack knowledge and confidence in suicide prevention related skills. King, Vidourek, and Strader (2008) for example, found only 11% of university students strongly believed they could recognise a friend at suicidal risk, 17% strongly believed they could ask a friend if he or she was suicidal and 71% were not aware of on-campus help resources. This low level of confidence and preparedness is concerning given that numerous studies have found that most people who die by suicide were much more likely to indicate their distress to family and friends (70-90% of people) than a professional (only 20-30% of people) (Bloch, 1987; Cimini et al., 2014; Joffe, 2008; Kalafat, Elias, & Gara, 1993; Klimes-Dougan et al., 2013).

Christensen and Petrie (2013) suggested that much more evidence-based public interventions are required in suicide prevention and public campaigns are strongly warranted. They and others suggest this part of the multi-system approach is greatly lacking (Cimini et al., 2014; Harned et al., 2016). In addition, it is suggested by Bruffaerts et al. (2019), Hickie et al. (2014), Werner-Seidler et al. (2016), Christensen and Petrie (2013) and Kitchingman, Wilson, Woodward, Caputi, and Wilson (2016) for these to be online or technologically based for accessibility and reach, suggesting these types of strategies will be key to effective prevention.

The ‘Community Programs’ domain of the above nine-level approach seems to be the most lacking in terms of availability and reach of interventions but highly vital, given most people who die by suicide do not reach a professional but rather communicate their intent to a family member or friend (see Chapter 3 for more detail). The public are almost like gatekeepers to much of the rest of the eight levels in the systems approach to suicide prevention. Could better training for the community be the missing piece of the puzzle to overall successful suicide prevention?

Summary

This chapter has outlined that there are nine main ways to prevent suicide. Importantly the community domain stands out as being one of the most important yet one of the most understudied. It is further suggested that the nine-level system may not be circular but rather linear which has to start with community awareness to be able to detect those at risk and refer them to the rest of the levels (e.g., GP, ED, psychotherapy). This thesis will focus on further exploring and strengthening the ‘community campaigns’ domain as a method to prevent suicide as further explored in the next chapter.

Chapter 3. Gaps in Community Suicide Prevention Education

As concluded in Chapter 2, the community domain in the systems approach is lacking, needing increased focused. The following chapter will outline where and why exactly the community sector is lacking and why it is so vital to the overall system.

1) Community Focus

Research has found 70-90% of persons who die by suicide, communicated their intentions in some way to their family and friends (Bloch, 1987; Cimini et al., 2014; Joffe, 2008; Kalafat et al., 1993; Klimes-Dougan et al., 2013). This includes young people, who are more likely to tell a friend than a teacher or other adult (Cimini et al., 2014; Kalafat et al., 1993; LaFromboise & Lewis, 2008; Schmidt, Iachini, George, Koller, & Weist, 2015). ‘Communication’ of suicide intent can be direct (saying they do not want to live), behavioural (e.g., giving away possessions, writing a will), verbal (e.g., ‘I can’t do this anymore’) or situational (e.g., recent redundancy, relationship break-up or experience of guilt). Furthermore, 75% of persons who complete suicide have had no contact with mental health services (Cimini et al., 2014; Simpson, Franke, & Gillett, 2007). Research has also found about 45% of people who die by suicide, consulted a general practitioner within 1 month of death, yet documentation of physician inquiry into mental health or patient disclosure of suicide ideation is rare (Turecki & Brent, 2016). This is evident in a finding that less than 30% of patients with suicidal behaviours express their suicide intent to their health-care professionals (Bruffaerts et al., 2019; Turecki & Brent, 2016). Additionally, the rate of university students with suicide ideation seeking professional services is low (less than 20%) (Joffe, 2008). As stated in Chapter 2, King et al. (2008) found only 11% of university students strongly believed they could recognise a friend at suicidal risk, 17% strongly believed they could ask a friend if he or she was suicidal and 71% were not aware of on-campus help resources. Overall, it is clear that persons at risk of suicide are much more likely to seek informal forms of support through ill-prepared family and friends than professional services.

Another important factor to consider is that while approximately 60% of persons who die by suicide had a diagnosed psychiatric illness, 40% do not (Bachmann, 2018). The other 40% is again where the community are vital contributors to suicide prevention as they will likely not come into contact with a medical or mental health professional for support. The other 40% were often affected by financial hardship, relationship issues, discrimination and other acute crises (Bachmann, 2018). These crises can be noticed by family, friends, or colleagues, who can intervene if better prepared.

A final important note about the characteristics of suicide incidents making the community a vital component to prevention is that approximately 75% of suicides occur at home (Harvard, 2014). Of course, this is difficult where persons live alone, however this does mean if the community are better trained and prepared to notice the signs of suicide risk, they could recognise risk sooner, intervene sooner and access professional support sooner. This includes monitoring medication use, removing poisonous substances and sharp objects, monitoring substance use, and noticing if someone is preparing something harmful or putting affairs in order.

Based on the above findings, it would be appropriate, for much of suicide prevention research, funding and strategies to be focused on the general community to increase their awareness and ability to act when presented with someone they know who might be thinking about suicide. This, however, does not appear to be the case, with most intervention strategies being targeted at persons at risk of suicide themselves or professionals who are the least likely to be made aware of suicide risk (Christensen & Petrie, 2013). **A lack of focus on the community forms one of the biggest gaps in suicide prevention at this stage, the first major focus of this thesis.**

2) Consideration of Determinants to Helping Behaviour

If the community domain in the nine-level system is insufficient, an exploration of how to encourage helping behaviour from the community is necessary. As the public will be the focus of this project, it is important to consider what motivates people into action. Research suggests that when people are presented with a peer thinking of suicide, they most often lack helping intention and/or behaviour (Bloch, 1987; Fischer et al., 2011; Jorm, Blewitt, Griffiths, Kitchener, & Parslow, 2005; Kalafat et al., 1993; Rudd et al., 2013). An example includes participants being exposed to a vignette of someone with expressed suicidal thoughts and intent to die and participants rarely expressing intent to intervene and access emergency services (Rudd et al., 2013). Rudd et al. (2013) asked three important questions related to this: Is it because they do not recognise the signs? Is it because they do not know what to do? What stops them from intervening? These questions are key to understanding how to motivate bystanders to intervene in an attempt to prevent suicide.

Suicide prevention intervention is a helping behaviour (Bloch, 1987; Fischer et al., 2011). It is therefore important to identify and understand the determinants to such behaviour to assess if current programs are addressing these in their interventions to ensure participants are motivated to take action. A number of determinants to helping

behaviour have been identified in research as presented below.

Personal factors. The gender of the helper and bystander has been found in some situations to influence helping behaviour. Kalafat et al. (1993) and Jorm et al. (2005) for example, found that men lacked intervention in a scenario of noticing a suicidal peer compared to females. Research suggests this difference is due to the socialisation into gender and social roles, expecting men to take more physical action to protect and women to take more emotional supportive action through talking (Eagly & Crowley, 1986). Overall however, Latané and Darley (1970) suggest gender is not a crucial factor in determining helping behaviour, also evident in a meta-analysis of studies from 1960-2010 which found no significant effect of gender on helping behaviour (Fischer et al., 2011).

Furthermore, personality has been suggested to also determine helping behaviour, where the trait of agreeableness, one of the Big Five personality traits identified by Costa and McCrae (1998), has been found to correlate with helping behaviour. Darley and Latané (1968), on the other hand, found personality was not strongly predictive of helping behaviour. Moreover, the perceived cost to the helper in time, risk, resources, distress, discomfort and money has been found to influence a decision to assist where a higher cost results in lower likelihood of helping (Betancourt, 1990; Dovidio, 1984; Fischer et al., 2011). Also, attitudes, perception of social norms and stigma have also been found to influence action where if someone has a negative perception of the victim, they are less likely to assist (Jorm et al., 2005; Rudd et al., 2013).

Interpersonal factors. The level of acquaintance is also suggested to influence a decision to help where if a victim is a friend compared to a stranger, the person is more likely to help (Latané & Nida, 1981). Furthermore, the level of communication available among potential helpers has also been found to determine helping behaviour where the more helpers are able to communicate, the less likely they are to help (Latané & Nida, 1981).

Additionally, it has been suggested that what a person attributes to the cause of another person's suffering is also a determinant in their decision to help (Betancourt, 1990). Research suggests that if people attribute another person's suffering to something within that person's control such as 'effort' or 'choice' leading to for example, drunkenness compared to out of their control such as a disability, they are less likely to help (Betancourt, 1990; Piliavin, Rodin, & Piliavin, 1969). Furthermore, the race of the victim has been suggested to potentially impact whether help is provided, where if they are similar in race, they are more likely to assist (Latané & Nida, 1981). Piliavin et al.

(1969), however did not find an effect of race.

Evolutionary factors. Evolutionary perspectives suggest helping behaviour is adaptive and performed to increase others reciprocating help to increase chances of survival (Trivers, 1971). It is further suggested helping may become an innate behavioural tendency or kin selection, i.e., individuals protect their own genes by helping close relatives (Kassin, Fein, Markus, McBain, & Williams, 2019)

Situational factors. Ambiguity of the situation has been found to impact helping behaviour where the less ambiguous and serious a situation is, the more likely someone is to help compared to higher ambiguity (Darley & Latané, 1968; Fischer et al., 2011; Kalafat et al., 1993). Also, the number of people present or believed to be present has been found to determine helping behaviour, where the more people are present, the less likely someone is to help (Fischer et al., 2011). This is termed in research as the ‘Bystander Effect’ and has been found to occur for both sexes of participants and victims, across nearly all age groups except very young children and in online and face-to-face situations (Fischer et al., 2011). Location of the incident has been found to determine helping behaviour which is less likely in cities compared to rural areas (Latané & Nida, 1981).

In summary, the above section has outlined determinants to helping behaviour including gender, personality, ambiguity, number of people present, location, level of acquaintance, level of communication available, personal cost, attitudes, perceptions, social norms, attributions, race, and ethnicity. Latané and Darley (1970) however, found through various simulations of emergency situations requiring help from bystanders that all of the outlined determinants to helping behaviour (including social norms, psychological and personality factors) take second place to the identified Bystander Effect, suggesting it is the most predictive of helping behaviour. Examples of simulations included placing participants in a room which fills with smoke simulating a fire, distress calls, pleas for assistance, and epileptic seizures (Latané & Darley, 1970). The significance of the Bystander Effect over and above the other reported factors, is evident in many studies including for example, Darley and Latané’s (1968) study with a scenario of an epileptic seizure being overheard alone, in the presence of other bystanders and belief of other bystanders being present. In this study, the presence or believed presence of other bystanders reduced participants’ feelings of personal responsibility and lowered the speed and frequency of helping significantly, i.e., the effect of group size was highly significant ($p < .01$). It found that 85% of participants who thought they alone knew of a

victim's need for help intervened, while only 31% of those who thought four other bystanders were also aware helped. Their study reported gender, personality and background measures where not significantly predictive of helping. Males and females responded with almost exactly the same speed and frequency. Personality factors such as level of alienation, Machiavellianism, sense of social responsibility, need for approval, authoritarianism, etc. had no significant effect on speed or frequency of helping. Background factors such as previous medical experience versus none responded with almost exactly the same speed and frequency (Darley & Latané, 1968).

Based on their continually replicated research, they came up with the following formula to calculate the probability of helping:

$$P1 = 1 - N \sqrt{(1-PG)}$$

P1 is the effective individual probability of helping, PG is the proportion of groups of size N in which at least one person helps (Latané & Nida, 1981). Latané and Nida (1981) conclude that the Bystander Effect has firm empirical foundation and the next step is to develop and test practical strategies for increasing bystander intervention which is the focus of this thesis. Latané and Darley's (1970) 'process model of help-giving' is said to be 'ground-breaking' regarding addressing questions of why people do not help (Urschler, Fischer, Kastenmüller, & Fischer).

The Bystander Effect in scenarios of suicide risk. The Bystander Effect has been found in scenarios of suicide risk over many decades. Bloch (1987) stated that almost 80% of persons who kill themselves give definite verbal or behavioural warning signs before taking their lives but most who hear these threats or see such behaviour do not take them seriously and fail to intervene. Furthermore, Jorm et al. (2005) found approximately 30-50% of participants presented with a vignette involving suicidal thoughts lacked appropriate intervention skills (e.g., seeking professional help, asking about intentions of acting on thoughts, etc.). In addition, Klimes-Dougan et al. (2013) stated approximately 75% of adolescents reported keeping the intentions of suicidal peers' secret. Finally, Rudd et al. (2013), as stated above, found participants were unlikely to seek emergency support when presented with a vignette of someone voicing specific suicidal thoughts with intent to die. As outlined above, the Bystander Effect is well established in scenarios of suicide risk, where inaction by most is evident.

Theoretical Background

A number of well-established social-psychological theories for explaining and predicting behaviour exist to motivate behaviour. The key models informing prosocial behaviour which may be relevant to suicide prevention interventions are outlined below.

Norm Activation Model. Schwartz's (1977) Norm Activation Model (NAM) has been applied to explaining behaviour, including altruism and environmentally friendly behaviour including recycling (Park & Ha, 2014) and organic buying (Shin, Im, Jung, & Severt, 2018). The model posits that if a person believes adverse consequences will occur without action, fears they will be held responsible for negative consequences if they do not act and have a personal moral belief to help, they are more likely to act (see Figure 1 below) (Steg & De Groot, 2010).

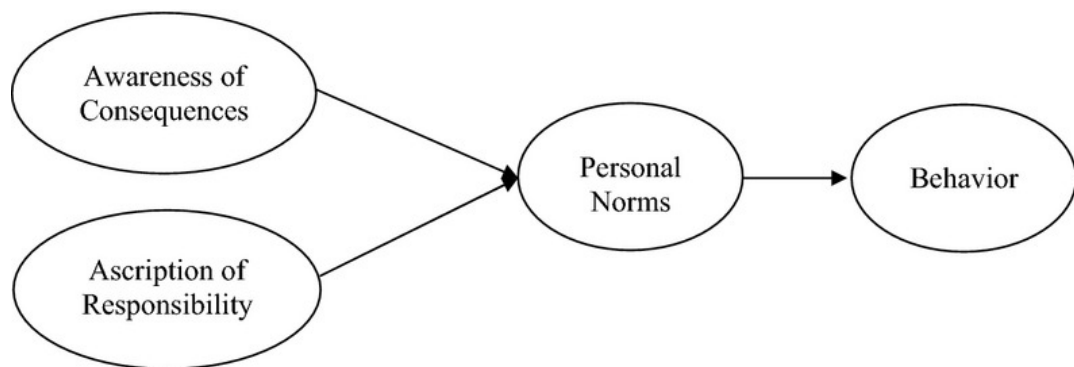


Figure 1. Norm Activation Theory

Protection Motivation Theory. Rogers's (1983) Protection Motivation Theory (PMT) posits that behaviour is more likely if an issue is more severe, vulnerability is high, self-efficacy is high and response efficacy is high (see Figure 2). The PMT has been applied to health promotive behaviour such as quitting smoking, healthy diet, and exercise (Floyd, Prentice-Dunn, & Rogers, 2000).

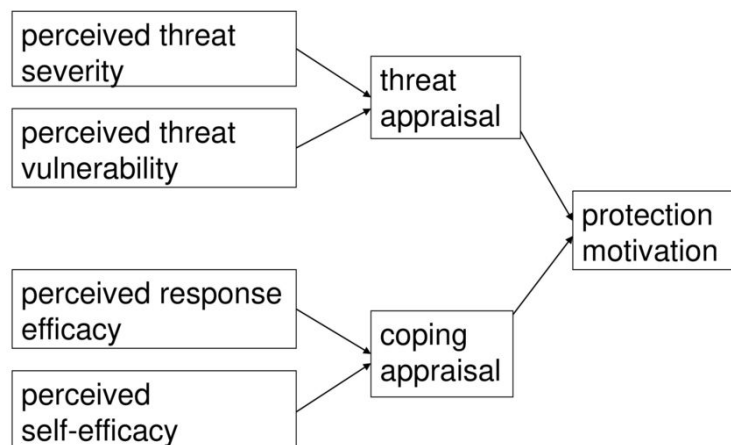


Figure 2. Protection Motivation Theory

Health Belief Model. Rosenstock's (1974) Health Belief Model (HBM) suggests that people's beliefs about a problem (based on their demographic and psychological characteristics), perceived benefits of action, perceived barriers to action, and self-efficacy explain behaviour (see Figure 3). It further poses that a cue or stimulus is necessary to trigger a health-promoting behaviour. It has been applied to organic eating (Yazdanpanah, Forouzani, & Hojjati, 2015) and healthy eating (Jeong & Ham, 2018).

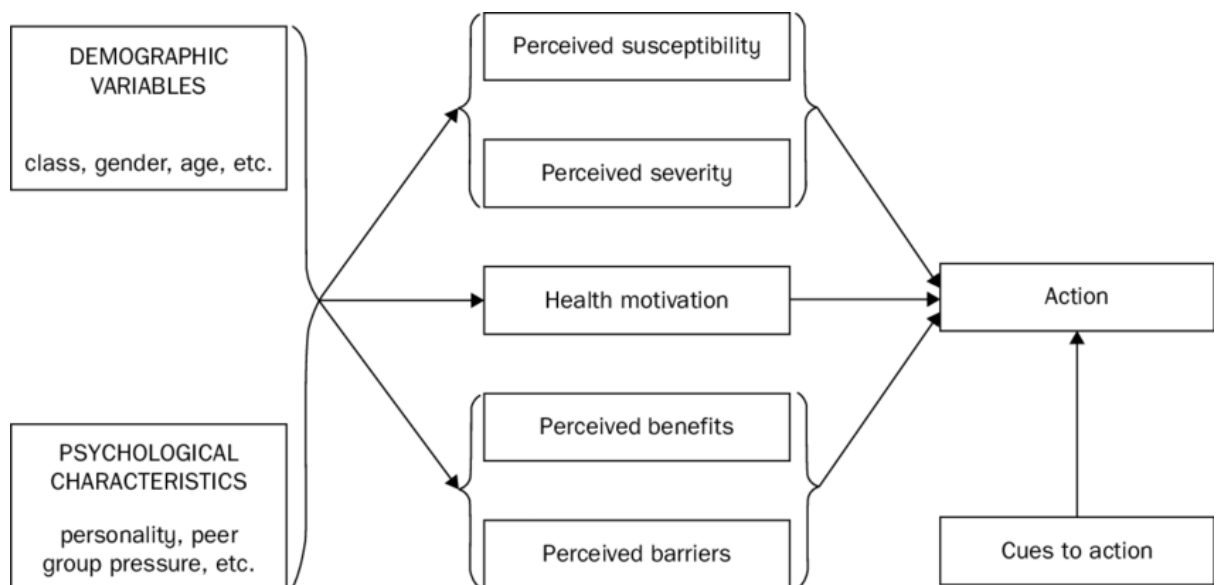


Figure 3. Health Belief Model

Theory of Reasoned Action. Ajzen and Fishbein's (1980) Theory of Reasoned Action (TRA) suggests that behaviour is based on the outcomes the individual expects will come as a result of performing the behaviour (see Figure 4). These expectations are said to be based on pre-existing attitudes and intentions. The TRA has been applied to the use of environmentally friendly products (Paul, Modi, & Patel, 2016).

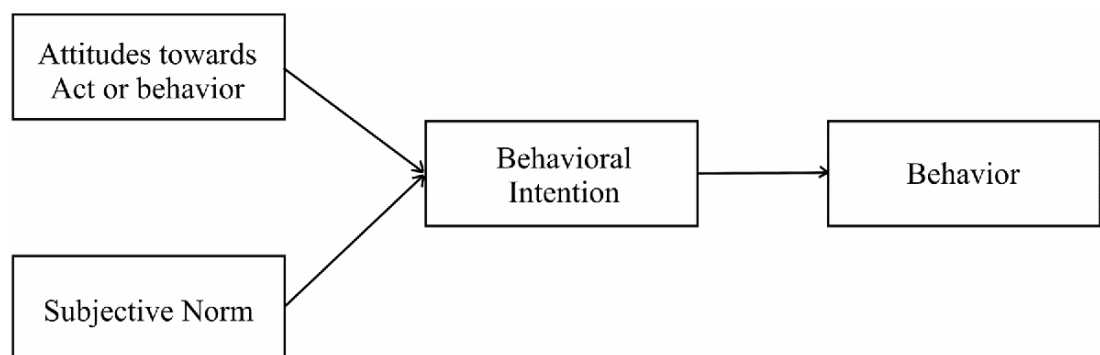


Figure 4. Theory of Reasoned Action

Theory of Planned Behaviour. Ajzen's (1991) Theory of Planned Behaviour (TPB) proposes that attitudes, subject norms, and perceived behavioural control, together

shape an individual's behavioural intentions and behaviours (see Figure 5). The model has been applied to online shopping usage (Yang, 2012) and environmentally friendly product uptake (Maichum, Parichatnon, & Peng, 2016).

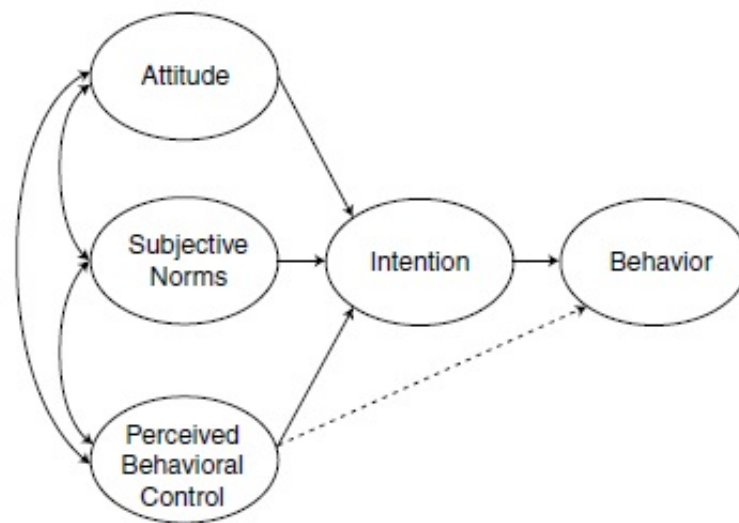


Figure 5. Theory of Planned Behaviour

Theory of Interpersonal Behaviour. Triandis' (1977) Theory of Interpersonal Behaviour (TIB) poses a model of behaviour change (see Figure 6). The model suggests a behaviour occurs if personal attitudes, moral beliefs, emotions, and social norms lead to intention to act (Triandis, 1977). It has been applied to many behaviours for example, behaviour change in level of food waste (Russell, Young, Unsworth, & Robinson, 2017) and internet giving (Amin & Phau, 2016).

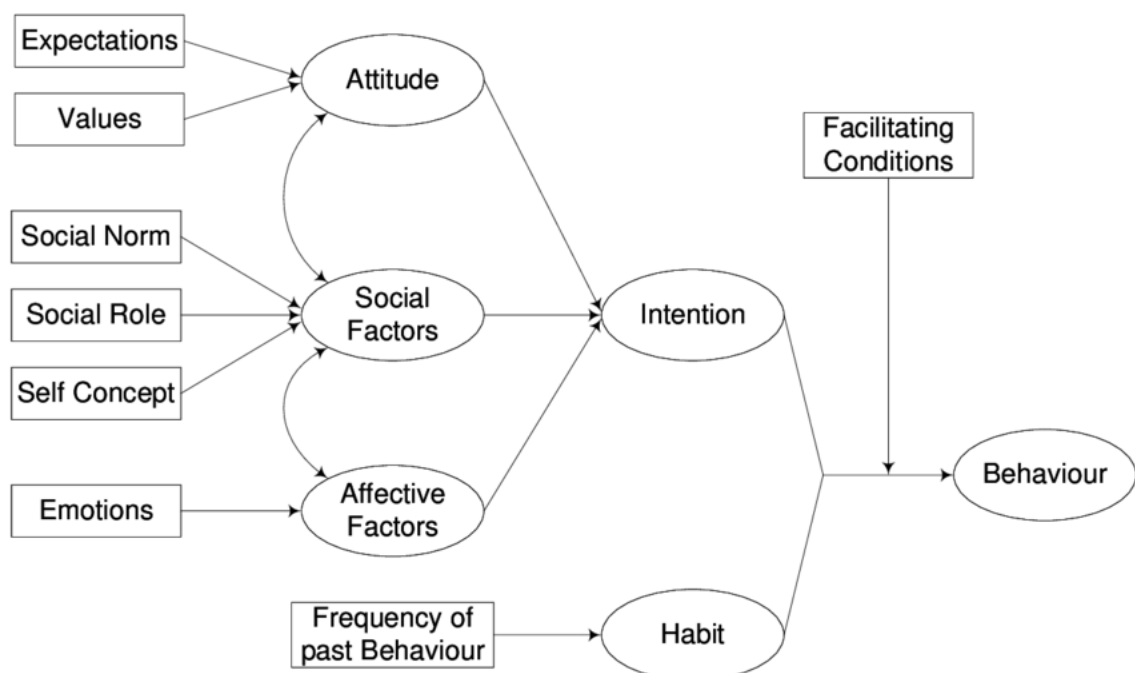


Figure 6. Theory of Interpersonal Behaviour

Bystander Intervention Model. Darley and Latané's (1968) Bystander Intervention Model (BIM) poses that, 5 consecutive steps are necessary for behaviour to occur: 1) notice a critical situation, 2) interpret the situation as an emergency, 3) develop a feeling of personal responsibility, 4) believe that they have the skills necessary to succeed and feel confident to intervene, and 5) reach a conscious decision to help (see Figure 7). The model has been applied to intervening when exposed to someone being bullied (Dillon & Bushman, 2015) or sexually harassed (Nickerson, Aloe, Livingston, & Feeley, 2014).

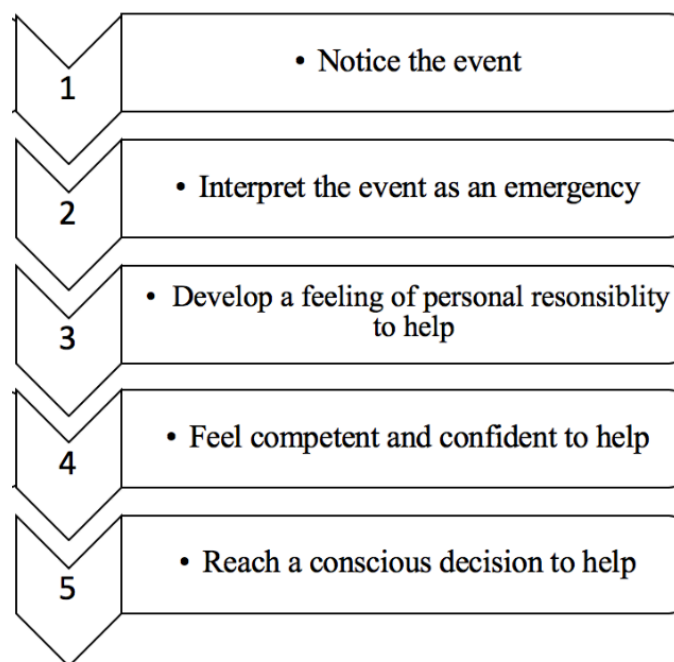


Figure 7. Bystander Intervention Model

Applying Social-Psychological Theory to Community Suicide Prevention

Social psychologists began trying to answer the question of ‘who helps when and why?’ since 1964 when a woman in New York, Kitty Genovese, was repeatedly stabbed with 38 onlookers, 75% of whom took no action to assist or call for help (Latané & Nida, 1981). She was reportedly on her way home from her job managing a bar at 3:20am when she was attacked, just 32 metres from her apartment. Lights reportedly turned on and windows went up while she repeatedly screamed for help. After 45 minutes apparently one man called the police, but she died before reaching the hospital. This significant incident led to the development of research into the determinants to helping behaviour where the Bystander Effect was born and subsequently heavily tested. The Bystander Effect is now a well-founded, robust, evidence-based, social psychological phenomenon occurring across many contexts (Darley & Latané, 1968; Fischer et al., 2011). While

there has been some controversy about the potential exaggeration of the number of onlookers in the women's murder, laboratory simulations and real-world examples have continued to replicate the Bystander Effect (Latané & Darley, 1970). Other examples include: in 2008 in the US, while a man was physically and sexually assaulting a woman in an apartment hallway, 10 persons opened their doors to see what was happening, none who helped or called for help as shown in closed-circuit television (CCTV); in 2011 in China, a 2 year-old girl was run over by a car who drove away and 18 persons were observed to walk past her body without helping until she was run over a second time, again captured on CCTV where only one person helped, however, it was too late; in 2017 in Australia, Dolly Everett died by suicide due to severe online bullying and harassment witnessed by many (Kassin et al., 2019). Police, the media and the public who have witnessed such footage, of bystanders taking no action in emergency situations, described it as 'horrificing' and 'chilling' seeing others turn their back on persons needing help and call it a 'moral failing' (Kassin et al., 2019).

A few days after Kitty's murder, Latané and Darley met to discuss the event (Kassin et al., 2019). While newspapers were reporting the neighbours were 'moral monsters' and that the morals and values of society had declined, Latané and Darley thought more social psychological processes might have been at work (Kassin et al., 2019). They speculated that because each witness could see others around the street turning on their lights and looking out their windows, that each witness assumed that others would or should intervene (Kassin et al., 2019). They tested this theory and consistently found that the presence of others has an inhibiting effect on helping behaviour which has continued to be found in different scenarios over the 6 decades since then. It seems while most people report the examples provided above to be shocking, it is likely if they were in the same position, they would also not act for three main reasons explained below.

Three core features have been noted to underlie the Bystander Effect. Firstly, what is termed 'diffusion of responsibility' where the more people are present, the more the perceived responsibility to intervene is shared, resulting in inaction (Latané & Darley, 1970). Secondly, 'pluralistic ignorance' where bystanders rely on the actions of others to decide what to do. This has consistently been found to lead to a crowd of inaction as everyone is observing each other and conforming to doing nothing (Latané & Darley, 1970). Thirdly, what contributes to the Bystander Effect is 'evaluation apprehension' where bystanders fear being judged by others on the actions they take for example, fear of

making a mistake or being embarrassed (Fischer et al., 2011). The Bystander Effect has been found to occur in various experimental and field situations including bullying, drunk driving, recycling, organ donation, sexual harassment and assault, reducing energy and other consumption, heart attacks and suicide risk (Anker & Feeley, 2011; Bloch, 1987; Burn, 2009; Darley & Latané, 1968; Fischer et al., 2011; Kalafat et al., 1993; Kassin et al., 2019; Nickerson et al., 2014; Rabow, Newcomb, Monto, & Hernandez, 1990). The review above also noted the Bystander Effect is evidently the strongest deterrent to helping behaviour compared to other personal, interpersonal, evolutionary and situational factors. The entire aim of suicide prevention education for the community is to encourage helping behaviour, making the consideration of the Bystander Effect highly relevant.

When reviewing the social-psychological theories and models above, one key difference stands out. The NAM, PMT, HBM, TRA, TPB and TIB are most often applied to behaviours which can be performed in private for personal benefit. This includes increasing exercise, eating healthy, adherence to medical treatment regimens and reducing health compromising habits such as smoking and drinking. Furthermore, it also targets behaviour which can be done in private for the benefit of society as a whole for example, recycling and buying and using environmentally friendly products. The four main pro-social behaviours which are different to the aforementioned factors are intervening when someone is being bullied, sexually harassed, having a heart attack or at risk of suicide. These are different because they cannot be done in private. They involve communicating with another person, potentially with other onlookers present and/or the perceived presence or availability of others. As soon as a real or perceived third party is involved, human behaviour changes. Factors which are irrelevant in private behaviour suddenly are at the forefront of consideration. This is because humans are highly prone to conformity, fear of embarrassment, fear of negative evaluation, fear of making mistakes, and diffusion of responsibility. These factors often lead to inaction meaning persons needing bystander support are left vulnerable. For this reason, the Bystander Intervention Model is highly relevant in suicide prevention education material because it must consider these factors forming the Bystander Effect and must be designed to be able to overcome this effect so that helping behaviour is more likely to be elicited. The other models do not take these factors in to account and are therefore less appropriate in situations of helping others than oneself.

More on the Bystander Intervention Model

Darley and Latané (1968) suggested it is not enough for someone to intervene to simply be the only person present or when others are present, to take personal responsibility to intervene despite fearing evaluation and observing inaction. As stated above, they put forth the Bystander Intervention Model (BIM) outlining that the main requirements for a bystander to intervene goes beyond the aforementioned requirements and includes the need to: 1) notice a critical situation, 2) interpret the situation as an emergency, 3) develop a feeling of personal responsibility, 4) believe that they have the skills necessary to succeed and feel confident to intervene, and 5) reach a conscious decision to help. Structural equation modelling suggests that each step in the model is more likely influenced by the previous step and intervention information should perhaps consider addressing each step, in order, to increase the likelihood of action (Darley & Latané, 1968; Nickerson et al., 2014). For example, take the woman who was stabbed repeatedly over an extended period of time. Thirty-eight people were identified to have witnessed the attack (noticed), however, few if any went to her aid or called the police (taking personal responsibility, having the skills and knowledge to take action and deciding to act), showing the importance and relevance of the BIM, i.e., the presence and sequence of each step are required for helping behaviour to take place (Bloch, 1987). This event and model suggested that even if someone felt personal responsibility to act, unless they notice and interpret it as an emergency, feel competent and confident to intervene and reach a decision to intervene, they are unlikely to assist. This suggests the Bystander Effect is more complex than just diffusion of responsibility and the BIM needs to be considered in its entirety to truly understand how to counter the Bystander Effect.

The BIM was recently replicated in Nickerson et al.'s (2014) study in which a confirmatory factor analysis with a sample of 562 secondary school students confirmed the five-factor structure of the model in the context of helping someone who was at risk of sexual harassment. Structural equation modelling revealed that all the steps were influenced by the previous step in the model, as the theory proposes. It was also replicated in other behavioural domains, e.g., reducing energy consumption, recycling and organ donation (Anker & Feeley, 2011). Although the Bystander Effect has been found in suicide related studies (inaction when presented with suicide risk) (Bloch, 1987; Jorm et al., 2005; Klimes-Dougan et al., 2013; Rudd et al., 2013), the BIM does not seem to have been included and tested within the domain of community suicide prevention intervention. Although suicide is hard to predict and not all suicides are preventable, if the

general public are more equipped to notice the 4 out of 5 incidents that suicide is communicated, take these seriously, talk responsibility to help, know how to help, feel confident to do so and take action, suicide rates could potentially show reductions (Bloch, 1987). It is therefore important to test whether the BIM has the same predictive effect on bystander intervention in suicide prevention in the public, to inform future community suicide prevention campaigns' content.

Current community awareness training often does not meet these requirements (Jones et al., 2015; Sareen et al., 2013). They often simply present suicide rates and risk factors which is clearly not enough to counter the Bystander Effect as this only covers the first step of noticing a peer may be suicidal and potentially interpreting this as an emergency but does not progress to training participants to accept personal responsibility to help, teach them practically how to help and encouraging them to decide to intervene (Jones et al., 2015; Sareen et al., 2013). This would complete the five required parts for bystanders to intervene and increase likelihood of intervening. **Overall, the second important gap in community suicide prevention is informing education material by the BIM and assessing such material's efficacy in increasing bystander intervention.**

3) Bystander Intervention Model-Informed Measures

If the BIM is suggested to be a highly relevant model to apply to intervention education content and assessment in suicide prevention, measures informed by this model are necessary. A review of the literature could not identify any measures which assess BIM related helping behaviour in community suicide prevention, for example, participant capacity to 1) notice, 2) interpret as urgent/important, 3) assume personal responsibility, 4) feel confident and competent to act and 5) reach a conscious decision to help. This forms the third major gap in suicide prevention research.

Validated measures which do exist in the community suicide prevention domain include the Stigma of Suicide Scale (SOSS), Question, Persuade and Refer Questionnaire (QPR), Suicide Information Test (SIT), Confidence and Beliefs Questions (CBQ), Attitudes Towards Suicide Questionnaire (ATTS) (Van Landschoot, Portzky, & Van Heeringen, 2017). These assess stigma, knowledge, attitudes and confidence. Some of these instruments and their research outcomes are presented in Study 1 (Chapter 5). These, however, do not assess the impact of BIM-informed education material in increasing skills in the five parts of the BIM. **A lack of validated BIM-informed measures to assess bystander outcomes forms the third major gap in community suicide prevention research.**

4) Technology

Many researchers have put out a call for more technology-based interventions as currently most training is presented via workshops (Christensen & Petrie, 2013; Hickie et al., 2014; Werner-Seidler et al., 2016). Technology-based interventions are recommended as we live in a world which demands fast and convenient communication. McMillen, Hawley, and Proctor (2016) for example, found participants agreed training workshops are inconvenient, expensive and too time-consuming. There is a strong call for technology-based suicide prevention training to work around these issues to be able to reach larger numbers, in a faster, more convenient and more cost-effective manner. McMillen et al. (2016) further reported a number of mental health training trials have found participants in technology-based (online reading and videos) training performed as well or better than instructor-led training workshops, and they strongly preferred technology-based training compared to workshops.

Mobile applications have been used to target people who are at risk of suicide and to educate the public on how to intervene. The evidence is still inconclusive as the number of suicide prevention applications is small, technology-based suicide prevention remains understudied and the applications lack interactive features [see de la Torre, Castillo, Arambarri, López-Coronado, and Franco (2017) for a review]. As early detection and referral for help is key to suicide prevention based on the Nuremberg study (Hegerl et al., 2010), de la Torre et al. (2017) suggest suicide prevention applications for the public is highly relevant and warranted to increase early detection and support.

Some evidence already exists for the efficacy of mental health smartphone applications for patients with a mental illness, as opposed to the general public in this study. A systematic review of five studies found most to be effective in significantly reducing symptoms (Donker et al., 2013). Turecki and Brent (2016) suggest internet-based applications to monitor patients after discharge and between appointments improve outcomes. Another systematic review of 27 studies found improvement in symptoms with usability and feasibility indicated (Rathbone & Prescott, 2017).

Furthermore, many current suicide prevention training programs (e.g., workshops, lectures) rely on behaviour rehearsal, mnemonics and acronyms. Cross et al. (2011) found that rehearsed intervention skills did not lead to retained skill at follow-up which had diminished. Additionally, Bryan, Steiner-Pappalardo, and Rudd (2009) found mnemonics did not help participants remember suicide warning signs and in fact interfered with learning. They suggested confidence and perceived ability to recognise suicide risk is not

related to recall ability. This further supports the necessity of technology-based suicide prevention training formats for easy access to information repositories.

Overall, research regarding the efficacy of mental health related applications are still in preliminary stages due to the recency of the development of these applications and limited number of evaluation studies available (Lui, Marcus, & Barry, 2017). Overall, however, results are said to be promising (Lui et al., 2017). It is suggested that 91% of people in the world have a mobile device, with time spent on smartphones being higher than on any other digital device (Rathbone & Prescott, 2017; Source Digit, 2012). Around 2.2 million applications currently exist, 6% with a mental health focus (Donker et al., 2013; Rathbone & Prescott, 2017). Further, data have shown that around 76% of Australians are interested in using mobile phones for mental health related issues (Donker et al., 2013) and 31% of mobile phone holders have downloaded an application to obtain health information (Rathbone & Prescott, 2017). Issues with applications include technical failure potential, privacy issues, reliability of internet connections and reliance on a battery (Donker et al., 2013). Overall however, mental health applications have numerous benefits including accessibility, portability, and flexibility in use (Donker et al., 2013). **A lack of technology-based training material forms the fourth major gap in community suicide prevention research.**

Summary

This chapter has outlined four key gaps in community suicide prevention training efforts including: 1) targeting the community; 2) informing education material by the Bystander Intervention Model; 3) developing measures to test the effects of BIM-informed material on BIM parts; and 4) designing technology-based delivery modalities. Chapter 4 outlines how this research program will address each of these gaps.

Chapter 4. How the Thesis Will Address Research Gaps

1) Community Focused

As outlined, most people who die by suicide communicated their intent in some form to family and/or friends, rarely reach a mental health professional, often do not have a diagnosed mental illness and most die at home. It appears the community are the true gatekeepers to suicide prevention and the least prepared to help. It is vital the next wave of suicide prevention pays more attention to the community domain who are in the best position to detect and respond to suicide risk by getting those at risk to a professional trained to assist. All studies in this project will target the community to add to the body of research in this area. The thesis will not recruit any persons at risk of suicide themselves or review in detail the prevalence and aetiology of suicide ideation, plans and/or attempts (see Auerbach et al. (2019) and Mortier et al. (2018) for a review on the prevalence of suicidal thoughts and behaviours).

2) Theory Focused

This thesis places a large importance and focus on theory-based suicide prevention programs. No other studies could be identified which have explored what the research states about which theories to apply in community suicide prevention training or reviewing any theories already being applied. Theory is important to consider in intervention studies related to behaviour change. Human behaviour, although complex and multifaceted, can be observed, tested, and analysed to develop theories to predict and/or explain certain phenomena (Garner, Wagner, & Kawulich, 2009; Glanz, Rimer, & Viswanath, 2008). Theories which are heavily tested and consistently replicated establish an evidence base and evidence-based practice is the gold standard in professional practice (Barker et al., 2016). Theory can provide ideas about the source of a particular problem, in this case inaction by the public when it comes to suicide risk, and suggests specific ideas to address them based on previous data (Stiles, 2007).

Suicide prevention strategies which are not theory based, may not be taking well founded social phenomenon into account. This may impact how effective a strategy is if they are missing important components or even going against important components. Take community suicide prevention training for example. If a trainer consistently uses the word ‘someone’ instead of stressing personal responsibility, their intervention is unlikely to be effective. They may say, ‘the best thing to do if a person presents with suicide risk is for *someone* to have a conversation with them about their situation and ask about suicidal thoughts’. This encourages diffusion of responsibility to *someone*, where instead it is

important to encourage participants to always act on any suicide risk factor or warning sign immediately and personally and not wait for someone else to help. Not basing interventions on human behaviour theory means time, effort and funding could be wasted if neglecting to address important factors which result in action. Theory-informed interventions can identify the targets for behaviour change and the methods of accomplishing these changes (Glanz et al., 2008).

Theory-driven interventions are said to be more effective than programs based on intuition, tradition or precedent (Glanz et al., 2008). Public health research for example, suggests that using theory in designing interventions for behaviour change can lead to more powerful effects than interventions developed without theory (Glanz et al., 2008). Glanz et al. (2008) further claimed that communities are more likely to benefit from an intervention if it is based on a theory of behaviour. Systematic reviews have found theory-based interventions to have more powerful effects than interventions not built around theory (Ammerman, Lindquist, Lohr, & Hersey, 2002; Legler et al., 2002).

As outlined in Chapter 3, research suggests one of the most important theories to consider in suicide prevention is the Bystander Intervention Model to ensure strategies are able to overcome the Bystander Effect (inaction) and lead to action from the community. This thesis will test the BIM's relevance and efficacy in randomised controlled trials by informing material by this model and testing bystander intervention related constructs.

3) BIM-Informed Measures

As stated in Chapter 3, no validated BIM-informed measurement tools related to community suicide prevention intervention could be identified. This thesis aims to adapt validated BIM-informed bystander intervention questionnaires used in scenarios of bullying and sexual harassment to start its exploration of applicability in community suicide prevention research.

4) Technology Focused

As outlined in Chapter 3, there appears to be a dearth of technology-based suicide prevention education material for the community. Training is often time-consuming and expensive workshops which are inconvenient and inaccessible. This thesis will deliver and test the efficacy of technology-based formats of an online factsheet and video.

Summary

This chapter has highlighted the key areas of focus of this thesis to address the gaps identified in Chapter 3: community strategies, BIM-informed education, BIM-informed measurement tools and technology-based formats. Suicide is a major global

leading cause of death and contributor to social and economic burden. The community is a strong focus as they are predicted to be gatekeepers to those at risk reaching professional help. This is because those at risk are far more likely to access informal support through family and friends than formal support through professionals. Theory is of focus to ensure programs are in line with known human behaviour patterns and designed in ways most likely to be effective. Finally, technology is of focus to aid in the accessibility of interventions.

The literature review (Chapter 3) has presented theories which explain prosocial behaviour and put forth and justified a theory to inform the randomised controlled trials (RCTs) in this thesis. The following chapter is a systematic review of suicide prevention programs to ascertain what theories are being used to inform their education content and delivery, who they are targeting and their level of efficacy. This chapter aims to capture current efforts in suicide prevention more closely and gaps more specifically.

Chapter 5. Study 1 - Saving Lives: A Systematic Review of Theory-Based Suicide Prevention Programs

The following chapter presents the first study of this thesis, currently under review in the *Community Mental Health Journal*. Any italicised text in square brackets are amendments, not currently in the version under review.

Statement of contribution to co-authored paper:

Conceptualisation: Karien Hill, Carina Chan, Deanne Armstrong; Methodology: Karien Hill, Carina Chan, Deanne Armstrong; Literature search and data analysis: Karien Hill; Writing - original draft preparation: Karien Hill; Writing - review and editing: Karien Hill, Carina Chan, Shawn Somerset, Ralf Schwarzer.

Karien Hill



Signature: _____ Date: 18 May 2020

Abstract

Suicide is a global epidemic. This study assessed the scope and effectiveness of suicide prevention programs. Systematic literature searches were conducted using PsycINFO, ERIC and MEDLINE to retrieve articles published between January 2007 and March 2017 and fulfilled inclusion criteria (studies evaluating the efficacy of theory/model-based suicide prevention programs in increasing participant knowledge or skills when presented with a *peer* at risk of suicide). Of 1,398 studies identified, 25 were reviewed and most: targeted professionals; were 1-4-day workshops; were underpinned by 19 different theories; taught less detail to the community than professionals; and improved target outcomes. Current programs, although effective, are limited by their inaccessibility, narrow content for the community and substantial variability in theory base. Future suicide prevention programs will benefit from being informed by a more specific theory, delivered through technology, targeting more of the community and improving methodological rigour. The review is informed by PRISMA guidelines.

Keywords: Community awareness; suicide prevention; theory/model-informed education.

Saving Lives: A Systematic Review on the Efficacy of Theory-Based Suicide Prevention Programs

One person dies by suicide every 40 seconds around the world (World Health Organisation, 2019c). Suicide has reached global epidemic proportions and is a leading cause of death around the world (Jones & Cipriani, 2016; World Health Organisation, 2019b). Contemporary research suggests a nine-level approach is necessary to reduce suicide including: reducing access to lethal means, responsible media reporting, community awareness programs, gatekeeper training, school-based suicide prevention programs, training of general practitioners, training of frontline staff, effective psychotherapy and follow-up for individuals with a recent suicide attempt (Hegerl & Wittenburg, 2015; Hickie et al., 2014; Krysinska et al., 2015; Werner-Seidler, Perry, & Christensen, 2016). Despite public health efforts in each of these areas, significant headway in reducing suicide rates seems lacking.

Although the whole system described above is important, it seems that close family and friends have an especially pivotal role to play. This is because research has shown persons at risk are significantly more likely to communicate their suicide risk to family and friends (occurring for 70-90% of individuals who die by suicide) than professionals (occurring for only 20-30% of individuals) (Bloch, 1987; Britton, Williams, & Conner, 2008; Joffe, 2008; Kalafat, Elias, & Gara, 1993; Klimes-Dougan, Klingbeil, & Meller, 2013; Simpson, Franke, & Gillett, 2007). These warning signs can be behavioural (e.g. withdrawal, preparing a will), verbal (e.g. saying 'I can't do this anymore') and/or environmental (e.g. recent relationship break-up, recent shame/embarrassment) (King, Vidourek, & Strader, 2008). Current literature suggests the community awareness component of suicide prevention is lacking, despite its apparent importance (Cimini et al., 2014; Harned, Lungu, Wilks, & Linehan, 2016).

Those at risk are said to lack help-seeking behaviour due to high self-reliance, lack of perceived need for treatment, and stigmatizing attitudes toward suicide, mental health issues, and seeking professional help (Han, Batterham, Calear, & Randall, 2018). Instead, they are more likely to access informal forms of support through signalling their distress to family and friends (Cimini et al., 2014; Kalafat et al., 1993; LaFromboise & Lewis, 2008; Schmidt, Iachini, George, Koller, & Weist, 2015). The community however are ill prepared and inactive in responding to suicide risk (Rudd, Goulding, & Carlisle, 2013).

It is important to identify gaps in community programs which might explain the apparent slow progress in suicide prevention. Various systematic reviews have already assessed the efficacy of different parts the nine-level suicide prevention system [see Mann et al. (2005), Isaac et al. (2009), Clifford, Doran, and Tsey (2013), Cusimano and Sameem (2011), Harlow and Clough (2014), Katz et al. (2013), Zalsman et al. (2016)]. None of these have investigated the specifics of suicide prevention programs and which theories or models are informing their design and delivery. Despite many reviews, interventions still appear to be less than effective given a recent statement by the World Health Organization that if current suicide prevention efforts continue, reduction goals will not be met (World Health Organisation, 2019a). There has been a dearth in innovative suggestions being put forward to improve programs. This review aims to identify gaps including a specific assessment of the theories informing community programs [*i.e., what types of theories are informing current programs*], the modalities in which they are delivered [*i.e., online vs face-to-face vs blended*], and suggest innovative approaches to enhance effectiveness.

Method

This review is informed by PRISMA guidelines.

Protocol & Registration

Registration was applied for with a review protocol database however not granted as too much progress had been made by the time it was considered.

Eligibility Criteria

Inclusion. Study inclusion was initially comprised of suicide prevention programs targeting the general public evaluated via a randomized controlled trial. Based on limited papers returned from the search, this was expanded to studies of any design; 1) with a third-party to a person at risk of suicide (professionals and the general public), 2) the program delivery, content and/or assessment being theory-based [*introduction or method section of the study states part of the program was informed by at least 1 theory*], 3) evaluating change in participants (e.g., knowledge, awareness), 4) English, 5) peer-reviewed and 6) published between January 2007 and March 2017 for recent information only to assess why current efforts are not seeing significant changes in suicide rates.

Exclusion. Studies were excluded if they: 1) targeted persons specifically thinking of suicide themselves, 2) were not informed by a theory or model, 3) evaluated changes in help-seeking behaviour of suicidal persons or changes in suicide death or attempt rates, 4) non-English, 5) non-peer-reviewed or 6) published before 2007.

Information Sources

PsychINFO, ERIC and Medline databases were searched for papers.

Search Strategy

The key search terms comprised (Suicide Prevention) AND (program* OR strateg* OR training OR education OR intervention) AND (outcome OR success OR efficac* OR effective* OR evaluat*) NOT (review OR editorial OR comment*).

Study Selection

All papers returned from the search were screened for eligibility according to inclusion and exclusion criteria by the first author in April-May 2017.

Data Collection Process & Items

All data were extracted from papers using a data extraction form including the following data items: study design, number and type of participants, location, measures, control groups, type of suicide prevention program, program modality and length, underlying theory or model, type of content, outcome variable/s, outcome and outcome at follow-up.

Risk of Bias

Each study was assessed for methodological quality and potential weakness and bias (Barker, Pistrang, & Elliot, 2016). The 12 items used for the quality assessment of studies included pre- and post-assessment of outcomes, randomization of participants, follow-up data, control groups, validated measures, sample size calculations, similarity in baseline data, blinding assessors to conditions, reporting confidence intervals, reporting effect sizes, standardized interventions and more than self-report measures. Methodological quality based on this scoring system was considered in the interpretation of results.

Summary Measures

Core summary measures comprised effect sizes of outcomes, proportion of studies targeting the public, informing theories and delivery modality.

Synthesis of Results

Table 1 summarizes the suicide prevention programs included in this review.

Results

Study Selection

Figure 1 shows a PRISMA flowchart (<http://www.prisma-statement.org/>) outlining the article selection process. A search of three databases found 1753 papers which were screened for eligibility; 1097 were excluded based on titles, 355 duplicates

were removed, 211 were excluded based on abstracts and 3 studies were unavailable.

After screening, 87 full articles were assessed for eligibility after which 62 were excluded according to inclusion/exclusion criteria, leaving 25 papers.

Table 1

Characteristics of Studies Included in the Systematic Review

No.	Author	Design	N & location	Population/s	Measures	Control	Suicide prevention program type, length & providers (if known)	Theory/Model	Content	Outcome Variable	Outcome immediately post-intervention	Outcome at follow-up
1	Strunk, King, Vidourek, and Sorter (2014)	RCT, between-groups repeated-measures 2X2.	1547. USA.	High school students.	Self-report questionnaire.	Waitlist.	<i>Surviving the Teens®</i> . 4 X 50-min sessions. Program educator.	Social Cognitive Theory.	Risk factors, how to recognise signs, how to act.	Knowledge, attitudes, confidence, behavioural intentions.	+ η^2 : .004-.075 (small-medium)	None.
2	Matthieu and Hensley (2013)	Within-groups repeated-measures 1X2.	50. USA.	Professionals in substance abuse treatment facility.	Self-report questionnaires .	None.	<i>QPR</i> 3 sessions. Doctoral level Social Worker.	Active Learning Theory.	How to intervene, self-efficacy, declarative knowledge.	Perceived self-efficacy.	+ ES: 1.18 (large).	None.
3	Clark, Matthieu, Ross, and Knox (2010)	Within-groups repeated-measures 1X2.	365. USA.	Community- & school-based staff.	Self-report questionnaires .	None.	Samaritans of New York's Public Education Suicide Awareness and Prevention training. 3 hrs.	Samaritan's Befriending Model. Samaritan's Communication Model.	Overview of model, statistics, myths, stigma, warning signs, intervention and risk assessment techniques, active listening, suicide prevention plan.	Self-efficacy.	+ ES: .6 (medium).	None.
4	de Beurs et al. (2015)	RCT 2X2.	303. Netherlands.	Mental health professionals.	Self-report response to on-line videos.	IAU control.	Dutch Multidisciplinary Suicide Prevention Guideline. 1-hr online module. 1 day face-to-face. Mental health professionals.	Stress Vulnerability and Entrapment Model, Train-the-Trainer Model, Adult Learning Theory, Diffusion of Innovation Theory.	Not clear.	Knowledge, confidence, recognising appropriate response to suicidal behaviour.	Did not report.	3-month follow-up. + ES: .4-1.0 (small-large).
5	Sun, Chiang, Lin, and	RCT, between-groups	74. Taiwan.	Family of people with suicide	Self-report questionnaires .	Control group received	Suicide Care Education Intervention.	Suicide Care Theory.	Not clear.	Ability to care, stress levels,	Stress: 0 Other: +	None.

	Chen (2014)	repeated-measures 2X2.		ideation.		normal suicide care support.	2 hrs.			attitudes towards attempted suicide.	ES: not reported.	
6	Wyman et al. (2010)	RCT, between-groups repeated-measures, 2X2.	3128. USA.	Peer leaders and school students.	Self-report questionnaire.	Waitlist.	<i>Sources of Strength.</i> 4-6 hrs.	Diffusion of Innovations Theory.	Protective factors, skills for increasing protective factors.	Connectedness to adults, school engagement, likelihood to refer, perceptions of support, acceptability of help-seeking.	+ ES: .21-.75 (small-medium)	None.
7	Cimini et al. (2014)	Case study.	335. USA.	University staff, students.	Self-report questionnaires	None.	Gate-keeper training program. 1.5 hr.	Gatekeeper Surveillance, Gatekeeper Communication Models.	Risk factors, resources for assistance, options for intervention, practice in delivering interventions.	Knowledge, comfort.	+ ES: not reported.	3-month follow-up: 0.
8	Matthieu, Chen, Schohn, Lantinga, and Knox (2009)	Within-group repeated-measures, 1X3.	71. USA.	Employees of the Veterans Health Administration.	Self-report questionnaire.	None.	<i>QPR.</i> 3 sessions. Doctoral level Social Worker.	Active Learning Theory.	Not clear.	Knowledge, self-efficacy.	+ ES: .5-.6 (medium)	1-year follow up: Self-efficacy = +. ES=.3-.5 (small-medium). Knowledge = 0.
9	Conner, Wood, Pisani, and Kemp (2013)	Within-group repeated-measures 1X3.	273. USA.	Substance use disorders treatment providers.	Self-report questionnaire.	None.	Suicide prevention training video. 2 hrs.	Social Learning Theory.	Not clear.	Self-efficacy, knowledge, frequency of prevention behaviours.	+ ES: .35-.77 (small-medium)	2-month follow-up: +. ES: .35-.77 (small-medium).
10	Keller et al. (2009)	Within-group repeated-measures 1X3.	416. USA.	Child welfare, juvenile justice, health, and education system employees.	Self-report questionnaire.	None.	<i>QPR.</i> 3 hrs.	Early Detection and Referral Model.	Not clear.	Knowledge, self-efficacy, attitudes.	+ ES: .5-1.54 (medium-large).	6-month follow-up: +. ES: .7-.83 (medium-large).

11	Chan, Chien, and Tso (2008)	Qualitative.	54. Hong Kong.	Nurses.	Focus groups.	None.	Education programme on suicide prevention and management. 18 hrs.	The Stress-Vulnerability Model. Care Model.	Not clear.	Attitude, confidence, professional skills.	+ ES: not reported.	None.
12	Walsh, Hooven, and Kronick (2013)	Within-group repeated-measures 1X2.	237. USA.	High school staff.	Self-report questionnaires.	None.	Suicide education session. 1.5 hr.	Systems Level Change Theory.	Not clear.	Knowledge, confidence, competence.	+ ES: not reported.	None.
13	Robinson, Braybrook, and Robertson (2014)	Mixed quantitative and qualitative.	168. Scotland.	General public.	Self-report surveys, focus groups, interviews.	None.	Public awareness campaign – <i>Choose Life</i> .	Theory of Behaviour Change.	Crisis service numbers, challenging stigma.	Suicide awareness, attitudes, behaviour.	+ ES: not reported.	None.
14	Chagnon, Houle, Marcoux, and Renaud (2007)	RCT, between-groups repeated-measures 2X3.	71. Canada.	Youth Workers.	Self-report questionnaire.	No intervention.	Suicide Action Montreal. 3 days. Senior staff from the suicide prevention centre.	Competency-Based In-service Training Model.	Risk and protective factors, distress cues, signs of mental disorder. persons to contact for referrals, crisis intervention skills.	Knowledge, attitudes, intervention skills.	+ ES: not reported.	6-month follow-up: +. ES: not reported.
15	Bean and Baber (2011)	Within-group repeated-measures 1X2.	852. USA.	Police officers, first responders, primary care providers, educators, guidance counsellors, social service workers, mental health care providers and high school students.	Self-report questionnaire.	None.	<i>Connect</i> . 3 hrs.	Ecological Model.	Knowledge, attitudes, beliefs.	Knowledge, attitudes, belief in the usefulness of mental health care, stigma associated with help-seeking.	+ ES: 1.23-1.93 (large).	None.

16	Jacobson, Osteen, Jones, and Berman (2012)	Within-group repeated-measure, 1X3.	452. USA.	Clinicians.	Self-report questionnaire.	None.	<i>Recognising and Responding to Suicide Risk.</i> 2 days.	Early Detection and Referral Model.	Confidence, assessing and formulating suicide risk, developing suicide prevention treatment plans.	Attitudes, confidence.	+ ES: not reported.	4-month follow-up: +. ES: not reported.
17	Cross et al. (2011)	RCT, between-groups repeated-measures 2X3.	147. USA.	School staff and parents.	Self-report questionnaire, observation.	Gatekeeper training AU (without behaviour-al rehearsal)	<i>QPR.</i> 1 hr. 2 certified QPR trainers.	Adult learning Theory.	Epidemiology of suicide, statistics, myths, warning signs, gatekeeper skills.	Knowledge, attitudes, spread of gatekeeper training information to others, observed gatekeeper skill.	+ ES: .3-2.7 (small-large).	0
18	LaFromboise and Lewis (2008)	Within-groups repeated-measures 1X2.	602. USA.	Counselling staff from Department of Veterans Affairs.	Self-report questionnaire.	None.	<i>QPR.</i> 3 sessions. Doctoral level Social Worker.	Culturally-Informed Model.	Epidemiology of suicide, statistics, myths, warning signs, gatekeeper skills.	Knowledge, self-efficacy.	+ ES: not reported.	None.
19	Reis and Cornell (2008)	Between-groups repeated-measures 2X2.	410. USA.	Counsellors and teachers.	Self-report questionnaire.	No QPR training.	<i>QPR.</i> 1.5 hr.	Chain of Survival Model.	Not clear.	Knowledge, prevention practices.	Not reported.	4-month follow-up: +. ES: not reported.
20	Wyman et al. (2008)	RCT between-groups repeated-measures 2X2.	249. USA.	Secondary School Staff.	Self-report questionnaire.	Waitlist control.	<i>QPR.</i> 1.5 hr.	The Surveillance Model. Gatekeeper Communication Model.	Rates of youth suicide, warning signs, risk factors, assessment skills, referring a student for help.	Knowledge, efficacy, service access.	Not reported.	1-year follow-up: +. ES: .41-1.22 (small-large).
21	Cross, Matthieu, Cerel, and Knox (2007)	Within-groups repeated-measures 1X2.	76. USA.	Non-clinical employees in a university hospital workplace.	Self-report questionnaire, observation in role plays.	None.	Community gatekeeper training. 1 hr.	Active Learning Theory, Diffusion of Innovations Theory, Interpersonal-Psychological Theory.	Not clear.	Knowledge, attitudes, self-efficacy. Demonstration of skills.	+ ES: not reported.	None.

22	Baber and Bean (2009)	Pre and post within-groups.	288. USA.	Police officers, first responders, primary care providers, educators, guidance counsellors, social service workers, mental health care providers, school custodians, bus drivers, school students.	Self-report questionnaire.	None.	Community training sessions. 3 hrs.	Ecological Risk/Protective Model.	Not clear.	Knowledge, belief in the usefulness of mental health care, preparedness to help, sense of responsibility to help, likelihood to seek help.	+ ES: 1.1-1.8 (large).	None.
23	Gask, Lever-Green, and Hays (2008)	Within-groups repeated-measures, 1X3.	203. England.	Council and voluntary organisation staff, GP, social workers, nurses, occupational therapists. Registered nurses.	Self-report questionnaire, telephone interview.	None.	<i>STORM</i> . 12 trained facilitators.	Adult Learning Theory. Bandura's Social Learning Theory.	Not clear.	Attitudes, confidence.	+ ES: not reported.	+ ES: not reported.
24	Chan, Chien, and Tso (2009)	Between- and within- groups repeated-measures.	110. Hong Kong.	Registered nurses.	Self-report questionnaire.	Yes.	Education programme on suicide prevention. 8.5 hrs.	Stress-Vulnerability Model.	Not clear.	Suicide knowledge, opinion, acceptability, management.	0	None.
25	Silk, Perrault, Nazione, Pace, and Collins-Eaglin (2017)	Quasi-experiment with a control condition.	391. USA.	University students.	Focus groups, surveys.	Control neighbour-hood conditions.	Peer and celebrity sources: table toppers, posters, e-mails, digital signs.	The Social Norms Approach.	Peer and celebrity sources to promoting help-seeking.	Perception of help-seeking, intention of helping.	+ ES: not reported.	None.

Note. η^2 = partial eta squared, ES = effect size (Cohen's d); RCT = Randomised control trial; USA = United States of America; QPR = Question, Persuade, Refer; IAU = Implementation as Usual; + = significant effect found; 0 = no significant effect found.

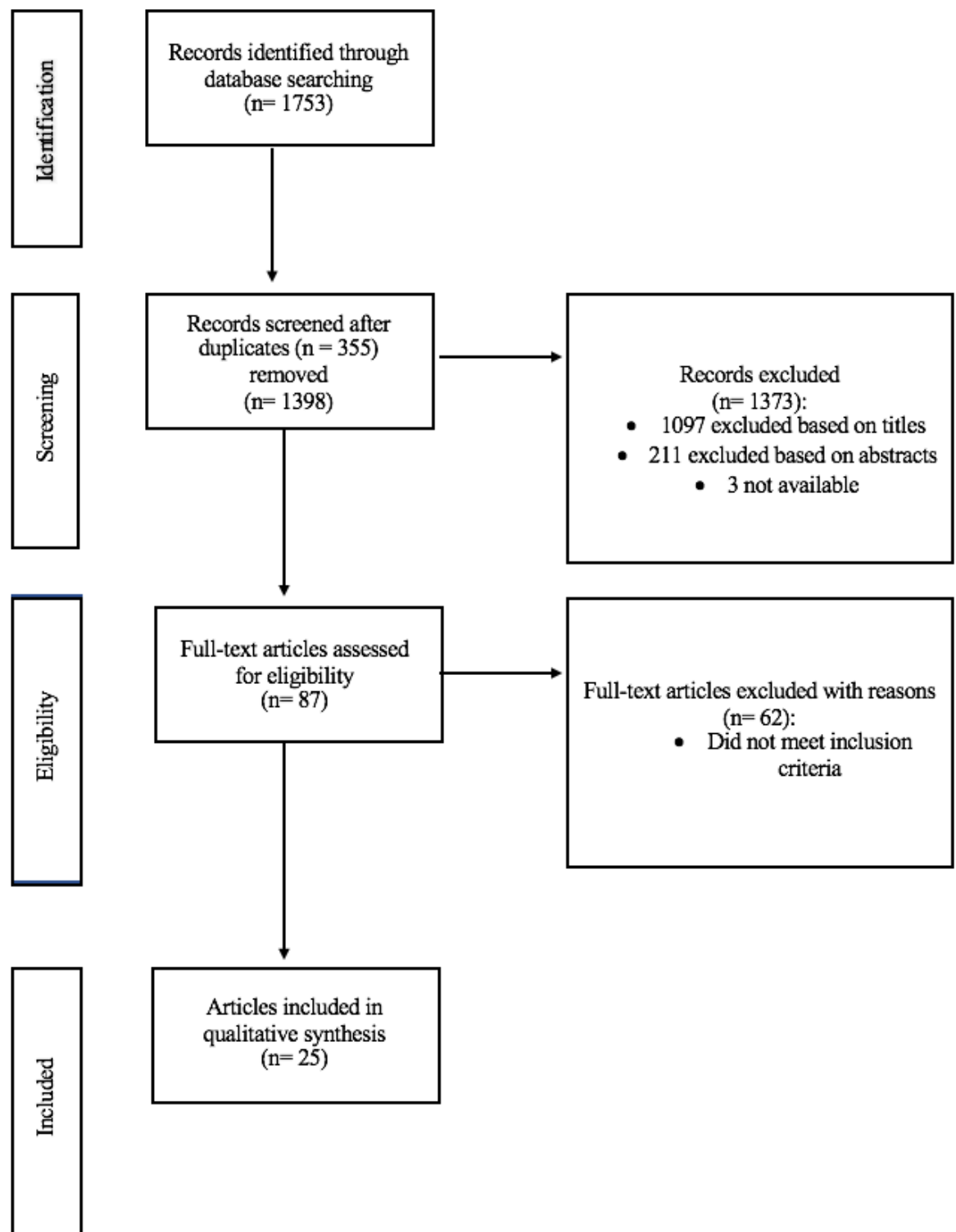


Figure 1. Flowchart of article selection process

Population

The majority of the studies targeted ‘gatekeepers’ (21), comprising both clinical and non-clinical professionals. In this review, 17 studies included clinical professionals (e.g., general practitioners, mental health clinicians) and 21 included non-clinical professionals (e.g., teaching and administrative staff, police officers). Two studies targeted the general community, six targeted school and university students, and one targeted family of persons at risk of suicide. Some studies included multiple target groups. The 25 studies included both males and females, totalling 10, 872 participants.

Mode

The majority of studies (22) comprised face-to-face lecture/workshop-based programs ranging between 1 to 3-hours and 2 to 4-days. One delivered their program via e-learning modules while two used printed media (e.g., posters and leaflets).

Theoretical Frameworks

Across the 25 studies in this review, 19 different theories and models were identified as shown in Table 2.

Table 2

Theories and Models Underpinning Studies

Theory	Guidelines for Content
Diffusion of Innovation Theory	People adopt new information better through their trusted social networks. Content should therefore be targeted at gatekeepers (Cross, Matthieu, Cerel, & Knox, 2007; de Beurs et al., 2015; Wyman et al., 2010).
Social Learning Theory	Training should include videos and role plays as new behaviours are acquired through observation and imitation (Conner, Wood, Pisani, & Kemp, 2013; Gask, Lever-Green, & Hays, 2008).
Stress-Vulnerability Model	Training should teach how to recognise persons at risk of suicide who should be flagged for intervention (Chan, Chien, & Tso, 2008, 2009).
Social Norms Theory	Content should be delivered by social peers and present intervention as the norm as participants will adopt similar attitudes and behaviours as their peers (Silk, Perrault, Nazione, Pace, & Collins-Eaglin, 2017).
Active Learning Theory	Training should include the use of role plays (e.g., rehearsal of gatekeeper skills judged by trainers) to enhance the transfer of learning through experience (Cross et al., 2007; Matthieu, Chen, Schohn, Lantinga, & Knox, 2009; Matthieu & Hensley, 2013)
Adult Learning Theory	Training should include collaboration, relevance and experience as adults learn best through these factors (Cross et al., 2011; de Beurs et al., 2015; Gask et al., 2008).

Theory of Behaviour Change	Training should include the progression through the five stages of pre-contemplation, contemplation, preparation for action, action, and maintenance (Robinson, Braybrook, & Robertson, 2014).
Train-the-Trainer Model	Content should focus on teaching participants skills and how to deliver this information to others (de Beurs et al., 2015).
Competency-Based In-service Training Model	Content should teach core competencies to promote intervention including risk and protective factors associated with suicide (Chagnon, Houle, Marcoux, & Renaud, 2007).
Early Detection and Referral Model	Content should teach the ability to recognise risk factors early to promote early intervention (Jacobson, Osteen, Jones, & Berman, 2012; Keller et al., 2009).
Chain of Survival Model	Content should teach warning signs for early detection and intervention (Reis & Cornell, 2008).
Surveillance Model	Content should teach risk factors of suicide to promote recognising suicidal communications from others (Wyman et al., 2008).
Gatekeeper Communication Model	Content should focus on enhancing knowledge of warning signs and self-efficacy to intervene among large numbers of gatekeepers in a community to increase identification and referral of those at risk (Cimini et al., 2014; Wyman et al., 2008).
Systems Level Change Theory	A primary barrier to change is that individuals involved do not feel competent to take on new roles. Training should therefore focus on increasing perceived confidence and competence to increase the responsiveness to others at risk of suicide (Walsh, Hooven, & Kronick, 2013).
Ecological Risk/Protective Model	Content should teach how to weigh up a peer's risk and protective factors to suicide to determine whether intervention is necessary (Baber & Bean, 2009; Bean & Baber, 2011).
Social Cognitive Theory	Content should target participants' self-efficacy beliefs in being able to help a peer as self-efficacy is a major determinant in regulating behaviour to enact change (Strunk, King, Vidourek, & Sorter, 2014).
Samaritan's Befriending and Communication Model	Content should teach participants active listening and sensitivity against biases to intervene when someone is thinking of suicide (Clark, Matthieu, Ross, & Knox, 2010).
Culturally-Informed Model	Content should teach how to consider diverse cultural beliefs and practices and how this may impact suicide risk and intervention (LaFromboise & Lewis, 2008).
Suicide Care Theory	Content should address stigma and teach families how to support those with mental illness (Sun, Chiang, Lin, & Chen, 2014).

Content

The main themes identified among the program contents comprised: 1) the public learnt the least detail (attitudes, stigma and awareness of crisis service numbers); 2) high school and university students learnt the aforementioned details plus suicide risk factors and warning signs and how to refer someone to a professional; 3) non-clinical professionals learnt the information in point 1) and 2) plus how to practically respond to someone at risk of suicide (e.g., risk assessment skills) and 4) clinical professionals addressed all aforementioned factors in addition to treatment planning skills.

Outcomes

A majority (21) of the studies reported a significant improvement between groups or time points (depending on design) in their outcome variables, ranging from small to large effect sizes post intervention. Three studies did not assess outcomes immediately post-intervention (follow-up only) (de Beurs et al., 2015; Reis & Cornell, 2008; Wyman et al., 2008) while another study found no significant difference in the outcome variable (suicide knowledge, opinion, acceptability and management) after training (clinical professionals) (Chan, Chien, & Tso, 2009).

Follow-Up

Eleven studies included a follow-up of between two and twelve months after the original program. Seven of these maintained their effects at follow-up while four did not, suggesting varying potential for long-term effects on the target populations.

Methodological Quality

The methodological quality of the 25 included studies is summarized in Table 3. Only 9 of the 25 studies met at least half of these criteria indicating a deficit of methodological quality. Missing in most studies were: randomization, follow-up, control groups, validated measures, sample size calculation, similar or controlled baseline data, blinding assessors, confidence intervals, effect sizes and more than self-report measures, comprising methodological rigor (Barker et al., 2016). The two methodological strengths of the studies were that most provided pre-and post-measurement and standardized interventions.

Table 3

Methodological Quality of Each Study

Criteria	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Pre and post	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X
Randomisation	✓	X	X	✓	✓	✓	X	X	X	X	X	X	X	✓	X	X	✓	X	X	✓	X	X	X	✓	X
Follow-up	X	X	X	✓	X	X	✓	✓	✓	✓	✓	X	X	✓	X	✓	✓	X	✓	✓	X	X	✓	X	X
Control group	✓	X	X	✓	✓	✓	X	X	X	X	X	X	X	✓	X	X	✓	X	✓	✓	X	X	X	✓	✓
Validated measures.	✓	X	X	✓	✓	✓	✓	✓	X	X	✓	X	X	✓	X	X	X	Unclear	X	✓	X	X	X	✓	✓
Sample size calculation.	X	X	X	✓	✓	✓	X	X	X	✓	X	X	X	X	X	X	X	Unclear	X	✓	X	X	X	✓	X
Similar baseline data.	✓	X	X	✓ (adjusted)	✓ (adjusted)	✓ (adjusted)	Unclear		X	X	✓	X	✓	✓ (adjusted)	Unclear	Unclear	✓	Unclear	X	✓	Unclear	Unclear	Unclear	✓	X
Blinding of outcome assessor.	X	X	X	X (not possible)	X	X	X	X	X	X	X	X	X	X	X	X	✓	Unclear			X	X	X	X	X
Reporting confidence intervals.	X	X	X	✓	X	✓	X	X	X	X	X	X	X	X	X	X	X	Unclear	X	✓	X	X	X	X	X
Reporting effect sizes.	✓	✓	✓	✓	X	✓	X	✓	✓	✓	X	X	X	X	✓	X	✓	Unclear	X	✓	X	✓	X	X	X

Standardised delivery of intervention.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Unclear	X
More than self-report measures.	X	X	X	X	X	X	X	X	X	X	✓	X	✓	X	X	X	✓	X	X	X	✓	X	✓	X	✓
No. of criterion met.	7	3	3	10	7	9	3	5	4	5	6	2	2	7	3	3	9	2	4	10	3	3	4	6	3

Discussion

This present review of recently published suicide prevention programs aimed to explore aspects of target populations, delivery mode, theory base and content, identifying potential gaps and suggesting new, innovative ideas to address them.

Population

Studies in this review mainly targeted professional practitioners (both clinical and non-clinical). Training treating clinicians, frontline staff and gatekeepers is clearly important in managing suicide risk. It appears however, that 70-90% of those at risk, do not reach these groups who are trained to assist. Instead, at-risk individuals communicate their distress to family and friends who are often far less competent to even detect, let alone respond to their signs.

Mode

Twenty-three suicide prevention programs in this review were delivered through 1 to 4-day lectures and workshops. Many researchers have called for more technology-based interventions (Christensen & Petrie, 2013; Hickie et al., 2014; Werner-Seidler et al., 2016). Training workshops are inconvenient, expensive and too time-consuming (McMillen, Hawley, & Proctor, 2016). Technology-based training for example, through videos, smart phone applications and websites, may address these issues by reaching larger numbers, in a faster, more convenient and more cost-effective way. Technology-based training programs can lead to participants performing as well as or better than instructor-led training workshops (McMillen et al., 2016).

Theory and Content

Of the 25 studies reviewed, 19 different theories informing program content and design were identified, representing substantial variability. While many were evidence-based and considered important aspects of human behaviour, indeed as Christensen (2015) commented, current suicide prevention approaches appear ‘scattergun’, uncoordinated, involve disparate approaches and are devoid of a single foundation theory.

For any community suicide prevention program to be effective, it must generate action through helping behaviour from the lay public who are most often communicated to about suicide risk. Some studies suggest a strong deterrent to helping behaviour is the Bystander Effect; i.e. inaction by bystanders when help is necessary due to diffusion of responsibility, fear of negative evaluation, ambiguity, lack of confidence and group conformity (Fischer et al., 2011). While clearly many theories have been considered, none seem to have taken into consideration the common theme that people close to those are

risk are communicated to, but often do nothing (Rudd et al., 2013). The Bystander Intervention Model (BIM) is one model which considers this aspect of human behaviour. The BIM contends that for bystanders to overcome the Bystander Effect, they must go through five vital sequential steps: notice the event, interpret it as urgent/important, accept personal responsibility to help, feel competent and confident to help and reach a conscious decision to help (Darley & Latane, 1968; Latané & Darley, 1970). The models found in the current review are important and can help motivate individual behaviour such as increasing exercise which can be performed in private. Motivating helping behaviour on the other hand, which suicide prevention programs aim to promote, must be informed by models which take the effect of third parties into account on human behaviour.

The Bystander Effect has been found in many scenarios where helping behaviour would be required, for example bullying and sexual harassment, where it is consistently found that most people lack appropriate helping behavior (Nickerson, Aloe, Livingston, & Feeley, 2014). This effect has been replicated in scenarios of suicide risk (Jorm, Blewitt, Griffiths, Kitchener, & Parslow, 2005; Rudd et al., 2013). The BIM has been applied to scenarios of bullying and sexual harassment. Each step builds on the previous and leads to helping behaviour (Nickerson et al., 2014). The BIM has recently been applied to suicide prevention education material and found to lead to increased readiness, confidence and intent to help, compared to controls whose education content was not BIM-informed (Hill, Somerset, Schwarzer, & Chan, in press). The community domain of the nine-level system aims to educate the public to intervene when they recognise someone at risk. Thus, the BIM may add significant value to program designs and stimulate actual helping behaviour.

Outcomes, Follow-Up and Methodology

Most studies appeared to be effective in improving target outcomes (e.g., knowledge, confidence). Less than half of the studies included a follow-up phase to gauge duration of effect. Of these, not all maintained their effects at follow-up. This is consistent with the lack of reduction in suicide rates despite efficacious training programs being in place. This failure may be due to the absence of a unifying theoretical framework, reliance on low technology interventions and low study design rigor.

Limitations

Most of the reviewed studies were conducted in the USA and conclusions should be generalized with caution. Additionally, only studies which included an underpinning

theory or model were included. The initial search identified 50 other potentially eligible studies without a theoretical underpinning, but analysis of these was beyond the scope and criteria of this study (although initial screening indicates similar results to above). Finally, only one author completed the study selection.

Conclusion

While the studies in this review demonstrated some efficacy, suicide rates have continued to rise globally. Key issues identified include substantial variability in the theory base informing interventions, limited interventions targeting the lay public and inaccessible training formats. The gaps identified by this review suggest suicide prevention programs need to go beyond current efforts and increase education for the lay public who are much more likely to be contacted by those at suicide risk than professionals, be delivered through technology-based formats to increase accessibility and potentially be informed by the Bystander Intervention Model to overcome inaction. Future research should also apply rigorous methodological design to test the efficacy of these recommendations. The public are crucial gatekeepers in linking those at suicide risk, disproportionally men, to professional practitioners who can help. A public that is better prepared to detect and respond to suicide risk, is a pathway to reducing suicide rates.

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Chapter 6. Study 2 Rationale: A Call for Technology-Based Community Suicide Prevention Initiatives

Study 1 revealed most current suicide prevention strategies are not taking into account many of the suggested foci outlined in the literature review of this study. This included the importance of focusing on the general community. This is because, as previously explained, most people who die by suicide communicated their plans and distress to family and friends, rarely making it to a professional. Study 1 revealed most training targets professionals, rarely reaching the general community.

Furthermore, Study 1 revealed there is a significant lack of adequate training for the general community to identify suicide risk and warning factors and more importantly, how to respond in a situation where someone is presenting with suicide risk. In addition, it became apparent that many current programs are not considering theories of determinants to helping behaviour. If designing a program aimed at teaching people how to recognise and respond to suicide risk, it is vital to consider how to develop content which is most likely to result in action. As outlined in the introduction (see Chapter 3), it is highly likely that current inaction by the public in suicide prevention could be a result of the Bystander Effect. Inaction by bystanders occurs for numerous reasons, namely a diffusion of responsibility, feeling incompetent to act, fear of negative evaluation by others for acting and the ambiguity of the situation. Current strategies do not appear to be targeting the Bystander Effect and may therefore be failing to encourage the implementation of any training strategies covered.

The Bystander Intervention Model (BIM) poses that the following five steps need to occur to overcome the Bystander Effect and have someone act in a risk situation: 1) notice a critical situation, 2) interpret the situation as an emergency, 3) develop a feeling of personal responsibility, 4) competence and confidence to act, and 5) reach a conscious decision to help. It is vital for suicide prevention programs to address this model within their content and delivery to increase the likelihood of uptake and implementation of the training. Moreover, no assessment measures could be identified which assess the impact of BIM-informed training on bystander behaviour.

Study 1 also showed that most current suicide prevention programs are delivered through workshops. As outlined in the literature review of this thesis (see Chapter 3), there is a strong call for more accessible training material through technology and online systems. This is supported by the findings in Study 1. While workshops have multiple important benefits including face-to-face, in-depth and interactive training, this method is

not feasible on a mass scale to educate the public. These are often time-consuming, being 1-4 days in length, costly being \$300-\$800 AUD, and difficult to access, often only offered in major cities over limited dates per calendar year. This is a huge disadvantage and does not meet feasibility criteria to reach the public in a fast, economic and feasible manner.

Introduction to Study 2

Study 2 in the next chapter will be addressing the gaps summarised above and testing its efficacy. Study 2 targeted the general adult population. Secondly, the suicide prevention training material was designed to address each part of the BIM in order. Third, outcomes were assessed via an adapted BIM-based measure. Fourth, it was presented through a technology modality of an online factsheet, easily and freely downloadable. It is important to test whether addressing and incorporating these factors, as suggested in the literature review and systematic review, has any potential benefit. The outcomes assessed included the impact training had on participants' readiness to detect and respond to suicide risk and their confidence and intent to help. Comparisons were made between the experimental condition (BIM-guided material) and a standard condition (current public training material not designed according to the BIM).

Summary

Overall, the key gaps identified in the systematic review included: limited detailed training available for the public, no consideration of the Bystander Effect or Bystander Intervention Model in education material, no BIM-based measurement tools and limited technology-based delivery modalities. The next study will address these gaps through testing the efficacy of a BIM-informed, technology-based tool for the general public.

Chapter 7. Study 2 - Promoting the community's ability to detect and respond to suicide risk through an online Bystander Intervention Model-informed tool: A Randomised Controlled Trial

This chapter includes a co-authored paper. The status of the paper is in press in *Crisis: The Journal for Crisis Intervention and Suicide Prevention* (accepted for publication 8th March 2020) (see Appendix A for acceptance letter and permission to include in thesis):

Hill, K., Somerset, S., Schwarzer, R., & Chan, C. (*in press*). Promoting the community's ability to detect and respond to suicide risk through an online Bystander Intervention Model-informed tool: A Randomised Controlled Trial. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*. doi: 10.1027/0227-5910/a000708.

Statement of contribution to co-authored published paper:

My contribution to the paper involved providing direction on the research design; selection, development, and consultation of the assessment measures; recruitment and data collection procedures; collation of the data, preliminary and main analyses, and results; interpretation and discussion of findings. The co-authors provided direction on study design and data analyses and reviewed drafts of the paper.

Karien Hill

Signature:  _____ Date: 18/05/2020

Abstract

Background: The public health sector has advocated for more innovative, technology-based, suicide prevention education for the community, to improve their ability to detect and respond to suicide risk. Emerging evidence suggests addressing the Bystander Effect through the Bystander Intervention Model (BIM) in education material may have potential for suicide prevention.

Method: A sample of 281 adults recruited from the community participated in a randomized controlled trial comprising a standard factsheet about suicide and mental health (control), and a factsheet designed according to the BIM (experimental). Participants' self-reported detecting and responding to suicide risk readiness, confidence, and intent when presented with a suicidal peer was tested prior to and post-intervention and compared across time and between groups.

Results: The intervention group had significantly higher levels of detecting and responding to suicide risk readiness, confidence, and intent than the control group at post-intervention (all p 's < 0.001) with moderate-to-large effect sizes.

Conclusion: This study demonstrates BIM-informed suicide prevention training may enhance the community's intervention readiness, confidence, and intent better than current standard material. Further testing in this area is recommended. While results were statistically significant, clinical significance requires further exploration.

Promoting the community's ability to detect and respond to suicide risk through an online Bystander Intervention Model-informed tool: A Randomized Controlled Trial

Suicide is a global public health issue and leading cause of death in many countries (World Health Organisation, 2019). Between approximately 1960-2008, suicide rates increased worldwide by over 60% (World Health Organisation, 2008). The 2019 World Health Organization (WHO) report stated that by 2016, the global age-standardized suicide rate reduced by 9.8%, although not all countries observed a reduction (World Health Organisation, 2019). The report concluded if current rates continue, global suicide rate reduction targets will fall short and suicide prevention efforts must be strengthened to make progress. This paper presents a trial aimed at strengthening community suicide prevention programs.

The Black Dog Institute Australia has developed a multi-strategy/sectoral approach called 'LifeSpan' (Black Dog Institute, 2018). Longitudinal research will assess its effects on suicide rates, however the strategy has a strong evidence base from global trials [see Hegerl et al. (2010); Mann et al. (2005); Zalsman et al. (2016)]. The strategy includes nine key interventions; reducing access to lethal suicide methods, responsible media reporting of suicide, community awareness programs, gatekeeper training, school-based programs, training of general practitioners, training of frontline staff, evidence-based psychotherapy, and follow-up for individuals with a recent suicide attempt (Black Dog Institute, 2018). While this system promotes a synergetic effect by implementing all components together, the community sector warrants a more specific focus.

Previous studies indicate that 70-90% of youth and adults who died by suicide, communicated warning signs of their intentions to their family and friends, whereas only 20-30% had any contact with a health professional ('current or former clients' to a counselling service before death, although no specific timeframe from health professional contact to death was reported) (Bloch, 1987; Kalafat, Elias, & Gara, 1993; Klimes-Dougan, Klingbeil, & Meller, 2013). Warning signs can be behavioural (e.g. withdrawal, preparing a will), verbal (e.g. saying 'I can't do this anymore'), and/or environmental (e.g. recent relationship break-up, shame/embarrassment) (King, Vidourek, & Strader, 2008). Thus, the general community is a vital part of the system, acting as 'gate-keepers' to much of the rest of the system.

It appears the general community, however, is ill-prepared to fulfill this role. For example, Joffe (2008) suggested traditional mental health services (e.g. crisis telephone support, counselling services) will miss the majority of individuals most at risk.

Furthermore, King et al. (2008) found only 11% of their survey population believed they could recognize a friend at suicide risk, 17% believed they could ask a friend if they were suicidal, and 71% were not aware of mental health support resources.

The majority of people with suicidality reportedly do not seek professional help due to self-reliance, lack of perceived need for treatment, and stigma towards suicide, mental health, and help-seeking (Han, Batterham, Cate, & Randall, 2018). Instead, they are more likely to access informal forms of support by indicating their distress to family and friends, including young people, who are more likely to tell a friend than an adult (Cimini et al., 2014; Schmidt, Iachini, George, Koller, & Weist, 2015). Clearly, the community needs training in appropriate suicide prevention behaviours.

Overall, community-focused research is highly warranted and technology-based formats rather than face-to-face, is suggested to increase feasibility and accessibility (Christensen & Petrie, 2013).

Theory

Previous community-focused suicide prevention research found participants lacked satisfactory responses to hypothetical suicide risk, evident in their reported helping intentions (Fischer et al., 2011; Jorm, Blewett, Griffiths, Kitchener, & Parslow, 2005; Rudd, Goulding, & Carlisle, 2013). One study found 75% of adolescent participants reported keeping intentions of suicidal peers secret (Kalafat et al., 1993; Klimes-Dougan et al., 2013). Adult participants were far less likely to report seeking emergency services when someone voiced suicidal thoughts with intent to die, compared to someone with signs of a heart attack (Rudd et al., 2013). This inaction may reflect the Bystander Effect (Bloch, 1987; Darley & Latane, 1968; Fischer et al., 2011), a social psychological phenomenon where the more people present in an emergency, the less likely an individual is to help. The most prominent inaction contributors are; fear of negative evaluation by onlookers, lack of confidence in skills to help, and diffusion of responsibility (assuming others will help) (Latané & Darley, 1970).

Detecting and responding to suicide risk in others is a helping behaviour (Bloch, 1987; Fischer et al., 2011). The Bystander Effect, a significant barrier to helping behaviour, is therefore important to consider in community suicide prevention training. Many theories inform behaviour change, for example, the Theory of Planned Behaviour, Protection Motivation Theory, and the Theory of Interpersonal Behaviour (Ajzen, 1991; Moody & Siponen, 2013; Rogers & Prentice-Dunn, 1997). These theories focus on motivating behaviour (e.g. increasing exercise) that often impacts the individual *only* and

can be performed in private. Conversely, community intervention involves action to help *others*. When another individual is involved, other factors of human behaviour need consideration. People are highly prone to conformity and fear of judgement from others (Latané & Darley, 1970). These theories alone are not enough to initiate intervention as they do not focus on overcoming the Bystander Effect. Community education needs to be informed by theories which account for the additional effect of third parties on behaviour.

Although complex and multi-layered, progressing through the Bystander Intervention Model (BIM) is suggested to be essential for bystander intervention (Fischer et al., 2011), namely: 1) notice a critical situation, 2) interpret the situation as an emergency or urgent, 3) assume personal responsibility to help, 4) feel competent and confident to help, and 5) reach a conscious decision to help. Previous studies mostly target knowledge, attitudes, skills and compassion [see for example, Robinson, Braybrook, and Robertson (2014) and Strunk, King, Vidourek, and Sorter (2014)]. According to bystander research and the BIM, these foci are not sufficient in leading to helping behaviour as vital components promoting action are missing. This mainly includes teaching the transfer of knowledge into urgent, immediate, personal action with a sense of confidence.

A review of the literature found no mention of BIM use in community suicide prevention. Thus, the current study aimed to test whether an online BIM-informed intervention enhances community members' aptitude to detect and respond to a person manifesting suicide risk factors. It was hypothesized that BIM-informed material would lead to significantly higher scores in detecting and responding to suicide risk readiness, confidence, and intent than the standard condition.

This study adds to research often targeting adolescents (helpers and those at risk) by targeting adults, with training material applicable to youth and adults at risk.

Method

Study Design

The study was a 2x2, between-within group, repeated measures randomized controlled trial (RCT). The within-subject variable was time (immediately pre-intervention, immediately post-intervention) and the between-subject variable was intervention content (BIM-informed vs. not BIM-informed). The dependent variables were self-reported detecting and responding to suicide risk (DARTS): 1) readiness and 2) confidence and intent.

Ethics Approval

University Human Research Ethics Committee (registration number: HEC19007) [see Appendix B for ethics approval letter].

Registration

Australian New Zealand Clinical Trials Registry (ANZCTR) (registration number: ACTRN12618001330235).

Participants

Men and women aged ≥ 18 years were recruited. Exclusion criteria included anyone previously bereaved by suicide, distressed by the topic and/or experiencing suicide ideation. Participants had to indicate they did not meet exclusion criteria before commencing. The study was conducted online, and participants could participate from anywhere. At least 64 participants per group were required to detect a large effect size (optimally a Cohen's d of .50) at alpha .05 with sufficient power (.80-1.0) (Cohen, 1992).

Intervention

Standard condition. The active control group received publicly available information from websites about what to do when worried a friend may be at risk of suicide [Appendix C]. When subjectively compared to the BIM, this information addressed part one (noticing) and four (competence/confidence) in minimal detail.

Experimental condition. This group received a factsheet [Appendix D] with evidence-based, best practice guidelines in DARTS, arranged to address each part of the BIM (see Electronic Supplementary Material [ESM] 1 [Appendix E] for more detail). (Page & Stritzke, 2014). The control group intervention consisted of three A4 pages of bullet points whereas the experimental group had six pages (see Figure S1, ESM 2 [Appendix F] for conceptual framework).

Study Protocol

The study was conducted using Qualtrics software (<https://www.qualtrics.com>) between July-December 2017 (follow-up was conducted in January-July 2018). Participants were recruited via social media and flyers [Appendix G] delivered in local (Brisbane, Australia) libraries, gyms, retail shops, and universities. Participants were directed to the survey via a link on the flyer and randomly allocated by *Qualtrics*. The study advertisement and every survey page provided professional support information for anyone experiencing distress [Appendix H]. The survey consisted of: participant information and consent [Appendix I], demographics [Appendix J], DARTS Readiness Scale (DARTS-RS) Time 1 (T1) [Appendix K], vignette 1, Confidence and Intent to

Intervene Scale (CITIS) T1 [Appendix L], factsheet (experimental v control), Manipulation Check Scale (MCS) [Appendix M], DARTS-RS Time 2 (T2), vignette 2, CITIS T2, debrief [Appendix N] (see Figure S2, ESM 2 [Appendix F] for overall study protocol). A follow-up study was emailed six months post-intervention. Despite reminder emails and incentives (draw to win one of three \$50 vouchers), only 131 individuals responded and only 68 matched identifier codes. Due to the low numbers and limited power, follow-up analyses were not included in this study.

Vignettes. Two similar vignettes were used, involving a person noticing a peer displaying warning signs and risk factors of suicide (see ESM 3 [Appendix O]). These were modified vignettes from Jorm et al. (2005, p. 3), written to satisfy diagnostic criteria for major depression, a significant risk factor of suicide (Blasco-Fontecilla et al., 2012). Both vignettes included a male at risk as based on Jorm et al. (2005). Evidence suggests the gender of the person in need of help does not impact the Bystander Effect or helping behaviour significantly (Fischer et al., 2011).

Measures

The outcome measures (outlined below) measured the constructs of readiness, confidence, and intent. As actual behaviour is difficult to capture, a vignette measuring these constructs is justified. These constructs correlate with subsequent behaviour including helping someone experiencing suicidal thoughts, aligning with the Theory of Planned Behaviour which suggests intention is linked to behaviour with correlations up to .94 (Aldrich, 2015; Rossetto, Jorm, & Reavley, 2016; Shemanski Aldrich & Cerel, 2009).

DARTS-RS. Participants' DARTS readiness, measured by their ability to progress through each step of the BIM, was assessed prior to and after introducing the factsheet by the 16-item adapted version of the 'Bystander Intervention in Bullying and Sexual Harassment' questionnaire (Nickerson, Aloe, Livingston, & Feeley, 2014). A confirmatory factor analysis with a sample of 562 high school students confirmed the five-factor structure of the measure in a bullying and sexual harassment scenario (Nickerson et al., 2014). The original measure was adapted to suit a scenario with a suicidal peer to establish baseline DARTS readiness and measure changes post intervention. Items (e.g. 'I can recognize most warning signs of suicide risk') were assessed on a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*), higher scores indicating higher readiness. The original scale had sound reliability and validity and the current sample had good internal consistency at T1 ($\alpha=.85$) and T2

($\alpha=.89$).

CITIS. This 11-item scale was adapted from Banyard, Moynihan, Cares, and Warner's (2014) 'Bystander readiness to help' questionnaire' for bullying and sexual harassment. This scale aimed to test the efficacy of the intervention by testing confidence and intent to act. The questions were administered pre- and post-intervention. Items (e.g. 'I am likely to feel confident to intervene') were assessed on a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*), higher scores indicating higher confidence and intent. The CITIS had good internal consistency at T1 ($\alpha=.87$) and T2 ($\alpha=.88$).

MCS. The 10-item manipulation check assessed how much the intervention content related to the BIM on a five-point scale from 0 (*not at all*) to 4 (*an extreme amount*). An example includes 'To what extent did the information sheet help you notice John may be thinking about suicide?'. The MCS had very good internal consistency ($\alpha=.96$).

Data Analysis

The *SPSS Version 20* program was used for statistical analysis of quantitative data. Analyses included repeated measures analysis of variance (mixed model ANOVAs) to assess differences in outcomes, analysis of covariance (ANCOVA) to assess for covariates, Pearson's product-moment correlation coefficient to assess validity, and independent sample *t*-tests for a manipulation check.

Assumptions testing. Assumptions testing revealed data were reasonably normal with no extreme outliers. Randomization checks were met for all demographic variables between conditions and baselines scores on dependent variables were similar between groups. The assumption of homogeneity of variances was met for both outcome analyses and the manipulation check. The assumption of Equality of Covariance was met for DARTS-RS but violated for CITIS, however group sizes over $n=30$ are robust against such violations (Allen & Bennett, 2007).

Results

Participants

The study recruited 281 participants with a mean age of 35.67 years ($SD = 14.21$, range = 18-71). The majority of participants were female, Caucasian, working in health and social assistance, with no previous suicide prevention training, no previous personal mental health related diagnosis and have had a family member with a mental health

related diagnosis (see Table S1-7, ESM 4 [Appendix P] for demographic data between groups). The latter three demographics were collected to assess impact on dependent variables.

Outcome Analyses

DARTS-RS. An ANOVA assessed the impact of two interventions on participants' DARTS-RS scores, across two time points revealing a significant interaction between condition and time, Wilks Lambda = .92, $F(1, 279) = 23.07$, $p < .001$, $\eta_p^2 = .08$. Experimental condition participants had significantly higher DARTS-RS scores than the standard group depending on the time, observably at T2 with a moderate-large effect size (see Table S8, ESM 4 [Appendix P]).

CITIS. An ANOVA with CITIS scores revealed a significant interaction between condition and time, Wilks Lambda = .93, $F(1, 278) = 19.82$, $p < .001$, $\eta_p^2 = .07$. Experimental condition participants had significantly higher CITIS scores than the control group depending on the time, observably at T2 at a moderate-large effect size (see Table S9, ESM 4 [Appendix P]).

The same ANOVAs as above were conducted on confidence items alone and intent items alone, yielding similar results as above: significant interactions, where experimental condition participants had significantly higher scores than controls at T2.

Manipulation Check. An Independent Samples t -test assessed whether scores between conditions were different in the MCS, revealing a significant difference between the experimental ($M = 38.58$, $SD = 8.87$) and standard group ($M = 31.70$, $SD = 9.66$), $t(279) = 6.23$, $p < .001$ (2-tailed). The magnitude of this difference (mean difference = 6.89, 95% CI[4.71, 9.06]) was moderate-large ($\eta^2 = .12$).

Validity Checks. The relationship between outcome variables was investigated using the Pearson product-moment correlation coefficient to assess convergent criterion validity. Table S10 in ESM 4 [Appendix P] shows all correlations between DARTS-RS and CITIS at T1 and T2 were large and significant, providing evidence of criterion validity of the scales.

Covariates

Multiple 2x2, ANCOVAs were conducted to assess the interaction between time and condition on DARTS-RS and CITIS controlling for demographic variables. When comparing adjusted mean scores to original scores, they were very similar. Overall no covariates changed the size of the effect of the condition to any meaningful extent.

Discussion

This study consisted of an online, community trial intervention for adults, teaching how to detect and respond to suicide risk (DARTS). The aim was to test whether BIM-guided education material increases DARTS readiness, confidence, and intent. Results indicated the experimental group had significantly higher scores on the DARTS-RS and CITIS post-intervention compared to the control group. This indicates BIM-informed education can increase individuals' readiness to: identify suicide risk and warning signs; interpret any sign as important to follow-up on; assume personal responsibility to help; know how to help and feel confident to do so; and reach a decision to help. This is a unique finding compared to previous studies. This is because previous studies have mainly focused on part four of the BIM, knowledge/skills/competence in helping. Other studies have not addressed all five parts of the BIM through educating participants to notice risk factors, interpret them as an emergency, take personal responsibility to help, know how to help, and decide to help.

According to bystander research, all of the above steps are imperative for helping behavior to occur. Knowledge alone may be enough to change behavior not involving others, for example, understanding one's own mental health. When it comes to helping others at risk, however, more complex human behaviour needs consideration as it involves fear of negative evaluation, conformity to inaction, and diffusion of responsibility. This study not only taught all five factors to participants but assessed them too. Furthermore, this study demonstrated the intervention increased participants' confidence and intent to act. The MCS indicated participants deemed experimental content to be more aligned with the BIM. This provides evidence for the efficacy of BIM-informed suicide prevention material as leading to increased DARTS readiness, confidence and intent.

Limitations

The homogeneity of the sample, being female health professionals, is a potential limitation. However, this sample is likely to be more literate in suicide prevention with higher baseline knowledge, where a more heterogeneous sample may actually result in higher differences between intervention groups due to lower baseline knowledge. The insufficient numbers at follow-up did not allow assessment of the intervention effect over 6 months. Additionally, all data were based on self-report, meaning outcomes lack any kind of in-depth exploration of participant perceptions or actual behaviours rather than intent only. Furthermore, participants' interpretation of questions may have varied. One

question for example, ‘I know what to say to get someone who is thinking about suicide to not go through with the act’ assesses level of agreement, but not participants’ knowledge of what can be said and whether this is accurate according to best-practice. Finally, although results were statistically significant with moderate-large effect sizes, the differences between groups were not large, and further research is required to determine clinical significance, i.e. if the effect is transferable in real-world situations.

Strengths

Despite the limitations, this study also has important strengths, namely its uniqueness and the first known application of the BIM in suicide prevention material and outcome measures for the community. Our data shows that self-reported DARTS readiness, confidence and intent increased as a result of intervention. Further, this study used an active control condition with almost identical baseline scores pre-intervention whereas the difference post intervention was significant with a moderate-large effect size, a finding that is worth exploring further.

Implications & Future Directions

This paper suggests that BIM-informed community suicide prevention training results in greater DARTS readiness, confidence, and intent compared to current publicly available material. This has important implications for future community campaigns (e.g., websites, flyers, workshops) which may benefit from being designed according to the five components of the BIM to increase the likelihood of helping behaviour.

Compared to research on the prevention of bullying and sexual harassment, where the BIM has been successfully applied to gatekeepers, suicide prevention lags in initiatives and research informed by this model. The current study demonstrates that success in other areas may transfer into suicide prevention. However, more research is required to further replicate these findings. Future studies are recommended to include a larger, more diverse sample and assess beyond self-report (e.g. action planning and behaviour through role play), allowing a closer assessment of clinical significance. Intervention information is recommended to be more accessible (e.g. a video rather than factsheet). Furthermore, based on the lack of psychometrically validated measures in this area, it is suggested to adapt and/or develop and validate new measurement tools to assess the efficacy of BIM-informed tools.

Conclusion

The results of this study provide preliminary evidence that online, BIM-informed DARTS education material may increase readiness, confidence, and intent to help. This

can help shape future suicide prevention research to address high and increasing suicide incidence. A substantially higher proportion of people at risk of suicide communicate their distress to community members than to health professionals. This warrants a focus on interventions that improve community suicide risk literacy, to enable vulnerable peers to be recognized and referred to professional care. Interventions informed by the BIM may offer potential to enhance this response, and, therefore, prevent suicide.

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Electronic Supplementary Material

- ESM 1. Experimental group factsheet content focus [*Appendix E*].
- ESM 2. Figures [*Appendix F*].
- ESM 3. Vignettes [*Appendix O*].
- ESM 4. Demographic and outcomes tables [*Appendix P*].

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Chapter 8. Implementation and Dissemination Data

Of utmost importance in research is the implementation of efficacious interventions to ensure important findings are translated into real world situations. At a suicide prevention workshop hosted by the International Association for Suicide Prevention Christine Morgan, the National Suicide Prevention Adviser to the Australian Prime Minister, stated that Australia is good at researching the topic of suicide and suicide prevention but lacks implementation of findings and evaluation of efficacy of implemented programs (Morgan, 2020). She stated we need to stop researching, and start implementing.

Implementation research states that successful implementation of research findings includes meeting the following 8 core criteria: acceptability, adoption, appropriateness, feasibility, fidelity, implementation cost, penetration and sustainability (Proctor et al., 2011). If most of these are met, research is said to be more efficiently implemented, with a higher likelihood of successful transmission of laboratory or simulated findings (Proctor et al., 2011). Implementation effectiveness is separate to treatment or intervention effectiveness and both are required for successful transmission of findings. An intervention can be highly effective in improving target outcomes (in this thesis for example, confidence to support a peer at risk of suicide), however if implemented in a way which is not acceptable to users (in this thesis for example, if the content is too expensive, too long, too hard to understand, etc.), it can lose its value and impact.

The following chapter will present brief results from implementation and dissemination related questions delivered in the Study 2 sample. Appendix Q presents the questions which were delivered. Although the sample size in Study 2 was 281 participants, generally 193 participants completed these questions. The aim of these questions being added to the survey was to gather insight into participants' current uptake of mental health resources and preferences of tool formats to inform future education development, implementation and dissemination.

Awareness of Mental Health Organisations

Participants were asked which mental health advocacy organisation they are most aware of. Table 1 shows Lifeline is the most recognised organisation and only 1.6% of people were not aware of any organisations. This shows a good awareness of where the community can go to for help.

Table 1

Mental Health Organisation Awareness

Organisation	Frequency	Percent
Lifeline	107	55.4
Beyond Blue	53	27.5
headspace	16	8.3
Black Dog Institute	9	4.7
None	3	1.6
Other	5	2.6
Total	193	100

Awareness of Suicide Prevention Support Information

Participants were asked which (if any) suicide prevention material or tools they are most aware of. Table 2 shows more than 50% of participants were not aware of any material which can help them if they were concerned about a peer's mental health and suicide risk status. Furthermore, 13.5% were aware of RUOK? resources and the rest indicated awareness of support information through other organisations such as Lifeline and Beyond Blue. It is concerning that in the current sample, it appears a significant proportion of people lack awareness of where to go for help when concerned about someone else.

Table 2

Awareness of Suicide Prevention Tools

Organisation/Television Advertisement/Radio/Tool	Frequency	Percent
RUOK?	26	13.5
National Suicide Prevention Awareness Day	1	.50
Lifeline	19	9.84
Beyond Blue	6	3.1
Black Dog Institute advertisements	4	2.07
Salvation Army	1	.50
Kids helpline	2	1.03
Mates Talk Change	1	.50
Talking to them and listening	8	4.15
Sane	1	.50
Suicide call back service	1	.50
GP	1	.50
See a counsellor	1	.50
Develop a safety plan with the person	1	.50
Other	11	5.7
None	109	56.5
Total	193	100

Resources Most Often Accessed

Participants were asked which (if any) suicide prevention materials or tools they have previously accessed when concerned about someone else. Table 3 shows most participants had accessed support information when concerned about someone's mental health status via a website (42%).

Table 3

Types of Resources Most Often Accessed from Mental Health Services

Type of service	Frequency	Percent
Website	24	42.1
Telephone counselling	18	31.6
Other	11	19.2
Online chat	3	5.2
Flyer	1	1.8
Total	57	100

Previous Accessing Resources for Others

Participants were asked if they had previously accessed a mental health service when concerned about someone in the past and if not, why not. Table 4 shows almost 70% of the sample had not previously contacted a mental health service despite being concerned about someone's wellbeing. Table 5 shows the biggest reason participants reported for not accessing help for others was feeling the situation was not urgent enough to require action (70%). Furthermore, nearly 12% were not aware of mental health support services.

Table 4

Previous Access of Mental Health Support for Others

Response	Frequency	Percent
Yes	85	30.2
No	195	69.4
Total	280	100

Table 5

Reasons for Not Accessing Mental Health Support for Others

Reason	Frequency	Percent
Not aware they existed	23	11.8
Not feel a need to access any services	137	70.0
Not easily accessible	7	3.5
Not the right person	6	3.0
Not confident	3	1.5

Other	19	9.7
Total	195	100

Suicide Prevention Tools Rated Most Useful

Participants were asked what type of suicide prevention tool they would find most useful. Table 6 shows most participants deemed websites most useful (46.6%) followed by smartphone applications (16.6%).

Table 6

Suicide Prevention Education Delivery Format Preferences

Tool	Frequency	Percent
Website	90	46.6
Smartphone application	32	16.6
Social media page	29	15.0
Workshop	26	13.5
Flyer	10	5.2
Other	6	3.1
Total	193	100

Suicide Prevention Tools Rated Most Convenient

Participants were asked what type of suicide prevention tool they would find most convenient to use. Table 7 shows most participants deemed websites most convenient (44.6%) followed by smartphone applications (24.4%).

Table 7

Mode of Delivery Most Convenient

Tool	Frequency	Percent
Website	86	44.6
Smartphone application	47	24.4
Social media page	46	23.8
Flyer	8	4.1
Other	5	2.6
Workshop	1	.5
Total	193	100

Suicide Prevention Tools Rated Most Accessible

Participants were asked what type of suicide prevention tool they would find most accessible. Table 8 shows most participants deemed websites most accessible (48.7%) followed by smartphone applications (26.9%).

Table 8

Mode of Delivery Most Accessible

	Frequency	Percent
Website	94	48.7
Smartphone application	52	26.9
Social media page	41	21.2
Other	4	2.1
Flyer	2	1.0
Workshop	0	0
Total	193	100

Suicide Prevention Tools Rated Most Comfortable to Use

Participants were asked what type of suicide prevention tool they would feel most comfortable using. Table 9 shows most participants deemed websites most comfortable to use (56%) followed by smartphone applications (22.8%).

Table 9

Mode of Delivery Most Comfortable to Use

	Frequency	Percent
Website	108	56.0
Smartphone application	44	22.8
Social media page	24	12.4
Flyer	8	4.1
Other	7	3.6
Workshop	2	1.0
Total	193	100

Community Perception of Need for Increased Community Suicide Prevention

Material

Participants were asked the following question:

How strongly do you agree with the following statement: 'There is a need in the community for more free public suicide prevention material'.

Table 10 shows most participants strongly agreed that there is a need for more community suicide prevention materials (77.2%).

Table 10

Ratings of Need for Community Suicide Prevention Material

Rating	Frequency	Percent
Strongly Disagree	2	1.0
Disagree	2	1.0
Neutral	5	2.6
Agree	35	18.1
Strongly Agree	149	77.2
Total	193	100

Marketing Resources

Participants were asked what the best way would be in their opinion to market any community suicide prevention resources. Table 11 shows most participants prefer social media advertising (58%).

Table 11

Preferred Marketing Method

Marketing method	Frequency	Percent
Social media advertisement	112	58.0
Television advertisement	43	22.3
Other (often a combination preferred)	15	7.8
Radio advertisement	14	7.3
Public poster	5	2.6
Billboard	4	2.1
Total	193	100

Comments About Factsheet Intervention: Experimental V Control

Participants were given an opportunity to provide feedback about the survey. Table 12 presents a collation of key comments until saturation of ideas was reached. No positive comments were stated regarding the standard condition. The key negative comments about the standard condition was that it was too simple and did not teach practical, step-by-step actions to take if concerned about a peer. Key negative comments about the experimental condition was that it was too long and that the layout needs improvement. Key positive comments about the experimental factsheet was that it provided practical steps and scripts to follow and increased confidence. There were also multiple suggestions to turn the experimental factsheet into a website, videos and smartphone application.

Table 12

Participant Comments about Factsheets

Standard		Experimental	
Positive	Negative	Positive	Negative
	<ul style="list-style-type: none"> No practical advice for helping someone, e.g., how to start a conversation. Just provided facts and helplines – people already aware. Did not give confidence or skills to help someone. Needs a mini ‘script’. What words to use. No reassurance that talking about suicide is going to making someone do it. Needs step by step on what to do. 	<ul style="list-style-type: none"> It provides practical steps to take and things to say. ‘It’s great’. Information is great, very helpful and confidence boosting. The content is terrific. The flowchart was good. Turn into online training modules. The flow chart was very helpful and can see it being successful. Turn this into a video and script. Thank you for doing this important research! 	<ul style="list-style-type: none"> Too much information. Improve layout and design.

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|--|---|
| <ul style="list-style-type: none"> • Need more than just Lifeline etc. phone numbers. • Need more than being referred to a website. • Need more than just a phone number. • Sure it tried to 'inform' me but it did nothing to actually help me tackle a scenario with someone with suicidal thoughts. • Needs more detail. • Not empowering to do something about it. • Too brief. • Doesn't give much guidance. • More skills; specifically what to ask, what actions to take, decision making guidelines for intervention, importance of intervening. • Tell us (onlookers) literally what to do to engage with the person who is suicidal. It doesn't say what to do, only info. Like how are you, it's just polite to | <ul style="list-style-type: none"> • Good info. • What I found most helpful was the bystander info and the flow chart. • The questions are phrased into positive statements on the need to help those at risk. • I found that this changed my position to act quicker and at great urgency once I read the information sheet. • Completing this survey made me more aware of noticing suicide warnings around me and made me feel more equipped to act. • Helplines often don't help and counselling can be expensive. Please turn this into a website and videos. • Well done! • I think the information sheet is fantastic, and targets common myths that create barriers to the conversation around suicide. |
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| <p>say but rarely anyone genuinely asks it's just a reflex. Maybe making this more of an ownership thing for people reading to actually speak up.</p> | <ul style="list-style-type: none"> • Good work, hope it goes well! • I think it's extremely important and important to address the bystander effect. e.g. not acting or ignoring is choosing to not act. |
| <ul style="list-style-type: none"> • Too general and simple. I know that the "Are you ok?" is well meaning, but my experience, is people will not respond with something like "Well, I am thinking of killing myself" So for me I struggle on the "Are you ok?" day. My experience with suicide, is the silence from the person contemplating it. Never going near the subject. Mental Health First Aid tips. Stuff we can literally do. | <ul style="list-style-type: none"> • Probably the same statement as above. • Get it out there and make it as available in as many avenues as funds allow! Good job. • This is really valuable research, thank you. • The information was great. • The message that anyone can help and providing confidence in everyone's skills to do so was what I found most valuable from the flyer. • Please let me know if or when a smartphone app is made. • If the info could be condensed to a double sided card provided in Council calendars (or the like) and provided with Council yearly info (like |
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it would normalise the information and make it readily accessible/easily located. recycle/refuse collection etc) No one thinks they will need this info but to know it is available, is key to when the situation presents itself. All the best and thank You.

Summary

The information above presented collated frequency statistics calculated through SPSS version 20 for implementation and dissemination related questions completed by participants in Study 2. Key information to take from the above includes: 1) most participants knew about mental health support organisations however more than half lacked awareness of where to go for supporting someone specifically when concerned about suicide risk; 2) participants consistently prefer websites and smartphone applications to access suicide prevention related material; 3) most participants reported not seeking support for a peer due to feeling it was not urgent enough, i.e., not interpreting risk factors or warning signs as urgent (although they may prefer informal support over professional support); 4) most participants felt there is a need for more information for the community in terms of how to help someone presenting with risk; 5) most preferred for these to be marketed via social media; 6) many reported current standard information lacks detail and practical steps to help those at risk; and 7) many found the experimental sheet useful in increasing confidence and suggested turning it in to a website, videos and smartphone application.

The above summary provides useful information when thinking about implementing and disseminating any of the educational resources developed within the current project or other tools in general. As reported in Chapter 5, most current suicide prevention educational material is delivered through workshops and posters. These two methods of delivery were rated as the least preferred, useful, convenient and accessible. Furthermore, the fact that many participants reported not intervening due to feeling the

situation was not urgent enough highlights the importance of the current research and increased education for the community because while suicide is preventable, it is unpredictable even for professionals (Barker, Pistrang, & Elliot, 2016). Although we can assess vulnerability of being at suicide risk based on risk factors, warning signs and protective factors, even professionals are said to not be able to predict suicide accurately (Barker, Pistrang, & Elliot, 2016). Therefore, as stated in the education material in this thesis, any sign should be acted upon. If someone displays even one risk factor such as a recent relationship break-up, it is important that person is asked if they are having any thoughts of ending their life, instead of assuming it is not urgent enough. Continuing research in community response to suicide risk would benefit from taking the above information into account when designing and delivering new resources to ensure material has the highest chance of uptake in the community and therefore a more equipped community to prevent suicide. Study 3 takes some of the findings of this chapter into account by testing the efficacy of education material delivered via a video format and providing education on the importance of acting on all signs.

Chapter 9. Study 3 Rationale: A Call to Assess the Impact of BIM-Informed Training on Action Plans

Study 2 assessed whether BIM-guided community training material makes any significant difference in increasing participants' readiness, confidence and intent to detect and respond to suicide risk, compared to an active control condition (standard, existing community information from RUOK?, Lifeline, Beyond Blue, and other online resources). Study 2 was an RCT with 281 members of the community aged 18 years and above. It found that the BIM-guided material was associated with significantly higher readiness, confidence and intent to detect and respond to suicide risk than the standard condition with moderate to large effect sizes.

A limitation of Study 2 was that the outcomes were based on forced-choice responses only, limiting any insight into participants' behaviour or ability. Study 3 aimed to extend Study 2 in the following ways. Study 3 aimed to assess helping behaviour beyond readiness, confidence and intent. To address actual helping behaviour is not feasible in the context of suicide prevention, so action planning to intervene is the next closest predictor of actual helping behaviour. Action planning is defined as 'specifying the details of when, where, and how to act in the service of one's intentions' (Carraro & Gaudreau, 2013). While the exact post-intentional processes and working mechanisms between intention and behaviour are not well understood, action planning has been suggested as an effective means of translating intention into action by initiating goal-directed behaviours and problem-solving potential obstacles in advance (Carraro & Gaudreau, 2013). A meta-analysis by Carraro and Gaudreau (2013) found action planning partially mediates the relationship between intention and behaviour and a medium-large summary effect of action planning on behaviour was found.

Study 3 extended from Study 2 by assessing open responses (action plans) of how participants plan to intervene in a hypothetical scenario, i.e., what they would say, ask and do. It also tested if BIM-guided material results in more appropriate suicide prevention action plans compared to a standard condition. See Study 3's Action Plan Checklist for 'appropriate' behaviours based on best-practice, evidence-based suicide prevention intervention. This is further explained below.

Study 3 Rationale

While research suggests readiness, confidence and behavioural intent to be predictive of behaviour, there are limitations to these translating into actual behaviour (Carraro & Gaudreau, 2013). Intention has been found to only account for 20-30% of the

variance in behaviour with correlations modest, at best (Gollwitzer, 1999). A limitation of common research methods of measuring intent as based on the Theory of Planned Behaviour, is its simplicity in suggesting a direct causal pathway between intention and behaviour when there are multiple, complex mediating factors at work post-intention (Carraro & Gaudreau, 2013). This is referred to as the intention-behaviour gap (Sniehotta, Scholz, & Schwarzer, 2005). Therefore, the issue of how to get intentions to more effectively translate into behaviour, comes down to exploring the variables which link intention to behaviour.

Based on self-reports and observations (e.g., taking medication, engaging in exercise), research has found strong predictors which link intention to behaviour include the ability to cope with competing goals and distractions and the specificity of behaviour goals (Gollwitzer, 1999). More importantly, “action planning” (planning out how an intention can be implemented) has been found to be a strong predictor to link intention to behaviour and overcome the aforementioned obstacles (competing goals, distraction). (Gollwitzer, 1999; Hagger & Luszczynska, 2014). Action planning is said to be effective by pre-deciding what, how, where and when to take action, and problem-solving ways to overcome obstacles (Gollwitzer, 1999). This means in the moment, there is less reliance on effortful deliberations, cognitive resources or even conscious effort, making automation more likely due to cues for action from mental representations formed during action planning (Gollwitzer, 1999).

Ajzen’s (1991) Theory of Planned Behaviour postulates that intentions are predictive of a specific end behaviour. For example, ‘I intend to lose weight (intention) through increasing my exercise (behaviour)’. This was the focus of Study 2, a scale item for example being ‘How likely are you (intention) to ask John if he has thought about ending his life (behaviour)?’. Gollwitzer’s (1999) Theory of Implementation Intentions proposes action planning of how, when and where an intention will be implemented to achieve a certain behaviour. For example, ‘I will help my friend who has been down lately (intention) by checking in with them (behaviour) by asking whether since their relationship break-up and losing their job they have had thoughts about ending their life. I will do this by organising to meet with them privately in person as soon as practicable. If they decline, I will ask if I can visit them at home. If they decline, I will call them. If they have had thoughts of ending their life, I will help them organise to see a professional and engage in meaningful and healthy activities with them such as exercise and socialising (action plan).’ This type of action planning is said to create a mental representation of

behaviour which will become activated and accessible in the desired situations and make decisions to act more likely due to automation. Study 3 focuses on moving beyond behavioural intent and addresses the intent-behaviour gap through eliciting action plans of suicide prevention behaviour. It will look at how participants plan to respond to a hypothetical scenario of someone presenting with suicide risk.

Study 3 will compare the efficacy of a BIM-informed suicide prevention educational video with a standard video in promoting appropriate suicide risk assessment and protective intervention in the general community according to best-practice in suicide prevention. Their written action plans will be assessed and compared between groups. The standard material will be based on publicly available suicide prevention information from the RUOK?, Lifeline and Beyond Blue websites on how to help someone thinking about suicide. These three organisations were endorsed in Study 2 as the community suicide prevention campaigns participants were most aware of.

Summary

In summary, Study 2's results are based on forced-choice questionnaires assessing readiness, confidence and intent. While intention is found to be linked to behaviour, it is not the most accurate and reliable predictor of actual behaviour. Study 3 will further assess more closely if the BIM can lead to increased helping behaviour by moving beyond forced-choice intent items to open questions eliciting an action plan to close the intent and behaviour gap. Before moving on to Study 3, the next chapter will present validity testing of the adapted measure used in Study 2: the DARTS-RS. Validity testing is included in the thesis because the authors modified the DARTS-RS based on research and evidence and the measure has not yet been applied to a scenario of suicide risk.

Chapter 10. Validity Testing of the Detecting and Responding to Suicide Risk Readiness Scale (DARTS-RS): Version 1

The following chapter is based on the following reference:

Hill, K. (2019). *Validation of the Suicide Risk Detection and Response Readiness Scale (SRDRRS): An adapted community measure* (Unpublished master's thesis). Australian Catholic University, Brisbane, Australia.

It is included in the thesis for continuity of information. It has been included and modified slightly, with permission of the author, to align with the format and flow of the thesis.

Introduction

To be able to evaluate the efficacy of BIM-guided campaigns, a validated measure is required. A number of measures exist to test the impact of suicide prevention campaigns on outcome variables such as knowledge and awareness (e.g., *Suicidal Caring Ability Scale*) (Sun, Chiang, Lin, & Chen, 2014). However, none could be identified specific to suicide prevention which measure the impact of BIM-informed material on BIM-related bystander intervention in the community. A measure of this nature, however, has been validated in the area of bullying and sexual harassment (Nickerson et al., 2014). The study concluded their findings filled a gap in the literature by providing a measure that can assess the impact of training on bystander skills according to the BIM. This gap appears to remain in the area of suicide risk.

The current chapter aimed to assess the reliability and validity of the first version of an adapted version of Nickerson et al.'s (2014) 'Bystander Intervention in Bullying and Sexual Harassment' scale to suit a scenario of suicide risk. This was the DARTS-RS measure used in Study 2. This was assessed by conducting factor analyses, assessing correlations with other measures to assess convergent and predictive validity and measuring internal consistency and test-retest reliability.

Method

Participants

The adapted items were administered to 281 participants with a mean age of 35.67 years ($SD = 14.21$, range = 18-71 years), the majority being Caucasian women, employed in the area of health and social assistance.

Measures

Detecting and Responding to Suicide Risk Readiness Scale (DARTS-RS). See Study 2 for details.

Confidence and Intent to Intervene Scale (CITIS). See Study 2 for details.

Bystander Behaviour Scale (BBS). At six months post intervention only, participants completed the adapted 'Bystander Behaviour Scale' (BBS) (Banyard, 2008; Banyard, Moynihan, Cares, & Warner, 2014). The 20-item measure assessed actual suicide preventive behaviour in the previous two months. This was adapted from an original version targeted at sexual harassment to relate to suicide prevention. Response options included 'yes' (score = 1), 'no' (score = 0) or 'no opportunity' (score = 0). An example question is 'I talked to a friend about suicide warning signs they were displaying'. Item scores were summed, higher scores indicating more bystander behaviour in the previous two months. The original (Cronbach's $\alpha = .97$) and current (Cronbach's $\alpha = .92$) scales had good reliability and validity. This measure is included in the current study to assess predictive validity. This measure was included in the data collection and analysis phase of Study 2 however due to low numbers at follow-up ($n=68$), was not included in the write up of Study 2 due to low power.

Procedure

Participants were recruited via social media, a university campus and flyers handed out in the community (gyms, libraries) in Brisbane (Australia), inviting participants to complete an anonymous questionnaire online. Inclusion criteria were men and women aged over 18 years. Exclusion criteria were previous bereavement by suicide of significant others, personal suicide ideation or distress by the topic of suicide. Participants completed demographic questions (age, gender, occupation) and the DARTS-RS and CITIS before and after an intervention. These were repeated six months post intervention, Time 3 (T3), in addition to the BBS. The control condition read a standard factsheet about suicide risk detection and response with information currently publicly available, not specifically designed to address each part of the BIM in detail and in order. The experimental condition read a factsheet designed to address each part of the BIM in detail and in order. Participants were randomly assigned into a condition by Qualtrics. The study was approved by the University's Human Research Ethics Committee (registration number: HEC19007).

Results

Factor Analysis

Using SPSS version 20, principal component and factor analyses were run at Time 1 (T1) and Time 2 (T2) on the DARTS-RS items using Principal Axis Factoring (PAF) and Principal Component Analysis (PCA) with oblique and orthogonal rotation. Item

loadings and patterns were essentially identical in these eight analyses. The results at T1 are reported below to present the scale prior to any intervention. Further, PAF is reported as the current study's aim is not simple data reduction but understanding underlying factors in relation to existing theory on the BIM (Tabachnick & Fidell, 2007). Results from the orthogonal rotation (independence of factors assumed) is reported as the BIM suggests the 5 parts are independent of each other (Tabachnick & Fidell, 2007).

The suitability of the 16 items of the DARTS-RS for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin value was .87, exceeding the recommended value of .60 and Bartlett's Test of Sphericity reached statistical significance, $p < .001$, supporting the factorability of the correlation matrix (Pallant, 2013). Principal Axis Factoring revealed the presence of three components with Eigenvalues exceeding 1, explaining 35.52%, 12.67% and 9.72% of the variance, respectively. An inspection of the scree plot revealed a clear break at the fourth component where Eigenvalues start to level out (see Figure 1). Based on the eigenvalues, scree plot and pattern matrix, three components were retained. To aid in the interpretation of these three components, orthogonal rotation was performed. The rotated solution revealed all three components showing at least three items with majority strong loadings (see Table 1 below).

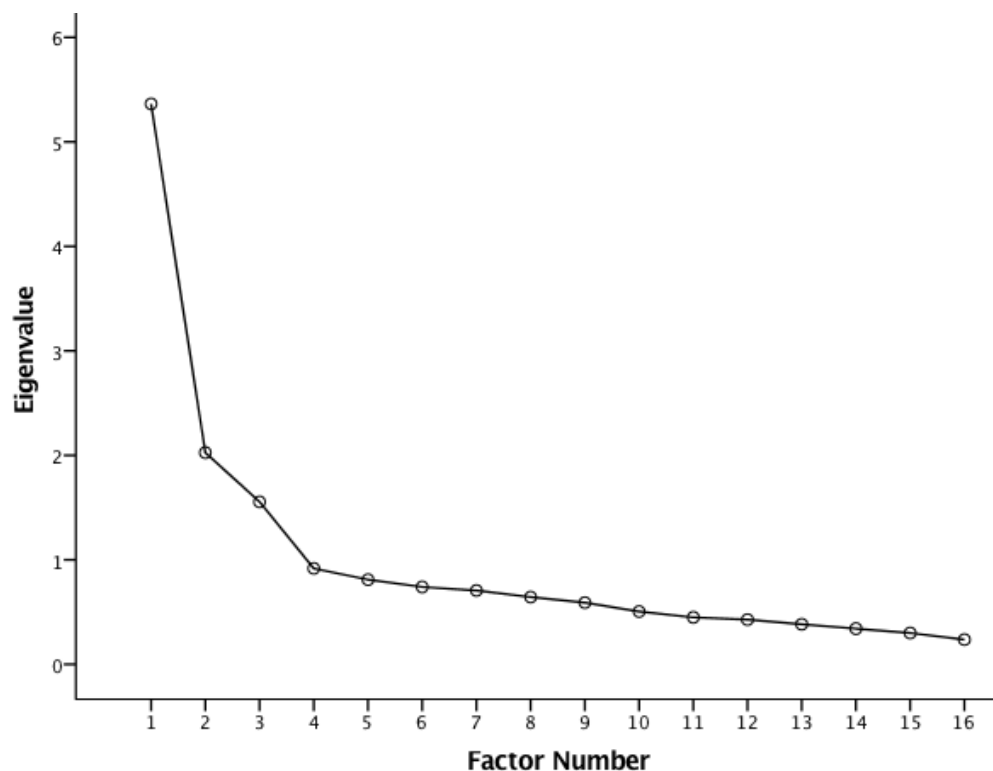


Figure 1. Scree Plot of Principle Axis Factoring of DARTS-RS Version 1 Eigenvalues

Table 1

DARTS-RS Version 1 Item Factor Loadings

Item	DARTS-RS Item	BIM Part	Factor 1	Factor 2	Factor 3
1	Suicide is a problem in my community.	1) Notice			.72
2	I am aware that people in my community die by suicide.	1) Notice			.88
3	I have seen people displaying warning signs of suicide around me this year.	1) Notice			.36
4	It is evident to me that someone who is displaying warning signs of suicide needs help.	2) Interpret as emergency			.50
5	If someone says they are thinking about killing themselves, the person hearing it should realise they are just seeking attention.	2) Interpret as emergency	.34		
6	I think persons thinking about suicide are in emotional and psychological pain.	2) Interpret as emergency	.42		.39
7	I feel personally responsible to intervene and assist if I hear someone is thinking about suicide.	3) Assume responsibility	.68		
8	If someone tells me they are thinking about suicide, even if I am not their immediate family or a health professional, it is still my responsibility to help them.	3) Assume responsibility	.69		
9	I believe that my actions can help to reduce suicide.	3) Assume responsibility	.57	.36	
10	I have the skills to support a person thinking about suicide.	4) Competence/confidence		.78	
11	I know what to say to get someone who is thinking about suicide to not go through with the act.	4) Competence/confidence		.87	
12	I can help get someone out of a situation where they are seriously thinking about suicide.	4) Competence/confidence		.69	
13	I would tell a group of my friends to help someone who they think may be contemplating suicide.	5) Implement decision	.54		
14	I would say something to someone if I thought they were thinking about suicide.	5) Implement decision	.68		
15	I would tell my friend to help someone who is thinking about suicide.	5) Implement decision	.56		
16	If I saw someone I did not know very well displaying warning signs of suicide, I would help them or get help for them.	5) Implement decision	.70		

Note. Only correlations of .3 or high are reported as per Pallant's (2013) guidelines for factor reporting.

Reliability

Internal consistency. The DARTS-RS had good internal consistency (Cronbach's $\alpha = .85$). Factor 1, consisting of nine items, had good internal consistency (Cronbach's $\alpha = .85$). Item analyses showed this alpha level remained at .82 or higher if any of the items were deleted. Item correlations with the factor were also assessed all of which were above .3, where a correlation of less than .3 is said to be problematic (see Table 2) (Tabachnick & Fidell, 2007). Item 6 and 9 also loaded on other factors. Further, item 5 appears to be the least consistent with the factor.

Table 2

DARTS-RS Version 1 Factor 1 Item Analyses

DARTS-RS Item	Correlation with factor	Cronbach's alpha if item deleted
5	.35	.85
6	.45	.84
7	.64	.82
8	.65	.82
9	.60	.83
13	.55	.83
14	.64	.82
15	.55	.83
16	.65	.82

Factor 2, consisting of four items, had good internal consistency (Cronbach's $\alpha = .83$). Item analyses showed the alpha level dropped to between .74 and .77 if items 10, 11 or 12 were deleted. The alpha level increased to .86 if item 9 was deleted. Item correlations with the factor were also assessed where all items correlated with the factor at .48 or higher (see Table 3).

Table 3

DARTS-RS Version 1 Factor 2 Item Analyses

DARTS-RS item	Correlation with factor	Cronbach's alpha if item deleted
9	.48	.86
10	.74	.75
11	.75	.74
12	.69	.77

Factor 3, consisting of five items, had a Cronbach alpha of .69. Item analyses showed the alpha level dropped to between .57-.67 if items 1, 2, 4 or 6 were deleted. The alpha level increased to .73 if item 3 was deleted. Item correlations with the factor were also assessed, all which were .33 or higher (see Table 4). Item 3 is the least consistent with the factor.

Table 4

DARTS-RS Version 1 Factor 3 Item Analyses

DARTS-RS	Correlation with factor	Cronbach's alpha if item deleted
1	.55	.60
2	.65	.57
3	.33	.73
4	.44	.64
6	.38	.67

Factor Analysis Rerun

A factor analysis was rerun as above with items 6 and 9 removed due to their loadings on more than one factor. Inspection of the correlation matrix revealed the presence of many coefficients of .30 and above. The Kaiser-Meyer-Olkin value was .84, exceeding the recommended value of .60 and Bartlett's Test of Sphericity reached statistical significance, $p < .001$, supporting the factorability of the correlation matrix. Principal Axis Factoring revealed the presence of three components with eigen values exceeding 1, explaining 33.34%, 13.64% and 10.96% of the variance, respectively. An inspection of the scree plot revealed a clear break at the fourth component. Based on the eigenvalues, scree plot and pattern matrix, three components were retained. To aid in the interpretation of these three components, orthogonal rotation was performed. The rotated

solution revealed all three components showing at least three items with majority strong loadings ($>.30$) (see Table 5).

Table 5

DARTS-RS Version 1 Item Factor Loadings (cross-loaded items removed)

Item	DARTS-RS Item	BIM Part	Factor 1	Factor 2	Factor 3
1	Suicide is a problem in my community.	1) Notice			.71
2	I am aware that people in my community die by suicide.	1) Notice			.91
3	I have seen people displaying warning signs of suicide around me this year.	1) Notice			.36
4	It is evident to me that someone who is displaying warning signs of suicide needs help.	2) Interpret as emergency			.49
5	If someone says they are thinking about killing themselves, the person hearing it should realise they are just seeking attention.	2) Interpret as emergency	.33		
7	I feel personally responsible to intervene and assist if I hear someone is thinking about suicide.	3) Assume responsibility	.67		
8	If someone tells me they are thinking about suicide, even if I am not their immediate family or a health professional, it is still my responsibility to help them.	3) Assume responsibility	.68		
10	I have the skills to support a person thinking about suicide.	4) Competence/confidence		.79	
11	I know what to say to get someone who is thinking about suicide to not go through with the act.	4) Competence/confidence		.86	
12	I can help get someone out of a situation where they are seriously thinking about suicide.	4) Competence/confidence		.70	
13	I would tell a group of my friends to help someone who they think may be contemplating suicide.	5) Implement decision	.53		
14	I would say something to someone if I thought they are thinking about suicide.	5) Implement decision	.70		
15	I would tell my friend to help someone who is thinking about suicide.	5) Implement decision	.57		
16	If I saw someone I did not know very well displaying warning signs of suicide, I would help them or get help for them.	5) Implement decision	.74		

Note. Only correlations of .3 or high are reported as per Pallant's (2013) guidelines for factor reporting.

Reliability

Internal consistency. The 14-item DARTS-RS had good internal consistency (Cronbach's $\alpha = .83$) with items 6 and 9 removed. Factor 1, consisting of seven items once item 6 and 9 were removed, had good internal consistency (Cronbach's $\alpha = .81$). Item analyses showed the alpha level ranged between .77 and .84 if any of the items were deleted. Item correlations with the factor were also assessed all which were above .3, except item 5 (see Table 6).

Table 6

DARTS-RS Version 1 Factor 1 Item Analyses (cross-loaded items removed)

DARTS-RS	Correlation with factor	Cronbach's alpha if item deleted
5	.30	.84
7	.62	.78
8	.64	.77
13	.52	.79
14	.65	.77
15	.54	.79
16	.65	.77

Factor 2, consisting of three items after item 9 was removed, had good internal consistency (Cronbach's $\alpha = .86$). Item analyses showed the alpha level ranged between .76-.84 if items 10, 11 or 12 were deleted. Item correlations with the factor were also assessed where all items correlated with the factor at .69 or higher (see Table 7).

Table 7

DARTS-RS Version 1 Factor 2 Item Analyses (cross-loaded items removed)

DARTS-RS	Correlation with factor	Cronbach's alpha if item deleted
10	.74	.79
11	.77	.76
12	.69	.84

Factor 3, consisting of four items after item 6 was removed, had acceptable internal consistency (Cronbach's $\alpha = .67$). Item analyses showed the alpha level ranged between .52-.74 if items 1, 2, 3 or 4 were deleted. Item correlations with the factor were also assessed, all which were .33 or higher (see Table 8). Item 3 remained the least

consistent with the factor.

Table 8

DARTS-RS Version 1 Factor 3 Item Analyses (cross-loaded items removed)

DARTS-RS	Correlation with factor	Cronbach's alpha if item deleted
1	.54	.56
2	.64	.52
3	.33	.74
4	.42	.63

Test-retest reliability. Test-retest reliability of the DARTS-RS was assessed. The relationship between the DARTS-RS at T2 and T3 was investigated using the Pearson product-moment correlation coefficient. The DARTS-RS correlation between T2 and T3 was large, positive and significant ($r=.72, p < .01, n = 68$).

Validity

Convergent validity. Convergent validity of the DARTS-RS was assessed. The relationships between the DARTS-RS and CITIS at T1, T2 and T3 were investigated using the Pearson product-moment correlation coefficient. As shown in Table 9, there were mostly large, significant, positive correlations between the DARTS-RS and CITIS at T1, T2 and T3 where higher scores on the DARTS-RS correlated with higher CITIS scores.

Table 9

Correlations Between DARTS-RS Version 1 & CITIS T1 (n = 280), T2 (n = 280), T3 (n = 68)

	CITIS T1	CITIS T2	CITIS T3
DARTS-RS T1	.74**	.53**	.47**
DARTS-RS T2	.57**	.70**	.67**
DARTS-RS T3	.62**	.66**	.73**

Note: ** $p < .01$

Predictive validity. Predictive validity of the DARTS-RS was investigated. The relationships between the DARTS-RS at T1, T2 and T3 and BBS were investigated using the Pearson product-moment correlation coefficient. There were small to medium, significant, positive correlations between the DARTS-RS at T1, T2 and T3 with the BBS (see Table 10).

Table 10

Correlations Between DARTS-RS Version 1 & BBS (n = 68)

	BBS
DARTS-RS T1	.29*
DARTS-RS T2	.30*
DARTS-RS T3	.25*

Note: * $p < .05$

Discussion

The aim of the current chapter was to assess the validity of the DARTS-RS. The measure has demonstrated to be a preliminary measure of components of the BIM in the context of community suicide risk intervention readiness. Key findings include that factor analysis revealed three factors, item 6 and 9 of the DARTS-RS cross-loaded on two factors, items 3 and 5 were least consistent with their factors and convergent validity, test-retest reliability, internal consistency and predictive validity of the DARTS-RS was demonstrated.

Factor Analysis

Factor structure. The factor structure only showed three factors compared to the five parts of the BIM. Factor 1 included ‘active’ items of taking responsibility (active) and deciding to help (active). Wording of items include ‘I would tell’, ‘I would say’, ‘I would help’, ‘my actions’ and ‘my responsibility’. Factor 2 relates to ‘competence/confidence’ to act with items worded ‘I have the skills’, ‘I know what to say’ and ‘I can help’. Factor 3 appears to contain ‘noticing/interpreting’-based items with common wording such as ‘I think’, ‘I am aware’, and ‘It is evident to me’.

The factor structure in the current study is not an exact replication of the five separate BIM parts. This may be due to the sample size being relatively small, the scale requiring refinement or BIM irrelevance in suicide. The three factors however still mapped on to and summarised the BIM. Part one (notice) and two (interpret) seem to have combined into a ‘noticing/interpreting’ factor. Part three (take responsibility) and five (decide to help) combined into an ‘active’ factor. Part three (competence/confidence) was replicated as its own factor. Part one and two, and three and five, are similar in the overall constructs they are assessing as summarised by the factor, thereby providing partial support for the five-part BIM in suicide risk. Removing cross-loaded items (6, 9) did not alter factor structures significantly. Factor 1 and 2 had good internal consistency

and Factor 3 was acceptable. All items correlated highly with their respective factor except item 3 and 5. Further testing of the BIM in suicide is recommended through using a bigger sample (at least 300) and refining of items as discussed below (Tabachnick & Fidell, 2007).

Item analysis. Item 5 of the DARTS-RS requires review based on low factor loading (.33), low correlation with the factor it pertains to (.30) and if deleted would increase the alpha of the factor: ‘If someone says they are thinking about killing themselves, the person hearing it should realise they are just seeking attention.’ This item did not fall on the same factor as other items within its BIM part (interpret as emergency). This item was adapted from: ‘If someone makes sexually inappropriate comments, the student on the receiving end should realise it is just a joke.’ This item may be problematic as it was the only item with reverse wording and scoring. While all items were carefully recoded for analysis, participants may have developed a pattern of answering on a certain extreme and continued through item 5 without realising. Furthermore, the wording of this item may have been too extreme. Research indicates, the public commonly assume suicidal threats and gestures are attempts to ‘seek attention’ when these are serious warning signs of suicide risk requiring further assessment (Chehil & Kutcher, 2012). The original version is also based on research of common excuses for and minimisation of sexual misconduct (Nickerson et al., 2014). Both items therefore have a theme of minimisation of the seriousness of the issue at hand by bystanders. The adapted item however may have been worded too strongly, leading most participants to answer in the most ‘socially appropriate’ manner, rather than true personal opinion. Strong wording includes ‘killing themselves’, ‘should’ and ‘just’. More neutral wording may have led to more variance in the item for example, see alternate wording in Table 11.

Table 11

DARTS-RS Item 5 Proposed Alternate Wording

Item 5	‘If someone says they are	...the person hearing	...they are <i>just</i>
Wording	thinking about <i>killing</i>	it <i>should</i> realise...	seeking attention.’
	<i>themselves...</i>		
Neutral	‘If someone says they are	...the person hearing	...they <i>could</i> be
Option A	thinking about <i>ending their</i>	it <i>might</i> think...	asking for
	<i>life...</i>		attention.’
Neutral	‘If someone says they are	...the person hearing	...they <i>might</i> be
Option B	thinking about <i>suicide...</i>	it <i>could</i> assume	seeking attention.’

Item 3 was also problematic based on a low factor loading (.36), low correlation with factor (.33) and if deleted would increase the alpha level of the factor, 'I have seen people displaying warning signs of suicide around me this year'. This item may have lacked consistency with the notice/interpret factor due to a number of potential reasons; participants not coming across anyone displaying warnings signs of suicide, limited knowledge of warning signs of suicide, not understanding the question, not being able to link/translate knowledge to peers or the sample size being too small. Future research is recommended to use a larger sample and adjust the item.

Item 4 and 6 (BIM part 2: interpret as emergency) also failed to distinguish from items 1-3 (BIM part 1: notice the event). This may be because these items were not worded strongly enough. Item 4 for example, 'It is evident to me that someone who is displaying warning signs of suicide needs help' could be reworded to 'It is evident to me that someone who is displaying warning signs of suicide needs immediate assessment and help to keep them safe' to initiate a stronger sense of urgency.

Items 7-9 (BIM part 3: assume personal responsibility) and items 13-16 (BIM part 5: decide to help) may have merged into one factor based on social desirability effects. All of these items have a theme of if the participant saw someone at risk, they would help. Most participants may have responded with 'agree' or 'strongly agree' however in practice this may not have resulted in action. Furthermore, they may not have discriminated because all items are about personally helping someone at risk. Future research may benefit from revised items and/or open-ended questions, rather than forced-choice questions, to generate responses or observed behaviour in hypothetical scenarios.

Additionally, items 6 and 9 cross-loaded on two factors, indicating they may not be capturing the core of the BIM part they pertain to and may require review to more specifically assess their respective construct. Item 6 for example, 'I think persons thinking about suicide are in emotional and psychological pain', pertaining to BIM part 2 (interpret as emergency), could be reworded to 'I think persons thinking about suicide are in emotional and psychological pain and require urgent assessment of risk and support to keep them safe'.

Reliability

The DARTS-RS was found to have good reliability in having very good internal consistency. Furthermore, scores on the DARTS-RS correlated largely and significantly between T2 and T3 suggesting test-retest reliability. This suggests a level of consistency

to the measure. The consistency of the results from the factor and principal component analyses at T1 and T2 further supports this statement.

Validity

The DARTS-RS and CITIS correlated largely and significantly with each other across time points, suggesting evidence of convergent validity. The DARTS-RS was expected to correlate with the BBS as readiness to help is found to be linked with behaviour (Hagger & Luszczynska, 2014). Correlations although significant, were only small to medium. This may indicate limited predictive validity of the DARTS-RS on behaviour, a sample size too small, lack of efficacy of the intervention to result in preventative behaviour, follow-up too soon after the intervention, not allowing enough time to implement learning or lack of retention of learning.

Limitations and Future Directions

Limitations of the current study includes a homogeneous sample, limiting generalisability. Furthermore, factor analysis research suggests at least 300 participants are required for robust interpretations and conclusions whereas the current study only had 281 participants (Tabachnick & Fidell, 2007). Furthermore, T3 only generated 68 matched responses, limiting power of results at follow-up, especially predictive validity results. Finally, as outlined above, the wording of item 5 may have been loaded while wording for items 3, 6 and 9 may have been too neutral, requiring revision and further testing.

Future research is recommended to adjust item wording to reduce evoking automatic, extreme responding and consider other methods of data collection to reduce social desirability and self-report effects for example, observation, focus groups or open questions. Additionally, future research could recruit a wider and larger sample of the general population and include more scales to assess divergent validity (e.g., ‘Stigma of Suicide Scale’ which one would expect to correlate negatively with the DARTS-RS) and convergent validity (e.g., ‘Literacy of Suicide Scale’ which one would expect to correlate positively with the DARTS-RS).

Conclusion

The current study aimed to assess the validity and reliability of an adapted measure to assess components of bystander intervention in accordance with the BIM in a community sample. Overall, results suggest initial, partial validation of the DARTS-RS through reliability and convergent validity established in the current sample. Although the five parts of the BIM were not replicated, the factor structure (notice/interpret, active

intent, confidence/competence) showed stability over time and two factors combined two parts of the model measuring similar constructs which can be understood together, still summarising the model. Further research on the DARTS-RS in suicide prevention is recommended to further establish the psychometric properties of the measure. Continued research and measurement development to assess how to increase community suicide risk detection and response is vital, to make the community segment of the suicide prevention system stronger. The next two chapters presents Study 3 of this thesis which delivered a modified, refined version of the current DARTS-RS and further validity testing and discussion.


**Chapter 11. Study 3 - Enhancing community suicide risk assessment and protective intervention action plans through a Bystander Intervention Model-informed video:
A Randomised Controlled Trial**

The following chapter presents Study 3 of this thesis, currently under review in *Crisis: The Journal of Crisis Intervention and Suicide Prevention*. Any italicised text in square brackets are amendments, not currently in the version under review.

Statement of contribution to co-authored paper:

My contribution to the paper involved providing direction on the research design; selection, development, and consultation of the assessment measures; recruitment and data collection procedures; collation of the data, preliminary and main analyses, and results; interpretation and discussion of findings. The co-authors provided direction on the study design and data analyses and reviewed drafts of the paper.

Karien Hill

Signature:  _____ Date: 18 May 2020

Abstract

Objective: A theory-informed (Bystander Intervention Model-BIM) intervention for the general community on participants' Risk of Suicide Assessment Ability (ROSAA) and Protective Intervention Ability (PIA) was compared to an active control.

Method: Video interventions with 628 participants ($M_{\text{age}} = 47.99$, $SD_{\text{age}} = 17.34$, range: 18-85 years) were conducted online. ROSAA and PIA were assessed immediately pre-intervention, post-intervention and at 2-month follow-up.

Results: Linear mixed model analyses indicated the interaction between time and condition were statistically significant for both outcomes variables. Both conditions improved significantly on both variables post-intervention, however the experimental condition significantly more than the control. At follow-up: ROSAA scores were significantly higher than at time 1 for both conditions; PIA scores were significantly higher than time 1 for the experimental group only; the experimental group showed significantly lower ROSAA and PIA scores than time 2, compared to controls who did not differ significantly between time 2 and 3.

Conclusion: Current community awareness information increased both ROSAA and PIA. A BIM-informed intervention significantly enhanced these effects, which seemed to wane somewhat over time with the effect being lower at follow-up compared to immediately post-intervention. The BIM should be explored further as a basis for community suicide prevention interventions.

Enhancing community suicide risk assessment and protective intervention action plans through a Bystander Intervention Model-informed video: A Randomized Controlled Trial

A nine-level approach has shown strong evidence for suicide prevention: reducing access to any lethal means to suicide, responsible media reporting of suicide incidents, community awareness programs, gatekeeper training, school-based programs, training of general practitioners in recognizing depression and suicide risk, training of frontline staff to effectively intervene, evidence-based psychotherapy, and follow-up for individuals with a recent suicide attempt (Hegerl & Wittenburg, 2015; Hickie et al., 2014; Krysinska et al., 2015; Werner-Seidler, Perry, & Christensen, 2016). Hill, Somerset, Schwarzer, and Chan (in press) have suggested the community awareness domain is a more important component of this nine than what has previously been highlighted, since the majority of persons at risk of suicide are more likely to access informal forms of support through family and friends, than professional services (Bloch, 1987; Kalafat, Elias, & Gara, 1993; Klimes-Dougan, Klingbeil, & Meller, 2013). This has been said to be due to high self-reliance, lack of perceived need for treatment, and stigmatizing attitudes toward suicide, mental health issues, and seeking professional help (Han, Batterham, Caelear, & Randall, 2018).

Significant upskilling of the community in early detection and protective responses may therefore represent a viable pathway for enhanced suicide prevention (Hill et al., in press). This is evidently needed as about 75% of adolescent participants have reported keeping the intentions of suicidal peers secret, i.e., not escalating the issue and seeking professional help (Klimes-Dougan et al., 2013). In a sample of adults, even when someone has voiced suicidal thoughts and intent to die, participants were far less likely to report seeking emergency services compared to someone with signs of a heart attack (Rudd, Goulding, & Carlisle, 2013).

The Bystander Effect (inaction by third parties to anyone in need of help due to fear of negative evaluation, incompetence, lack of confidence and diffusion of responsibility) has been found in scenarios involving suicide risk (Klimes-Dougan et al., 2013; Rudd et al., 2013). The Bystander Intervention Model (BIM) is said to overcome this effect through promoting helping behavior through five steps: 1) notice a situation, 2) interpret it as important/urgent, 3) assume personal responsibility to help, 4) feel confident and competent to help, and 5) consciously decide to help. A recent study found that BIM-informed suicide prevention material for the community significantly increased their confidence, readiness and intent to detect and respond to someone at risk of suicide

compared to an active control (Hill et al., in press). The present study aims to extend this research, by assessing what is deemed closer to actual behavior than confidence, readiness and intent; action plans (Hagger & Luszczynska, 2014). Action plans, an account of how to complete a prospective behavior, are said to fill part of the intention-behavior gap. It is hypothesized that BIM-informed suicide prevention material will lead to significantly higher Risk of Suicide Assessment Ability (ROSAA) and Protective Intervention Ability (PIA) post-intervention and at follow-up compared to controls.

Method

Study Design

The study was a 2×3, between-within group, repeated measures randomized controlled trial (RCT). The within-subject variable was time (pre-intervention, post-intervention, 2-months post-intervention) and the between-subject variable was intervention content (BIM-informed vs. not BIM-informed). The dependent variables were ROSAA and PIA.

Ethics Approval & Registration

University's Human Research Ethics Committee registration number: HEC190008 [*Appendix R*].

Australian New Zealand Clinical Trials Registry registration number: ACTRN12618001331224.

Participants

Males and females from the general public aged 18 years and over were recruited. Exclusion criteria included people previously bereaved by suicide, distressed by the topic of suicide and/or experiencing suicide ideation. Participants had to indicate they did not meet any of the high-risk group criteria before commencing the study. Although the main researcher was based in Brisbane, Australia, the study was conducted online, and participants could participate from anywhere. A sample size calculation based on ROSAA determined the study required at least 16 participants per group to gain sufficient power (.80) at alpha .05 (Clinical Calculator, 2020).

Intervention

Active control. The active control group viewed a video (5 minutes, 43 seconds) showing a presenter summarizing available information from the most well-known suicide prevention websites and organizations in Australia (as voted by a pilot cohort of $n=281$) about what to do when worried that a friend may be at risk of suicide. An audit of this video indicated that the information only addressed part 1 (noticing) and part 4

(competence/confidence) of the BIM, in minimal detail [*Appendix S*].

Experimental. This group viewed a video (10 minutes, 22 seconds) showing the same presenter explaining evidence-based [*Appendix S*], best practice guidelines in suicide risk assessment and protective action, specifically arranged to address each part of the BIM in order (see Electronic Supplementary Material [ESM] 1 [*Appendix T*] for details).

Vignettes

The study used two similar vignettes involving a person noticing a peer displaying warning signs and risk factors of suicide based on Jorm, Blewitt, Griffiths, Kitchener, and Parslow (2005) (see ESM 2) [*Appendix U*]. After reading the vignette, participants were asked what concerned them, what else they would want to know, and what they would say, do and ask. Despite evidence showing that gender of the victim does not have a profound impact on helping behavior, one vignette presented a male, and the other a female (Fischer et al., 2011).

Measures

ROSAA. Participant risk assessment ability was measured by a checklist of best practice in detecting the most significant risk factors and warning signs of suicide [*Appendix V*] (Page & Stritzke, 2014). These include 15 components, for example noticing a recent loss, increase in substance use, experience of intense guilt, and suicide ideation. Participants were awarded 1 point if they mentioned a risk factor or warning sign, 2 points if they elaborated and provided detail and 3 points if they mentioned they would ask about suicide ideation. These were totaled to derive the ROSAA score (range=0-31). Responses were elicited through 3 open questions, for example: ‘What stands out to you about Steve that may be of concern about his overall well-being.’

PIA. Participant protective intervention ability was measured by a checklist of best practice in non-professional bystander responses [*Appendix V*]. These included 27 components, for example, taking personal responsibility to help or find help, involving other family and friends, calling a crisis line for advice, giving the person a crisis line, encouraging and supporting the person to see a professional, encouraging and engaging in a healthy and meaningful lifestyle, and removing anything the person could use to harm themselves. Participants were awarded 1 point if they mentioned a protective intervention, 2 points if they elaborated and provided detail, and 3 points if they mentioned the most important part of overcoming the Bystander Effect, assuming personal responsibility. These were totaled to derive the PIA score (range=0-55).

Responses were elicited through 3 open questions, for example: ‘What do you think should happen next to support Steve?’.

Two researchers, a clinical psychology registrar with a bachelor of psychology (honors) and master of psychology (clinical) and another with a bachelor of psychology (honors), scored these qualitative responses separately, blinded to intervention groups.

Manipulation Check Scale (MCS). A manipulation check with 10 items was conducted by asking participants how much the video content related to the five-part BIM on a five-point rating scale from 0 (*not at all*) to 4 (*an extreme amount*) (range=0-40). An example item includes ‘To what extent did the information sheet help you notice Steve may be thinking about suicide?’. The MCS had very good internal consistency in the current sample ($\alpha=.96$).

Study Protocol

The online study was conducted using Qualtrics software (<https://www.qualtrics.com>). The study was conducted between May-September 2019 (follow-up conducted July-November 2019). Participants were recruited via social media, flyers [*Appendix W*] delivered in local (Brisbane, Australia) libraries, gyms, retail shops and universities, and through the Qualtrics paid platform. Participants were directed to the survey via a link on the flyer and allocated randomly to a condition by *Qualtrics*. The study advertisement and every survey page provided professional support information for anyone experiencing distress [*Appendix X*]. The survey consisted of the following: demographics [*Appendix J questions 1-4, 8-9*], participant information sheet [*Appendix Y*], vignette 1, six open questions to respond to the vignette [*Appendix Z*], video (experimental v control), MCS [*Appendix M – ‘factsheet’ replaced with ‘video’*], vignette 2, open questions time 2, debrief [*Appendix AA*]. A follow-up study was sent out via email 2 months post-intervention which included vignette 2 and open questions time 3. The time frame of 2 months was based on previous research in bystander behavior (Banyard, 2008). See ESM 3 [*Appendix BB*] for a CONSORT Flow Diagram.

Data Analysis

Mean level changes in ROSAA and PIA over three time points were examined dependent on condition. The SPSS 24 MIXED procedure was utilised to calculate linear multilevel models. In separate univariate analyses, the two outcome variables were specified as the level-1 dependent variables with three time points, crossed in individuals (level 2), with restricted maximum likelihood estimation, also accounting for missing

values. Cross-level interactions were assessed to determine relationships between intervention conditions and the three time points.

Mixed modelling was considered superior to analysis of variance (ANOVA) for this study. Numbers at pre and post were 628, which dropped to 126 at follow-up. To assess the impact at follow-up, where loss to follow-up is often high, mixed modelling can produce maximum likelihood results, taking missing data into account. Further, general linear models such as ANOVA have been criticised for violating assumptions of independence of observation and risking increased Type 1 errors (Shek & Ma, 2011). Mixed modelling is suggested to be a better way to assess longitudinal data by taking fixed and random effects into account, providing a more accurate representation of intervention effects (Shek & Ma, 2011). All assumptions testing was met *[including randomisation checks for all demographic variables and baseline scores on dependent variables]*. *[All demographic variables were entered as covariates to the dependent variables, none of which had a significant effect on results.]*

Results

Participants

At time 1 (T1), 320 participants were randomly assigned to the experimental intervention (M age=47.99, SD age =17.34, range:18-85) while 308 to the control (M age =47.65, SD age =17.17, range: 18-81), who were retained at time 2 (T2) totaling 628. At time 3 (T3), 67 experimental participants were retained (M age =52.01, SD age =16.60, range: 18-82) compared to 59 controls (M age=52.95, SD age =15.85, range: 20-81), totaling 126. While 167 participants responded at T3, not all identifier codes matched, leaving 126 to analyze. *[This means 502 responses were missing at T3. These were included in analyses as missing data using SPSS MIXED modelling procedures.]* See Tables 1-5 for all demographic data between groups and time points. As shown in the tables, demographics between T1, T2 and T3 were similar.

Table 1

Age

Time	Condition	Mean	<i>n</i>	Std. Deviation	Minimum	Maximum
1 and 2	Experimental	47.99	320	17.34	18	85
	Control	47.65	308	17.17	18	81
	Total	47.82	628	17.25	18	85
3	Experimental	52.01	67	16.60	18	82
	Control	52.95	59	15.85	20	81
	Total	52.45	126	16.20	18	82

Table 2

Gender

Condition		<i>T1 and T2</i>		T3	
		Frequency	Percent	Frequency	Percent
Experimental	Male	131	40.9	25	37.3
	Female	188	58.8	42	62.7
	Transgender female	1	.3	0	0
	Total	320	100	67	100
Control	Male	123	39.9	20	33.9
	Female	182	59.1	37	62.7
	Transgender male	1	.3	1	1.7
	Transgender female	1	.3	1	1.7
	Genderfluid	1	.3	0	0
	Total	308	100	59	100

Table 3

Country of Residence

Condition	Country	<i>T1 and T2</i>		<i>T3</i>	
		Frequency	Percent	Frequency	Percent
Experimental	Australia	287	89.7	64	95.5
	India	2	.6	1	1.5
	Canada	1	.3	0	0
	Poland	1	.3	0	0
	UK	10	3.1	1	1.5
	USA	13	4.1	1	1.5
	Netherlands	2	.6	0	0
	Germany	1	.3	0	0
	France	1	.3	0	0
	Indonesia	1	.3	0	0
	Missing	1	.3	0	0
	Total	320	100	67	100
Control	Australia	279	90.6	53	89.8
	India	1	.3	0	0
	South Africa	1	.3	0	0
	Belgium	1	.3	1	1.7
	Hong Kong	1	.3	1	1.7
	UK	13	4.2	2	3.4
	USA	9	2.9	2	3.4
	Germany	1	.3	0	0
	Turkey	1	.3	0	0
	Namibia	1	.3	0	0
	Total	308	100	59	100

Table 4

Ethnicity

Condition	Ethnicity	<i>T1 and T2</i>		<i>T3</i>	
		Frequency	Percent	Frequency	Percent
Experimental	Caucasian	262	81.9	52	77.6
	Aboriginal and Torres Strait Islander	3	.9	0	0
	Hispanic or Latino	3	.9	1	1.5
	Asian	39	12.2	11	16.4
	African American	8	2.5	2	3.0
	Pacific Islander	2	.6	1	1.5
	Other	3	.9	0	0
	Total	320	100	67	100
Control	Caucasian	251	81.5	46	78.0
	Aboriginal and Torres Strait Islander	2	.6	0	0
	Hispanic or Latino	6	1.9	1	1.7
	Asian	33	10.7	10	16.9
	African American	12	3.9	2	3.4
	Pacific Islander	1	.3	0	0
	Other	3	1.0	0	0
	Total	308	100	59	100

Table 5

Occupation

Condition	Occupation	<i>T1 and T2</i>		<i>T3</i>	
		Frequency	Percent	Frequency	Percent
Experimental	Forestry/fishing/agriculture	5	1.6	1	1.5
	Real estate	4	1.3	3	4.5
	Mining	1	.3	0	0
	Information technology	20	6.3	3	4.5
	Management	14	4.4	3	4.5
	Construction	8	2.5	1	1.5
	Administration	20	6.3	6	9.0
	Manufacturing	4	1.3	2	3.0
	Education/training	26	8.1	3	4.5
	Wholesale	4	1.3	0	0
	Health	22	6.9	2	3.0
	Retail	18	5.6	3	4.5
	Arts/entertainment	9	2.8	2	3.0
	Military	5	1.6	2	3.0
	Transportation/warehousing	7	2.2	1	1.5
	Sales	6	1.9	2	3.0
	Hospitality	9	2.8	3	4.5
	Finance/insurance	129	40.3	28	41.8
	Emergency services	2	.6	0	0
	Other	7	2.2	2	3.0
	Total	320	100	67	100
Control	Forestry/fishing/agriculture	5	1.6	1	1.7

Real estate	2	.6	2	3.4
Mining	2	.6	1	1.7
Information technology	23	7.5	5	8.5
Utilities	1	.3	1	1.7
Management	7	2.3	1	1.7
Construction	8	2.6	0	0
Administration	25	8.1	6	10.2
Manufacturing	6	1.9	2	3.4
Education/training	23	7.5	4	6.8
Wholesale	5	1.6	0	0
Health	26	8.4	5	8.5
Retail	18	5.8	1	1.7
Arts/entertainment	6	1.9	1	1.7
Military	4	1.3	0	0
Transportation/warehousing	9	2.9	2	3.4
Sales	3	1.0	0	0
Hospitality	8	2.6	3	5.1
Finance/insurance	119	38.6	24	40.7
Emergency services	2	.6	0	0
Other	6	1.9	0	0
Total	308	100	59	100

ROSAA

The effect of the intervention on ROSAA at three time points was assessed via linear mixed models. Table 6 shows that condition significantly predicted ROSAA, $F(1, 648) = 24.22, p < .001$, time significantly predicted ROSAA, $F(2, 392) = 159.76, p < .001$, and the interaction of time and condition, $F(2, 392) = 63.04, p < .001$, significantly predicted ROSAA (see Figure 1).

Table 6

Fixed Effects on Scores Based on Linear Mixed Modelling

	Source	Numerator df	Denominator df	<i>F</i>	<i>p</i>
ROSAA	Intercept	1	648	1801.00	<.001
	Condition	1	648	24.22	<.001
	Time	2	392	159.76	<.001
	Condition*Time	2	392	63.04	<.001
PIA	Intercept	1	345	829.86	<.001
	Condition	1	345	10.91	.001
	Time	2	233	56.10	<.001
	Condition*Time	2	233	15.45	<.001

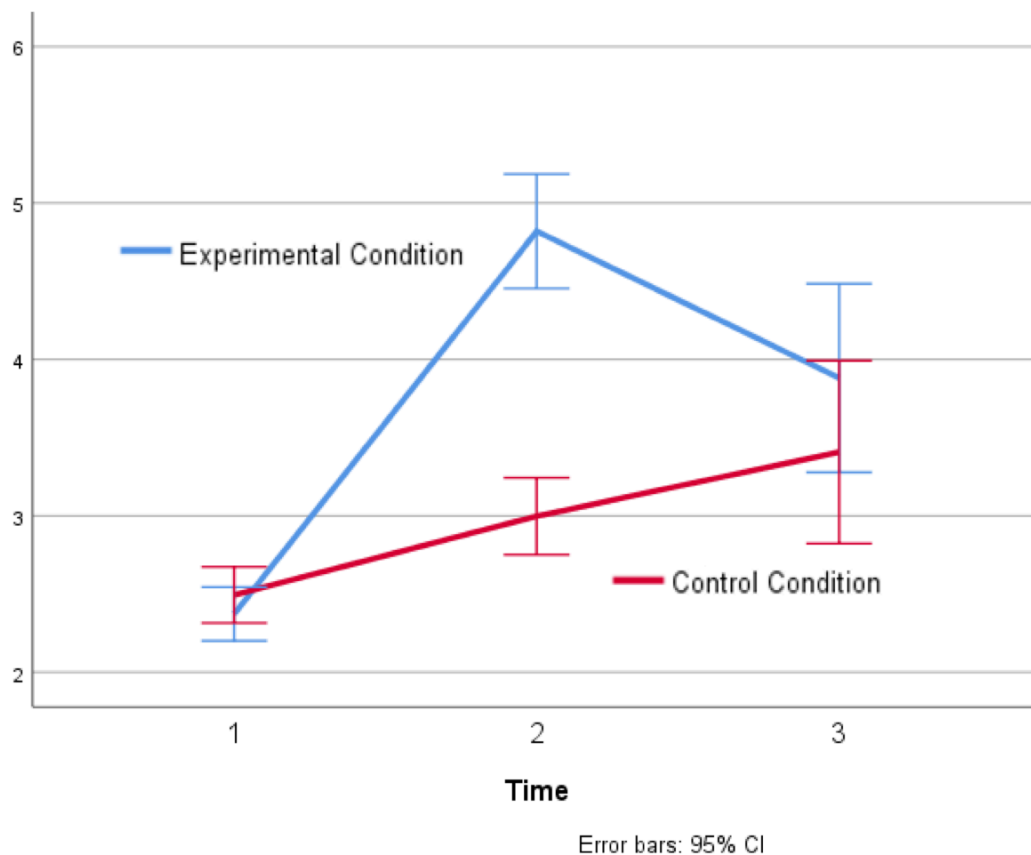


Figure 1. ROSAA mean scores at 3 time points with 95% confidence interval error bars.

To understand this interaction, pairwise comparisons were carried out (see Tables S1-4, ESM 4 [Appendix CC]). Pairwise comparisons showed that participants in both conditions had significantly higher scores at T2 and T3 compared to T1. At T3, experimental scores were significantly lower than T2, whereas control scores were not significantly different to T2 (relative to T3). Experimental versus control ROSAA scores were similar at T1, however at T2 and T3 experimental ROSAA were significantly higher than the controls.

At T3, there was a significant difference between the two conditions, $F(1, 272) = 3.96, p = .048$, although the error bars overlap. Note that the above result is based on maximum likelihood estimates ($n = 628$, accounting for missing values) whereas a less sophisticated graph would only consider the actual longitudinal sample with $n = 126$.

PIA

The effect of the intervention on participant PIA at the three time points was assessed via linear mixed models. Table 6 shows that condition significantly predicted PIA, $F(1, 345) = 10.91, p = .001$, time significantly predicted PIA, $F(2, 233) = 56.10, p < .001$, and the interaction of time and condition, $F(2, 233) = 15.45, p < .001$, significantly predicted PIA (see Figure 2).

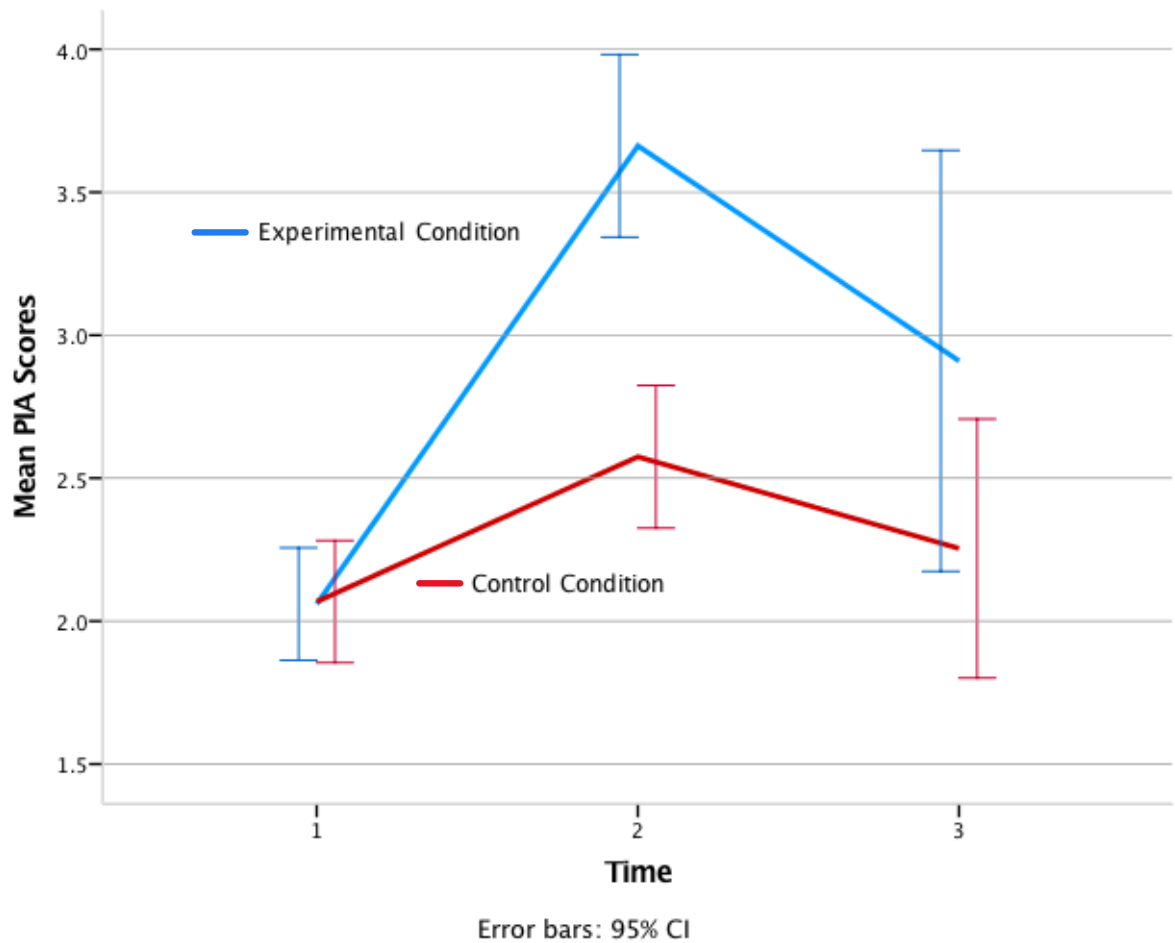


Figure 2. PIA mean scores at 3 time points with 95% confidence interval error bars.

To understand this interaction, pairwise comparisons were conducted (see Table S5-8, ESM 4 [Appendix CC]). Pairwise comparisons found that experimental PIA was significantly higher at T2 and T3 compared to T1, although T3 scores were significantly lower than T2. PIA of the control group was significantly higher at T2 compared to T1. At T3, control scores were not significantly different to T1 or T2. Experimental PIA scores were not significantly different to controls at T1, were significantly higher at T2 and were not significantly different at T3.

Manipulation Check

An Independent Samples *t*-test revealed the experimental condition ($M = 38.21$, $SD = 8.91$) had significantly higher scores than the control group ($M = 35.15$, $SD = 9.20$), $t(626) = 4.24$, $p < .001$ (2-tailed). The magnitude of the difference in the means (mean difference = 3.06, 95% CI[1.64, 4.48]) was small-to-moderate ($\eta^2 = .03$).

Reliability Check

Interrater reliability analyses were conducted using the Kappa statistic to determine consistency among raters which were fair (See Table S9, ESM 4 [Appendix

CCJ).

Discussion

This study was a trial of an educational video for adults in the general community, including how to assess for and respond to expressed suicide risk. The aim was to test whether a BIM-guided video increases risk of suicide assessment ability and protective intervention ability.

Results indicated that both the experimental and control groups improved in ROSAA and PIA post-intervention. However, the experimental group had significantly higher ROSAA and PIA immediately post-intervention compared to the control group. While the intervention effects seemed to wane for the experimental group in both conditions whereas the control group maintained learning between T2 and T3, the experimental group still had significantly higher ROSAA scores at T3 than the control group. Further, experimental ROSAA and PIA were still significantly higher at T3 compared to T1, where this applied only for ROSAA in the control group.

This indicates that video education material guided by the BIM can enhance an individual's ability to assess for suicide risk and take appropriate protective action better than currently available information. As the MSC indicated participants deemed the experimental video content more in line with the five BIM components, this study provides evidence that a BIM-informed suicide prevention video can enhance ROSAA and PIA in the general public. While current community awareness information can increase ROSAA and PIA, previous research suggests most community members do not intend to help when presented with someone at risk due to factors such as fear, uncertainty and diffusion of responsibility (Rudd et al., 2013). Applying the BIM to inform community suicide prevention education content may counter these components acting as barriers to helping behavior. We may thus see improved community responses to suicide risk, potentially leading to better prevention of suicide.

Intervention effects, however, were lower at T3 for the experimental group. These follow-up findings are similar to other longitudinal studies which often find significant decline in effect over time. This suggests community education should not be a once-off training. Rather, it should comprise an easy-to-access repository of information such as a website, booklet, social media page or smartphone application (Cimini et al., 2014).

To our knowledge, this is the first study reporting the impact of video content informed by the BIM on action plans of risk assessment and protective intervention. The findings of this study suggest that following the five steps of the BIM of noticing,

interpreting issues as an emergency, taking personal responsibility, feeling confident and competent to help and deciding to help may generate a higher-level helping behavior from the public when someone presents with suicide risk. While actual behavior itself was not tested in the present study, the formation of an action plan can link to actual behavior (Gollwitzer, 1999).

Limitations

Limitations of the study include the relative homogeneity of the sample, being Caucasian, Australian females working in the finance industry, which may limit generalizability to the general public. Furthermore, the sample size at follow-up was much smaller than the original sample despite follow-up reminders and incentives. This may have introduced undetected bias into the sample.

Strengths

This study was unique and the first known application of the BIM in suicide prevention video material for the community. There is evidence that self-reported suicide risk assessment and protective intervention ability increased as a result of the intervention, although this effect waned somewhat at follow-up. Further, this study used an active control condition which had almost identical baseline scores pre-intervention to the experimental condition, compared to post-intervention where experimental scores were significantly higher, a finding that deserves further investigation. Many studies assessing learning from suicide prevention material use forced-choice questionnaires which are subject to social desirability effects, whereas the current study used an action plan format with open questions and written responses allowing a more in-depth exploration of learning and understanding.

Implications and Future Directions

The current study suggests that a BIM-informed community suicide prevention training video results in greater suicide risk assessment and protective intervention ability as compared to current publicly available material. This has important implications for future community suicide prevention campaigns (e.g., websites, flyers, workshops), which may benefit from being designed according to the five components of the BIM to increase likelihood of helping behavior.

Future studies are recommended to include a more diverse sample and assess beyond self-reported action planning (e.g., behavior through role play), allowing a closer assessment of clinical significance. Intervention information is recommended to be more accessible in a variety of formats to suit different ages and preferences (e.g., video,

booklet, website, smartphone application). Furthermore, based on the paucity of psychometrically validated measures in this area, it is suggested to adapt and/or develop and validate new measurement tools to assess the efficacy of BIM-informed education.

Conclusion

The results of this study provide evidence for the efficacy of a BIM-informed video in increasing suicide risk assessment ability and protective intervention. This can help shape future research to more efficiently address the high and increasing suicide rates. A substantially higher proportion of people at risk of suicide communicate their distress to community members than to health professionals. This warrants a focus on interventions to enhance the general community member's ability to detect suicide risk, assess the risk and take appropriate protective action to refer the person at risk to professional care. Interventions informed by the BIM may offer potential to enhance this response and, therefore, prevent suicide. This theory-based video manifested a clear short-term effect, and further research needs to identify ways to sustain this.

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Electronic Supplementary Material

- ESM 1. Video content [*Appendix T*]
- ESM 2. Vignettes [*Appendix U*]
- ESM 3. CONSORT 2010 Flow Diagram [*Appendix BB*]
- ESM 4. Tables [*Appendix CC*]

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Chapter 12. Validity Testing of the Detecting and Responding to Suicide Risk Readiness Scale (DARTS-RS): Version 2

The current study aimed to assess the reliability and validity of the *modified* version (version 2) of the Detecting and Responding to Suicide Risk Readiness Scale (DARTS-RS) (version 1). The initial adapted version was delivered in Study 2 (see Chapter 7) and analysed in Chapter 10. The current study focused on the modified version delivered in the same sample as Study 3 (see Chapter 11). The results were not reported in Study 3 to keep the paper focused on the key outcomes measures. The modified version was assessed via conducting factor analyses, assessing correlations with other measures to assess convergent, divergent and predictive validity and measuring internal consistency and test-retest reliability.

Summary of Version 1

As Chapter 10 outlined, the initial adapted version may have too directly translated the original version concerning bullying and sexual harassment into suicide. See item 1 in Table 1 for example: ‘bullying is a problem at this school’ was very directly adapted to ‘suicide is a problem in my community’. The research team initially attempted to keep the measure as similar as possible in wording except to apply the situations to the topic of suicide. Furthermore, factor analyses showed certain items as problematic due to low factor loadings.

Firstly, item 5 was suggested to be problematic as it was the only item with reverse wording and scoring. While all items were carefully recoded for analysis, participants may have developed a pattern of answering on a certain extreme and continued through item 5 without realising. Furthermore, the wording of this item may have been too extreme. Research indicates, the public commonly assume suicidal threats and gestures are attempts to ‘seek attention’ when these are serious warning signs of suicide risk requiring further assessment (Chehil & Kutcher, 2012). The original version is also based on research of common excuses for and minimisation of sexual misconduct (Nickerson et al., 2014). Both items therefore have a theme of minimising the seriousness of the issue at hand by bystanders. The adapted item, however, may have been worded too strongly, leading most participants to answer in the most ‘socially appropriate’ manner, rather than true personal opinion. Strong wording includes ‘killing themselves’, ‘should’ and ‘just’. More neutral wording was suggested to potentially lead to more variance in the item and the item was modified accordingly for Study 3.

Secondly, item three, ‘I have seen people displaying warning signs of suicide around me this year’ had low correlations and loadings. This item was suggested to have lacked consistency with the ‘notice/interpret’ factor due to a number of potential reasons. These include participants not coming across anyone displaying warnings signs of suicide, limited knowledge of warning signs of suicide, not understanding the question, not being able to link/translate knowledge to peers or the sample size being too small. The item was therefore adjusted as outlined below.

As the first version of the adapted measure did not load on to the five parts of the BIM, the items were changed more significantly than the first version. Each item was carefully considered to not apply to the concept or topic of suicide itself and matching the original as closely as possible but more specifically a scenario of a peer presenting with suicide *risk*. This scenario was carefully applied to the five parts of the BIM for example, part 1, ‘notice the event’, was conceptualised as participants being able to notice someone at risk of suicide. Part 2, interpret the event as an emergency, was conceptualised as interpreting any suicide risk or warning sign as urgent to act upon. Part 3, accepting personal responsibility to help, was conceptualised as participants accepting personal responsibility to intervene in some way by assisting or asking someone else to assist the person at risk. Part 4, knowing how to help, was conceptualised as items capturing confidence and competence in assisting someone at risk. Part 5, implementing an intervention decision, was conceptualised as participants taking the first necessary steps to assist someone at risk. It was hypothesised that a less direct translation of the items may load on to the 5 parts of the BIM more closely by capturing the core of each part more specifically.

Table 1

Original, Adapted and Modified Versions of the Bullying and Sexual Harassment Questionnaire

Item No.	BIM Part	Original	Adapted, Version 1 (Study 2)	Modified, Version 2 (Study 3)
1	Notice the event	Bullying is a problem at this school.	Suicide is a problem in my community.	I can recognise most warning signs of suicide risk.
2	Notice the event	I am aware that students at my school are sexually harassed.	I am aware that people in my community die by suicide.	I am aware of most risk factors of suicide.
3	Notice the event	I have seen other students being bullied or harassed at my school this year.	I have seen people displaying warning signs of suicide around me this year.	I know what type of language and behaviour may indicate someone is thinking about suicide.

4	Interpret as emergency	It is evident to me that someone who is being bullied needs help.	It is evident to me that someone who is displaying warning signs of suicide needs help.	It is evident to me that someone who is displaying risk factors and/or warning signs of suicide needs to be asked if they are thinking about suicide as soon as possible.
5	Interpret as emergency *NOTE: Reverse score.	If someone makes sexually inappropriate comments, the student on the receiving end should realize it is just a joke.	If someone says they are thinking about killing themselves, the person hearing it should realise they are just seeking attention.	If someone repeatedly engages in self-harm behaviour, they may just be seeking attention.
6	Interpret as emergency	I think bullying and sexual harassment are hurtful and damaging to others.	I think persons thinking about suicide are in emotional and psychological pain.	If someone says they are thinking about suicide, it is vital they are asked about the details of these thoughts and referred to professional support as soon as possible.
7	Accept responsibility to help	I feel personally responsible to intervene and assist in resolving bullying or sexual harassment incidents.	I feel personally responsible to intervene and assist if I hear someone is thinking about suicide.	If someone is displaying risk factors and/or warning signs of suicide, I feel personally responsible to ask if they are thinking about suicide.
8	Accept responsibility to help	If I am not the one bullying or harassing others, it is still my responsibility to try to stop it.	If someone tells me they are thinking about suicide, even if I am not their immediate family or a health professional, it is still my responsibility to help them.	If I see someone displaying risk factors and/or warning signs of suicide, even if I am not their immediate family or a professional, it is still my responsibility to ask about suicidal thoughts and get help for them.
9	Accept responsibility to help	I believe that my actions can help to reduce bullying and sexual harassment.	I believe that my actions can help to reduce suicide.	I believe that my actions can help to reduce suicide.
10	Know how to help	I have the skills to support a student who is being treated disrespectfully.	I have the skills to support a person thinking about suicide.	I know what to say to someone who is displaying risk factors and/or warning signs of suicide.
11	Know how to help	I know what to say to get someone to stop bullying or harassing someone else.	I know what to say to get someone who is thinking about suicide to not go through with the act.	I know what to ask someone who is displaying risk factors and/or warning signs of suicide.
12	Know how to help	I can help get someone out of a situation where he or she is being bullied or harassed.	I can help get someone out of a situation where they are seriously thinking about suicide.	I know what to do if I see someone displaying risk factors and/or warning signs of suicide.
13	Implement intervention decision	I would tell a group of my friends to stop using sexist language or behaviours if I see or hear them.	I would tell a group of my friends to help someone who they think may be contemplating suicide.	If I saw someone who recently lost a family member to suicide, I would ask them if they

14	Implement intervention decision	I would say something to a student who is acting mean or disrespectful to a more vulnerable student.	I would say something to someone if I thinking they are thinking about suicide.	are having any thoughts about suicide themselves. If I saw someone who recently went through significant embarrassment or shame, even if I did not agree with their actions, I would ask them if they are having thoughts about suicide.
15	Implement intervention decision	I would tell my friend to stop using put-downs when talking about the person he or she is going with.	I would tell my friend to help someone who is thinking about suicide.	If someone sounds hopeless, such as saying 'I can't do this anymore', I would ask them if they are having thoughts about suicide.
16	Implement intervention decision	If I saw a student I did not know very well being harassed or bullied at school, I would help get him or her out of the situation.	If I saw someone I did not know very well displaying warning signs of suicide, I would help them or get help for them.	If someone says they are having thoughts about suicide, I would arrange appropriate professional support for them, even if they did not want it.

Method

Participants

The modified items were administered to 628 participants with a mean age of 47.82 years ($SD = 17.25$, range = 18-75 years), the majority being Caucasian (81%) women (58.9%), employed in finance (39%).

Measures

Detecting and Responding to Suicide Risk Readiness Scale (DARTS-RS). See Study 2 for description and Table 1 above for example items.

Confidence and Intent to Intervene Scale (CITIS). See Study 2 for description. This measure is included in the current chapter to assess convergent validity of the DARTS-RS.

Risk of Suicide Assessment Ability (ROSAA). See Study 3 for description. This measure is included in the current chapter to assess predictive validity of the DARTS-RS.

Protective Intervention Ability (PIA). See Study 3 for description. This measure is included in the current chapter to assess predictive validity of the DARTS-RS.

Stigma of Suicide Scale (SOSS). Participants' stigma towards suicide was assessed via the SOSS (see Appendix DD) prior to and after introducing the intervention and at 2-month follow-up. Items (e.g., 'In general people who suicide are shallow') were assessed on a five-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*), higher scores indicating higher stigma. The original scale had sound reliability and

validity ($\alpha=.70$) (Batterham, Callear, & Christensen, 2013). The author of the scale has provided written permission to use the scale in the current project (see Appendix EE).

Bystander Behaviour Scale (BBS). At Time 3 only (2-months post intervention), participants completed the Bystander Behaviour Scale (BBS) (see Appendix FF). This was a 20-item scale adapted from an original version (Bystander Behaviour Questionnaire) targeted at sexual harassment to be relevant to a scenario of suicide risk (Banyard, 2008; Banyard et al., 2014). This assessed actual suicide preventive behaviour in the previous 2 months. An example item includes ‘I talked to a friend about suicide warning signs they were displaying and asked them if they were thinking about suicide’. Response options include ‘yes’ (score=1), ‘no’ (score=0) or ‘no opportunity’ (score=0). A higher score indicates more instances of bystander behaviour. The original scale had good reliability and validity ($\alpha=.97$) (Banyard et al., 2014).

Procedure

Participants were recruited via social media, a university campus and flyers handed out in the community (gyms, libraries) in Brisbane (Australia), inviting participants to complete an anonymous questionnaire online. Inclusion criteria were adults aged over 18 years. Exclusion criteria were previous bereavement by suicide of significant others, personal suicide ideation or distress by the topic of suicide. Participants completed demographic (age, occupation, gender) questions and the DARTS-RS, CITIS, SOSS, ROSAA, and PIA before and after the intervention. These were repeated two months post intervention in addition to the BBS. The control condition watched a standard video about suicide risk detection and response with information currently publicly available, not specifically designed to address each part of the BIM in detail and in order. The experimental condition watched a video designed to address each part of the BIM in detail and in order. Participants were randomly assigned into a condition by Qualtrics. The study was approved by the University’s Human Research Ethics Committee (registration number: HEC19008).

Results

Factor Analysis

Using SPSS version 20, principal component and factor analyses were run at Time 1 (T1) and Time 2 (T2) on the DARTS-RS items using Principal Axis Factoring (PAF) and Principal Component Analysis (PCA) with direct oblique and orthogonal rotation. Item loadings and patterns were very similar in these eight analyses. The results at T1 are

reported below to present the scale prior to any intervention. Further, PAF is reported as the current study's aim is not simple data reduction but understanding underlying factors in relation to existing theory on the BIM (Tabachnick & Fidell, 2007). Results from the orthogonal rotation (independence of factors assumed) is reported as the BIM suggests the 5 parts are independent of each other (Tabachnick & Fidell, 2007).

The suitability of the 16 items of the DARTS-RS for factor analysis was assessed. Inspection of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin value was .90, exceeding the recommended value of .60 and Bartlett's Test of Sphericity reached statistical significance, $p < .001$, supporting the factorability of the correlation matrix. Principal Axis Factoring revealed the presence of three components with eigenvalues exceeding 1, explaining 41.56%, 11.28% and 8.10% of the variance respectively. An inspection of the scree plot revealed a clear break at the fourth component. Based on the eigenvalues, scree plot and pattern matrix, three components were retained (see Figure 1). To aid in the interpretation of these three components, orthogonal rotation was performed. The rotated solution revealed all three components showing at least three items with majority strong loadings (see Table 2).

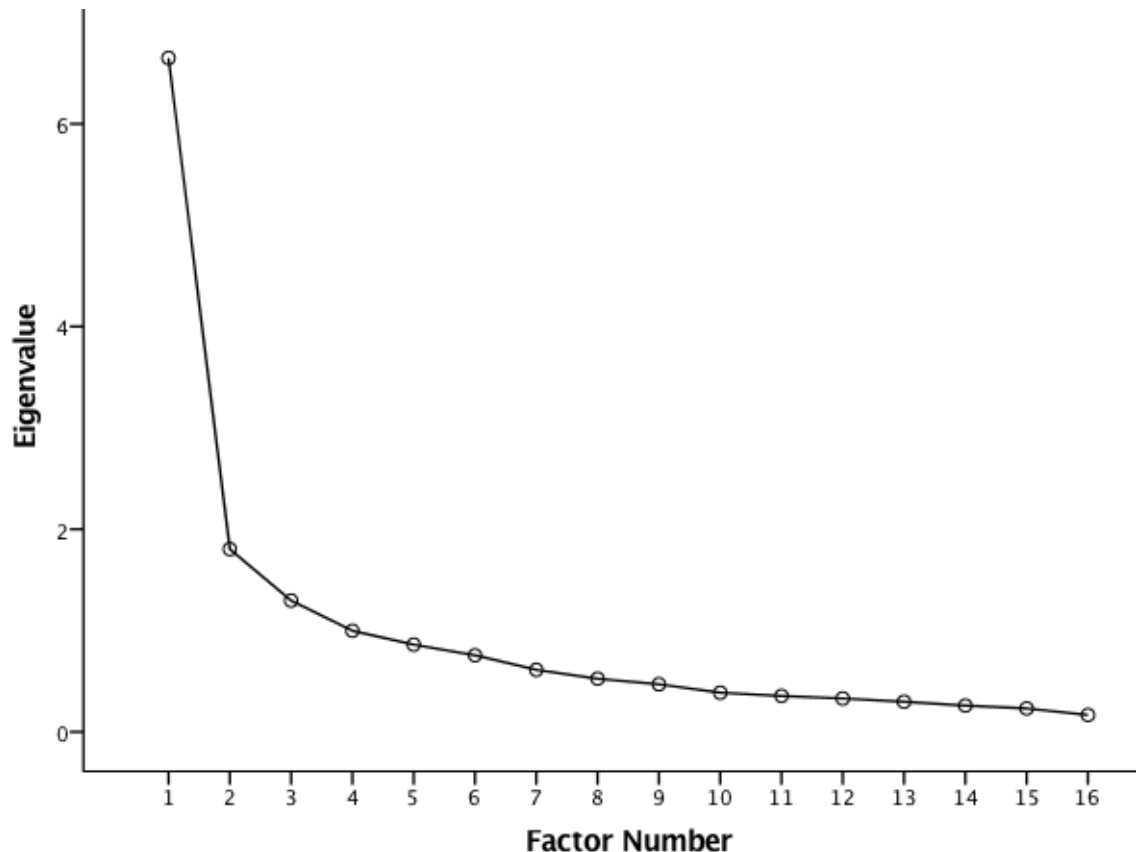


Figure 1. Scree Plot of Principle Axis Factoring of DARTS-RS Version 2 Eigenvalues

Table 2

DARTS-RS Version 2 Item Factor Loadings

Scale Item	DARTS-RS Item	BIM Part	Factor 1	Factor 2	Factor 3
1	I can recognise most warning signs of suicide risk.	1) Notice	.75		
2	I am aware of most risk factors of suicide.	1) Notice	.71		
3	I know what type of language and behaviour may indicate someone is thinking about suicide.	1) Notice	.75		
4	It is evident to me that someone who is displaying risk factors and/or warning signs of suicide needs to be asked if they are thinking about suicide as soon as possible.	2) Interpret as emergency		.50	
5	If someone repeatedly engages in self-harm behaviour, they may just be seeking attention.	2) Interpret as emergency			.12
6	If someone says they are thinking about suicide, it is vital they are asked about the details of these thoughts and referred to professional support as soon as possible.	2) Interpret as emergency			.58
7	If someone is displaying risk factors and/or warning signs of suicide, I feel personally responsible to ask if they are thinking about suicide.	3) Assume responsibility			.59
8	If I see someone displaying risk factors and/or warning signs of suicide, even if I am not their immediate family or a professional, it is still my responsibility to ask about suicidal thoughts and get help for them.	3) Assume responsibility			.65
9	I believe that my actions can help to reduce suicide.	3) Assume responsibility			.56
10	I know what to say to someone who is displaying risk factors and/or warning signs of suicide.	4) Competence/confidence	.78		
11	I know what to ask someone who is displaying risk factors and/or warning signs of suicide.	4) Competence/confidence	.76		
12	I know what to do if I see someone displaying risk factors and/or warning signs of suicide.	4) Competence/confidence	.71		
13	If I saw someone who recently lost a family member to suicide, I would ask them if they are having any thoughts about suicide themselves.	5) Implement intervention decision		.73	
14	If I saw someone who recently went through significant embarrassment or shame, even if I did not agree with their actions, I would ask them if they are having thoughts about suicide.	5) Implement intervention decision		.84	
15	If someone sounds hopeless, such as saying 'I can't do this anymore', I would ask them if they are having thoughts about suicide.	5) Implement intervention decision		.68	
16	If someone says they are having thoughts about suicide, I would arrange appropriate professional support for them, even if they did not want it.	5) Implement intervention decision			.33

Note. Only correlations of .3 or high are reported as per Pallant's (2013) guidelines for factor reporting

Reliability

Internal consistency. The DARTS-RS had good internal consistency (Cronbach's $\alpha = .89$). Factor 1, consisting of six items, had excellent internal consistency (Cronbach's $\alpha = .91$). Item analyses showed this alpha level remained at .88 or higher if any of the items were deleted. Item correlations with the factor were also assessed all which were above .7, where a correlation of less than .3 is said to be problematic (see Table 3) (Tabachnick & Fidell, 2007).

Table 3

DARTS-RS Version 2 Factor 1 Item Analyses

DARTS-RS	Correlation with factor	Cronbach's alpha if item deleted
1	.73	.89
2	.71	.90
3	.74	.89
10	.79	.88
11	.77	.89
12	.73	.89

Factor 2, consisting of four items, had good internal consistency (Cronbach's $\alpha = .84$). Item analyses showed the alpha level dropped to between .77 and .80 if items 13, 14 or 15 were deleted. The alpha level remained similar if item 4 was deleted. Item correlations with the factor were also assessed where all items correlated with the factor at .58 or higher (see Table 4).

Table 4

DARTS-RS Version 2 Factor 2 Item Analyses

DARTS-RS	Correlation with factor	Cronbach's alpha if item deleted
4	.58	.85
13	.70	.79
14	.75	.77
15	.69	.80

Factor 3, consisting of six items, had a Cronbach's alpha of .67. Item analyses showed the alpha level dropped to between .54-.64 if items 6-9 or 16 were deleted. The alpha level increased to .76 if item 5 was deleted. Item correlations with the factor were

also assessed, all which were .35 or higher except item 5 (see Table 5).

Table 5

DARTS-RS Version 2 Factor 3 Item Analyses

DARTS-RS	Correlation with factor	Cronbach's alpha if item deleted
5	.04	.76
6	.46	.61
7	.54	.57
8	.62	.54
9	.53	.59
16	.35	.64

From the above reliability analyses the items and factors are all acceptable except item 5. A PAF was rerun with item 5 removed and the factor structure was retained as above.

Test-retest reliability. Test-retest reliability of the DARTS-RS was assessed. The relationship between the DARTS-RS at T2 and T3 (approximately 2-month gap) was investigated using the Pearson product-moment correlation coefficient. The DARTS-RS correlation between T2 and T3 was large, positive and significant ($r=.77, p < .001, n = 126$).

Validity

Convergent validity. Convergent validity of the DARTS-RS was assessed. The relationships between the DARTS-RS and CITIS at T1, T2 and T3 were investigated using the Pearson product-moment correlation coefficient. As shown in Table 6, all correlations were large, positive and significant where higher scores on the DARTS-RS correlated with higher CITIS scores.

Table 6

Correlations Between DARTS-RS Version 2 & CITIS T1 (n = 628), T2 (n = 628), T3 (n = 126)

	CITIS T1	CITIS T2	CITIS T3
DARTS-RS T1	.75**	.57**	.50**
DARTS-RS T2	.49**	.84**	.67**
DARTS-RS T3	.52**	.76**	.84**

Note: ** $p < .001$

Predictive validity. Predictive validity of the DARTS-RS was investigated. The relationships between the DARTS-RS at T1, T2 and T3 and ROSAA and PIA combined (Checklist Total, i.e., CLTOT) were investigated using the Pearson product-moment correlation coefficient. There were small to medium, significant, positive correlations between the DARTS-RS at T1, T2 and T3 with the CLTOT (see Table 7).

Table 7

Correlations Between DARTS-RS Version 2 & CLTOT T1 (n = 628), T2 (n = 628), T3 (n = 126)

	CLTOT T1	CLTOT T2	CLTOT T3
DARTS-RS T1	.20**	.09*	.06
DARTS-RS T2	.27**	.39**	.35**
DARTS-RS T3	.28*	.28*	.40**

Note: * $p < .05$, ** $P < .001$

Discriminant Validity. Discriminant validity of the DARTS-RS was investigated. The relationships between the DARTS-RS at T1, T2 and T3 and SOSS were investigated using the Pearson product-moment correlation coefficient. There were small to medium, significant, negative correlations between the DARTS-RS at T1, T2 and T3 and SOSS (see Table 8).

Table 8

Correlations Between DARTS-RS Version 2 & SOSS T1 (n = 628), T2 (n = 628), T3 (n = 126)

	SOSS T1	SOSS T2	SOSS T3
DARTS-RS T1	-.12 *	-.04	-.03
DARTS-RS T2	-.31**	-.29**	-.20*
DARTS-RS T3	-.24*	-.18*	-.27*

Note: * $p < .05$, ** $P < .001$

Discussion

The aim of the current study was validity testing of the DARTS-RS Version 2. Key findings include that factor analysis revealed three factors, item 5 was the least consistent with its factor and convergent validity, divergent validity, test-retest reliability, internal consistency and predictive validity of the DARTS-RS was demonstrated. These findings are explained below.

Factor Analysis

Factor structure. When looking at the items which loaded highly on each factor, it can be deducted that Factor 1 appears to include ‘confidence-based’ items. These include confidence to notice/detect suicide risk in others and confidence to respond to those at risk. This factor encapsulates part 1 (notice the event) and part 4 (competence/confidence to help) of the BIM. Wording of items include ‘I know what to say’, ‘I know what to ask’, ‘I know what to do’, ‘I can recognise’ and ‘I am aware’.

Factor 2 relates to ‘intention to intervene’ with 3 items from part 5 of the BIM (implement intervention decision). It also includes one item from part 2 of the BIM (interpret as emergency) which seems to be an outlier requiring further refining. Items include wordings of ‘Someone who is displaying risk factors of suicide needs to be asked if they are thinking about suicide’ and ‘I would ask if they are having thoughts about suicide’.

Factor 3 appears to contain ‘personal sense of urgency to intervene’ items. One item is from part 2 of the BIM (interpret as emergency), 3 items from part 3 (accept personal responsibility to help) and one item from part 5 (implement intervention decision). Wording of items from all parts include ‘If someone says they are thinking about suicide, it is vital they are asked... and referred...’, ‘If someone is displaying risk factors of suicide, I feel personally responsible to ask...’, ‘If I see someone displaying warning signs... it is my responsibility to ask...’, ‘...my action can help’ and ‘I would arrange appropriate professional support, even if they did not want it’.

The factor structure in the current study is not an exact replication of the five separate BIM parts. This may be due to participant fatigue as it was a long questionnaire and item 5 indicates some lack of concentration on items (the only reverse-scored item), the scale requiring refinement or BIM irrelevance in suicide risk. The three factors still in general, mapped on to and summarised the BIM. Part one (notice) and four (know how to help) have combined into a ‘confidence’ factor: confidence in noticing and responding to suicide risk. Part 5 (decide to act) and one item from part 2 (emergency) combined into an ‘intention to intervene’ factor. Part 3 (personal responsibility) and one item from part 2 (emergency) and 5 (decide) resulted in a ‘personal sense of urgency to act’. The most disparate BIM part represented in the current factor analysis is part 2, interpreting any sign as an emergency or with a sense of urgency. One item was removed (item 5) due to low loadings and the remaining two items fall on separate factors. This could be due to

the items in other BIM parts often being worded with a sense of urgency, therefore this BIM part may indeed capture the remaining 4 parts. Removing a problematic item (5) did not alter factor structures significantly. Factors had fair to excellent internal consistency. All items correlated with their respective factor except item 5.

While the above paragraph reviewed potential reasons why the current sample did not map onto the five-part BIM, on the other hand, it could also mean that these three factors are the most important in the context of community suicide prevention and that the five-part BIM when applied to suicide prevention may better be summarised as three parts. The five-part BIM was conceptualised from incidents of inaction in scenarios of a bystander noticing a person in physical danger (violence, injury). When a model is applied in a different context, in this case suicide prevention, the strongest mechanisms at play may change. The first part of the five-part BIM is '*ability* to notice' a situation requiring intervention. Simple '*ability*' to notice may be less relevant in suicide prevention. Factor one in the three-part BIM returned in this paper includes '*confidence*' items, both in noticing someone at risk and helping someone at risk. It could be that when it comes to community suicide prevention, ability to notice is not enough, but people need '*confidence*' to notice all the signs. One might have the ability to do a task through learning but still lack confidence. One of the biggest reasons the Bystander Effect occurs which the BIM attempts to counter is fear of making a mistake, i.e., lack of confidence.

The second difference in the five-part BIM compared to the three-part version found in this study, is that the five-part version has two separate parts for '*personal responsibility to intervene*' and '*interpreting a situation as urgent*'. These two parts combined into one factor in the current study. The five-part model poses that before one can assume personal responsibility one must first interpret the situation as urgent, i.e., one cannot assume personal responsibility unless the situation has been deemed urgent (as the model suggests). In a scenario involving a person at risk of personal injury for example, a person in crutches dropping a pen, a bystander can notice the person needs help or else may injure themselves further and secondly take responsibility themselves to step in and help. In community suicide prevention on the other hand, these steps may not be sequential and reliant on one another but rather a combined step. It may be that taking personal responsibility is not dependant on interpreting the situation as urgent, but rather once a situation is noticed, a personal sense of urgency to respond is vital to lead to helping behaviour. Both versions have a final part of reaching a conscious decision and

intent to intervene. It may be that in scenarios of suicide risk, this final step is preceded by two steps instead of four.

Item analysis. Item 5 of the DARTS-RS requires review based on low factor loading (.12), low correlation with factor (.04) and if deleted would increase the alpha of the factor: 'If someone repeatedly engages in self-harm behaviour, they may just be seeking attention.' This item did not fall on the same factor as other items within its BIM part (interpret as emergency). This item was adapted from: 'If someone makes sexually inappropriate comments, the student on the receiving end should realise it is just a joke.'. This item may be problematic as it was the only item with reverse wording and scoring. While all items were carefully recoded for analysis, participants may have developed a pattern of answering on a certain extreme and continued through item 5 without realising or answered in the most socially desirable way. It could also be that although this item is a strong risk factor to suicide, self-harm to the reader may seem irrelevant in the context of community suicide prevention and may have caused confusion.

Reliability

The DARTS-RS was found to have good reliability in having good internal consistency. Furthermore, scores on the DARTS-RS correlated largely and significantly between T2 and T3 suggesting test-retest reliability. This suggests a level of consistency to the measure. The consistency of the results from the factor and principal component analyses at T1 and T2 further supports this statement.

Validity

The DARTS-RS and CITIS correlated largely and significantly with each other across time points, suggesting evidence of convergent validity as they are measuring similar constructs of readiness and confidence and intent to help. The DARTS-RS and CLTOT correlated small to moderately and significantly with each other across time points. This suggests evidence of predictive validity as one would expect readiness to help would translate into higher ability scores. The DARTS-RS and SOSS correlated small to moderately, significantly and negatively with each other across time points, suggesting evidence of divergent validity as one would expect the higher the readiness of someone to detect and respond to suicide risk, the lower their stigma towards suicide might be.

Limitations and Future Research

Limitations of the current study includes a homogeneous sample, limiting generalisability. Further, as outlined above, item 5 was problematic requiring revision and

further testing. Additionally, the overall wording of all items may have used wording indicating urgency which may have absorbed part 2 of the BIM (interpret as an emergency).

Future research is recommended to attempt to recruit a more diverse population, change item 5 so that it is not reverse-scored as it seems to have confused participants and refine overall wording so that the sense of urgency is not diluted into other items but items on their own to retain the five separate parts of the BIM. Furthermore, to separate out confidence to notice and confidence to intervene, it is suggested part 1/notice items are based on past behaviour (e.g., “I easily notice when friends or family are down and withdrawn”) and part 4/competence/confidence items are future focused (e.g., “I know what to say...”). It may also be better to design a completely separate questionnaire without attempting to adapt a previously validated measure.

Overall, while the DARTS-RS has not been a perfect replication of the BIM it has still been a useful measure in the current thesis to measure readiness to detect and respond to suicide risk. Both factor analyses from Chapter 10 and the current chapter have supported constructs of confidence to detect, sense of urgency to intervene, sense of personal responsibility to intervene, confidence to intervene and decision to intervene, summarising overall readiness to detect and respond.

Further, this does not take away from the fact that this thesis focused on the efficacy of content informed by the BIM, versus content not informed by the BIM. The manipulation check in both RCTs confirmed that the content of the experimental group was significantly more in line with the BIM than the control group. This means conclusions that BIM-guided material is more effective than none-BIM content in this study in affecting outcome variables is still valid, despite the DARTS-RS not being an exact replication of the five parts. In fact, this first application of a BIM-informed measure in the context of suicide prevention rather presents a potential new, three-part factor structure with a more relevant focus in this context. This three-part model of ‘confidence to notice and act’, ‘personal sense of urgency to act’, ‘decision and intent to act’ has potential value in future applications in suicide prevention research. This three-part model could be used to design education material and tested to see if it leads to increased likelihood in helping behaviour.

Conclusion

The current study aimed to assess the validity and reliability of a modified adapted measure to assess bystander intervention in accordance with the BIM in a community

sample. Overall, results suggest initial, partial validation of the DARTS-RS through reliability and convergent, divergent, and predictive validity indicated in the current sample. Although the five parts of the BIM were not replicated, the factor structure [confidence to detect and respond (part one and four combined), intent to respond (part five), personal urgency to respond (part two and three combined)] showed stability over time and two factors combined two parts of the model measuring similar constructs which can be understood together, still summarising the model to an extent. Further research on the DARTS-RS in suicide prevention is recommended to further establish the psychometric properties of the measure. Continued research and measurement development to assess how to increase community suicide risk detection and response is vital, to make the community segment of the suicide prevention system stronger.

Chapter 13. General Discussion and Conclusions

Rationale

This thesis is a response to a global call to action to improve how community suicide prevention is addressed. Suicide is *the* leading cause of death for young- and middle-aged adults in Australia, with huge ripple effects costing communities psychological and economic health.

Research Aims

This thesis aimed to firstly identify current intervention and research gaps in suicide prevention. This was the focus of Study 1 by systematically reviewing trends in current and recent suicide prevention programs in terms of content, delivery modality, theory base and outcomes. Secondly, this thesis aimed to address the gaps identified in the literature and systematic review. Study 2 and 3 involved RCTs to address these and test the efficacy of innovative strategies on readiness, confidence and intent to detect and respond to suicide risk. The RCTs also tested effects on suicide risk assessment and protective intervention ability.

Summary of Findings

Study 1 of this thesis was a systematic review of theory-based suicide prevention program efficacy studies published in the last decade. This study revealed most recent programs are targeting ‘gate-keepers’ (clinical and non-clinical professionals); are 1-4 days in length; are underpinned by 19 different theories; teach the least detail to the public and the most to gatekeepers; are presented through lectures and workshops and; are found to be effective in improving their target outcomes. It was concluded that current programs, while found to be effective, are limited by their substantial variability in theory base, narrow target population, long duration, difficult to access delivery modalities and narrow content for the public. Future suicide prevention programs were recommended to broaden to the general public, consider a more relevant theory - the BIM, be more accessible through brief technology-based delivery modes and improve methodological rigour.

Study 2 of this thesis, a response to the identified gaps in Study 1, was a RCT comparing the effect of a BIM-guided factsheet versus a standard condition factsheet on participant’s readiness, confidence and intent to detect and respond to suicide risk. It was found that participants exposed to the BIM-guided material had significantly higher readiness, confidence and intent to detect and respond to suicide risk than the standard condition with moderate to large effect sizes. It was concluded that further research

should be conducted to look into the potential value of designing suicide prevention program material according to the BIM further.

Study 3 involved a RCT comparing the effect of a BIM-guided training video versus a standard condition training video. This time however the outcome variables went beyond forced-choice measures and rather assessed plan of action on how participants would respond in a situation when presented with someone at risk of suicide. It involved two dependant variables: 1) risk of suicide assessment ability and 2) protective intervention ability. These were assessed through written responses to open questions about how participants would respond in a hypothetical scenario of suicide risk. It was found that the experimental group had significantly higher scores on both variables post intervention compared to the control. At follow-up, experimental scores were still significantly higher than time 1 and significantly higher than the control for one outcome variable.

Study 2 and 3 were each followed by a validation study of the Detecting and Responding to Suicide Risk Readiness Scale (DARTS-RS). Both revealed three factors, not five as suggested by the BIM and previous studies related to bullying and sexual harassment. There may be a few reasons for this. Firstly, it could be due to the general public having limited prior knowledge in suicide prevention. The scale was adapted from a scale measuring bullying and sexual harassment. When questions are framed around willingness to intervene, most people know what to do when faced with a ‘bully’ for example ask them to stop, encourage the victim to walk away, report the bully etc. When it comes to suicide prevention intervention, the community have demonstrated limited confidence in knowing what to say and do. Suicide is a topic embedded in taboo, fear of ‘making it worse’, ambiguity, limited experience, etc. These issues may have complicated the item relationships and factor structure as participants may have responded more conservatively. Furthermore, rather than adapting an existing validated measure targeted toward another construct, future research is recommended to develop a novel scale with rigorous item testing for each part of the original five-part and new three-part BIM. Two factors from the current thesis did seem to summarise two parts of the BIM and could still map on to the BIM. It may be however, that the BIM is constructed differently in the context of suicide prevention, hence why both versions are recommended to be tested further to explore which model is most relevant in suicide prevention. The measure was found to have good reliability and convergent, divergent and predictive validity.

Another component of results includes the implementation and dissemination data presented in chapter 8. The key findings were: most participants knew about mental health support organisations however more than half lacked awareness of where to go for supporting someone specifically when concerned about suicide risk; participants consistently prefer websites and smartphone applications to access suicide prevention related material over workshops, flyers and posters; most participants reported not seeking support for a peer due to feeling it was not urgent enough, i.e., not interpreting risk factors or warning signs as urgent/important (although they may prefer informal support over professional support); most participants felt there is a need for more information for the community in terms of how to help someone presenting with suicide risk; most preferred for these to be marketed via social media; many reported current standard information lacks detail and practical ideas to help those at risk; many found the experimental sheet useful in boosting confidence and suggested turning the content in to a website, videos and smartphone application.

Thesis Contribution to Evidence Base

Previous research in all nine areas of the systems approach found relevant interventions to be effective. This includes community and gate-keeper training which are of particular relevance to this thesis. Despite these advances, the systems approach required review as suicide rates continue to rise which is a largely preventable cause of death. Although previous strategies have been effective, their target outcomes were different. Previous studies have been found to be effective in improving community knowledge, stigma, attitudes and skills. The current study has suggested a reason why suicide rates are not showing significant reductions is that even if a community is highly knowledgeable, with low stigma, supportive attitudes and strong skills, inaction may prevail due to the Bystander Effect. Knowledge, low stigma, supportive attitudes and strong skills does not counter diffusion of responsibility, fear of negative evaluation and group conformity. No matter how effective an intervention is in increasing knowledge, skill, etc., if the Bystander Effect is not considered, community intervention is less likely to occur. This thesis found that when the Bystander Effect was addressed via BIM-guided education, participant suicide risk detection and response readiness, confidence and intent was significantly higher than controls exposed to current community awareness information. This is suspected to be due to the BIM group being more prepared to notice risk factors and warning signs, being more ready and understanding in interpreting these as urgent, being more willing to take personal responsibility to help, feeling more

competent and confident to help, and making a decision to help. These factors combined, according to the model, are more likely to result in helping behaviour.

Overall this thesis has contributed to the evidence base by highlighting important gaps in current research, developing innovative resources for the public to address these gaps which were found to be efficacious in impacting outcome variables and instigating BIM-related assessment development and validity testing. More specifically, the thesis has highlighted that current suicide prevention programs are based on theories of significant variability. It provides further evidence of Christensen and Petrie's (2013) statement that suicide prevention is following a 'scattergun approach'. A scattergun fires multiple pellets at a target hoping one might hit however most miss and fall to the ground (Osgoodby, 2013). In the same way, Study 1 of this thesis has revealed suicide prevention efforts may be 'firing' too many disjointed approaches which are missing the mark and core of what translates education into action. This thesis suggests suicide prevention education may benefit from a more direct, intentional approach based on theory and evidence of human behaviour.

Implications for Future Research

There seems to be a lack of direction in theory base which may be representing a lack of understanding of mechanisms involved that lead to change. Based on findings from the literature review and systematic review, future research may benefit from further applying and investigating the BIM which promotes turning learning into real world behaviour. This can be achieved by splitting training into the five parts of the BIM and focusing specific attention on each to ensure the community are readily able to detect warning signs and risk factors of suicide, interpret these as important to act on, take personal responsibility to help and/or get help, feel confident and competent to help, and consciously decide to help. Without action, suicide rates will continue to rise. Without addressing the Bystander Effect, inaction is likely to continue. The BIM addresses this common inaction in the public and may lead to suicide prevention education material being applied, therefore potentially contributing to prevention.

Furthermore, the summary of results has strongly highlighted the importance of better equipping the general community to detect, assess and respond to suicide risk through protective action. This is because most people at risk, including youth and adults, communicate risk factors and warning signs to family and friends, rarely reaching a professional for help. This thesis has shown the availability and quality of suicide prevention training for professionals far outweighs what is available for the general

community. Future research is therefore recommended to increase designing and testing programs for the community to ensure they are better equipped to detect and respond to suicide risk by getting those at risk to professional help.

Additionally, this thesis has highlighted that access to most suicide prevention programs is compromised due to being expensive, time-consuming and sparsely available. Training programs are approximately \$300-\$800 AUD, 1-4 days in length and only available a few times per year with different training organisation in capital cities. These are most often attended by professionals as a requirement of their work role. These training days are missing the general community from different geographical locations and socioeconomic statuses. For suicide prevention to move forward, we must better educate the public through freely available and easily accessible resources marketed to increase uptake. This includes for example social media pages, websites, smartphone applications, and videos. The current study has demonstrated feasibility that online resources can recruit the community and has shown efficacy in target outcome variables. Future research should continue to develop technology-based resources, test their efficacy and finally work on dissemination. Suicide is not confined to a single age group and should therefore be delivered via a multitude of technology-based tools and disseminated via a multitude of formats (e.g., radio, social media, television and GP wait areas). Finally, future research is recommended to continue developing measures to assess the impact of suicide prevention training for the public on bystander intervention readiness.

Implications for Policy, Practice and Dissemination

Future researchers could focus on the translation of this research into practice through developing hands on, accessible tools for the public to access to increase their ability to support someone at risk of suicide. Study 2 of this project found that participants preferred technology-based resources (approximately 96.3%) over hard copy or training workshops (3.7%). Further, they indicated they preferred these to be marketed to them through technology such as social media rather than through hard copies such as flyers. There are currently limited free, easy to use, technology-based resources for the public that are known about and often used. This should be an area of focus moving forward by developing easy to follow, basic steps for the public to move through the BIM to become equipped to be part of preventing suicide. This can include videos, websites, social media pages and smart phone applications that teach five simple steps to match the BIM encouraging: 1) noticing suicide risk by teaching all risk factors and warning signs, 2) interpreting any sign as an emergency by teaching suicide is hard to predict and any

sign should be acted on, 3) taking personal responsibility by teaching people directly about the Bystander Effect, 4) knowing what to say and do by teaching community-appropriate responses including asking about suicide ideation, 5) encouraging action by teaching participants talking about suicide does not increase risk unless actual suicide methods are discussed.

Strengths

This thesis is strengthened by high participant numbers in Study 2 at the initial intervention ($n=281$) and in Study 3 ($n=628$). Further, it is the first known study to systematically review variations in the theoretical basis of suicide prevention programs, and subsequently explore the utility of the Bystander Intervention Model within that context. Further, it incorporates an in-depth exploration of the BIM, applying it specifically through the development of a factsheet and video, and then testing various impacts including changes in detecting and responding to suicide risk readiness, suicide risk detection and response confidence and intent, suicide risk assessment ability and suicide risk protective intervention ability. While only being based on self-report, it moved beyond forced-choice responses and also included written action plans to gain more detail in learning and understanding. Further, the BIM content was consistently statistically significantly more effective than controls with moderate to large effect sizes, indicating a strength in findings worth exploring further.

The thesis also includes the development of new, evidence- and theory-based education material for the public in the form of a factsheet and video which can be further developed and used in the community. It also includes a new adapted measure (DARTS-RS) and potential 3-part BIM to explore further. Finally, a new checklist to measure action plans was developed which can be used in future research.

Limitations

A limitation of this thesis was that measures used in Study 2 and 3 had not been previously validated. The BIM has been investigated in other areas such as bullying and sexual harassment with multiple, validated measures. While the Bystander Effect has been replicated in suicide risk scenarios, the application of the BIM to education material and assessment tools has not been previously researched in the area of suicide prevention. This meant there was a dearth of available validated measures to use. For this reason, validated measures from other areas of research were adapted to suit suicide risk scenarios. While the current study has been able to establish a good level of reliability and validity to the measure through repeating measures throughout, it is still important to take

this into account when interpreting the results of this thesis. Further, both sample populations had some degree of homogeneity, limiting generalisability of results to the general population. Also, actual behaviour through role plays and observation was not assessed, meaning results are only based on intentions and action plans, limiting ability to generalise results into action. Sampling bias may also be relevant given exclusion criteria in both RCTs were participants previously bereaved by suicide, distressed by the topic of suicide or experiencing suicide ideation themselves. These groups however, (bereavement, suicide ideation, distress) were not the focus of the study and participating in the study could have caused distress to these groups. This is because persons bereaved by suicide are at higher risk of suicide themselves and learning about intervention could result in guilt for not acting to support others in their lives, guilt also being a risk factor for suicide. When looking at the balance between causing potential harm and obtaining a wider sample, protecting the public was more important.

Recommendations

Several recommendations emerge from the overall findings from this thesis. Firstly, suicide prevention programs should take the Bystander Effect and BIM into consideration in their design, content and delivery. Suicide is a highly ambiguous topic with most people reporting low levels of competency to act, most often diffusing any sense of responsibility to intervene to someone else. This leaves those at risk alone and vulnerable, increasing their risk. Training content must take this important aspect of human behaviour into account to ensure their content is applied.

Secondly, in relation to the nine-part system of suicide prevention, more time and resources should be focussed in the domain of community awareness and training to better equip the public to recognise and respond to suicide risk. The community part of this model may be more important than previously considered and currently acknowledged, since it acts as an important gateway to much of the rest of the system.

Finally, suicide prevention programs are recommended to expand to more online and technology-based modes of delivery to become more feasible, accessible and economical. Importantly, these should be regularly promoted on social media, at schools, high risk workplaces, general practice clinics, gyms, libraries, etc. to have a far reach and impact so that every community has free suicide prevention tools at their fingertips.

Conclusion of Thesis

This thesis has taken an in depth look into the gaps in current suicide prevention research and addressed some of these through innovative methods which are evidence-

and theory-based. It found that suicide rates are currently being targeted through nine main strategies: reducing access to lethal means of suicide, responsible media reporting about suicide, community awareness programs, gatekeeper training, school-based suicide prevention programs, training of general practitioners in detecting depression and suicide risk and referring to support, training of frontline staff, evidence-based psychotherapy and follow-up for individuals with a recent suicide attempt. It also found that one of these domains seems to be a gateway to most of the rest: community awareness. This is because multiple areas of research have found that most people at risk of suicide and who die by suicide communicate their distress to family and friends, rarely reaching a professional. This means that equipping the community to detect and respond to suicide risk, and to connect the person at risk to a health professional, should be a priority.

It appeared that the community position was in fact not being adequately addressed as reflected by the paucity of suicide prevention training for the general community, with that available being expensive and largely inaccessible. This became the aim of this thesis: to develop and test innovative ways to strengthen this nine-level system. This included developing a BIM-informed factsheet and video. These were theory-based by exploring and applying relevant theories and determinants to helping behaviour based on previous research. They were evidence based by using best-practice guidelines in detecting and responding to suicide risk. And finally, they were relevant by being technology-based and easily accessible.

The above resources were found to be significantly more effective than current publicly available information at improving suicide risk detection and response readiness, confidence and intent and suicide risk assessment and protective intervention ability. Future research is recommended to replicate BIM-informed suicide prevention training to further explore the themes addressed in this thesis. The nine-level suicide prevention system is well-established. A continued focus on strengthening each level through theory- and evidence-based strategies may save lives. The fact that we have lost valuable lives such as Kitty Genovese and Dolly Everett with many aware bystanders, does not mean society has become 'immoral monsters' as previously thought. Rather this presents a community who is afraid and ill-equipped to help. Let us teach the community it is okay to speak about mental health and suicide. Let us teach them that speaking about these topics does not increase risk, in fact talking can reduce risk. In the words of Dolly, 'Speak even if your voice shakes'.

Appendices

Appendix A

Study 2 Publication acceptance letter and permission to include in thesis

03/05/2020

Mail - KARIEN HILL - Outlook

Crisis: Editor Decision - Accept pending final version

em.cri.0.69c92c.a5ba730e@editorialmanager.com
 <em.cri.0.69c92c.a5ba730e@editorialmanager.com>
 on behalf of
 Crisis <em@editorialmanager.com>

Sun 8/03/2020 10:50 AM

To: KARIEN HILL <20091619@students.latrobe.edu.au>

CC: j.pirkis@unimelb.edu.au

Ref.: CRI-MS-2633R2

Promoting the community's ability to detect and respond to suicide risk through an online
 Bystander Intervention Model-informed tool: A Randomised Controlled Trial
 Crisis: The Journal of Crisis Intervention and Suicide Prevention

Dear Dr. Hill,

I am pleased to tell you that your work has been accepted for publication in Crisis: The Journal of Crisis Intervention and Suicide Prevention.

In order to process your manuscript for publication, please submit your paper one more time, including a completely unanonymized version of the manuscript. For production purposes it is necessary that you upload your manuscript, tables, and appendices as Word documents. Please note that your documents will be combined into a PDF at the time of upload. Please include the author names and affiliations as well as the author correspondence address, including street address and email. We also require a short biography (a maximum 50 words) for each author.

To submit the final version, go to <https://www.editorialmanager.com/cri/> and log in as an Author. You will see a menu item called Submission Needing Revision. You will find your submission record there.

Thank you for submitting your work to this journal.

With kind regards,

Jane Pirkis
 Editor-in-Chief
 Crisis: The Journal of Crisis Intervention and Suicide Prevention

In compliance with data protection regulations, you may request that we remove your personal registration details at any time. (Use the following URL: <https://www.editorialmanager.com/cri/login.asp?a=r>). Please contact the publication office if you have any questions.

20/05/2020

Mail - KARIEN HILL - Outlook

Crisis: Permission to Include Accepted Manuscript in Thesis**Production | Hogrefe Publishing <production@hogrefe.com>**

Mon 11/05/2020 6:46 PM

To: KARIEN HILL <20091619@students.latrobe.edu.au>**Cc:** Jane Pirkis <j.pirkis@unimelb.edu.au>; Wendy Iverson <crisisjournalea@gmail.com>

Dear Dr. Hill,

Thank you very much for inquiring about our sharing guidelines – the editorial team of *Crisis* has forwarded your email to me.

Your article “Promoting the Community’s Ability to Detect and Respond to Suicide Risk Through an Online Bystander Intervention Model-Informed Tool” is currently with the copyeditor. I will have the proof ready for you in about three weeks. The DOI of your article is 10.1027/0227-5910/a000708.

For us, the publisher, it is fine for you to include the accepted version in your thesis along with the statement you mentioned. You may also use the final published version for that purpose if it appears before your submission date. What is your deadline? We may be able to expedite the production.

All the best,

Juliane Munson
Journals and Book Production

production@hogrefe.com

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Registered: Göttingen HRB 2224
VAT no.: DE 115303194



Appendix B

Study 2 Ethics approval

Australian Catholic University Original Application Approval:

2016-281E Ethics application approved! - Karien Hill

22/11/2018 11:02 pm

2016-281E Ethics application approved!

Pratigya Pozniak <Pratigya.Pozniak@acu.edu.au> on behalf of
Res Ethics <Res.Ethics@acu.edu.au>

Mon 1/16/2017 9:32 AM

To: Carina Chan <Carina.Chan@acu.edu.au>; Deanne Armstrong <Deanne.Armstrong@acu.edu.au>;

Cc: Res Ethics <Res.Ethics@acu.edu.au>; Karien Hill <karien.hill@myacu.edu.au>;

Dear Applicant,

Principal Investigator: Dr Carina Chan

Co-Investigator: Dr Deanne Armstrong

Student Researcher: Karien Hill (HDR Student)

Ethics Register Number: 2016-281E

Project Title: Public Suicide Prevention Strategies: The Efficacy of an Online Strategy Addressing the Bystander Effect in increasing confidence and intent to intervene

Risk Level: Low Risk

Date Approved: 16/01/2017

Ethics Clearance End Date: 31/12/2017

This email is to advise that your application has been reviewed by the Australian Catholic University's Human Research Ethics Committee and confirmed as meeting the requirements of the National Statement on Ethical Conduct in Human Research.

The data collection of your project has received ethical clearance but the decision and authority to commence may be dependent on factors beyond the remit of the ethics review process and approval is subject to ratification at the next available Committee meeting. The Chief Investigator is responsible for ensuring that outstanding permission letters are obtained, interview/survey questions, if relevant, and a copy forwarded to ACU HREC before any data collection can occur. Failure to provide outstanding documents to the ACU HREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research. Further, this approval is only valid as long as approved procedures are followed.

If your project is a Clinical Trial, you are required to register it in a publicly accessible trials registry prior to enrolment of the first participant (e.g. Australian New Zealand Clinical Trials Registry <http://www.anzctr.org.au/>) as a condition of ethics approval.

If you require a formal approval certificate, please respond via reply email and one will be issued.

Researchers who fail to submit a progress report may have their ethical clearance revoked and/or the ethical clearances of other projects suspended. When your project has been completed a progress/final report

form must be submitted. The information researchers provide on the security of records, compliance with approval consent procedures and documentation and responses to special conditions is reported to the NHMRC on an annual basis. In accordance with NHMRC the ACU HREC may undertake annual audits of any projects considered to be of more than low risk.

It is the Principal Investigators / Supervisors responsibility to ensure that:

1. All serious and unexpected adverse events should be reported to the HREC with 72 hours.
2. Any changes to the protocol must be reviewed by the HREC by submitting a Modification/Change to Protocol Form prior to the research commencing or continuing. <http://research.acu.edu.au/researcher-support/integrity-and-ethics/>
3. Progress reports are to be submitted on an annual basis. <http://research.acu.edu.au/researcher-support/integrity-and-ethics/>
4. All research participants are to be provided with a Participant Information Letter and consent form, unless otherwise agreed by the Committee.
5. Protocols can be extended for a maximum of five (5) years after which a new application must be submitted. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

Researchers must immediately report to HREC any matter that might affect the ethical acceptability of the protocol eg: changes to protocols or unforeseen circumstances or adverse effects on participants.

Please do not hesitate to contact the office if you have any queries.

Kind regards,

Kylie Pashley
on behalf of ACU HREC Chair, Dr Nadia Crittenden

Ethics Officer | Research Services
Office of the Deputy Vice Chancellor (Research) Australian Catholic University

THIS IS AN AUTOMATICALLY GENERATED RESEARCHMASTER EMAIL

La Trobe University Ethics Transfer Approval:



Research Office

To	Carina Chan
From	University Human Ethics Committee
HEC Number	HEC19007
Project title	Public Suicide Prevention Strategies: The Efficacy of an Online Strategy Addressing the Bystander Effect in increasing confidence and intent to intervene
Approval Period	22 October 2018 – 28 April 2019
Date	20 February 2019

I am pleased to advise you that the University Human Ethics Committee (UHEC) has granted ethical approval of the project listed above, subject to the following conditions being met:

Conditions of Approval - Specific to this Project

This approval is the continuation of ethics clearance originally granted on 16 January 2017 by Australian Catholic University Human Research Ethics Committee using approval ID: 2016-281E

Conditions of Approval – All projects

- The Chief Investigator will immediately report anything that might warrant review of ethical approval of the project.
- The Chief Investigator will notify the UHEC of any event that requires a modification to the protocol or other project documents and submit any required amendments in accordance with the instructions provided by the UHEC. These instructions can be found at <http://www.latrobe.edu.au/researchers/research-office/ethics/human-ethics>.
- The Chief Investigator will submit any necessary reports related to the safety of research participants in accordance with UHEC policy and procedures. These instructions can be found at <http://www.latrobe.edu.au/researchers/research-office/ethics/human-ethics>.
- The Chief Investigator will report to the UHEC annually in the specified format and notify the UHEC when the project is completed at all sites.
- The Chief Investigator will notify the UHEC if the project is discontinued at a participating site before the expected completion date, with reasons provided.
- The Chief Investigator will notify the UHEC of any plan to extend the duration of the project past the approval period listed above and will submit any associated required documentation. Instructions for obtaining an extension of approval can be found at <http://www.latrobe.edu.au/researchers/research-office/ethics/human-ethics>.
- The Chief Investigator will notify the UHEC of his or her inability to continue as Coordinating Chief Investigator including the name of and contact information for a replacement.
- A copy of this ethical approval letter must be submitted to all Investigators and sites prior to commencing the project.

The UHEC Terms of Reference, Standard Operating Procedures, membership and standard forms are available from <http://www.latrobe.edu.au/researchers/research-office/ethics/human-ethics>.

Should you require any further information, please contact the Human Research Ethics Team on:
T: +61 3 9479 1443 | E: humanethics@latrobe.edu.au.

Warm regards,

David Finlay
Chair, University Human Ethics Committee

Appendix C

Study 2 Control group factsheet

Mental Health and Suicide

THE FACTS

- Everyone has an opinion about mental health and suicide, but opinions based on myths add to stigma and make life harder for people affected by mental illness. So here are the facts you need to tell the truth from the myths.

→ WHAT IS MENTAL ILLNESS

- Our knowledge of mental illness is incomplete, but we can say one thing for certain: mental illness isn't laziness, attention-seeking, bad diet, mental, physical or spiritual weakness or a failure of character. Mental illness is illness, as real as cancer, diabetes and heart disease.

→ WHO DEVELOPS MENTAL ILLNESS

- There is no immunity against mental illness. Not everyone develops a mental illness during their lives, but anyone can.
- At least 45% of us will experience a mental illness during our lives. And that is just anxiety, mood disorders and substance addictions in people aged 16-85. Add in young people, schizophrenia, eating disorders, personality disorders and more and the figure is likely far higher.
- At least 20% of adults are affected by mental illness every year.
- Anxiety disorders are the most common, followed by depression. Some people have more than one diagnosis, and many Australians go undiagnosed.
- Indigenous Australians experience much higher rates of psychological distress than the general population, and lower access to mental health services.
- LGBTIQ+ people experience very high rates of depression and psychological distress and are the most at-risk group in Australia for suicide.
- Mental illness is not more common in rural and remote areas than in cities, but rates of suicide are much higher, services are harder to access and stigma can be higher.

→ WHAT ARE THE CAUSES OF MENTAL ILLNESS

- There isn't one simple, obvious thing, like a virus or bacteria, that causes mental illness, and that makes the causes hard to work out. For some mental illnesses, like schizophrenia and bipolar disorder, it's possible to inherit a predisposition — a greater likelihood that you'll develop the disorder. For others, there seems to be no genetic link at all. But even then, it doesn't mean you will develop any mental health issues. Your likelihood of developing a mental illness is influenced by a complex combination of genetics, neurological factors, developmental factors, environmental factors, socio-economic factors, personality, cultural factors, life experience, substance use, thinking patterns, behaviours and other factors.

→ WHAT ARE THE SUICIDE RATES IN AUSTRALIA

- Every day in Australia, at least 8 people die from suicide.

HOW TO HELP

- Got a niggling feeling that someone you know or care about isn't behaving as they normally would? Perhaps they seem out of sorts? More agitated or withdrawn? Or they're just not themselves. Trust that gut instinct and act on it.
- By starting a conversation and commenting on the changes you've noticed, you could help that family member, friend or workmate open up. If they say they are not ok, you can follow our conversation steps to show them they're supported and help them find strategies to better manage the load. If they are ok, that person will know you're someone who cares enough to ask.
- See the next page on how to ask...



Appendix D

Study 2 Experimental group factsheet

Mental Health and Suicide

THE FACTS

- Everyone has an opinion about mental health and suicide, but opinions based on myths add to stigma and make life harder for people affected by mental illness. So here are the facts you need to tell the truth from the myths.

→ WHAT IS MENTAL ILLNESS

- Our knowledge of mental illness is incomplete, but we can say one thing for certain: mental illness isn't laziness, attention-seeking, bad diet, mental, physical or spiritual weakness or a failure of character. Mental illness is illness, as real as cancer, diabetes and heart disease.

→ WHO DEVELOPS MENTAL ILLNESS

- There is no immunity against mental illness. Not everyone develops a mental illness during their lives, but anyone can.
- At least 45% of us will experience a mental illness during our lives. And that is just anxiety, mood disorders and substance addictions in people aged 16-85. Add in young people, schizophrenia, eating disorders, personality disorders and more and the figure is likely far higher.
- One in every five adults are affected by mental illness every year.
- Anxiety disorders are the most common, followed by depression. Some people have more than one diagnosis, and many Australians go undiagnosed.
- Indigenous Australians experience much higher rates of psychological distress than the general population, and lower access to mental health services.
- LGBTIQ+ people experience very high rates of depression and psychological distress and are the most at-risk group in Australia for suicide.
- Mental illness is not more common in rural and remote areas than in cities, but rates of suicide are much higher, services are harder to access and stigma can be higher.

→ WHAT ARE THE CAUSES OF MENTAL ILLNESS

- There isn't one simple, obvious thing, like a virus or bacteria, that causes mental illness, and that makes the causes hard to work out. For some mental illnesses, like schizophrenia and bipolar disorder, it's possible to inherit a predisposition — a greater likelihood that you'll develop the disorder. For others, there seems to be no genetic link at all. But even then, it doesn't mean you will develop any mental health issues. Your likelihood of developing a mental illness is influenced by a complex combination of genetics, neurological factors, developmental factors, environmental factors, socio-economic factors, personality, cultural factors, life experience, substance use, thinking patterns, behaviours and other factors.

→ WHAT ARE THE SUICIDE RATES IN AUSTRALIA

- Every day in Australia, at least 8 people die from suicide and over 170 people attempt suicide.
- Suicide is THE LEADING CAUSE OF DEATH for Australians aged 15-44 and 4TH leading cause for those aged 44 and above.
- Men are at greater risk of suicide and least likely to seek help.

HOW TO HELP

- The following information will give you basic tips to help you talk to someone you are worried may be thinking about suicide. Many of us will notice changes in people around us and get the feeling that “something is not right”. You may not want to say anything for fear of making the situation worse or because you don’t know what to say if they confirm your concerns. While these conversations can be very difficult and confronting, it can make a difference and maybe even save a life. By talking to the person and getting further information, you can help them get the support they may need. Most persons thinking about suicide are relieved when someone finally follows the following steps in order:

1. **Notice** who around you may be at risk of suicide
2. Take any signs you see **seriously**
3. Take **personal responsibility** to help or get help
4. Learn **how to help**
5. **Decide** to help

- The following pages will teach you each of the above steps.
- REMEMBER: Another person’s thoughts, actions and past are not within your control, not your responsibility and not your fault. All we can do is learn about suicide and how to refer those at risk to a professional. Suicidal thoughts are often underlined by situational stress that can be alleviated with professional and practical support or a mental health condition which can be treated. If those at risk can be recognised and referred, we will go a long way in preventing suicide.

1. How to Notice Someone May be at Risk of Suicide

Suicide Warning Signs

- ♦ Drawing or writing about death or suicide.
- ♦ Talking about suicide or death, even jokingly:
 - "No one would care if I was gone."
 - "If I was dead people wouldn't have to worry about me."
 - "I don't want to be here anymore."
 - "I wish I could go to sleep and never wake up."
 - "I want to kill myself."
 - "I am completely over it."
 - "No one would miss me if I wasn't around anymore."
 - "My family would be better off without me."
- ♦ Saying hopeless statements:
 - 'I can't do this anymore'.
 - 'I can't take this anymore'.
 - 'It's no use'.
- ♦ Seeking access to something dangerous
- ♦ Saying goodbye or giving away possessions
- ♦ Getting things in order like writing a will
- ♦ Losing interest in things they previously enjoyed
- ♦ Taking less care of their appearance
- ♦ Anxiety / agitation
- ♦ Writing good-bye or suicide notes
- ♦ Difficulty concentrating
- ♦ Self-destructive or risky behaviour
- ♦ Increased use of alcohol or drugs
- ♦ Withdrawal from others
- ♦ Seeking revenge
- ♦ Feeling trapped – like there's no way out
- ♦ Unable to sleep or sleeping all the time
- ♦ Dramatic changes in mood

Suicide Risk Factors

- ♦ Hopeless – no reason for living
- ♦ Recent embarrassment or shame
- ♦ Extreme guilt
- ♦ Previous suicide attempts
- ♦ Alcohol and/or substance use
- ♦ Current or previous history of psychiatric diagnosis
- ♦ Impulsivity and poor self-control
- ♦ Anger
- ♦ Distress
- ♦ Stressful life events (often in previous 6 months)
- ♦ Recent loss (relationship, health, job, money)
- ♦ Recent discharge from an inpatient psychiatric unit
- ♦ Family history of suicide
- ♦ History of abuse and/or trauma
- ♦ Chronic health problems/pain
- ♦ Elderly or young adult
- ♦ Unmarried/single
- ♦ Living alone
- ♦ LGBTIQA+ orientation
- ♦ White male
- ♦ Feeling worthless
- ♦ Financial stress
- ♦ Social isolation
- ♦ Seeking revenge
- ♦ Lack of protective factors

Protective Factors Against Suicide

- ♦ Reasons to live
- ♦ Hope
- ♦ Good physical health
- ♦ Good mental health
- ♦ High self-esteem
- ♦ Religious affiliation / spirituality
- ♦ Moral objection to suicide
- ♦ Medication
- ♦ Sense of responsibility to family
- ♦ High self-efficacy & self-esteem
- ♦ Good social and communication skills
- ♦ Good problem-solving skills
- ♦ Social support
- ♦ Healthy personal relationships
- ♦ Employment
- ♦ Children living in home
- ♦ Good coping skills
- ♦ Good frustration and distress tolerance
- ♦ Strong sense of meaning and purpose in life
- ♦ Cognitive flexibility
- ♦ Feeling safe
- ♦ Strong family connections
- ♦ Good sleep pattern, good diet
- ♦ Regular exercise
- ♦ High life satisfaction



2. Take Any Suicide Risk Factors and Warning Signs Seriously

- Even if a person displays just one of the above risks, for example a recent relationship break-up or job loss, it is important to follow ALL of the next steps in order.
- Suicide is hard to predict and no one can really know when someone will act on their thoughts. The only information one has are risk factors, warnings signs and protective factors. It is therefore vital to take every sign seriously and act immediately.
- It is better to ask and be wrong than not ask at all.
- Some people think that multiple and seemingly manipulative self-injurious behaviours means that the person is just trying to get attention and are not really suicidal. However, any prior suicidal behaviour or attempts increases the likelihood of eventual dying by suicide.
- Take all signs seriously and act immediately.



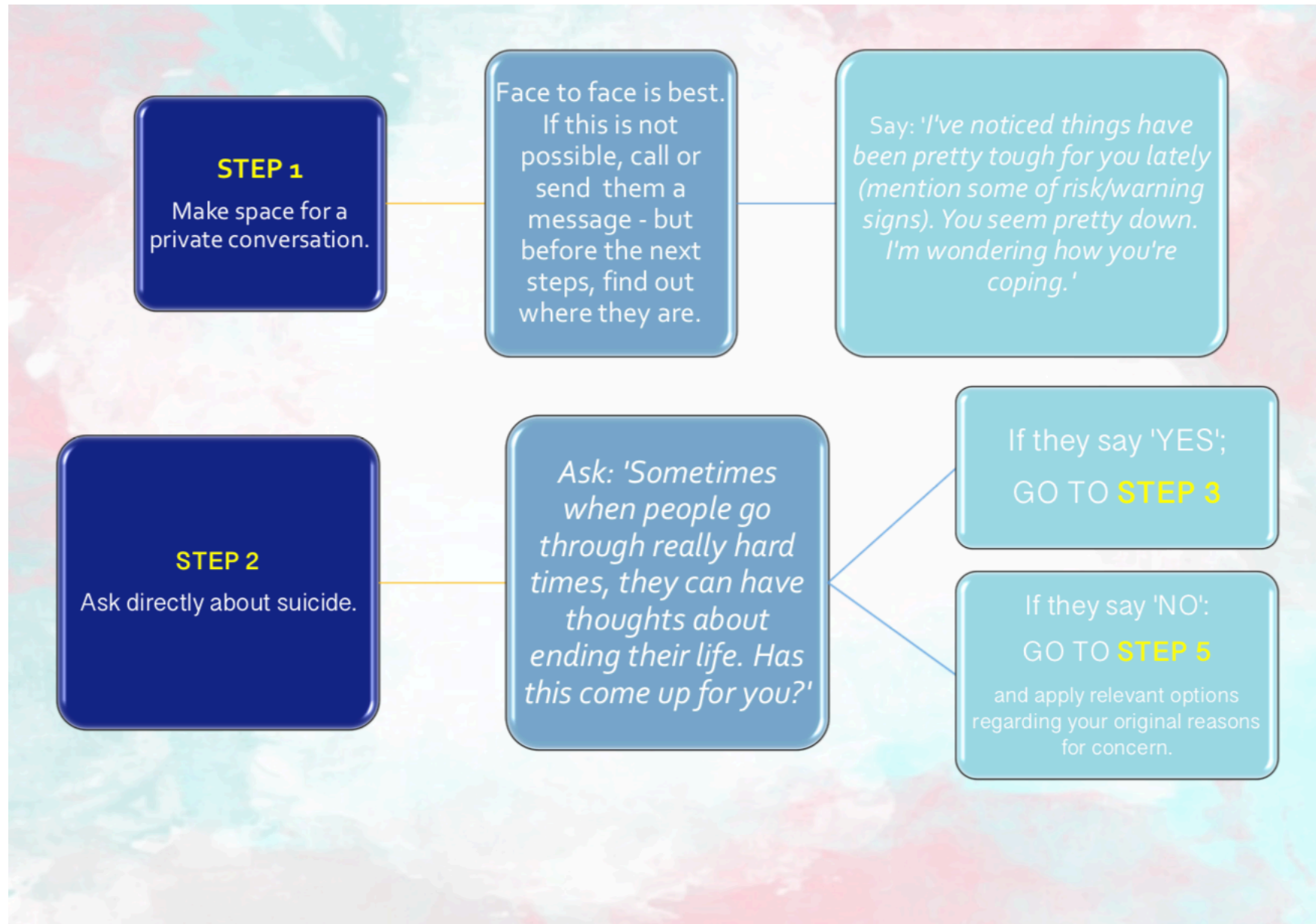
3. Take Personal Responsibility to Help

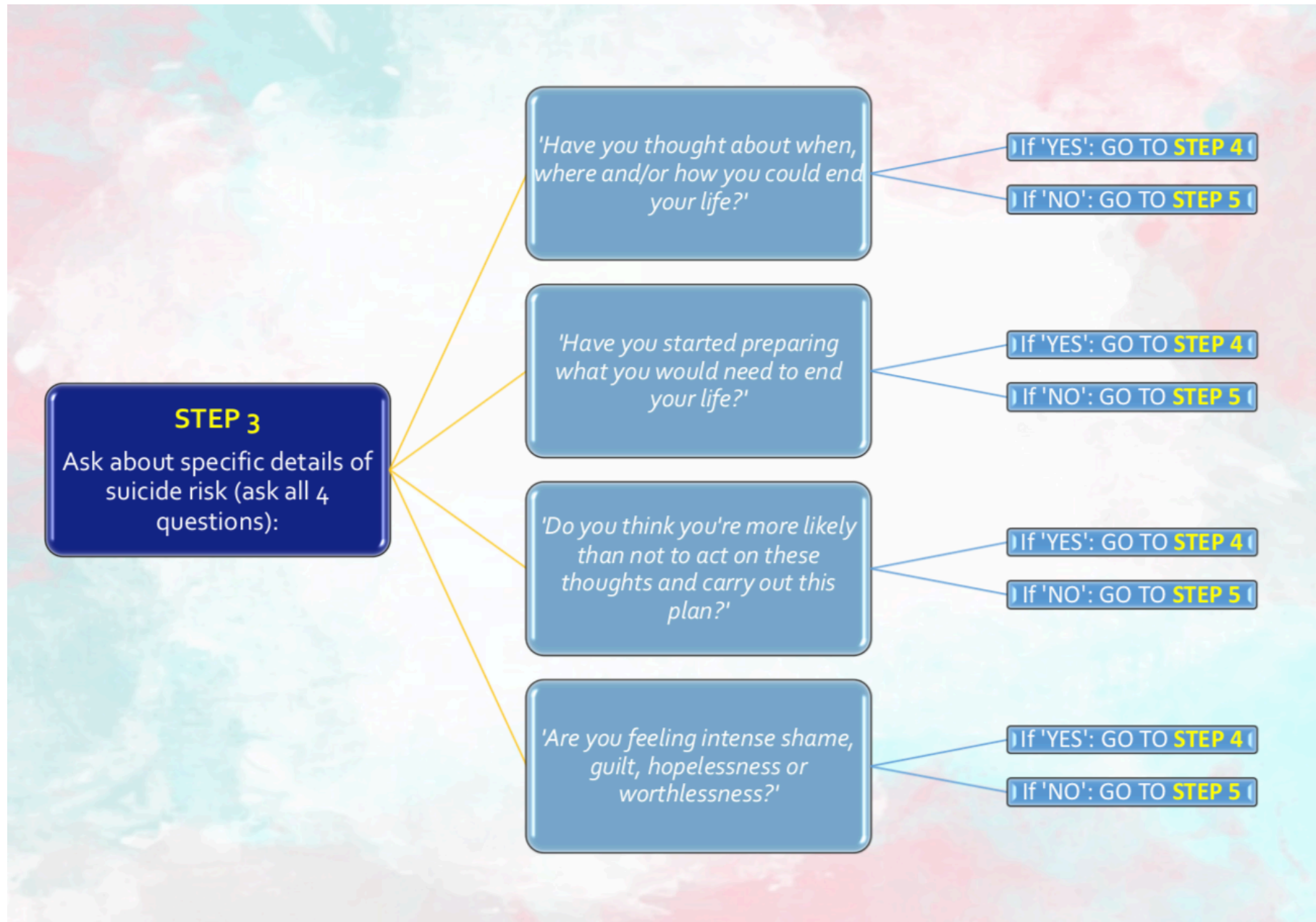
- ◆ You might have heard of the Bystander Effect. This is a consistently observed phenomenon in human behaviour that when someone needs help, most people think someone else will help so they do nothing. It is important you realise this part of human nature and ensure when you notice someone is at risk, do not wait for someone else to do something – take personal responsibility to help. No one else may have noticed the risk or the person may only have communicated their intent and thoughts to you.
- ◆ If they tell you to leave them alone or go away or give them space – don't – this will confirm their beliefs that they are alone and no one cares. Don't give up on them, persist, get them to a professional.
- ◆ If you find it too difficult to follow these steps, find someone else who can. If the person does not feel comfortable speaking with you about their feelings, ask who else they could talk to and contact them. If there is no one and you are seriously concerned, call 000.



4. Learn How to Help

The following 5 steps will teach you the basics on how to assess if someone may be at risk of suicide and how to help.





STEP 4

Keeping them safe
NOW:

If someone is thinking
about suicide and they
have a plan, have
prepared to carry out
that plan and intend to
carry out the plan they
need help NOW

or

if you are uncertain
about their risk...

*... say 'You seem really
overwhelmed right now and
it's almost like you have
tunnel vision, seeing death as
the only option. It's pretty
normal to feel like this when
you've had so much going on.
When people are suicidal, it's
really helpful to go to
hospital where they can give
you a break from trying to
fight these overwhelming
thoughts on your own. They
can help by listening and
planning the best way
forward to keep you safe.
This can include medication,
social support and
counselling.'*

Take them to your nearest
hospital for a more
thorough mental health
assessment and
management plan.

If they refuse to go,
call an ambulance
(and police if they
may be
uncooperative). This
may be difficult and
distressing, but may
save a life.

STEP 5

Keeping them safe in the near future:

If someone has thought about suicide and have vague plans and intent however say they will not 'actually' act on their thoughts in the near future, it is still important to support them, especially in the 3 months following suicidal thoughts.

Remove anything they can use to harm themselves.

Ask them what has been causing them stress lately and adding to suicidal thoughts. Listen without giving advice, without judging, without making it about you. Just listen.

Remind them, thoughts of suicide are just thoughts, they don't have to be acted on. They often only last a few minutes so delay any decision to end their life: get support.

Remove any drugs or alcohol they could take which can increase impulsive decisions to harm themselves.

Ensure they have all numbers to important support and crisis lines: Lifeline 13 11 14 | 13 MH CALL

Encourage them to call a support line or call a support line with them.

Encourage them to see their GP or book and take them to their GP.

Encourage them to see a Psychologist or book and take them to a Psychologist (Australian residents with mental health difficulties have access to 10 free psychology sessions/year-see a GP for a referral).

Ask them who their main supports are and ensure they are aware of the person's risk and part of keeping them safe.

Ask them what has stopped them so far from ending their life and how they have got through difficult times before - elaborate on these.

Plan how they can be supported in the next 3 months through not being left alone, being engaged in meaningful and healthy activity (e.g., socialising, volunteering, employment, exercise), get enough sleep being listened to and validated in their distress, continued monitoring for suicide risk.

Build a safety plan with the person which involves identifying their triggers to suicidal thoughts, things they can try on their own to cope (e.g., exercise, play with pets), who to contact for support and crisis support lines. Try BeyondBlue's 'BeyondNow' app to help with this.

Problem solve any issues causing stress or cut down on stress or commitments for a while where possible.



5. Consciously Decide to Help

- ◆ It is natural to find the topic of suicide very confronting and it can be difficult to start the conversation.
- ◆ You might be concerned that you will make the situation worse or that you will ask about suicide and be mistaken. It is better to ask and be mistaken than to say nothing. **Experts agree that asking someone whether they are thinking about suicide is unlikely to make the situation worse or 'put ideas in their head'.**
- ◆ You can help someone if you show that you care, are willing to listen and try to get them to talk to a professional to assist them with how they are feeling.
- ◆ If the person is not thinking about suicide, it can still be an opportunity to have a discussion about why you were concerned about them and let them know you're someone they can talk to if things get tough.
- ◆ Many people think if someone really wants to die by suicide, there is nothing you can do about it. Most suicidal ideas however are associated with the presence of an underlying, treatable disorder. Getting the person to a professional who can help treat any underlying disorder can save a life.
- ◆ The acute risk for suicide is often time-limited. If you can help the person survive the immediate crisis and the strong intent to die, then you will have gone a long way towards promoting a positive outcome.
- ◆ When talking to someone with suicidal thoughts, remember that suicide should not be kept a secret. The number one priority is to keep the person safe, this may mean breaking confidentiality if you need to get someone else involved.
- ◆ Don't be a bystander and do nothing – instead stand by your family and friends and notice their warning signs and risk factors, take them seriously, ask directly if they are thinking about suicide and how and when they are planning to take their life, take personal responsibility to help and arrange appropriate support for them.

Take Care of Yourself

- ◆ Be kind to yourself. It can be draining talking to someone about suicide and supporting them.
- ◆ Be aware of your own coping and get help if you need it by getting your own personal counselling. If you notice your usual mood, appetite, concentration, temper, thoughts, behaviour or sleep changing, these are red flags of reduced resilience. Getting back to basics such as eating well, sleeping, exercising, socialising and relaxing are good ways to look after yourself and build your resilience back up.
- ◆ If you have or have not had the conversation with someone you were worried about and later they make an attempt to end their life, seek immediate help for yourself through your GP. Remember: only YOUR thoughts and action are within your control. Everything else – someone else's thoughts, actions, past are not your fault, within your control or your responsibility.

RESOURCES

SUPPORT

Lifeline

24-hour national telephone crisis counselling service and online counselling.

P: 13 11 14. W: www.lifeline.org.au

Kids Helpline

Free confidential 24-hour telephone and online counselling for young people between 5 and 18.

P: 1800 55 1800. W: www.kidshelp.com.au

Suicide Call Back Service

24-hour national telephone counselling service to people 18 years and over and online services.

P: 1300 659 467. W: www.suicidecallbackservice.org.au

Mindhealthconnect

Website aggregates mental health resources and content from the leading health organisations.

W: www.mindhealthconnect.org.au

beyondblue: National depression initiative

24-hour telephone support and online chat service and links to local services.

P: 1300 22 4636. W: www.beyondblue.org.au

e-headspace

Telephone and online counselling for young people 12-25 years.

P: 1800 650 890. W: www.eheadspace.org.au

TRAINING

LivingWorks Australia

Targeted mental health training for communities, caregivers and professionals. W:

www.livingworks.com.au

Mental Health First Aid

Training for those assisting adults, young people, Aboriginal and Torres Strait Islander and Vietnamese communities with mental health problems or in a mental crisis. W: <https://www.mhfa.com.au/cms/>

Question, Persuade, Refer (QPR) Suicide Prevention Training

Free online training course for Australian residents. W: www.suicideprevention.salvos.org.au/training

For a more comprehensive list of links refer to the "Supporting Information" section at

www.conversationsmatter.com.au

Appendix E
Study 2 Electronic Supplementary Material 1
Experimental group factsheet content focus

Table S1

Experimental group factsheet content focus

BIM Part	Content Focus
1: Notice	A detailed overview of suicide risk factors, warning signs and protective factors.
2: Interpret as emergency/urgent	An explanation that no one can accurately predict suicide, making it vital to act on any sign.
3: Assume personal responsibility	Directly educated participants about the Bystander Effect.
4: Competence and confidence to help	Explaining how to ask questions about suicide risk and how to respond appropriately to keep the person safe.
5: Decide to help	Addressing common myths and fears around suicide for example, explaining that talking about suicide (except for details of suicide means) does not increase risk, instead helping people feel relieved and understood.

Appendix F
Study 2 Electronic Supplementary Material 2
Figures

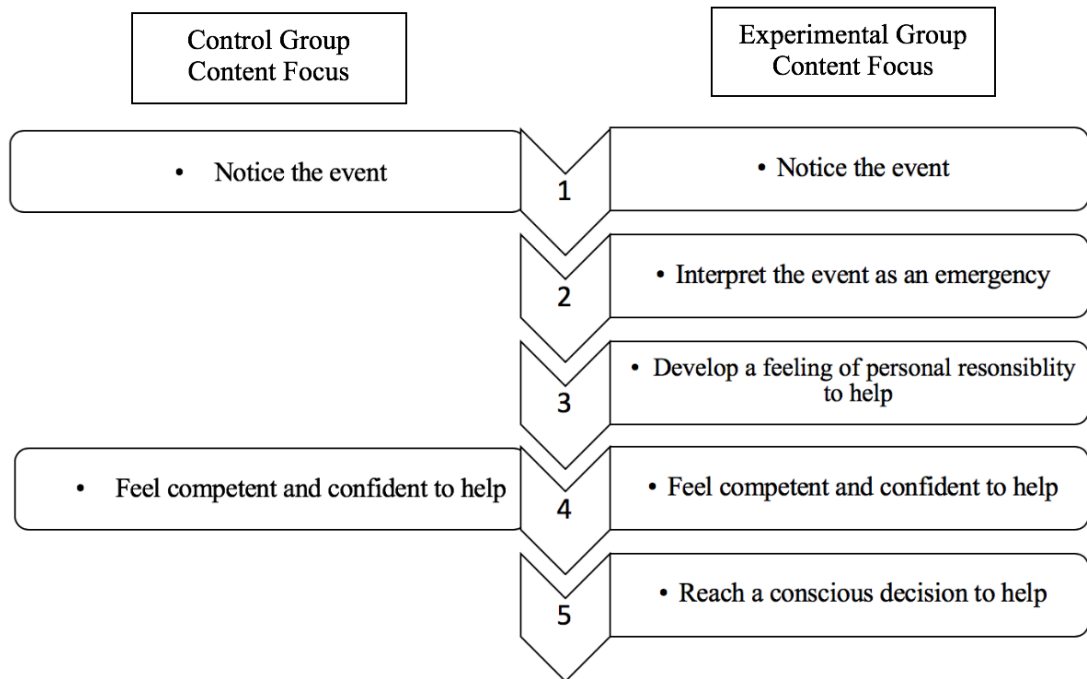


Figure S1. Conceptual framework

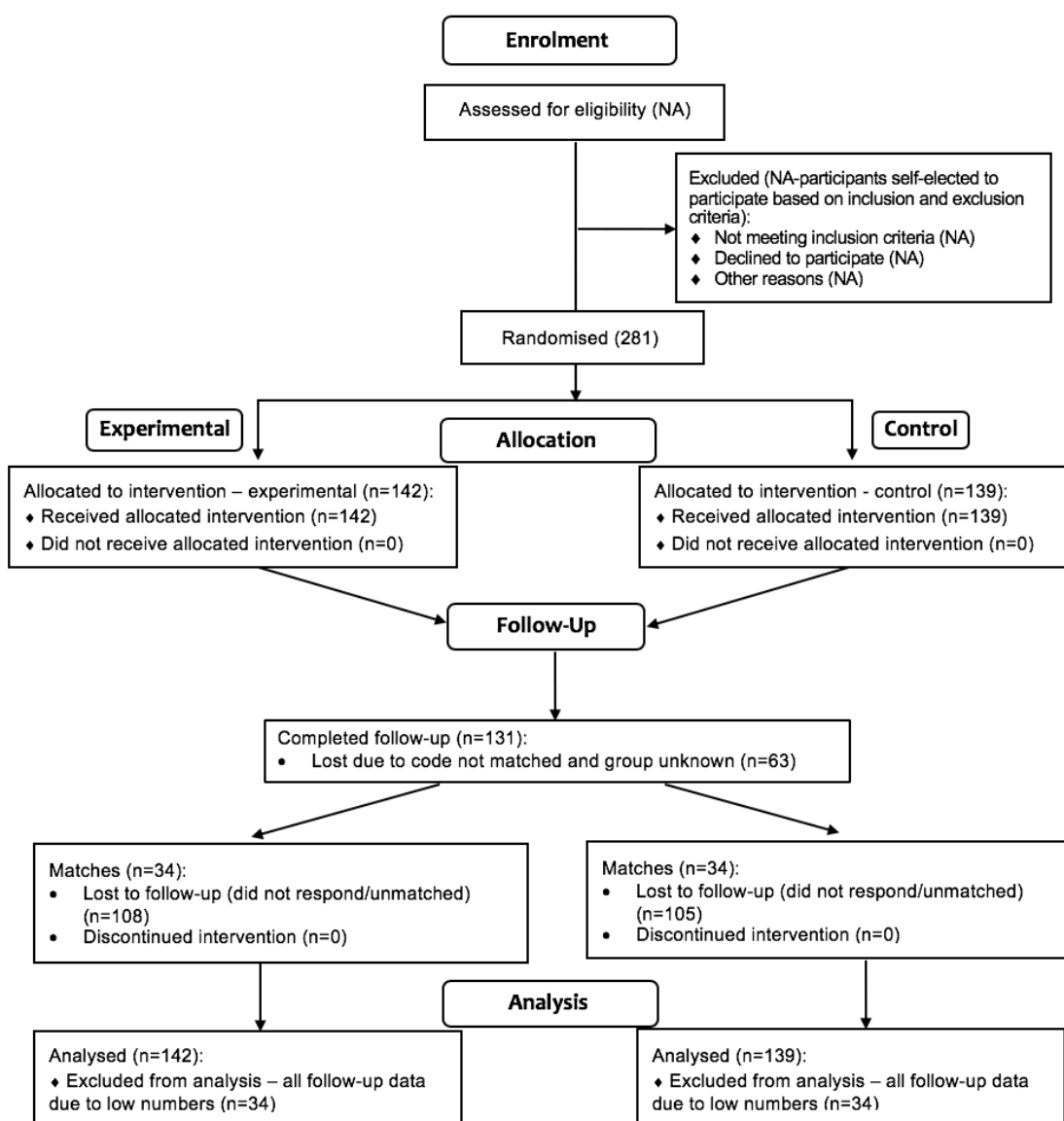
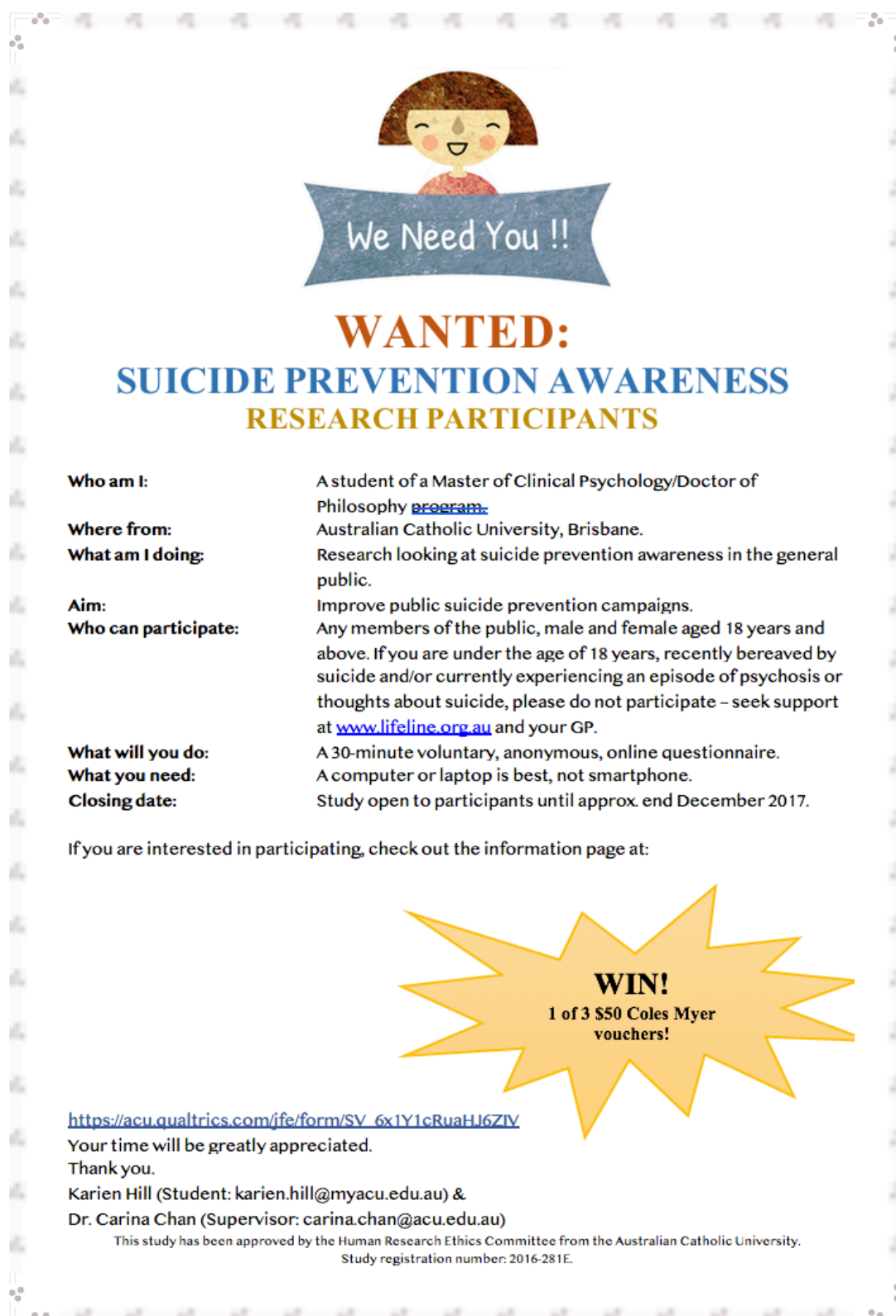


Figure S2. Flow chart of the current study

Appendix G
Study 2 Recruitment flyer



We Need You !!

WANTED:
SUICIDE PREVENTION AWARENESS
RESEARCH PARTICIPANTS

Who am I: A student of a Master of Clinical Psychology/Doctor of Philosophy program.

Where from: Australian Catholic University, Brisbane.

What am I doing: Research looking at suicide prevention awareness in the general public.

Aim: Improve public suicide prevention campaigns.

Who can participate: Any members of the public, male and female aged 18 years and above. If you are under the age of 18 years, recently bereaved by suicide and/or currently experiencing an episode of psychosis or thoughts about suicide, please do not participate – seek support at www.lifeline.org.au and your GP.

What will you do: A 30-minute voluntary, anonymous, online questionnaire.

What you need: A computer or laptop is best, not smartphone.

Closing date: Study open to participants until approx. end December 2017.

If you are interested in participating, check out the information page at:

WIN!
1 of 3 \$50 Coles Myer vouchers!

https://acu.qualtrics.com/jfe/form/SV_6x1Y1cRuaHJ6ZIV

Your time will be greatly appreciated.
Thank you.

Karien Hill (Student: karien.hill@myacu.edu.au) &
Dr. Carina Chan (Supervisor: carina.chan@acu.edu.au)

This study has been approved by the Human Research Ethics Committee from the Australian Catholic University.
Study registration number: 2016-281E.

Appendix H

Study 2 Support information on survey pages

If you become distressed at any stage, you do not need to continue with the survey. Free, confidential telephone counselling is available with Lifeline – call 13 11 14 or Beyond Blue 1300 22 4636 if you are in Australia.

For international participants, here is a link with international support lines:

<http://suicide.org/international-suicide-hotlines.html>.

ACU students can access counselling through <https://www.acu.edu.au/student-life/student-services/counselling-services>

Appendix I
Study 2 Participant Information Sheet

Dear Participant,

You are invited to participate in an online questionnaire on suicide prevention awareness. Below is some information about the project. Once you have read and understood this information and would like to participate, you may click the arrow at the bottom of this page which will represent your understanding of the study and consent to participate.

Project Title:

Suicide Prevention Awareness

Student Researcher:

Karien Hill

Supervisor:

Dr. Carina Chan
Deputy Head of School of Psychology
Australian Catholic University

What is the project about?

This research project aims to investigate current public suicide prevention awareness.

Who is undertaking the project?

This project is being conducted by Karien Hill, a student in the Master of Clinical Psychology / Doctor of Philosophy program at the Banyo campus of Australian Catholic University (ACU).

Who is being asked to participate?

Any members of the public, male and female aged 18 years and above.

Who should not complete this questionnaire?

If you are under the age of 18 years, have recently been bereaved by suicide and/or currently experiencing an episode of psychosis or thoughts of suicide, please do not continue on to the questionnaire. Seek help from Lifeline (call 13 11 14 or visit www.lifeline.org.au) and your GP.

What do I need to participate?

This questionnaire is recommended to be completed on a laptop or computer, not smartphone.

Are there any risks associated with participating in this project?

No severe risks are anticipated for this project. You will be asked about your awareness of suicide prevention which may be a confronting topic. The questions will however be completely hypothetical and scenario based, and a debrief page with support numbers and services is provided at the end of the questionnaire.

What will I be asked to do?

You will be asked to answer an online questionnaire about your awareness of suicide prevention. In 6-9 months, you will be emailed one more similar questionnaire to complete as a follow-up study. This forms an important part of research to establish the longevity of results. This means to participate in this questionnaire, your email address will be required. Your email address however, will not be linked to any of your other responses and will be used for the sole purpose of emailing you once to send the next questionnaire link.

How much time?

The questionnaire should take approximately 30 minutes to complete.

What are the benefits of the research project?

By participating in the questionnaire you have the opportunity to contribute to deepening the understanding of how to equip the general public with better suicide prevention action. This will potentially inform future public suicide prevention campaigns.

Can I withdraw from the study?

Participation will take the form of completing an online questionnaire. Information will be anonymous and therefore once submitted, will be unable to be withdrawn. Until clicking the arrow on the final page of the questionnaire however, participants may withdraw from the study without penalty, simply by exiting their internet browser as no information will be stored until submission.

Will I be able to find out the results of the study?

It is not proposed to provide formal feedback to participants however participants may contact the researcher to find out overall collated results at the end of the project (approximately mid 2018).

Who do I contact if I have questions about the project?

If you would like further information about the project, you may contact the student researcher via email: karien.hill@myacu.edu.au

What if I have a complaint or any concerns?

The study has been approved by the Human Research Ethics Committee at Australian Catholic University. If you have any complaints or concerns about the conduct of the project, you may contact the Manager of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Manager, Ethics
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
North Sydney Campus
PO Box 968
NORTH SYDNEY, NSW 2059
P: 02 9739 2519
F: 02 9739 2870
E: resethics.manager@acu.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

If I want to participate, how do I proceed?

Clicking the arrow below represents having read and understood this information and agreeing and consenting to participating in the study.

Yours sincerely,

Karien Hill

Appendix J

Study 2 Demographic questions

- 1) What is your gender?
 - ☐ Male
 - ☐ Female
 - ☐ Other
- 2) What is your age in years? _____
- 3) What is your ethnicity?
 - ☐ Caucasian
 - ☐ Aboriginal or Torres Straight Islander
 - ☐ Hispanic or Latino
 - ☐ Asian / Pacific Islander
 - ☐ Other _____
- 4) Which of the following industries and job types most closely matches the one in which you are employed or studying?
 - ☐ Forestry, fishing, hunting or agriculture support
 - ☐ Real estate or rental and leasing
 - ☐ Mining
 - ☐ Information technology
 - ☐ Utilities
 - ☐ Management of people, companies or enterprises
 - ☐ Construction and labourers
 - ☐ Clerical and administrative workers
 - ☐ Manufacturing
 - ☐ Educational and training services
 - ☐ Wholesale trade
 - ☐ Health care or social assistance
 - ☐ Retail trade
 - ☐ Arts, entertainment or recreation
 - ☐ Military
 - ☐ Transportation or warehousing
 - ☐ Sales workers
 - ☐ Personal services (e.g., beauty, fitness)
 - ☐ Accommodation or food services
 - ☐ Finance or insurance
 - ☐ Emergency services (e.g., police, ambulance)
 - ☐ Other (please specify:)

5) Have you had prior suicide prevention or awareness training?

- ☐ No
 - ☐ Yes (please briefly describe)
-

6) Have you ever had a mental health related diagnosis?

- ☐ Yes
- ☐ No

7) Have you had a friend or family member who has had a a mental health related diagnosis?

- ☐ Yes
- ☐ No

8) Please provide your email address for the researcher to be able to email the follow-up component of this study to you in a few months' time (your email address will NOT be linked to any of your survey answers): _____

9) If you would like to enter a draw to win 1 of 3 Coles Myer \$50 gift vouchers, please provide your email address below (your email address will NOT be linked to any of your survey answers): _____

Appendix K

Study 2 Detecting and Responding to Suicide risk Readiness Scale (DARTS-RS)

(Version 1)

Please indicate how much you agree with the following statements:

No.	DARTS-RS Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	Suicide is a problem in my community.					
2	I am aware that people in my community die by suicide.					
3	I have seen people displaying warning signs of suicide around me this year.					
4	It is evident to me that someone who is displaying warning signs of suicide needs help.					
5	If someone says they are thinking about killing themselves, the person hearing it should realise they are just seeking attention.					
6	I think persons thinking about suicide are in emotional and psychological pain.					
7	I feel personally responsible to intervene and assist if I hear someone is thinking about suicide.					
8	If someone tells me they are thinking about suicide, even if I am not their immediate family or a health professional, it is still my responsibility to help them.					
9	I believe that my actions can help to reduce suicide.					
10	I have the skills to support a person thinking about suicide.					
11	I know what to say to get someone who is thinking about suicide to not go through with the act.					
12	I can help get someone out of a situation where they are seriously thinking about suicide.					
13	I would tell a group of my friends to help someone who they think may be contemplating suicide.					
14	I would say something to someone if I thought they were thinking about suicide.					
15	I would tell my friend to help someone who is thinking about suicide.					
16	If I saw someone I did not know very well displaying warning signs of suicide, I would help them or get help for them.					

Appendix L

Confidence and Intent to Intervene Scale (CITIS) Items

Please answer the following questions about John:

No.	CITIS Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I am likely to talk to John about the warning signs he is displaying.					
2	I am likely to ask John directly if he is thinking about ending his life.					
3	I am likely to ask John for specific details about how he plans to take his own life.					
4	I am likely to attempt to keep John safe.					
5	I am likely to encourage John to see a health professional (e.g., GP or Psychologist) regarding the warning signs he is displaying.					
6	I am likely to accompany John to a health professional.					
7	I am likely to encourage John to contact a mental health support service (e.g., Lifeline) regarding the warning signs he is displaying.					
8	I am likely to contact a mental health support service on John's behalf.					
9	I am likely to feel confident to intervene.					
10	I am likely to feel assertive to intervene.					
11	I am likely to feel self-assured to intervene.					

Appendix M

Study 2 Manipulation Check Scale (MSC)

Please answer the following questions in relation to the hypothetical excerpt you previously read about John and the information sheet you just read:

No.	MCS Item	Not at all	A slight amount	A moderate amount	A considerable amount	A great amount
1	To what extent did the information sheet help you notice John may be thinking about suicide?					
2	To what extent did the information sheet help you interpret the situation with John as an emergency?					
3	To what extent did the information sheet encourage you to accept personal responsibility to intervene?					
4	To what extent did the information sheet help you know how to help John?					
5	To what extent did the information sheet encourage you to make a deliberate decision to help John?					
6	To what extent did the information sheet help you notice John may be at risk of ending his life?					
7	To what extent did the information sheet help you notice John is in a serious situation which requires immediate action?					
8	To what extent did the information sheet encourage you to accept a personal role in helping John?					
9	To what extent did the information sheet give you the skills to help John?					
10	To what extent did the information sheet encourage you to implement what you have learnt and apply it in helping John?					

Appendix N
Study 2 Debrief page

End of Questionnaire.

Please ensure you click the final arrow at the bottom of this page to submit your answers.

Thank you for your time!

QUESTIONNAIRE DEBRIEF

This study was interested in the Australian public's suicide prevention awareness. This questionnaire has measured how much you know about suicide prevention and whether information presented improved your awareness.

It is possible that after completing the questionnaire you may feel the need to talk to someone about how you feel about suicide, coping with any past experiences involving suicide or realising you or a friend or family member may be at risk. If you have been struggling with a personal problem or have a family member or friend going through a challenging time, it is often helpful to talk to someone about it. Below are support lines and online chat services who have people trained to listen and provide support. They welcome calls from anyone wanting to talk about anything that is of concern to them. They can help just by understanding, or they might provide some ideas of how you could move forward:

Lifeline

24-hour national telephone crisis counselling service and online counselling.
13 11 14 or www.lifeline.org.au

Kids Helpline

Free confidential 24 hour telephone and online counselling for young people between 5 and 18.
1800 55 1800 or www.kidshelp.com.au

Suicide Call Back Service

24-hour national telephone counselling service to people 18 years and over and online services.
1300 659 467 or www.suicidecallbackservice.org.au

Mindhealthconnect

Website aggregates mental health resources and content from the leading health organisations.
www.mindhealthconnect.org.au

Beyond Blue: National depression initiative

24-hour telephone support and online chat service and links to local services.
1300 22 4636 or www.beyondblue.org.au

e-headspace

Online counselling for young people 12-25 years.
www.eheadspace.org.au

If you would like to talk to someone face-to-face, below are ACU's available services:

Brisbane Psychology and Counselling Clinic, ACU (for non-ACU students)
07 3623 7453

ACU Student Services (for ACU students)
07 3623 7100

If you need to further discuss this research project or would like to know the results of the study (available approximately mid 2018), please contact:

Student Researcher**Karien Hill**

Email: karien.hill@myacu.edu.au

Supervisor**Dr. Carina Chan**

Phone: 07 3623 7891

Email: carina.chan@acu.edu.au

Australian Catholic University's Human Research Ethics Committee has approved this study. If you have any questions, concerns or complaints regarding the conduct of this research, please contact:

Human Ethics Committee

P: 02 9739 2519

E: resethics.manager@acu.edu.au

**Once again, thank you for your time and participation!
Your contribution is greatly appreciated.**

Appendix O
Study 2 Electronic Supplementary Material 3
Vignettes

Vignette 1

“A good friend of yours, John, has been feeling unusually sad and miserable for the last few weeks. Even though he is tired all the time, he has trouble sleeping nearly every night. John doesn't feel like eating and has lost weight. He can't keep his mind on his work and puts off making any decisions. Even day-to-day tasks seem too much for him. This has come to the attention of John's boss who is concerned about his lowered productivity. John feels he will never be happy again and believes his family would be better off without him. John is full of despair and hopelessness.”

Vignette 2

“One of your good friends, Steve, has recently lost his job and girlfriend and ever since, he has felt really down. Even though he sleeps all day he still feels tired all the time. Steve has found it hard to be motivated to look for new employment and when he does, he finds it difficult to concentrate. He has also been spending less time with others and when he does, he has felt irritable and annoyed with them with no good reason. Steve has been feeling like a burden on his family as he is not contributing financially and feels he is bringing everyone down and disappointing them. He feels worthless and hopeless.”

Appendix P
Study 2 Electronic Supplementary Material 4
Demographic and outcome tables

Table S1

Age

Condition	<i>M</i>	<i>n</i>	<i>SD</i>	Maximum	Minimum
Control	35.09	139	13.701	65	18
Experimental	36.25	142	14.724	71	18
Total	35.67	281	14.213	71	18

Note. *M* = mean, *n* = sample size, *SD* = standard deviation.

Table S2

Gender

Condition	Gender	<i>n</i>	Percent
Control	Male	28	20.1
	Female	110	79.1
	Other	1	.7
	Total	139	100.0
Experimental	Male	28	19.7
	Female	114	80.3
	Total	142	100.0

Note. ‘Other’ text entry not specified.

Table S3

Ethnicity

Condition	Ethnicity	<i>n</i>	Percent
Control	Middle Eastern	1	0.72
	Hispanic or Latino	3	2.2
	Aboriginal or Torres Strait Islander	4	2.9
	Other*	4	2.88
	Asian/Pacific Islander	10	7.19
	Caucasian	117	84.17
	Total	139	100
Experimental	American Indian	1	0.7
	Middle Eastern	1	0.7
	Aboriginal or Torres Strait Islander	3	2.1
	Other*	3	2.1
	Asian/Pacific Islander	12	8.45
	Caucasian	122	85.9
	Total	142	100

* Text entries of ‘mixed’ ethnicities.

Table S4
Occupation

Condition	Occupation	<i>n</i>	Percent
Control	Forestry, fishing, hunting or agriculture support	1	0.7
	Military	1	0.7
	Mining	1	0.7
	Real estate or rental and leasing	1	0.7
	Finance or insurance	2	1.4
	Information technology	2	1.4
	Sales workers	2	1.4
	Arts, entertainment or recreation	3	2.2
	Construction and labourers	4	2.9
	Accommodation or food services	5	3.6
	Management of people, companies or enterprises	5	3.6
	Personal services (e.g., beauty, fitness)	5	3.6
	Retail trade	6	4.3
	Clerical and administrative workers	7	5.04
	Other*	10	7.19
	Educational and training services	33	23.7
	Health care or social assistance	51	36.69
	Total	139	100
Experimental	Forestry, fishing, hunting or agriculture support	1	0.7
	Manufacturing	1	0.7
	Missing	1	0.7
	Real estate or rental and leasing	2	1.4
	Retail trade	3	2.1
	Finance or insurance	3	2.1
	Information technology	4	2.8
	Arts, entertainment or recreation	5	3.5
	Accommodation or food services	5	3.5
	Management of people, companies or enterprises	7	4.93
	Clerical and administrative workers	11	7.75
	Other*	11	7.75
	Educational and training services	37	26.1
	Health care or social assistance	51	35.92
	Total	142	100

* Text entries: 'retired', 'stay at home mother', 'researcher'.

Table S5
Knowing someone with a diagnosed mental illness

Condition	Diagnosis-other	<i>n</i>	Percent
Control	No	31	22.3
	Yes	108	77.7
	Total	139	100.0
Experimental	No	19	13.4
	Yes	123	86.6
	Total	142	100.0

Table S6

Personal mental illness diagnosis

Condition	Diagnosis-personal	<i>n</i>	Percent
Control	No	82	59.0
	Yes	57	41.0
	Total	139	100.0
Experimental	No	81	57.0
	Yes	61	43.0
	Total	142	100.0

Table S7

Previous suicide prevention training

Condition	Previous training	<i>n</i>	Percent
Control	No	100	71.9
	Yes	39	28.1
	Total	139	100.0
Experimental	No	106	74.6
	Yes	36	25.4
	Total	142	100.0

Table S8

Detecting and Responding to Suicide risk Readiness Scale (DARTS-RS) descriptive statistics

DARTS-RS	Condition	<i>n</i> *	<i>M</i>	<i>SD</i>
Time 1	Control	139	64.54	7.61
	Experimental	142	64.39	7.82
Time 2	Control	139	66.88	7.96
	Experimental	142	69.88	7.40

*Total *n* = 281.

Table S9

Confidence & Intent to Intervene Scale (CITIS) descriptive statistics

CITIS	Condition	<i>n</i> *	<i>M</i>	<i>SD</i>
Time 1	Control	139	41.03	7.04
	Experimental	141	40.79	6.90
Time 2	Control	139	42.61	6.94
	Experimental	141	45.51	5.96

*Total *n* = 280.

Table S10
Correlations between outcome variables

		DARTS-RS T2	CITIS T1	CITIS T2
DARTS-RS T1	<i>r</i>	.71*	.74*	.53*
	<i>n</i>	281	280	280
DARTS-RS T2	<i>r</i>		.57*	.70*
	<i>n</i>		280	280
CITIS T1	<i>r</i>			.60*
	<i>n</i>			280

Note. *r* = Pearson's correlation, *n* = number.

* $p < .00$

Appendix Q

Study 2 Implementation and dissemination questions

1) Please indicate the mental health advocacy ORGANISATION you are MOST AWARE of:

- ☐ Black Dog Institute
 - ☐ Lifeline
 - ☐ Beyond Blue
 - ☐ headspace
 - ☐ Mind Health Connect
 - ☐ Open Minds
 - ☐ Sane
 - ☐ None
 - ☐ Other (please specify):
-

2) Please indicate a public suicide prevention STRATEGY you are MOST AWARE of (Type N/A if you are not aware of any.):

3) Have you ever ACCESSED any suicide prevention resources when concerned about SOMEONE ELSE?

- ☐ Yes
- ☐ No

3a) If yes, what type of resource from this organisation did you access MOST?

- ☐ Telephone counselling
 - ☐ Online chat
 - ☐ Social media page
 - ☐ Website
 - ☐ Smart phone application
 - ☐ Flyer
 - ☐ Training workshop
 - ☐ Other (please specify):
-

3b) If no, please indicate why not:

- ☐ You were not aware they existed.
 - ☐ You did not feel a need to access any service.
 - ☐ They were not easily accessible.
 - ☐ Other (please explain):
-

4) If you were concerned someone may be thinking about suicide, and the information sheet presented in this questionnaire was freely available, which mode of delivery would you find most USEFUL?

- ☐ Social media page
- ☐ Website
- ☐ Smart phone application
- ☐ Flyer

- Training workshop
- Other (please specify) _____

5) If you were concerned someone may be thinking about suicide, and the information sheet presented in this questionnaire was freely available, which mode of delivery would you find most CONVENIENT (e.g., quick and easy to use)?

- Social media page
- Website
- Smart phone application
- Flyer
- Training workshop
- Other (please specify) _____

6) If you were concerned someone may be thinking about suicide, and the information sheet presented in this questionnaire was freely available, which mode of delivery would you find most ACCESSIBLE?

- Social media page
- Website
- Smart phone application
- Flyer
- Training workshop
- Other (please specify) _____

7) If you were concerned someone may be thinking about suicide, and the information sheet presented in this questionnaire was freely available, which mode of delivery would you feel most COMFORTABLE using?

- Social media page
- Website
- Smart phone application
- Flyer
- Training workshop
- Other (please specify) _____

8) How strongly do you agree with the following statement: “There is a need in the community for free public suicide prevention materials?”

- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

9) If the information sheet existed as a smartphone application, website, training workshop etc., what would be the best way for you to find out about it?

- Television advertisement
- Radio advertisement
- Social media advertisement
- Billboard
- Public poster advertisement
- Other (please specify):

10) If you could improve the information sheet presented to increase the public's CONFIDENCE, INTENT and/or SKILLS to intervene when someone is at risk of suicide, what would it be? (optional)

11) Do you have any final comments that may be helpful to the researchers in designing an intervention for the public which will be accessible, appropriate, viable and increase their confidence and intent to intervene in the case a peer may be at risk of suicide? (optional)

Appendix R

Study 3 Ethics approval



Research Office

To	Carina Chan
From	University Human Ethics Committee
HEC Number	HEC19008
Project title	Promoting suicide prevention action planning in the community: A randomised controlled trial guided by the Bystander Intervention Model
Approval Period	20 February 2019 – 28 August 2023
Date	20 February 2019

I am pleased to advise you that the University Human Ethics Committee (UHEC) has granted ethical approval of the project listed above, subject to the following conditions being met:

Conditions of Approval - Specific to this Project

This approval is the continuation of ethics clearance originally granted on 28 August 2018 by Australian Catholic University Human Research Ethics Committee using approval ID: 2018-171H

Conditions of Approval – All projects

- The Chief Investigator will immediately report anything that might warrant review of ethical approval of the project.
- The Chief Investigator will notify the UHEC of any event that requires a modification to the protocol or other project documents and submit any required amendments in accordance with the instructions provided by the UHEC. These instructions can be found at <http://www.latrobe.edu.au/researchers/research-office/ethics/human-ethics>.
- The Chief Investigator will submit any necessary reports related to the safety of research participants in accordance with UHEC policy and procedures. These instructions can be found at <http://www.latrobe.edu.au/researchers/research-office/ethics/human-ethics>.
- The Chief Investigator will report to the UHEC annually in the specified format and notify the UHEC when the project is completed at all sites.
- The Chief Investigator will notify the UHEC if the project is discontinued at a participating site before the expected completion date, with reasons provided.
- The Chief Investigator will notify the UHEC of any plan to extend the duration of the project past the approval period listed above and will submit any associated required documentation. Instructions for obtaining an extension of approval can be found at <http://www.latrobe.edu.au/researchers/research-office/ethics/human-ethics>.
- The Chief Investigator will notify the UHEC of his or her inability to continue as Coordinating Chief Investigator including the name of and contact information for a replacement.
- A copy of this ethical approval letter must be submitted to all Investigators and sites prior to commencing the project.

The UHEC Terms of Reference, Standard Operating Procedures, membership and standard forms are available from <http://www.latrobe.edu.au/researchers/research-office/ethics/human-ethics>.

Should you require any further information, please contact the Human Research Ethics Team on:
T: +61 3 9479 1443 | E: humanethics@latrobe.edu.au.

Warm regards,

David Finlay
Chair, University Human Ethics Committee

Appendix S

Study 3 Control and experimental group videos

Control group video: <https://youtu.be/rd66Q9xOlz4>

Experimental group video: <https://youtu.be/SStAlvuW620>

Appendix T
Study 3 Electronic Supplementary Material 1
Video Content

Control v experimental video content focus

BIM Part	Control	Experimental
1: Notice	Looking out for friends who seem 'not themselves'.	A detailed overview of suicide risk factors, warning signs and protective factors.
2: Interpret as emergency/urgent		An explanation that no one can accurately predict suicide, making it vital to act on any sign.
3: Assume personal responsibility		Directly educated participants about the Bystander Effect.
4: Competence and confidence to help	Brief and minimal ideas on how to support.	Explaining how to ask questions about suicide risk and how to respond appropriately to keep the person safe.
5: Decide to help		Addressing common myths and fears around suicide for example, explaining that talking about suicide (except for details of suicide means) does not increase risk, instead helping people feel relieved and understood.

Appendix U
Study 3 Electronic Supplementary Material 2
Vignettes

Vignette 1

“One of your good friends, Steve, was let go from his job last week after being found out for sexual harassment toward others in the workplace. His boyfriend also broke up with him last month. Steve’s grandmother with whom he was very close, died last year from cancer.

Steve lives alone in an apartment and you've noticed he has been declining invitations to social events more often lately. When you have seen him, he has appeared unkempt, tired and intoxicated. You have tried to encourage him to find a new job but all he says is ‘What’s the point?’ and asks for space.

Steve is not very close with his family but speaks to his brother and mother sometimes. He also has a few other friends who he meets up with sometimes for gaming nights.”

Vignette 2

“One of your friends, Kate, was recently made redundant. You are aware she has a mortgage and other debt and is concerned about making her repayments. She has also been suffering with chronic pain and anxiety for a few years after a serious car accident, avoiding driving and not able to play tennis anymore which she used to enjoy.

Kate lives alone in an apartment and you've noticed she has been cancelling on coming to social events at the last minute lately. When you have seen her, she has appeared irritable, thin and tired. You have talked to her about applying for a new job but she just says ‘I can't do this’ and asks for space.

Kate is not very close with her family but speaks to her sister and mother sometimes. She also has a few other friends who she meets up with sometimes for dinner parties.”

Appendix V

Study 3 Action Plan Checklist

Scorer ID: _____ Date: _____ Participant ID: _____ Time: 1 / 2 / 3

A) Risk of Suicide Assessment Ability (ROSAA) Checklist

Q	Question/Statement/Consideration	SCORE = 0 (not asked/considered)	SCORE = 1 (asked/considered however lacked detail)	SCORE = 2 (thoroughly assessed in detail)
1	Detects key risk factors and warning signs: <ul style="list-style-type: none"> - Loss of employment - Potential shame - Potential guilt - Loss of relationship - LGBTIQA+ orientation - Living alone - Social withdrawal - Potential sleep issues - Taking less care of appearance - Increased substance use - Poor family connections - Grief - potentially traumatic loss - Hopeless language - Chronic pain - Anxiety - Potential trauma from car accident - Financial stress - Loss of functioning to do previous activities - Irritability - Appearing underweight - Fatigue - Disrupted family relationships 			
3	Interpret scenario as friend being at risk of suicide requiring immediate action/sense of urgency and importance.			
5	"I want to understand what it's been like for you. Can you tell me what is going on for you?" (Ask about what has been happening and just LISTEN and VALIDATE their experience without judgement or advice).			
5	"Are you having any THOUGHTS about suicide?"			
5	"Have you thought about HOW you would end your life?"			
5	"Have you thought about WHEN you would end your life?"			
5	"Have you started PREPARING what you would need to carry out this plan?"			
5	"Do you have a real INTENTION to act on your thoughts? How LIKELY are you to act on your thoughts out of 10?"			


	Other factors noticed/considered/taken into account in risk assessment:			
2	“Any PREVIOUS suicide attempts or deliberate SELF-HARM ?”			
2	IMPULSIVITY ?			
2	Written suicide or good-bye LETTERS ?			
2	Level of PROTECTIVE factors (e.g., hope, coping skills, self-esteem, strong family connections, diet, exercise, sleep).			
2	Level and frequency of DRUG and ALCOHOL consumption?			
2	Level and frequency of SOCIAL SUPPORT ?			
2	Feelings of SHAME, GUILT, HOPELESSNESS, WORTHLESSNESS ?			
	TOTAL			

B) Protective Intervention Ability (PIA) Checklist

Q	Type of Action	SCORE = 0 (not mentioned)	SCORE = 1 (mentioned)	SCORE = 2 (discussed in detail)
4	Personal responsibility to act assumed.			
6	Give them Lifeline or another crisis number.			
6	Encourage them to call Lifeline or another crisis number.			
6	Call Lifeline/other crisis number for them.			
6	Encourage them to see their GP.			
6	Book a GP appointment for them.			
6	Take them to a GP appointment.			
6	Encourage them to see a Psychologist.			
6	Book Psychologist appointment for them.			
6	Take them to a Psychologist appointment.			
6	Take them to hospital for further assessment.			
6	Remove access to anything they could use to end their life.			
6	Identify their support network.			
6	Call someone in support network and notify them of person's distress and plan how they can support them.			
6	Ask what has got the person through difficult times before and elaborate on these.			
6	Ask what has stopped them from acting on thoughts so far and elaborate on these.			
6	Ask for reasons to live and elaborate on these.			
6	Plan how they can be supported in the next 3 months through not being left alone, being aware of their suicide warning signs and risk factors, having coping skills and support			

	numbers to call when feeling at risk, continued monitoring for suicide risk.			
6	Build a safety plan with the person which involves identifying their triggers to suicide ideation, things they can try on their own to cope, who to contact for support and crisis support lines using Beyond Blue's 'Beyond Now' App.			
6	Encourage reduced drug and alcohol consumption.			
6	Remove access to drugs and alcohol.			
6	Encourage increased social and physical activity.			
6	Engage in increased social and physical activity with them.			
6	Encourage them to engage in meaningful life activities such as volunteering, employment and/or hobbies.			
6	Engage in meaningful life activities with them such as volunteering, employment and/or hobbies.			
6	Encourage healthy diet and good sleep hygiene.			
6	Call 000 for ambulance to take them to hospital for further assessment.			
	TOTAL			

Appendix W
Study 3 Recruitment flyer



LA TROBE
UNIVERSITY

SUICIDE PREVENTION RESEARCH PARTICIPANTS WANTED:
Research looking at how people in the general community respond in a hypothetical scenario to someone displaying warning signs and risk factors of suicide.

Who am I:	PhD Candidate
Where from:	La Trobe University
What am I doing:	Researching ways to improve suicide risk detection and response in the community.
Who can participate:	Any members of the public, male and female aged 18 years and above.
Who should NOT participate:	Anyone who: <ul style="list-style-type: none"> - is aged under 18 years - feels highly distressed by the topic of suicide - has been previously bereaved by suicide of significant others - is having thoughts about suicide (reach out and ask for help at www.lifeline.org.au (P: 13 11 14) and your GP) - is trained in mental health care and suicide prevention
What will you do:	A 30-40-minute voluntary, anonymous, online questionnaire about your suicide risk detection and response skills in a hypothetical scenario. A debrief page is provided with support options if any distress is caused.
What you need:	<ul style="list-style-type: none"> - A computer, smartphone, tablet or laptop to complete questions - Enough internet data to watch a 5-10 min video - Earphones (if necessary) to hear the video
Closing date:	Approx. end June 2019 but the sooner you can complete it, the better.
Follow-up study:	This study has a follow-up online questionnaire in approx. 2-4 months so you must be willing to provide your email address (it won't be linked to your answers or used for any purpose other than sending you a new survey link).

If you are interested in participating, check out the information page at:

https://latrobe.co1.qualtrics.com/jfe/form/SV_8lbOIM35ZWmTTE1


(To be sent the link or if you have any questions, you can email 20091619@students.latrobe.edu.au)

Your time will be greatly appreciated.

Thank you.

Karien Hill (Student researcher) &
Dr. Carina Chan (Principle Supervisor)
Dr. Philippe Chouinard (Co- Supervisor)

This study has been approved by the Human Research Ethics Committee of La Trobe University.
Study registration number: HEC19008.



WIN
1 of 3 \$50 Coles
Myer vouchers!

Appendix X

Study 3 Support information on survey pages

If you become distressed at any stage, you do not need to continue with the survey. Free, confidential telephone counselling is available with Lifeline – call 13 11 14 or Beyond Blue 1300 22 4636 if you are in Australia.

For international participants, here is a link with international support lines:

<http://suicide.org/international-suicide-hotlines.html>.

LTU students can access counselling through

<https://www.latrobe.edu.au/students/support/wellbeing/counselling/contacts>

Appendix Y

Study 3 Participant Information Sheet

This research is being carried out by the following researchers: Karien Hill The research is being carried out in partial fulfilment of a PhD under the supervision of Dr. Carina Chan and Dr. Philippe Chouinard. The following researchers will be conducting the study:		
Role	Name	Organisation
PhD Candidate	Karien Hill	La Trobe University
Primary Supervisor	Dr. Carina Chan	La Trobe University
Co-supervisor	Dr. Philippe Chouinard	La Trobe University
Research funder	This research is supported by in kind support by La Trobe University.	

1. **What is the study about?**

You are invited to participate in a study investigating **how the general public responds to a person presenting with suicide risk in a hypothetical scenario**. You will be asked about your gender, age and occupation and asked to watch an information video followed by how you would respond in a certain hypothetical scenario. You will also be asked about your general suicide prevention intervention knowledge and confidence. We hope to learn how effective the video is in increasing appropriate suicide risk detection and response skills.

2. **Do I have to participate?**

Being part of this study is **voluntary**. If you want to be part of the study we ask that you read the information below carefully.

You can read the information below and decide at the end if you do not want to participate. If you decide not to participate this won't affect your relationship with La Trobe University or any other organisation.

3. **Who is being asked to participate?**

- Members of the general public
- Male and female
- Aged 18 years and above
- Who **do not meet any of the criteria below**:
 - Under the age of 18 years
 - Previous bereavement by suicide of significant others
 - Feel distressed by the topic of suicide
 - Currently experiencing thoughts of suicide (If you are, please seek support from Lifeline (call 13 11 14 or visit www.lifeline.org.au) and your doctor-'it ain't weak to speak').
 - Previous formal suicide prevention training.

4. What will I be asked to do?

If you want to take part in this study, we will ask you to participate in an online questionnaire, asking about your **demographics** (age, gender, occupation), suicide prevention knowledge and your response to a hypothetical scenario involving suicide risk. Questions will vary between response options (e.g., yes, no), **rating scales** [e.g., 'How strongly do you agree with ...': a) strongly disagree, b) disagree, c) neutral, d) agree, e) strongly agree] and **open questions** (e.g., your age and asking you to type your response to a hypothetical scenario). It will take approximately **30-40 minutes** of your time to be part of this study.

A similar follow-up questionnaire will be emailed to you in 2-4 months' time.

5. What are the benefits?

No direct benefits are anticipated for participants by completing the questionnaire. By participating, you have the opportunity to contribute to deepening the understanding of how to equip the general public with better suicide prevention responses. You will also leave with a training resource of suicide prevention material at the end of the follow-up questionnaire.

The expected benefits to society in general are potentially informing how to improve future public suicide prevention campaigns.

6. What are the risks?

With any study, there are (1) risks we know about, (2) risks we don't know about, and (3) risks we don't expect. If you experience something that you aren't sure about, please contact us immediately so we can discuss the best way to manage your concerns.

Name/Organisation	Position	Email
Karien Hill La Trobe University	Student	20091619@students.latrobe.edu.au

We have outlined the risks we know about below. This will help you decide if you want to be part of the study.

A risk of feeling distressed is possible when completing the survey due to the nature of the topic of suicide. You will be asked about your response to a hypothetical scenario involving someone presenting with suicide risk which may be a confronting topic to consider. The questions will be completely hypothetical and scenario based, and a debrief page with support numbers and services is provided at the end of the questionnaire as well as support options on every page throughout.

7. What will happen to information about me?

By ticking the boxes below, this tells us you want to take part in the study.

We will **collect** information about you in ways that will not reveal who you are.

We will **store** information about you in ways that will not reveal who you are.

We will **publish** information about you in ways that will not be identified in any type of publication from this study.

We will **keep** your information for 15 years after the project is completed. After this time,

we will destroy all of your data.

The storage, transfer and destruction of your data will be undertaken in accordance with the [Research Data Management Policy](https://policies.latrobe.edu.au/document/view.php?id=106/) <https://policies.latrobe.edu.au/document/view.php?id=106/>.

The personal information you provide will be handled in accordance with applicable privacy laws, any health information collected will be handled in accordance with the Health Records Act 2001 (Vic). Subject to any exceptions in relevant laws, you have the right to access and correct your personal information by contacting the research team.

8. Will I hear about the results of the study?

It is not proposed to provide formal feedback to participants however participants may contact the researcher to find out overall collated results at the end of the project (approximately beginning 2020).

9. What if I change my mind?

If you no longer want to complete the questionnaire, simply close the web browser. If you change your mind after clicking on the 'Submit' button, we cannot withdraw your responses because we cannot link who you are with your questionnaire responses.

Your decision to withdraw at any point will **not** affect your relationship with La Trobe University or any other organisation.

10. Who can I contact for questions or more information?

If you would like to speak to us, please use the contact details below:

Name	Position	Email
Karien Hill	PhD Candidate	20091619@students.latrobe.edu.au

11. What if I have a complaint?

If you have a complaint about any part of this study, please contact:

Ethics Reference Number	Position	Telephone	Email
HEC19008	Senior Research Ethics Officer	+61 3 9479 1443	humanethics@latrobe.edu.au

To participate in the study, please indicate your informed consent through ticking the following boxes if they apply to you:

- ☐ I have READ and UNDERSTOOD the information page.
- ☐ I understand that my participation is VOLUNTARY and ANONYMOUS.
- ☐ I understand I may withdraw from the questionnaire without penalty until I submit, after which my answers cannot be retrieved however remain anonymous.
- ☐ I understand that my responses may be published in journal articles or shared with other researchers in future.
- ☐ I am NOT highly distressed by discussing the topic of suicide.
- ☐ I have NOT previously been bereaved by suicide of significant others.
- ☐ I am NOT currently experiencing thoughts about suicide.
- ☐ I have NOT had previous training in suicide prevention.
- ☐ I am aged 18 YEAR or over.
- ☐ I AGREE to participating in this questionnaire.

Appendix Z

Study 3 Action plan questions

Please read the hypothetical scenario below:

One of your friends, Kate, was recently made redundant. You are aware she has a mortgage and other debt and is concerned about making her repayments. She has also been suffering with chronic pain and anxiety for a few years after a serious car accident, avoiding driving and not able to play tennis anymore which she used to enjoy.

Kate lives alone in an apartment and you've noticed she has been cancelling on coming to social events at the last minute lately. When you have seen her, she has appeared irritable, thin and tired. You have talked to her about applying for a new job but she just says, 'I can't do this' and asks for space.

Kate is not very close with her family but speaks to her sister and mother sometimes. She also has a few other friends who she meets up with sometimes for dinner parties.

Please answer the following questions about the scenario above. Please give as much detail as you can.

1. What stands out to you about Kate that may be of concern about her overall well-being?
2. What else would you want to know about Kate?
3. How do you interpret the situation with Kate?
4. Who do you think is in the best position to support Kate?
5. What do you think should be said to and asked of Kate?
6. What do you think should happen next to support Kate?

Appendix AA
 Study 3 Debrief page
 End of Questionnaire.

Questionnaire Debrief Page

Please ensure you click the final arrow at the bottom of this page to submit your answers.

Thank you for your time!

SUMMARY

This study was interested in public responses to suicide risk in a hypothetical scenario. This questionnaire has measured how you plan to respond in a hypothetical scenario involving someone at risk of suicide and whether information presented improved your response.

FOLLOW-UP QUESTIONNAIRE TO COME!

It is important for the researchers to assess the maintenance of any learning outcomes. Please keep an eye out for an email with a follow-up questionnaire in 2-4 months' time.

At the final stage all participants will be provided with resources (flyers, wallet cards) to keep to help with suicide risk detection and response skills not currently provided.

Also there were 2 version of this study - one more informative than the other. It is important to get the full version at follow-up to learn all available skills.

SUPPORT INFO

It is possible that after completing the questionnaire you may feel the need to talk to someone about how you feel about suicide, coping with any past experiences involving suicide or realising you or a friend or family member may be at risk. If you have been struggling with a personal problem or have a family member or friend going through a challenging time, it is often helpful to talk to someone about it. Below are support lines and online chat services who have people trained to listen and provide support. They welcome calls from anyone wanting to talk about anything that is of concern to them. They can help just by understanding, or they might provide some ideas of how you could move forward:

Lifeline

24-hour national telephone crisis counselling service and online counselling.
 13 11 14 or www.lifeline.org.au

Kids Helpline

Free confidential 24-hour telephone and online counselling for young people between 5 and 18.
 1800 55 1800 or www.kidshelp.com.au

Suicide Call Back Service

24-hour national telephone counselling service to people 18 years and over and online services.

1300 659 467 or www.suicidecallbackservice.org.au

Mindhealthconnect

Website aggregates mental health resources and content from the leading health organisations.

www.mindhealthconnect.org.au

Beyond Blue: National depression initiative

24-hour telephone support and online chat service and links to local services.

1300 22 4636 or www.beyondblue.org.au

e-headspace

Online counselling for young people 12-25 years.

www.eheadspace.org.au

If you would like to talk to someone face-to-face, go to:

Public: <https://www.psychology.org.au/Find-a-Psychologist>

LTU students:

<https://www.latrobe.edu.au/students/support/wellbeing/counselling/contacts>

CONTACTS

If you need to further discuss this research project or would like to know the results of the study (available approximately beginning 2020), please contact:

Student Researcher**Karien Hill**

Email: 20091619@students.latrobe.edu.au

Supervisors

Dr. Carina Chan (Principle Supervisor) - Email: Carina.Chan@latrobe.edu.au

Dr. Philippe Chouinard (Co-supervisor)

Assoc Prof Shawn Somerset (Co-supervisor)

Dr. Ralf Schwarzer (Co-investigator)

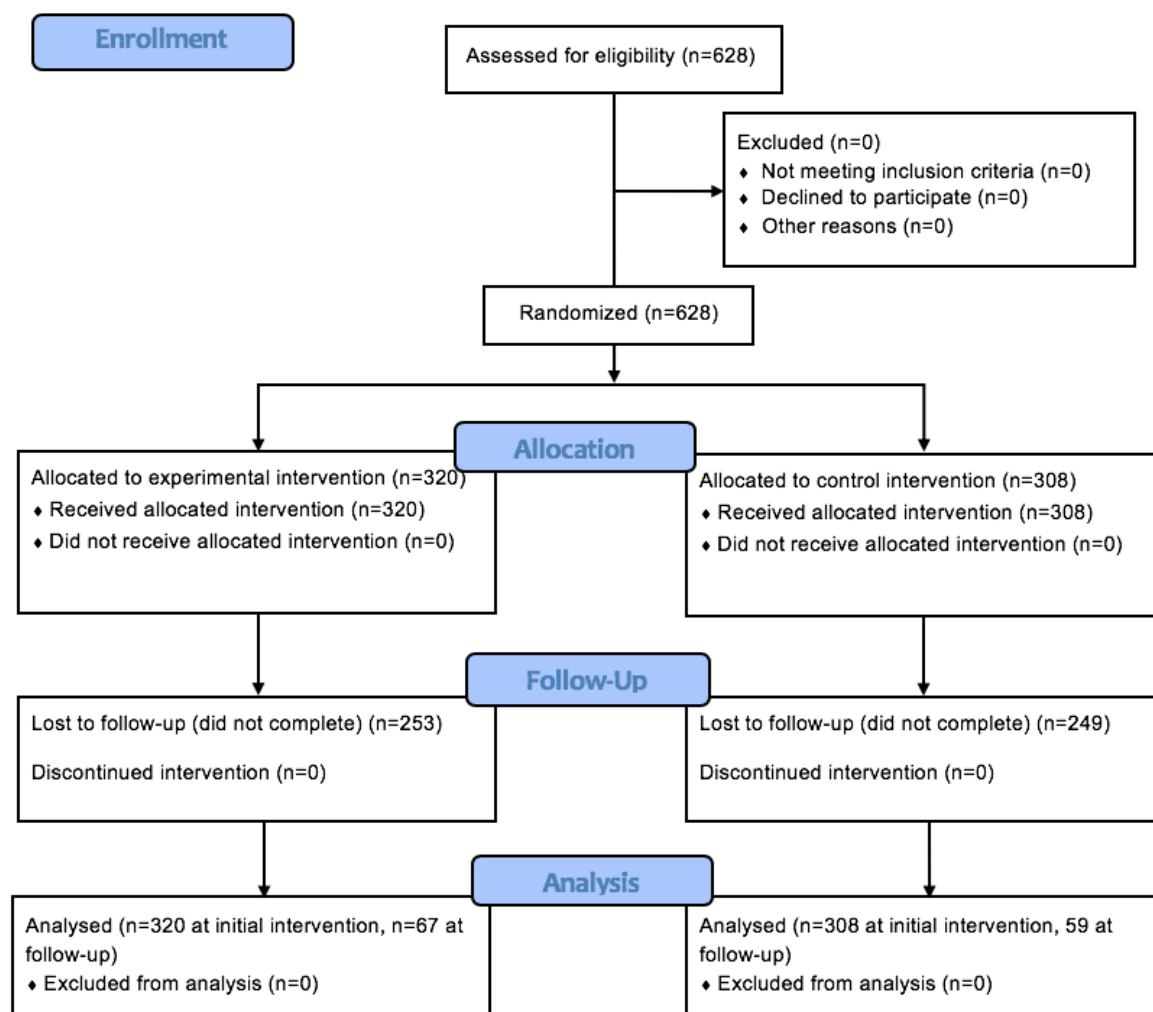
La Trobe University's Human Research Ethics Committee has approved this study (No.: HEC19008). If you have any questions, concerns or complaints regarding the conduct of this research, please contact:

Research Ethics Officer

P: +61 3 9479 1443

E: humanethics@latrobe.edu.au

Appendix BB
Study 3 Electronic Supplementary Material 3



Appendix CC
Study 3 Electronic Supplementary Material 4
Additional Tables

Linear Mixed Model Results - ROSAA

Table S1

Intervention effects on ROSAA at three time points

Parameter	Estimate	Std. Error	df	<i>t</i>	<i>p</i>	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	3.34	.23	271.24	14.81	<.001	2.90	3.79
Experimental	.62	.31	272.29	1.99	.05	.01	1.23
Control	0 ^b	0	.	.	.	.	.
Time 1	-.85	.22	247.41	-3.93	<.001	-1.28	-.42
Time 2	-.35	.23	288.43	-1.50	.13	-.80	.11
Time 3	0 ^a	0	.	.	.	.	.
Time 1 *	-.74	.30	247.96	-2.49	.01	-1.32	-.15
Experimental							
Time 2 *	1.20	.32	289.99	3.79	<.001	.58	1.83
Experimental							
Time 3 *	0 ^b	0	.	.	.	.	.
Experimental							
Time 1 *	0 ^b	0	.	.	.	.	.
Control							
Time 2 *	0 ^b	0	.	.	.	.	.
Control							
Time 3 *	0 ^b	0	.	.	.	.	.
Control							

a. This parameter is set to zero because it is redundant.

Table S2

Time pairwise comparisons for ROSAA

Condition	(I) Time	(J) Time	Mean Difference (I-J)	Std. Error	df	<i>p</i>	95% Confidence Interval for Difference	
							Lower Bound	Upper Bound
Experimental	1	2	-2.45*	.12	1103.04	<.001	-2.69	-2.21
		3	-1.59*	.20	248.58	<.001	-1.99	-1.19
	2	1	2.45*	.12	1103.04	<.001	2.21	2.69
		3	.86*	.22	291.66	<.001	.42	1.29
	3	1	1.59*	.20	248.58	<.001	1.19	1.99
		2	-.86*	.22	291.66	<.001	-1.29	-.43
Control	1	2	-.50*	.12	1102.97	<.001	-.75	-.26
		3	-.85*	.22	247.41	<.001	-1.28	-.43
	2	1	.50*	.12	1102.97	<.001	.26	.75
		3	-.35	.23	288.43	.13	-.80	.11
	3	1	.85*	.22	247.41	<.001	.43	1.28
		2	.35	.23	288.43	.13	-.11	.80

*. The mean difference is significant at the .05 level.

Table S3

Condition pairwise comparisons for ROSAA

Time	(I) Condition	(J) Condition	Mean Difference (I-J)	Std. Error	df	<i>p</i>	95% Confidence Interval for Difference	
							Lower Bound	Upper Bound
1	Experimental	Control	-.12	.11	1046.35	.27	-.34	.09
	Control	Experimental	.12	.11	1046.35	.27	-.09	.34
2	Experimental	Control	1.82*	.20	1014.30	<.001	1.44	2.21
	Control	Experimental	-1.82*	.20	1014.30	<.001	-2.21	-1.44
3	Experimental	Control	.62*	.31	272.29	.05	.01	1.23
	Control	Experimental	-.62*	.31	272.29	.05	-1.23	-.01

*. The mean difference is significant at the .05 level.

Table S4

Simple effects of condition on ROSAA at each time point

Time	Numerator df	Denominator df	<i>F</i>	<i>p</i>
1	1	1046.35	1.24	.265
2	1	1014.30	85.48	<.001
3	1	272.29	3.96	.048

Linear Mixed Model Results - PIA

Table S5

Testing intervention effects on PIA at three time points

Parameter	Estimate	Std. Error	df	<i>t</i>	<i>p</i>	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	2.24	.28	153.01	7.88	<.001	1.68	2.81
Experimental	.71	.39	153.49	1.81	.07	-.07	1.48
Control	0 ^a	0	.	.	.	.	.
Time 1	-.17	.28	148.65	-.62	.54	-.73	.38
Time 2	.33	.29	161.93	1.12	.26	-.24	.91
Time 3	0 ^a	0	.	.	.	.	.
Time 1 *	-.72	.39	149.00	-1.85	.07	-1.48	.05
Experimental							
Time 2 *	.38	.40	162.59	.95	.34	-.41	1.17
Experimental							
Time 3 *	0 ^a	0	.	.	.	.	.
Experimental							
Time 1 *	0 ^a	0	.	.	.	.	.
Control							
Time 2 *	0 ^a	0	.	.	.	.	.
Control							
Time 3 *	0 ^a	0	.	.	.	.	.
Control							

a. This parameter is set to zero because it is redundant.

Table S6

Time pairwise comparisons for PIA scores

Condition	(I) Time	(J) Time	Mean Difference (I-J)	Std. Error	df	<i>p</i>	95% Confidence Interval for Difference	
							Lower Bound	Upper Bound
Experimental	1	2	-1.61*	.14	683.52	<.001	-1.88	-1.33
		3	-.89*	.27	149.39	.001	-1.42	-.37
	2	1	1.61*	.14	683.52	<.001	1.33	1.88
		3	.71*	.28	163.29	.01	.17	1.26
	3	1	.89*	.27	149.39	.001	.37	1.42
		2	-.71*	.28	163.29	.01	-1.26	-.17
Control	1	2	-.51*	.14	682.54	<.001	-.79	-.23
		3	-.18	.28	148.65	.54	-.73	.38
	2	1	.51*	.14	682.54	<.001	.23	.79
		3	.33	.29	161.93	.26	-.25	.91
	3	1	.18	.28	148.65	.54	-.38	.73
		2	-.33	.29	161.93	.26	-.91	.25

*. The mean difference is significant at the .05 level.

Table S7

Condition pairwise comparisons for PIA scores

Time	(I) Condition	(J) Condition	Mean Difference (I-J)	Std. Error	df	<i>p</i>	95% Confidence Interval for Difference	
							Lower Bound	Upper Bound
1	Experimental	Control	-.01	.15	618.92	.94	-.30	.28
	Control	Experimental	.01	.15	618.92	.94	-.28	.30
2	Experimental	Control	1.09*	.20	721.66	<.001	.70	1.48
	Control	Experimental	-1.09*	.20	721.66	<.001	-1.48	-.70
3	Experimental	Control	.71	.39	153.49	.07	-.07	1.48
	Control	Experimental	-.71	.39	153.49	.07	-1.48	.07

*. The mean difference is significant at the .05 level.

Table S8

Simple effects of condition on PIA at each time point

Time	Numerator df	Denominator df	<i>F</i>	<i>p</i>
1	1	618.92	.01	.94
2	1	721.66	29.70	<.001
3	1	153.49	3.27	.07

Reliability Testing

Table S9

Kappa statistics for ROSAA and PIA

Time	Kappa	<i>p</i>	Level of agreement
Time 1, ROSAA	.22	<.001	Fair
Time 1, PIA	.33	<.001	Fair
Time 2, ROSAA	.21	<.001	Fair
Time 2, PIA	.23	<.001	Fair

Appendix DD

Study 3 Stigma of Suicide Scale (SOSS)

Using the scale below, please rate how much you agree with the descriptions of people who take their own lives (suicide). In general, people who suicide are . . .

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Stigma					
Pathetic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shallow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Immoral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
An embarrassment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Irresponsible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Stupid	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cowardly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Vengeful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Isolation/ Depression					
Lonely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Isolated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disconnected	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Glorification/ Normalisation					
Strong	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Brave	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Noble	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dedicated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix EE

Permission to use Stigma of Suicide Scale (SOSS)

Re: Requesting Permission to use Stigma of Suicide Scale - Karien Hill

22/11/2018 8:59 am

Dear Karien,

Thanks for your email. I am happy for you to use the SOSS. I have attached the scale for your reference, along with a related scale on literacy (knowledge) of suicide.

The SOSS (long or short form) is scored by calculating three separate scores, one for each subscale (stigma, isolation/depression, normalisation/glorification), based on the mean (average) of all items within the subscale. A response of strongly disagree is scored 1, up to strongly agree is 5. The mean scores will consequently range from 1-5, with higher scores indicating higher stigma, greater attribution to isolation/depression or greater normalisation/glorification. Most studies have used the short form of the SOSS (16 items). The LOSS is scored as the number of correctly answered items (most studies also use the short form, range 0-12; "don't know" is scored as incorrect).

Please let me know if you need any of the papers related to the scale, and please let me know if I can be of further assistance. Best wishes for your research.

Kind regards,
Phil

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From: [Karien Hill](#)
Sent: Wednesday, 21 November 2018 2:46 PM
To: [Philip Batterham](#)
Cc: [Carina Chan](#)
Subject: Requesting Permission to use Stigma of Suicide Scale

Dear Philip,

I am currently completing research in suicide prevention with my supervisor Dr. Carina Chan. One of my scales tests participants' suicide risk detection and response readiness.

I am writing to request permission to use the Stigma of Suicide Scale (SOS) to test discriminant validity of my measure. I will ensure the form of your scale is not changed and you are appropriately referenced.

Let me know if you require any further information.

Thank you for your time.

Kind regards,

Karien

Appendix FF

Study 3 Bystander Behaviour Scale (BBS)

Please read the list below and select Yes or No for all the items indicating behaviours you have actually engaged in IN THE LAST 2 MONTHS. If you have not been in a situation like that in the past two months, select “no opportunity.”

No.	BBS Item	No Opportunity	Yes	No
1	I encouraged others to learn more and get involved in preventing suicide.			
2	I talked with a friend about suicide as an issue for our community.			
3	I talked with a friend about what suicide risk factors are and what warning signs for suicide might be.			
4	If a friend said they were feeling down and hopeless but they didn't mention 'suicide', I expressed concern and/or offered to help.			
5	I approached a friend if I thought they were thinking about suicide and let them know that I was there to help.			
6	I let a friend I suspected had suicidal thoughts know that I was available for help and support.			
7	I supported a friend who wanted to see a professional about their suicidal thoughts.			
8	If I saw a friend with an object which could cause them harm, I said something and asked what the friend was doing.			
9	I talked to a friend about suicide warning signs they were displaying and asked them if they were thinking about suicide.			
10	I expressed disagreement with a friend who said talking to someone about suicide will make them feel worse or put the idea in their head.			
11	If I saw a friend displaying suicide warning signs, I said something to them.			
12	If I heard a friend talking in ways which indicates suicide warning signs, I said something to them.			
13	If I heard a friend talking about someone they think may be suicidal but they would rather give the person space, I spoke up and expressed concern for the suicidal person.			
14	I heard a friend talking about their family member who they think may be suicidal but they'd rather not get involved and I expressed concern for their family member.			
15	I ensured a friend was safe by getting them professional help when they were displaying suicide warning signs.			
16	I went with a friend to talk with someone (community service, police, crisis centre, etc.) about their suicidal thoughts.			
17	I called 000 or authorities when a friend needed help because of feeling suicidal.			
18	I made sure a friend didn't leave another friend alone who was planning suicide.			
19	I called a crisis centre or community resource for help when a friend told me they were experiencing suicidal thoughts.			
20	When I heard that a friend was planning to kill themselves, I came forward with what I knew rather than keeping silent.			

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