Masculinity and suicidal thoughts and behaviours in men

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Abstract

Background

Internationally and in Australia, men are more likely to die by suicide than women, with traditional masculine norms potentially heightening this risk. However, there is limited evidence regarding the mechanisms linking masculinity to suicidality, particularly in the Australian context. Additionally, few suicide prevention interventions explicitly address masculinity, and even fewer have been empirically evaluated. This PhD aimed to explore the relationship between masculinity and suicidal thoughts and behaviours. The research had three specific objectives: (1) to describe the emergence and trajectory of masculinity and suicide research as a field; (2) to investigate a potential behavioural mechanism through which the masculine norm of self-reliance may be linked to suicidal thoughts; and (3) to evaluate a suicide prevention intervention designed for men with a focus on masculinity.

Method

This thesis involved three studies. Study 1 was a bibliometric review of journal articles from eight electronic academic databases, mapping the emergence and trajectory of the field of masculinity and suicide. Study 2 was an analytical epidemiological study that employed causal mediation analysis using data from two waves of the Australian Longitudinal Study on Male Health and administrative data from the Medicare Benefits Schedule. This study explored whether professional help-seeking might mediate the relationship between the masculine norm of self-reliance and suicidal thoughts among men. Study 3 used a mixed-methods approach, combining descriptive statistics and thematic analysis, to evaluate a suicide prevention intervention (the Boys Do Cry campaign) designed to address key constructs examined in Study 2, including self-reliance, help-seeking, and suicidality. Twitter data were used to assess the reach and engagement of this intervention and to examine key topics of discussion prompted by the campaign.

Results

Study 1 revealed that, while the concept of masculinity appeared in suicide literature as early as 1954, substantial growth in publications only occurred in the last five years (2017-2021). Scientific discourse shifted from viewing suicide as inherently linked to mental illness to incorporating social determinants of health. Study 2 found that highly self-reliant men were at

1.46 times higher odds of experiencing subsequent suicidal thoughts compared to those with low self-reliance (OR = 1.46, 95% CI 1.24-1.72). However, contrary to expectations, help-seeking did not mediate the relationship between self-reliance and suicidal thinking (OR = 1.00, 95% CI 0.99-1.01). Study 3 revealed that the Boys Do Cry suicide prevention media campaign reached 140,650 Twitter users and generated 4,477 engagements with its content. Visual content and endorsements from public figures, such as Robert Smith from The Cure, enhanced public engagement. Key topics of discussion prompted by Boys Do Cry included support for the campaign, reiteration of the campaign's core messages around challenging traditional masculine norms, references to the original band, song, or lead singer (The Cure, Boys Don't Cry, or Robert Smith), mental health-related hashtags, and emotional responses to the campaign.

Conclusion

The three studies collectively highlight the importance of addressing traditional masculine norms in suicide prevention efforts. While self-reliance is a contributory factor to suicide risk among men, the lack of mediation by professional help-seeking suggests that other psychological processes may be involved. Media campaigns like Boys Do Cry show promise in challenging harmful masculine stereotypes and encouraging open discussions. National strategies should incorporate gender-sensitive approaches that directly address and redefine harmful masculine norms, promoting healthier expressions of masculinity. Continued research is needed to further clarify the mechanisms linking masculinity and suicidal thoughts and behaviours and to develop effective interventions that reduce suicide risk among men.

Declaration

This is to certify that:

i. the thesis comprises only my original work towards the PhD except where indicated in the preface;
ii. due acknowledgement has been made in the text to all other material used;
iii. the thesis is less than 100,000 words in length, exclusive of tables, maps, bibliographies and appendices.

Simone Scotti Requena
14 November 2024

Preface

This thesis follows a 'thesis with publications' format. I prepared one journal article for each of the three studies. The article for Study 1 has been published in *Archives of Suicide Research*, the article for Study 2 has been published in *Social Psychiatry and Psychiatric Epidemiology*, and the article for Study 3 has been published in *JMIR Formative Research*. Several researchers substantially contributed to these articles, and my role, along with the roles of other contributors, is described below.

In all studies, I was responsible for designing the study, including formulating the research questions, selecting the research methods, collecting and analysing data, writing codes or coding data (where appropriate), managing the data, and drafting and submitting the final manuscript for publication. In all articles, I am the primary author, having contributed to 75% or more of the work. All co-authors have provided consent for the inclusion of these articles in this thesis.

Study 1 – Chapter 5: Scotti Requena, S., Pirkis, J., Currier, D., Nicholas, A., Arantes, A. A., & Armfield, N. R. (2022). The origins and evolution of the field of masculinity and suicide: a bibliometric and content analysis of the research field. *Archives of Suicide Research*, 28(1), 20–34. https://doi.org/10.1080/13811118.2022.2151956

In this article, I was responsible for conceptualising the study, selecting the appropriate methodology, conducting the formal analyses, curating the data, and drafting the manuscript. Jane Pirkis and Nigel Armfield supervised this project; Jane Pirkis oversaw the content, while Nigel Armfield supervised the methodological aspects. Dianne Currier and Angela Nicholas contributed substantially to writing, reviewing, and editing, while Adriano Arantes assisted with data visualisation. The contribution proportions for each person are outlined below:

Author name	**Contributions**	**Proportion contributed**
Simone Scotti Requena	Conceptualisation, Methodology, Formal analysis, Data Curation, Writing - Original Draft	80%
Jane Pirkis	Writing - Review & Editing, Supervision	5%

Dianne Currier & Angela Nicholas	Writing - Review & Editing	5%
Adriano A. Arantes	Visualisation	5%
Nigel R. Armfield	Conceptualisation, Methodology, Writing - Review & Editing, Supervision	5%

Study 2 – Chapter 6: Scotti Requena, S., Pirkis, J., Arya, V., Nicholas, A., Currier, D. (2024). Does help-seeking mediate the relationship between the masculine norm of self-reliance and suicidal thoughts among Australian men? *Social Psychiatry and Psychiatric Epidemiology*. https://doi.org/10.1007/s00127-024-02788-x

In this article, I was responsible for the conceptualisation of the study, applying for ethical approval, selecting the appropriate methodology, conducting the formal analyses, curating the data, and drafting the manuscript. Jane Pirkis and Dianne Currier contributed to the study's conceptualisation and methodology, with Dianne Currier supervising the project. Vikas Arya validated the analytical code, and all co-authors reviewed the manuscript. The contribution proportions for each person are outlined below:

Author name	**Contributions**	**Proportion contributed**
Simone Scotti Requena	Conceptualisation, Methodology, Formal analysis, Data Curation, Writing - Original Draft	75%
Jane Pirkis	Conceptualisation, Methodology, Writing - Review & Editing	5%
Vikas Arya	Validation, Writing - Review & Editing	5%
Angela Nicholas	Review & Editing	5%
Dianne Currier	Conceptualisation, Methodology, Writing - Review & Editing, Supervision	10%

Study 3 – Chapter 7: Scotti Requena, S., Pirkis, J., Currier, D., Conway, M., Lee, S., Turnure, J., Cummins, J., & Nicholas, A. (2023). An evaluation of the Boys Do Cry suicide prevention media campaign on Twitter: mixed methods approach. *JMIR Formative Research*, 7, e49325. https://doi.org/10.2196/49325

In this article, I was responsible for conceptualising the study, applying for ethical approval, selecting the appropriate methodology, conducting formal analyses, curating data, and drafting the manuscript. Jane Pirkis, Dianne Currier, and Angela Nicholas contributed to the study's conceptualisation, while Simon Lee wrote the song on which the study is based. All co-authors provided substantial feedback on the manuscript. The contribution proportions for each person are outlined below:

Author name	**Contributions**	**Proportion contributed**
Simone Scotti Requena	Conceptualisation, Methodology, Formal analysis, Data Curation, Writing - Original Draft	75%
Jane Pirkis	Conceptualisation, Writing - Review & Editing, Funding acquisition	5%
Dianne Currier, Simon Lee, Jackie Turnure, Jennifer Cummins	Conceptualisation, Writing - Review & Editing	5%
Mike Conway	Methodology, Writing - Review & Editing	5%
Angela Nicholas	Conceptualisation, Methodology, Writing - Review & Editing, Supervision	10%

The work presented in this thesis has not been submitted for any other qualification. All work commenced with the beginning of my PhD in March 2021.

Published work is presented in the thesis as it appears in the original articles. Minor edits, including updates to heading numbering, British spelling, date formatting, and numbering of figures and tables, were made to maintain consistent formatting and flow. Additionally, the pronoun 'we' was replaced with passive voice or 'the study' where appropriate to create a more formal tone throughout the thesis.

During my PhD, I also contributed to other peer-reviewed journal articles outside the scope of this thesis, both as primary author and co-author. However, three articles in which I am second author are closely related to the thesis topic and are listed below:

- Nicholas, A., **Scotti Requena, S.,** Ftanou, M., Rice, Spittal, M., S., Fletcher, J., Mackinnon, A., Seidler, Z., Le, L. K., Mihalopoulos, C., Pirkis, J. (2025). Boys Do Cry: A randomised controlled trial testing the effects of a music video promoting help-seeking for mental health difficulties in Australian men. *BMC Public Health.* https://doi.org/10.1186/s12889-024-21172-7.
- Nicholas, A., **Scotti Requena, S.,** Rice, S., Seidler, Z., Ftanou, M., Fletcher, J., Pirkis, J. (2024). Boys Do Cry: What do Australian men think of a music video encouraging them to talk about their mental health struggles? *American Journal of Men's Health.* (Under review)
- Nicholas, A., **Scotti Requena, S. S.,** Ftanou, M., Rice, S., Fletcher, J., Mackinnon, A., Seidler, Z., Le, L. K., Mihalopoulos, C., Pirkis, J. (2022). The effectiveness of a media-based intervention promoting help-seeking for mental health difficulties by Australian men: study protocol for a randomised controlled trial. *Trials*. https://doi.org/10.1186/s13063-022-06210-2.

In the Boys Do Cry suicide prevention media campaign, which led to the evaluations mentioned above, I was part of the research advisory group (https://boysdocry.com.au/credits). I was involved in all stages of the studies, including design, data collection, data analysis, and both early and final stages of manuscript preparation. This work was conducted alongside my PhD supervisors, Dr Nicholas (the trial manager), and other collaborators, under the supervision of Prof Pirkis, one of the chief investigators for this trial.

Funding sources

This doctoral work was funded by a Suicide Prevention Australia PhD scholarship (2021-2024), which is part of the National Suicide Prevention Research Fund, sponsored by the Australian Government Department of Health, and administered by Suicide Prevention Australia. I also received a Melbourne Research Scholarship for the fees offset.

The work presented in this thesis involves data from two larger projects: the Australian Longitudinal Study on Male Health (Ten to Men) and the Buoy Project. The Ten to Men study is funded by the Australian Government Department of Health and the Buoy Project is funded by the Australian Medical Research Future Fund.

Editing assistance

In accordance with the University of Melbourne's guidelines for the responsible use of digital assistance tools in research outputs (https://research.unimelb.edu.au/strengths/ethics/research-integrity-and-digital-assistance-tools) and the Australian Standards for Editing Practice, I acknowledge the use of ChatGPT (https://chat.openai.com/) and Grammarly (https://app.grammarly.com/) to check my grammar in the preparation of this thesis. In ChatGPT, the prompt "Check my grammar using British English" was used. Suggested changes were carefully reviewed. No content has been generated by either of these tools. Additionally, the data entered in ChatGPT was not used to improve the model, as selected under "Data controls".

Acknowledgements

I would like to express my deepest gratitude to my supervisors – Prof. Jane Pirkis, Dr. Angela Nicholas, A/Prof. Dianne Currier, and Dr. Vikas Arya. Their invaluable mentorship and support have brought me to this point. Jane shared her extensive knowledge of suicide prevention and epidemiology, along with her brilliant ideas. I am forever grateful that she gave me the opportunity to learn from her and her team. Angela generously shared her expertise, providing abundant feedback on grammar and writing skills, and has been incredibly supportive throughout this journey. Dianne offered her vast knowledge of epidemiology and research ethics, providing thorough and thoughtful feedback and challenging me to organise my ideas and write more effectively. Vikas shared his expertise in data analysis and coding, both of which I truly enjoy learning. I also extend my heartfelt thanks to Prof. Cathy Vaughan for chairing my advisory committee meetings and for her steady support throughout this journey. I couldn't have asked for a better team – they are truly brilliant and kind people.

I would also like to thank the Graduate Researcher Association at the Melbourne School of Population & Global Health (GRAM). Since we began meeting in person, I have felt truly welcomed by this group. Thanks to all my colleagues in the Centre(s) – I can't wait to come out of my cave!

A heartfelt thanks to my friend and former mentor, Dr. Nigel Armfield, for his guidance during the early stages of my PhD when I was still in Queensland. Nigel, thank you for inspiring me to always learn more and for encouraging me to pursue a PhD.

Finally, special thanks to my partner, Adriano/Cocó – thank you for keeping me going when I wanted to stop; I am forever in your debt. And to my mum, thank you for everything.

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Chapter 1: Introduction

1.1 Setting the context

Suicide is a major public health problem with far-reaching consequences for societies around the world. Beyond lives lost, individuals bereaved by suicide, such as family members and friends, are also more likely to attempt suicide (Pitman et al., 2016). According to the World Health Organisation, more than 700,000 individuals around the world die by suicide every year. It is also estimated that for every suicide, there are over 20 suicide attempts, which highlights the extensive reach of the problem (World Health Organization, 2021a).

One particularly notable aspect of suicide statistics is the gender differences observed across countries (World Health Organization, 2021a). Globally, males have age-standardised suicide rates 2.3 times higher than females, with high-income countries reporting over three times higher rates for males[1] (World Health Organization, 2021a). As in other high-income countries, three-quarters of all suicides in Australia are by males (Australian Bureau of Statistics, 2022, 2023a). Despite some fluctuations, Australian male suicide rates have been consistently higher than those for females over the last decade (Australian Bureau of Statistics, 2023a).

Various theoretical models have explored risk factors associated with suicide (O'Connor & Kirtley, 2018; Pirkis et al., 2024; Van Orden et al., 2010). Some researchers have suggested that gender differences in specific factors could possibly explain why men are more likely to die by suicide (Canetto & Sakinofsky, 1998; Möller-Leimkühler, 2003; Struszczyk et al., 2019). Literature suggests that, compared to women, men are more likely to use lethal suicide methods (Cai et al., 2022; Mergl et al., 2015), engage in more harmful levels of alcohol and other drug use (Fisher et al., 2020; Pompili et al., 2010; Schneider, 2009), have untreated symptoms of depression (Oliffe, Broom, et al., 2019a; Oliffe, Rossnagel, et al., 2019; Richardson et al., 2021; Seidler et al., 2016), report higher levels of social isolation (Milner et

[1]Biological sex terms (e.g., males) are used when death statistics are reported, as death data are currently categorised by sex. Reporting these statistics as gender (e.g., men) could be misleading, since someone recorded as male at death may not have identified as a man, or vice versa. However, in this thesis, where possible, preference is given to gender-related terms.

al., 2015; Umberson et al., 2022), and are more reluctant to seek help for mental health issues (Möller-Leimkühler, 2002, 2003).

Many of these identified risk factors may be linked to elements of masculinity – the socially constructed set of norms, influenced by culture, dictating how boys and men should think and behave (Levant & Pryor, 2020c). It has been suggested that, in Western countries, it may be that rigid alignment to certain traditional masculine norms related to emotional stoicism and self-reliance that could be a thread connecting many of the risk factors for suicide in men (Cleary, 2012; Coleman, 2015; Feigelman et al., 2021; Genuchi, 2019; Griffin et al., 2022; King et al., 2020; Pirkis et al., 2017; River & Flood, 2021; Tyler et al., 2022).

Levant and Pryor (2020b) propose that "… two aspects of masculinity are theorized to play a role in men's reluctance to seek physical and mental health care. One is the obligation to be self-reliant to the point of not needing help from anyone. The second is the mandate to never reveal vulnerability to anyone" (pp. 15-16). Research consistently shows that men are less likely to seek professional help than women, which could be a key mechanism through which masculinity and suicidality are connected (Liddon et al., 2018; Möller-Leimkühler, 2002, 2003). This gender disparity in help-seeking has persisted over time in Australia. In 2007, 28% of males with a mental health disorder sought professional help compared to 41% of females. Over a decade later, in 2020-2022, these rates increased to 36% for males and 51% for females, but the gap between genders remained significant (Australian Bureau of Statistics, 2008, 2023b)

Reluctance to seek help, particularly from professional sources, is recognised as a key suicide risk factor (Han et al., 2018). A study of Canadian men found that masculinity heightens suicide risk by inhibiting help-seeking behaviours (Houle et al., 2008). This study, however, focused on men who sought help from family and friends rather than from mental health services, which is where the major gap in help-seeking behaviour is observed for men (Australian Bureau of Statistics, 2023b; Liddon et al., 2018; Mok et al., 2021; Möller-Leimkühler, 2002, 2003). The author's review of the published literature identified a lack of studies, both internationally and in Australia, investigating the relationship between help-seeking from mental health professionals, self-reliance, and suicidality. Addressing this notable gap is important because if help-seeking is indeed a causal mechanism linking the

masculine norm of self-reliance and suicidality, it would become a priority target for policymakers and researchers in designing suicide interventions for men.

Despite the growing evidence for the link between masculinity and suicide risk among men, the number of suicide prevention interventions designed specifically for men that focus on masculinity is limited (Struszczyk et al., 2019). Moreover, only a small, albeit growing, number of these interventions have been empirically tested (Pirkis, King, et al., 2022; Struszczyk et al., 2019). These interventions generally reflect the three-level public health framework comprising universal, selective and indicated interventions (Pirkis et al., 2024; World Health Organization, 2018). Universal interventions target the entire general population and addresses specific risk factors for suicide; for example, media campaigns targeting masculine norms. Selective interventions focus on sub-populations with higher risk for suicide, such as men experiencing job loss or relationship breakdown. Finally, indicated interventions are designed for individuals known to be experiencing suicidal thoughts or behaviours, such as therapy programs that incorporate discussion about masculinity and emotional expression.

While some suicide prevention efforts designed specifically for men with a focus on masculinity have shown promising findings, much remains unknown. Therefore, building the evidence base on what works in male suicide prevention is an ongoing task. By targeting underlying masculine norms that contribute to suicidality, interventions may be more effective in reducing suicide rates among men.

1.1.1 Research gaps identified in the literature

Despite growing recognition of the role that masculinity may play in men's higher rates of suicide, research gaps remain in the literature. Indeed, to date, no studies have examined the emergence and trajectory of masculinity and suicide as a distinct research field. Another gap is the limited evidence examining putative causal mechanisms, such as reluctance to seek help, linking the masculine norm of self-reliance and suicidal thoughts, particularly in the Australian context. Additionally, empirical evaluations of suicide prevention interventions designed for men with a focus on masculinity are scarce, and several of those that exist have not been empirically evaluated. Addressing these gaps is important for building the evidence

base and laying the foundations for developing effective interventions and policies tailored for boys and men, with the ultimate goal of reducing the higher suicide rates among them.

1.1.2 Broad aim and specific objectives

The broad aim of this thesis was to investigate the relationship between masculinity and suicidal thoughts and behaviours.

The specific objectives of this research were:

1. To describe the emergence and trajectory of the field of masculinity and suicide research (Study 1)
2. To investigate a potential behavioural mechanism through which the masculine norm of self-reliance and suicidal thoughts might be related (Study 2)
3. To evaluate a suicide prevention intervention designed for men with a focus on masculinity (Study 3)

1.1.3 Component studies

To address the specific objectives of this thesis, three studies were conducted, each guided by a set of research questions. These studies were conducted using a combination of quantitative and qualitative methodologies and drew upon three different data sources.

1.1.3.1 Objective 1: To describe the emergence and trajectory of the field of masculinity and suicide research (Study 1)

Study 1 employed a bibliometric analysis using data from several academic electronic databases to trace the emergence and development of research on masculinity and suicide.

Research Questions:

1. When did the topic of masculinity first emerge in the suicide literature?
2. How has the research output relating to masculinity and suicide evolved over time?
3. What are the major topics discussed within the masculinity and suicide literature? Have they have changed over time?
4. What are the most influential publications in masculinity and suicide research?

1.1.3.2 Objective 2: To investigate a potential behavioural mechanism through which the masculine norm of self-reliance and suicidal thoughts might be related (Study 2)

Study 2 took the form of a quantitative analysis of a national longitudinal study to investigate whether help-seeking mediated the relationship between self-reliance and suicidal thoughts in Australian men.

Research Question:

5. Does help-seeking mediate the relationship between the masculine norm of self-reliance and suicidal thoughts among men?

1.1.3.3 Objective 3: To evaluate a suicide prevention intervention designed for men with a focus on masculinity (Study 3)

Study 3 involved quantitative and qualitative analyses of intervention data to evaluate a suicide prevention initiative designed for men with a focus on masculinity – the Boys Do Cry campaign.

Research Questions:

6. What was the reach of the Boys Do Cry campaign, and how did the public engage with it?
7. What were the highest and lowest performing tweets and how did the public engage with them?
8. What was the pattern of Twitter activity for campaign-related tweets over the course of the campaign and in the post-campaign period?
9. What were the key topics of discussion prompted by the Boys Do Cry campaign?

1.2 Structure of this thesis

This thesis comprises eight chapters. Chapter 1, the present chapter, provides a brief overview of the thesis. Chapter 2 examines the current state of knowledge on suicide among men, including suicide statistics and major risk factors for suicide, as well as emerging research on masculinity and suicide. Chapter 3 describes the theoretical foundation for examining the intersection of masculinity and suicide by discussing how two contemporary

models of suicidal thoughts and behaviours may help to clarify the role of masculinity in men's suicidal thoughts and behaviours.

Chapter 4 outlines the three different methodological approaches underpinning each of the three studies. It also provides additional information on the methodologies and methods used in the empirical work that were not provided in the journal articles that report on them. Chapters 5 describes Study 1, the bibliometric review describing the masculinity and suicide research field over time [published journal article]. Chapter 6 describes Study 2, the quantitative analysis investigating whether help-seeking mediates the relationship between self-reliance and suicidal thoughts among men [published journal article]. Chapter 7 describes Study 3, the empirical evaluation of a suicide prevention intervention designed for men with a focus on masculinity [published journal article].

Chapter 8 discusses the overall findings from the empirical research undertaken and considers these findings in relation to the broader literature and the theoretical framework discussed in Chapter 3. It also outlines some implications of the findings from the three studies and discusses future research directions.

Chapter 2: Background literature review

2.1 Defining key concepts

2.1.1 Masculinity

Masculinity is not a homogenous concept but rather a complex and multifaceted one, subject to change over time (Connell, 2005). The term is often referred to in the literature as 'masculinities' to acknowledge its varied and evolving nature across different societies (Cleary, 2019; Connell, 2005). One prominent approach to conceptualising masculinity in the mental health literature is by adopting a social constructivist perspective, which views masculinity as a set of historically contingent, socially constructed norms shaped by culture (Cleary, 2019; Levant & Pryor, 2020c). These norms influence the beliefs and behaviours of boys and men, in contrast to biological determinist views that consider masculinity as innate characteristics linked to one's biological sex (i.e., being male) (Cleary, 2019; Connell, 2005; Fine, 2010; Levant & Pryor, 2020c).

Masculine norms associated with mental health problems or gender inequity are frequently mentioned in the literature as hegemonic masculinity[2], a term coined by the sociologist Raewyn Connell (Connell, 1987). However, recently, influenced by Positive Psychology, a growing number of mental health researchers have begun to explore 'positive masculinities' in an attempt to promote healthier masculine norms among boys and men (Kiselica et al., 2016; McDermott et al., 2019; Seidler et al., 2019; Seidler et al., 2018; Wilson et al., 2022). For simplicity, the term masculinity is used in this thesis to explore its link to suicidal thoughts and behaviours, particularly in the Australian context, with specific masculine norms, whether traditional or not, explicitly stated where appropriate.

2.1.2 Suicidal thoughts and behaviours

Language describing suicidal thoughts and behaviours have changed over time (Pirkis et al., 2023), making it critical to establish clear definitions. Some changes in language are

[2]The literature refers to 'hegemonic masculinity', 'dominant masculinity', and 'traditional masculinity' interchangeably.

definitional, while others are aimed at reducing stigma, such as avoiding terms like ‘commit suicide’ or ‘successful suicide’ (Pirkis et al., 2023). A recent international consensus study conducted with experts in the field of suicide prevention and individuals with lived experience of suicide agreed on definitions for terms related to suicide in the English language (De Leo et al., 2021). In that study, suicide was defined as “an act resulting in death which is initiated and carried out by an individual to the end of the action, with the knowledge of a potentially fatal result, and in which intent may be ambiguous or unclear, may involve the risk of dying, or may not involve explicit intent to die” (p. 8), while a suicide attempt was defined as “an act in which a person harms himself or herself, with the intention to die, and survives” (p. 8). Another commonly used term in suicide research is ‘suicidal ideation’ (or suicidal thoughts), which the experts in the consensus study defined as “to think of suicide with or without suicidal intent, or hope for death by killing oneself, or state suicidal intention without engaging in behaviour” (p. 8).

Another term, ‘self-harm’, was defined by De Leo and colleagues as “a non-fatal act in which a person harms himself or herself intentionally, with varying motives including the wish to die” (De Leo et al., 2021, p. 8). However, this term does not differentiate suicide attempt from ‘non-suicidal self-harm’, which involves harming oneself without the intent to die (De Leo et al., 2021; Plener et al., 2015; Turecki et al., 2019). Although non-suicidal self-harm is related to suicidal thoughts and behaviours (Mars et al., 2019), it is not the focus of this thesis. The broad term ‘suicidal thoughts and behaviours’ is used in this thesis to encompass as many suicide-related terms as possible.

2.2 Suicide worldwide

In 2019, suicide was the 17th leading cause of death across all age groups and the 4th leading cause of death among young people aged 15-19 years (World Health Organization, 2021b). The World Health Organisation estimates that over 700,000 people die by suicide every year – equivalent to one death every 40 seconds. For every suicide, there are more than 20 suicide attempts (World Health Organization, 2021b).

While the global age-standardised suicide rate was 9.0 per 100,000 individuals in 2019, these rates varied substantially by region (World Health Organization, 2021a). For example, African, European, and South-East Asian countries had the highest suicide rates, 11.2, 10.5,

and 10.2 suicides per 100,000 individuals, respectively. Notably, over three-quarters (77%) of all suicides occur in low- and middle-income countries, where the majority of the world's population lives (World Health Organization, 2021a). However, high-income countries have the highest suicide rates (10.9 per 100,000 individuals) among all income groups (World Health Organization, 2021a). These figures highlight the complexity of suicide as a public health problem.

Another important disparity in suicide rates of particular relevance to this thesis is related to sex and gender. In 2019, the global age-standardised suicide rate for males was 12.6 per 100,000 people, while for females was 5.4 per 100,000 individuals (World Health Organization, 2021a). Among income groups, males in high-income countries had the highest suicide rate (16.5 per 100,000 people), whereas females in lower-middle income countries had the highest suicide rates (7.1 per 100,000 individuals) compared to females in other income countries (World Health Organization, 2021a). Figure 2-1 illustrates the male-to-female ratio of age-standardised suicide rates worldwide (World Health Organization, 2021a). A ratio larger than one indicates that male suicide rates exceed those of females in that country. Despite variation in rates, all countries, where data available, had a male-to-female ratio greater than one, highlighting that suicide trends are not uniform but vary across and within countries.

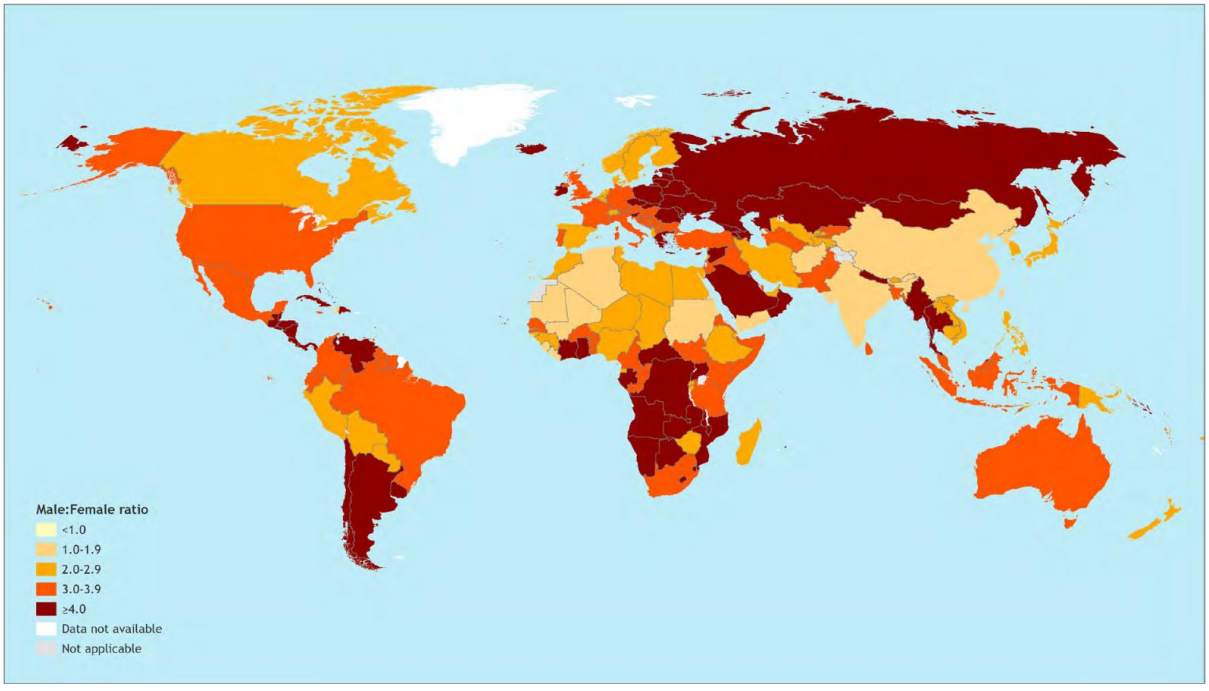

Figure 2-1 Male-to-female ratios of the age-standardised suicide rates in 2019 worldwide. Source: World Health Organization (2021a)

2.3 Suicide in Australia

In 2023, there were 3,214 suicides in Australia, making suicide the 16th leading cause of death across all age groups and the leading cause of death among children (Australian Bureau of Statistics, 2022, 2023a). In the same year, the age-standardised suicide rate was estimated to be 12.1 per 100,000 individuals.

Australian suicide rates by sex follow similar trends to those observed in other high-income countries, with males accounting for three-quarters (75%) of all suicides in 2023 (Australian Bureau of Statistics, 2023a). This results in a male suicide rate of 18.0 per 100,000 persons, compared to 5.8 per 100,000 for females. Despite some fluctuations, male suicide rates have consistently been higher than those for females over the past decade in Australia, as shown in Figure 2-2 (Australian Bureau of Statistics, 2023a).

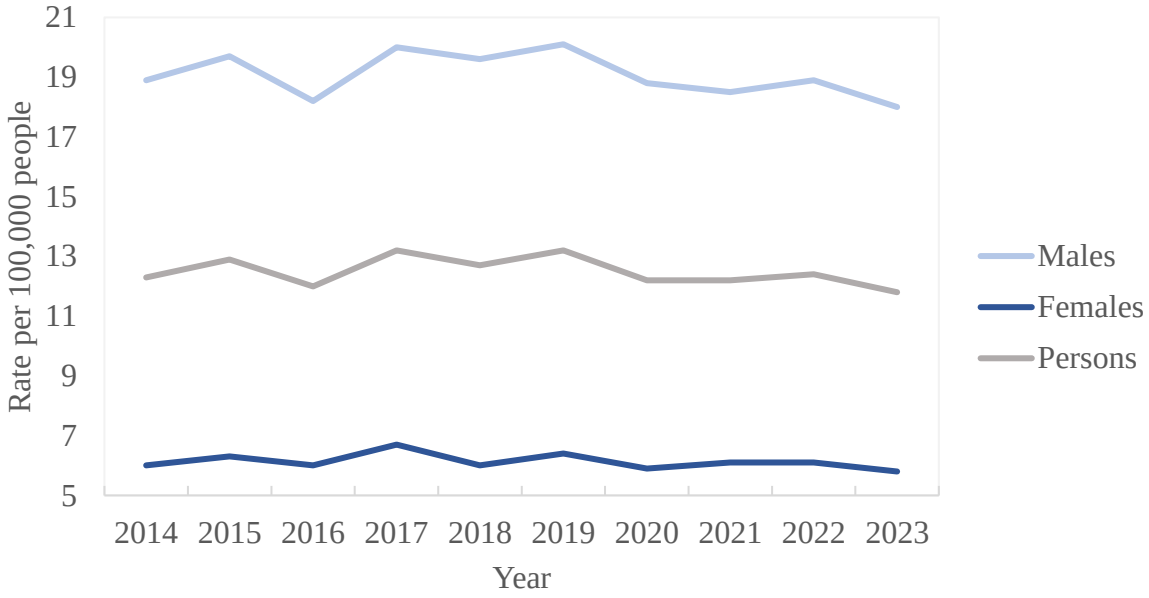

Figure 2-2 Age-standardised suicide rates per 100,000 individuals from 2014 to 2023 in Australia, with preliminary data for 2022-2023. Source: Australian Bureau of Statistics (2022, 2023a)

There are also substantial differences in suicide rates among Australian males based on age groups. In 2023, males aged 55-59 years had the highest age-specific suicide rates, with 30.9 deaths per 100,000 individuals (Australian Bureau of Statistics, 2022, 2023a). However, the highest proportion of total suicides was among males aged 40-44 years, accounting for 10%

of all suicides. The second highest age-specific suicide rate was among males aged 45-49 years, with 27.3 deaths per 100,000 individuals. Compared to 2022, the age-specific suicide rate among males aged 55-59 years increased by nearly six deaths per 100,000 individuals (Australian Bureau of Statistics, 2023a). Males aged 19 years and under also experienced an increase in their suicide rates, while males aged 85 years and over had the largest decrease from 2022 to 2023. Figure 2-3 shows the male suicide rates by age in Australia for 2022-2023 (Australian Bureau of Statistics, 2022, 2023a).

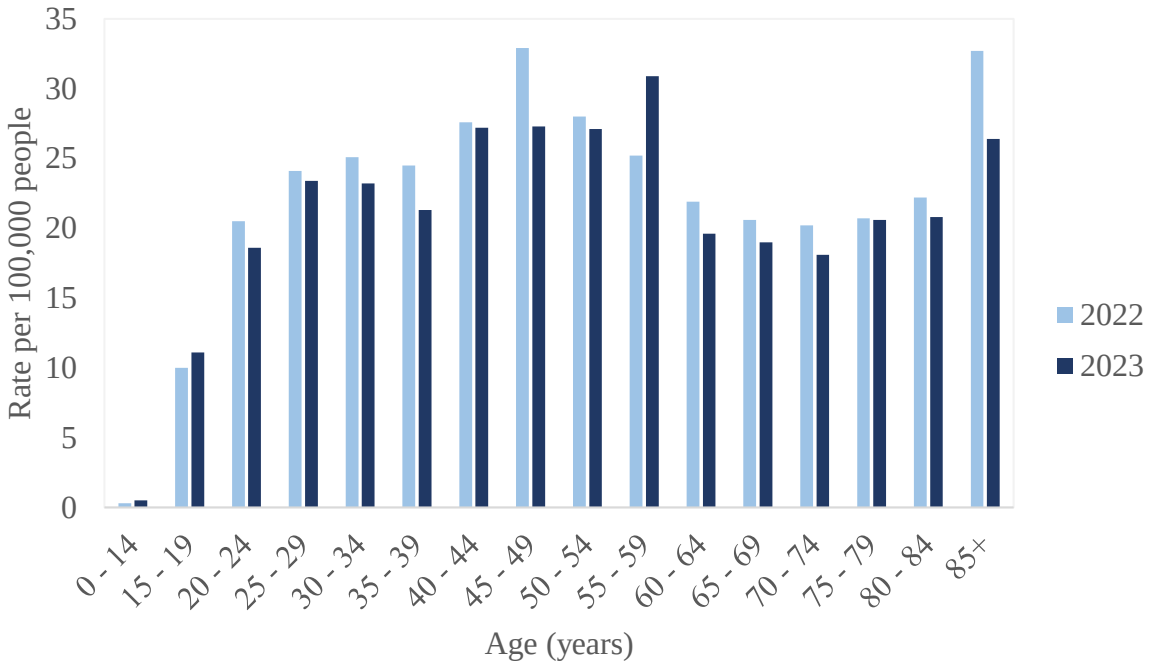

Figure 2-3 Male age-specific suicide rates per 100,000 individuals in Australia, 2022-2023 (preliminary data). Source: Australian Bureau of Statistics (2023a)

Although men account for three-quarters of all suicides in Australia, certain groups of individuals are at a higher risk of dying by suicide based on factors such as race, culture, gender identity, and sexual orientation (Australian Bureau of Statistics, 2022; Australian Government Department of Health, 2020). These higher-risk groups include Aboriginal and Torres Strait Islander peoples, individuals from socio-economically disadvantaged backgrounds, people living in rural and remote areas, individuals with disabilities, those from culturally and linguistically diverse backgrounds, members of the LGBTIQ+ community, veterans, socially isolated individuals, and people involved in the criminal justice system (Australian Government Department of Health, 2020).

2.3.1 Public health imperatives in Australia

In addition to individual loss of life, suicide has other far-reaching effects on Australian society. For instance, suicide creates a significant burden to the economy, with an estimated annual cost of $2.2 billion to Australians, including expenses related to coronial investigations, emergency services, police, counselling support, and lost lifetime earnings costs (KPMG, 2019). Moreover, a large nationally representative survey (n = 3,002) conducted in Australia found that nearly 60% of the population has been affected by the suicide of someone they know (Maple et al., 2019), which is itself a major risk factor for suicide (Turecki et al., 2019). Despite fluctuations, suicide rates particularly among men, have remained consistently high over time, highlighting the importance of identifying key risk factors for suicide in men.

2.4 Risk factors for suicide in men

Various theoretical models have explored risk factors associated with suicide (Hawton & Pirkis, 2017; Pirkis et al., 2023; Turecki et al., 2019). Commonly identified factors include a combination of socio-demographic characteristics (e.g., age, sex, gender identity, ethnicity, employment, occupation), biological factors (e.g., genetics, epigenetic changes), personality traits (e.g., impulsivity, coping skills), clinical conditions (e.g., use/abuse of alcohol and other drugs, depression), stressful life events (e.g., relationship breakups, loss of a family member), early-life adversities (e.g., sexual abuse), access to lethal means (e.g., firearms, pesticides), exposure to others' suicide (e.g., through media or personal connections), lack of access to mental health services, and economic crises (Hawton & Pirkis, 2017; Turecki et al., 2019). Despite these identified risk factors, the interactions and causal pathways among them have not been sufficiently explored in the literature (Franklin et al., 2017).

A number of researchers have suggested that differences in individual-level and contextual suicide risk factors could possibly explain why men are more likely to die by suicide than women (Canetto & Sakinofsky, 1998; Möller-Leimkühler, 2003; Struszczyk et al., 2019). These may include the choice of lethal suicide methods, substance abuse, depression, stigma, social isolation, suppression of emotions, and reluctance to seek help (Richardson et al., 2021). Many of these risk factors identified in epidemiological literature may be linked to certain dimensions of masculinity. Specifically, adherence to traditional masculine norms

related to stoicism may underlie many of these factors, thereby increasing the risk of suicide among men.

Men are more likely than women to choose lethal suicide methods, increasing their risk of death. For example, a study conducted in four European countries – Portugal, Germany, Ireland, and Hungary – found that suicide attempts were over three times more likely to be fatal among men than women, primarily due to the lethality of methods chosen (e.g., hanging, jumping, or using sharp objects) (Mergl et al., 2015). However, a 2022 meta-analysis of 34 studies on the lethality of suicide methods found that when using the same methods, the case fatality rates between males and females were the same, although the overall fatality rates were higher among men (Cai et al., 2022). This suggests that men tend to choose more lethal methods, which may be influenced by societal expectations related to gender norms.

As proposed by Cleary (2019), early views from the 19th century, based on Durkheim's sociological work on sex differences in suicide rates in the 50s, suggested that men's higher capacity intellectually and morally to act on suicide created notions of suicide as a masculine act. Therefore, societal perceptions of masculinity may pressure men to choose more lethal methods to conform to these expectations. Other researchers have also suggested that the lethality of suicide methods and adherence to gender-related stereotypes, such as those characterising masculinity, may be underlying factors in men's preference for more lethal suicide methods due to social expectations (Möller-Leimkühler, 2003). Thus, the choice of lethal suicide methods is not only a behavioural pattern but may also reflect internalised masculine ideals that contribute to higher suicide rates among men, likely compounded by other interacting factors.

Substance abuse, including acute intoxication and chronic use of alcohol and other drugs, is also strongly linked to increased suicide risk in men (Fisher et al., 2020). Studies in the United States and Australia have found that individuals who died by suicide using lethal methods (firearms in the United States, hanging or suffocation in Australia) were more likely to be intoxicated by alcohol and other drugs, with this pattern being more prevalent among males (Darke et al., 2023; Kõlves et al., 2020; Lange et al., 2023). Furthermore, global prevalence rates for substance-related disorders are higher in males than females (Institute for Health Metrics and Evaluation, 2021), indicating that substance abuse is a major factor in understanding heightened suicide risk among men (Richardson et al., 2021). This pattern may

be linked to masculine norms that encourage risk-taking and discourage expressing vulnerability, leading men to use substances as a coping mechanism to suppress 'unwanted' emotions, further increasing vulnerability to suicide.

Supporting this, a Canadian study found that emotion suppression was a key mechanism linking anger and depression symptoms in men (Rice, Kealy, Ogrodniczuk, et al., 2020). Another study, in Germany, found that boys and young men were more likely to suppress emotions as a coping mechanism, while girls and women were more likely to seek help or reach out for social support (Zimmermann & Iwanski, 2014). These findings suggest that societal expectations of masculinity promote emotional suppression, which can lead to substance abuse as a coping behaviour. However, this is not to say that men experience emotions differently from women; rather, they may express emotions in a different manner, perhaps perceiving certain emotions as a threat to their masculine identities (Emslie et al., 2007; Oliffe, Rossnagel, et al., 2019; Rice, Kealy, Ogrodniczuk, et al., 2020; Ridge et al., 2011). This can lead men to 'bottle up' feelings perceived as 'bad' or contrary to societal norms, instead of seeking help, which is particularly problematic when someone is already feeling depressed, as it heightens suicide risk (Richardson et al., 2021; Turecki et al., 2019).

Under-recognition of depression symptoms is another important factor, with strong evidence linking it to suicidal thoughts and behaviours in men (Oliffe, Broom, et al., 2019a; Oliffe, Rossnagel, et al., 2019; Richardson et al., 2021; Seidler et al., 2016). Some scholars have suggested that men express symptoms of depression in a particular way – a concept referred to in the literature as 'male depression' – leading to the under-recognition of symptoms. Male depression symptoms is characterised by the suppression of certain emotions (e.g., sadness, fear) and the externalisation of other symptoms or emotions (e.g., substance abuse, anger, aggression, and risk-taking) (Herreen et al., 2022; Martin et al., 2013; Rice, Kealy, Seidler, et al., 2020). This pattern of symptom expression may be shaped by rigid adherence to traditional masculine norms that discourage emotional vulnerability.

The consequences of under-recognition are significant. Under-recognised depression can lead to undertreatment or lack of treatment altogether, which is problematic because untreated depression is a known risk factor for suicide, particularly among men (Richardson et al., 2021; Turecki et al., 2019). Therefore, adherence to masculine norms that promote emotional suppression not only masks depressive symptoms but also hinders timely intervention,

increasing the risk of suicidal behaviours. There is some emergent evidence supporting this link (Rice et al., 2013; Seidler et al., 2016).

Stigma surrounding mental health issues also plays a significant role in increasing suicide risk among men. Beliefs related to men being strong and invulnerable can lead to a reluctance to disclose mental health problems, exacerbating depression and other risk factors (Rice et al., 2013; Seidler et al., 2016). A Canadian study found that men held more stigmatising views towards depression and suicide than women and perceived professional help as 'embarrassing' (Oliffe et al., 2016). This stigma is closely tied to masculine norms that value toughness and self-reliance, discouraging men from seeking help and perpetuating a cycle of emotional suppression and social isolation (McKenzie et al., 2018; McKenzie et al., 2022).

This reluctance to acknowledge mental health issues can lead to social isolation. Evidence from Australia and the United States shows that men are more likely than women to experience higher levels of social isolation (Milner et al., 2015; Umberson et al., 2022). According to a 2022 systematic review of 46 studies, there is a strong relationship between social isolation and suicide risk, particularly among men (Motillon-Toudic et al., 2022). Here again, traditional masculine norms that discourage expressing vulnerability or seeking support may contribute to social isolation, further increasing suicide risk. These studies suggest that stigma and social isolation may work together in heightening suicide risk among men, creating a vicious cycle where men avoid acknowledging mental health issues and isolate themselves instead of seeking appropriate support.

Finally, reluctance to seek help is another major suicide risk, particularly among males. International literature shows that men are less likely to seek professional help for mental health problems compared to women (Liddon et al., 2018; Mok et al., 2021; Möller-Leimkühler, 2002, 2003). This trend is also evident in Australia, where boys and men with mental health disorders are also less likely to use mental health services compared to females (36% vs. 51% in 2022) (Australian Bureau of Statistics, 2023b). A systematic synthesis of 55 studies found that key barriers for professional help-seeking for suicidality included high self-reliance, stigma associated with mental health problems, and lack of perceived need for treatment (Han et al., 2018). A number of studies have been conducted in Australia since this review that add further weight to the potential link of the masculine norm of self-reliance and reluctance to seek help among men. A study conducted with men living in non-urban areas

showed that those who endorsed more strongly traditional masculine beliefs and stereotypical male behaviours had more negative attitudes towards mental health service use compared to those who less strongly endorsed those norms (Piatkowski et al., 2023). Additionally, Reily et al. (2024) found that the masculine norm of self-reliance was the most common barrier to professional help-seeking among Australian men with a history of suicidal thinking. These men tended to use self-help strategies instead of professional help. Reluctance to seek professional help is major suicide risk factor, particularly among men (Turecki et al., 2019; World Health Organization, 2014). This raises the question of whether reluctance to seek help may be a key mechanism through which masculinity and suicidality are connected in men.

In summary, risk factors for suicide in men are multiple and influenced by a complex interplay of various factors. Men are more likely to choose lethal suicide methods, engage in more problematic levels of alcohol and other drug use, have unrecognised and undertreated depression symptoms, hold stigmatised attitudes toward mental health and suicide, experience social isolation, suppress emotions linked to vulnerability, and avoid seeking help when in distress. There is emerging evidence that traditional masculine norms, particularly those related to stoicism, may be a thread connecting these factors, ultimately increasing suicidality among men.

2.5 Masculinity and suicide as a research field

2.5.1 Measuring masculinity

Given the complexity and multiplicity of understandings of masculinity, examining how the concept has been operationalised into measurable constructs is important to any investigation of the link between masculinity and suicidal thoughts and behaviours among men. There are multiple ways masculinity has been operationalised in the epidemiological literature, with a 2015 review identifying 16 masculinity scales (Thompson Jr & Bennett, 2015). The review classified these masculinity measures into two groups: nine scales that evaluated the level of adherence to traditional masculinity, predominantly designed in the United States, and seven scales designed for use in non-Western cultures (e.g., Russian, Latinx). The three most widely used masculinity measures in Western countries are the Gender Role Conflict Scale (O'Neil et al., 1986), the Male Role Norms Inventory (Levant et al., 2013), and the

Conformity to Masculine Norms Inventory (Mahalik et al., 2003). These instruments assess the broad construct of traditional Western masculinity and specific masculine norms.

The Gender Role Conflict Scale measures the conflicts men experience when they feel they are not meeting traditional male role expectations, focusing on specific norms such as: 1) restricted emotionality; 2) success, power and competition; 3) restricted affectionate behaviour between men; and 4) conflicts between work and family relations (O'Neil et al., 1986). The Male Role Norms Inventory assesses the endorsement of traditional masculine ideology, with specific norms including: 1) restricted emotionality; 2) self-reliance through mechanical skills; 3) negativity toward sexual minorities; 4) avoidance of femininity; 5) importance of sex; 6) toughness; and 7) dominance (Levant et al., 2013). The Conformity to Masculine Norms Inventory evaluates the extent to which individuals conform to traditional masculine gender norms, measuring specific norms such as: 1) winning; 2) emotional control; 3) risk taking; 4) violence; 5) power over women; 6) dominance; 7) playboy; 8) self-reliance; 9) primacy of work; 10) disdain for homosexuality; and 11) pursuit of status (Mahalik et al., 2003).

It is noteworthy that there are various challenges in trying to measure masculinity quantitatively (Smiler, 2004; Smiler & Epstein, 2010; Thompson Jr & Bennett, 2015). Masculinity scales often provide an overall measurement of masculinity as a total score. However, some researchers argue that assessing specific masculine norms is more useful. This approach accounts for the construct's plurality and addresses concerns regarding the validity of total scores, particularly for the Conformity to Masculine Norms Inventory (Hammer et al., 2018). Another challenge is the cultural and contextual dependency of masculine norms (Smiler, 2004; Smiler & Epstein, 2010; Thompson Jr & Bennett, 2015). Scales are often developed with a specific sample in a specific country and applying them to different cultures requires careful consideration. More contemporary masculinity measures attempt to address this by focusing on specific masculine norms; however, the number of studies in the suicide literature investigating individual norms is still limited. Finally, masculinity is an evolving concept, and measurements need to evolve with societal and cultural changes to capture this accurately (Smiler, 2004; Smiler & Epstein, 2010; Thompson Jr & Bennett, 2015). Nevertheless, despite these challenges, using masculinity measures in research remains valuable for understanding how masculine constructs and norms can influence behaviour or contribute to gender-specific health disparities, such as suicide.

Moreover, researchers and policy makers can also use such information to design interventions that target traditional norms linked to suicidality and promote healthier behaviours among individuals. Therefore, the use of some form of measurement of masculinity is crucial in advancing knowledge in the field of masculinity and suicide.

2.5.2 The scientific study of masculinity and suicide

The 2000s have seen a marked increase in the scientific study of masculinity and suicide. Quantitative studies exploring this topic have predominantly emerged from the Western countries (Coleman, 2015; Coleman et al., 2020; Daruwala et al., 2021; Easton et al., 2013; Feigelman et al., 2021; Genuchi, 2019; Granato et al., 2015; Griffin et al., 2022; King et al., 2020; McDermott et al., 2018; Pirkis et al., 2017; Rice et al., 2022; Tyler et al., 2022; Walther et al., 2023). Although the aims of these studies differ substantially, they collectively support the notion that traditional masculinity increases suicide risk among men. For those studies that investigate specific masculine norms in relation to suicidal thoughts and behaviours, the norm of self-reliance consistently emerges in the literature from Australia and the United States, suggesting that self-reliance is a key factor in understanding the role of masculinity in suicide risk when using quantitative methodologies (Daruwala et al., 2021; Griffin et al., 2022; King et al., 2020; McDermott et al., 2018; Pirkis et al., 2017; Tyler et al., 2022). Qualitative studies on masculinity and suicide are more diverse in their forms and contexts, offering better representation from countries outside the West (Abarca, 2022; Åhlander et al., 2023; Andoh-Arthur et al., 2018; Apesoa-Varano et al., 2018; Bantjes et al., 2017; Bryant & Garnham, 2015; Khan, Dery, et al., 2022; Khan, Ratele, et al., 2022; Kieran, 2021; Küçükkaraca & Koçak, 2023; Muñoz, 2022; Oliffe et al., 2015; Rasmussen et al., 2018; River & Flood, 2021; Schlichthorst, King, Turnure, et al., 2019; Trail et al., 2021). These studies collectively indicate that traditional masculinity increases suicide risk among boys and men through feelings of shame around failure, disconnectedness, and emotional pain. Overall, the interest in multiple countries in the scientific study of masculinity and suicide appears to be on an upswing; however, the emergence and evolution of this scientific field as a distinct area of study is yet to be documented. Given that that a growing number of public health initiatives targeting suicide among men focus on challenging traditional masculine norms and promoting healthier alternatives, understanding the scope and trajectory of this research field is important.

2.6 Suicide prevention efforts with a focus on masculinity

Public health approaches to suicide prevention generally adopt a three-level framework for interventions (Pirkis, King, et al., 2022; World Health Organization, 2018). The first level, *universal interventions*, targets the entire general population and addresses specific risk factors for suicide. The second level, *selective interventions*, focusses on sub-populations with higher risk for suicide (e.g., specific age groups, individuals with mental health problems). The third level, *indicated interventions*, is aimed at individuals who are known to be living with suicidal thoughts or behaviours.

Universal suicide prevention interventions

Examples of suicide prevention interventions with a focus on masculinity that have targeted the general population include 'Man Therapy', 'DUDES Club', and 'Man Up'. Man Therapy is an online suicide prevention intervention in the United States aimed at reducing stigma surrounding mental health problems and promoting help-seeking (https://mantherapy.org/). A randomised controlled trial involving 554 working-aged men compared the intervention group (Man Therapy) to a control group that accessed an online screening and referral website. The study found that both intervention and control groups showed improvements in suicidal thoughts, suggesting that the intervention might not be potent enough to reduce suicidal thinking on its own, but may serve as a vehicle to reframe self-reliance and help-seeking behaviour (Frey et al., 2023). In Canada, the DUDES Club suicide prevention program is aimed at promoting mental health by fostering positive masculine norms, such as trust and respect, among Indigenous men (https://dudesclub.ca/). A qualitative evaluation of men's experiences in the DUDES Club found positive effects, including an improved sense of brotherhood and community, and a shift in traditional masculine norms (Efimoff et al., 2021). Another universal intervention, the Australian Man Up media-based suicide prevention campaign, aimed at promoting help-seeking among men through a focus on masculinity (https://manup.org.au/). A randomised controlled trial with 354 men compared Man Up to a control group that watched a neutral health-related documentary. The trial found that Man Up was more effective in promoting help-seeking intentions compared to a control group (King et al., 2018). Qualitative evaluations also showed that the campaign successfully promoted conversations about masculinity and suicide across social media platforms (Schlichthorst, King, Turnure, et al., 2019; Schlichthorst et al., 2018).

Selective suicide prevention interventions

Examples of suicide prevention interventions with a focus on masculinity that have targeted specific populations with higher risk for suicide, such as veterans, construction or manufacturing workers, and older men, include 'Shoulder to Shoulder', 'Mates in Construction', and 'Alive and Kicking Goals!'. The Shoulder to Shoulder campaign aimed to tackle the 'hypermasculine' culture in the Army by encouraging soldiers to seek treatment for mental health problems instead of relying on themselves. Scholars have argued that, even though the Shoulder to Shoulder campaign did not address the high suicide rates among the military in the United States, it helped to promote an alternative to dominant military masculine norms that place value on close male friendships, emotional openness and compassion (Kieran, 2021).

Mates in Construction is an Australian suicide prevention program aimed at reducing suicide among men working in the construction industry by raising awareness of the problem (i.e., construction workers are at a higher risk of suicide than other workers) and promoting help-seeking behaviour (https://mates.org.au/). A recent evidence synthesis of empirical evaluations of the Mates in Construction program with 12 studies found this program to be effective in increasing suicide awareness by reducing mental health stigma and improving mental health literacy and help-seeking intentions (Gullestrup et al., 2023).

Alive and Kicking Goals! is another Australian intervention aimed at reducing suicide stigma among young Aboriginal and Torres Strait Islanders men through workshops, mentoring, and counselling in the Kimberley region in Western Australia (https://mensoutreach.org.au/alive-kicking-goals/). The program's pilot evaluation found that it was successful in teaching skills related to suicide prevention and raising awareness of the issue in the region (Tighe & McKay, 2012).

2.6.1 The Buoy Project

Seven suicide prevention interventions for boys and men are currently being tested in randomised controlled trials (Australian Government Department of Health, 2020; Pirkis, King, et al., 2022). These evaluations are part of the 'Buoy Project', which is a collaboration between various universities and community organisations in Australia with a focus on reframing help-seeking behaviour rather than self-reliance, with the broad aim of preventing

and reducing suicide in boys and men (https://lifeinmind.org.au/suicide-prevention/collaborations/buoy-project). Some of these interventions are universal, such as 'Boys Do Cry', 'Breaking the Man Code', and 'Ahead of the Game' (King et al., 2022; Vella et al., 2021). The Boys Do Cry intervention is described briefly at the end of this section and in detail in Chapter 4 as it is part of this thesis. Both Breaking the Man Code and Ahead of the Game are interventions designed for adolescent males, with Breaking the Man Code tailored as a school workshop and Ahead of the Game as a sport-based program.

The two of those interventions that combine universal and selective approaches are 'MATES in Manufacturing' and 'Conversations about Suicide' (LaMontagne et al., 2022; Oostermeijer et al., 2022). MATES in Manufacturing offers training and support specifically tailored for male workers in the manufacturing sector, while Conversations about Suicide provides specialist Mental Health First Aid suicide prevention training adapted for older men in Men's Sheds.

Two interventions are aimed at individuals who are known to be living with suicidal thoughts or behaviours (i.e. indicated interventions) in Australia – 'Men in Mind' and 'Specialist Lifeline Services' (Pirkis, King, et al., 2022; Seidler et al., 2022). Men in Mind focusses on training mental health professionals, including psychologists, to utilise therapies that have proven effective for males; Men in Mind is also categorised as an indicated intervention. Specialist Lifeline Services is specifically designed to support boys and men. These interventions all challenge the self-reliance masculine norm and promote help-seeking behaviour, which may indirectly address public and self-stigma towards suicide.

The Boys Do Cry intervention is one of the universal interventions being tested in the Buoy Project. It features a four-minute music video of a group of Australian men singing an adapted version of "Boys Don't Cry" by The Cure (https://boysdocry.com.au/). The lyrics challenges the masculine norm of self-reliance by encouraging men to reach out and seek help when struggling emotionally. This campaign is particularly relevant to this thesis, as the evaluation study was conducted separately from, but complemented, the main trial. It is also one of the studies included in this thesis.

2.7 Summary of knowledge gaps

This background literature review identified several knowledge gaps. Firstly, while there is growing interest in this field, the broad literature on masculinity and suicide has not been systematically described, and thus questions remain regarding the emergence and development of masculinity and suicide research as a distinct area of study. Secondly, although several risk factors for suicide in men have been identified, much remains unknown about the interactions and pathways among these factors. For example, while studies have identified associations between self-reliance and suicidality in men and between help-seeking and suicidality in general, research investigating how reluctance to seek help might link the masculine norm of self-reliance with suicidality in men is lacking. Finally, despite the clear need for targeted suicide prevention interventions focused on masculinity, few interventions have been empirically studied, leaving a major gap in evidence-based approaches.

This doctoral research aims to address these three knowledge gaps. The next chapter examines theoretical models of suicidal thoughts and behaviours, providing a framework to understand the mechanisms underlying suicidality and informing the research approach used in this thesis.

Chapter 3: Models of suicidal thoughts and behaviours

Suicide is a complex issue and a multidetermined behaviour with various factors involved (Hawton & Pirkis, 2017; Pirkis et al., 2024; Turecki et al., 2019). For this reason, no single model has yet provided a definitive explanation for why people die by suicide, which has led to the development of several theoretical frameworks from various disciplines (Díaz-Oliván et al., 2021). These theories include perspectives from neurobiology (Blasco-Fontecilla et al., 2020; Oquendo et al., 2014), sociology (Durkheim, 1951), and psychology (Joiner, 2005; O'Connor, 2011). Among all these models, the two most widely used contemporary frameworks, both coming from the discipline of psychology, are the Interpersonal Theory of Suicide (Joiner, 2005; Van Orden et al., 2010) and the Integrated Motivational-Volitional model (O'Connor, 2011; O'Connor & Kirtley, 2018). Both of these models focus on factors involved in the transition from suicidal thoughts to suicidal behaviours – known as ideation-to-action frameworks (Klonsky et al., 2018). Although this thesis is not focused on testing any particular framework, these two models offer useful lenses for examining the potential role of masculinity as a contributory factor to suicidal thoughts and behaviours among men.

3.1 The Interpersonal Theory of Suicide

First published in 2005, Joiner's Interpersonal Theory of Suicide proposes that there are three key constructs to suicidal behaviour (Joiner, 2005; Van Orden et al., 2010). Two of these constructs – thwarted belongingness and perceived burdensomeness – are considered to be related to the desire to end one's life, while the third construct – acquired capability for suicide – relates to the capability to engage in suicidal behaviour. This theory suggests that individuals die by suicide because they have the desire and the capability to do so (Van Orden et al., 2010). According to this theory, thwarted belongingness refers to an unmet need for social connectedness, leading to a desire to end one's life (desire for suicide, e.g., "I want to kill myself") when this need is not fulfilled, whereas perceived burdensomeness relates to the belief that one is a burden to others (such as family and friends), resulting in feelings of self-hatred and liability.

This theory poses that acquired capability for suicide develops through habituation or repeated exposure to painful or fearsome experiences (e.g., previous suicidal behaviours,

exposure to others' suicides, childhood trauma). The theory also suggests that this habituation leads to fearlessness of death and less pain sensitivity (or more tolerance), increasing someone's capability to engage in serious suicidal behaviours (Van Orden et al., 2010). According to the theory, it is the presence of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide that can lead to serious suicidal behaviours (i.e., death or near-death suicide attempts). Figure 3-1 illustrates how these constructs are interrelated using a Venn diagram adapted from Van Orden et al. (2010).

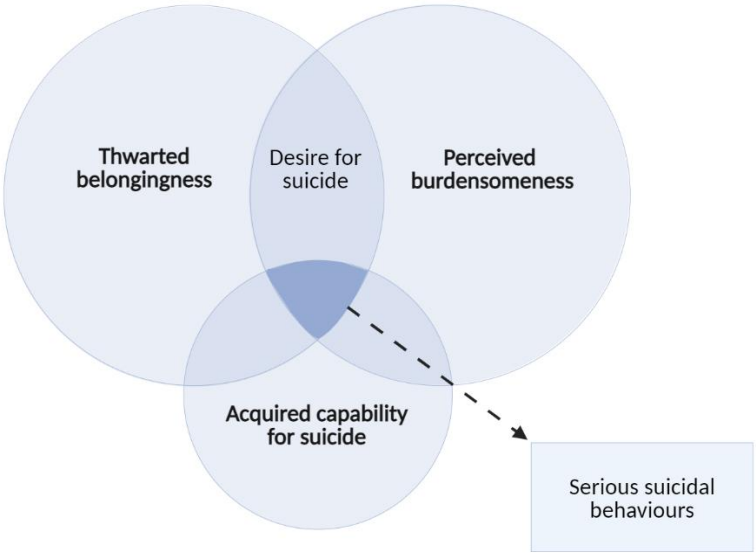

Figure 3-1 Key constructs of the Interpersonal Theory of Suicide. Adapted from Van Orden et al. (2010)

A review of the literature of 66 studies found robust evidence for the relationship between perceived burdensomeness and suicidal thoughts, with mixed findings for thwarted belongingness (Ma et al., 2016). This review suggested limited evidence for the interaction between the three constructs of the theory (thwarted belongingness and perceived burdensomeness and acquired capability for suicide) and suicide thoughts and behaviours. Another review, with a meta-analytic synthesis of 122 studies, investigated the interaction between the Interpersonal Theory of Suicide constructs and suicidal thoughts and behaviours (Chu et al., 2017). They found significant, though modest, effects for the interaction between thwarted belongingness and perceived burdensomeness in predicting suicidal thoughts, and the interaction of all three constructs (thwarted belongingness, perceived burdensomeness,

and acquired capability for suicide) with a greater number of previous suicidal attempts (Chu et al., 2017).

Considering that thwarted belongingness and perceived burdensomeness involve feelings and beliefs (Van Orden et al., 2010), they can be considered, to some extent, related to social norms. It is possible that these beliefs may contribute to suicidal thoughts in men if these beliefs align rigidly with societal norms, particularly those characterising traditional masculine norms that emphasise self-reliance and emotional stoicism as a sign of strength (Cleary, 2019). For example, men may rely solely on themselves out of fear of burdening others, leading to the suppression of emotions and/or social isolation, both major suicide risk factors in men (Motillon-Toudic et al., 2022; Richardson et al., 2021). Furthermore, if a man is already experiencing suicidal thoughts, the development of acquired capability for suicide may be influenced by efforts to resist feelings of vulnerability associated with seeking help. This could manifest as increased fearlessness about death and higher pain tolerance. These effects may be particularly pronounced when other factors are present, such as access to means. Research suggests that men tend to choose more lethal methods of suicide compared to women and have higher rates of suicide by these means (Cai et al., 2022; Mergl et al., 2015). According to the theory, fearlessness about death and increased pain tolerance are critical in leading to serious suicidal behaviours. Men might believe that behaving in a fashion that runs contrary to these norms would threaten their masculine identities and fear failing in the attempt (Cleary, 2019). This idea also aligns with the Gender Role Strain Paradigm by Pleck (1995), which posits that rigid adherence to gender stereotypes and norms can negatively influence behaviour and wellbeing, including aspects of masculine identities (Levant & Richmond, 2016). This dynamic may, in part, explain the increased the risk of suicide among men.

Supporting this proposition, recent studies from the United States have explored the relationship between traditional masculine norms and key components of the Interpersonal Theory of Suicide in samples of men and women (Daruwala et al., 2021; Granato et al., 2015; Perry et al., 2022). Daruwala et al. (2021) examined a sample of 953 military personnel (74% men; aged 18–61 years), while Granato et al. (2015) studied 583 university students (38% men; aged 17–53 years), and Perry et al. (2022) included 149 university students (47% men; aged 18–35 years). These studies found that traditional masculine norms, such as stoicism and sensation seeking (Daruwala et al., 2021; Perry et al., 2022); restricted emotionality,

success, power and competition, restricted affectionate behaviour between men, and conflicts between work and family relations (Granato et al., 2015), were associated with increased acquired capability for suicide, particularly among men. Granato and colleagues also found that adherence to norms of self-reliance and verbal aggression was associated with thwarted belongingness and perceived burdensomeness, which are the key elements for suicide thinking according to this theory.

Although the studies to date have all been conducted in the United States, and thus caution should be exercised in generalising their findings, they suggest a potential association whereby elements of masculinity exacerbate the cognitive and behavioural factors identified in the Interpersonal Theory of Suicide.

3.2 The Integrated Motivational-Volitional model

The Integrated Motivational-Volitional model, developed by O'Connor and colleagues in the United Kingdom (O'Connor, 2011), offers another framework for understanding the relationship between masculinity and suicidal thoughts and behaviours in men. Influenced by Interpersonal Theory of Suicide, as suggested by Anestis et al. (2017), this model outlines biopsychosocial processes that lead from the emergence of suicidal thoughts to the enactment of suicidal behaviours, divided into three distinct phases; pre-motivational, motivational, and volitional (O'Connor, 2011; O'Connor & Kirtley, 2018). The pre-motivational phase considers the biopsychosocial context and environmental factors that set the stage for suicidal thoughts and behaviours. The motivational phase focusses on factors that lead to the formation of suicidal thoughts, particularly how feelings of defeat and entrapment – defined as the experience of feeling trapped by one's circumstances or internal state – drive suicidal thinking; the volitional phase outlines factors involved in the transition from suicidal thoughts to suicidal behaviours, such as access to means, impulsivity, and fearlessness about death (O'Connor, 2011; O'Connor & Kirtley, 2018). Figure 3-2 illustrates the three phases involved in the Integrated Motivational-Volitional model as in O'Connor and Kirtley (2018).

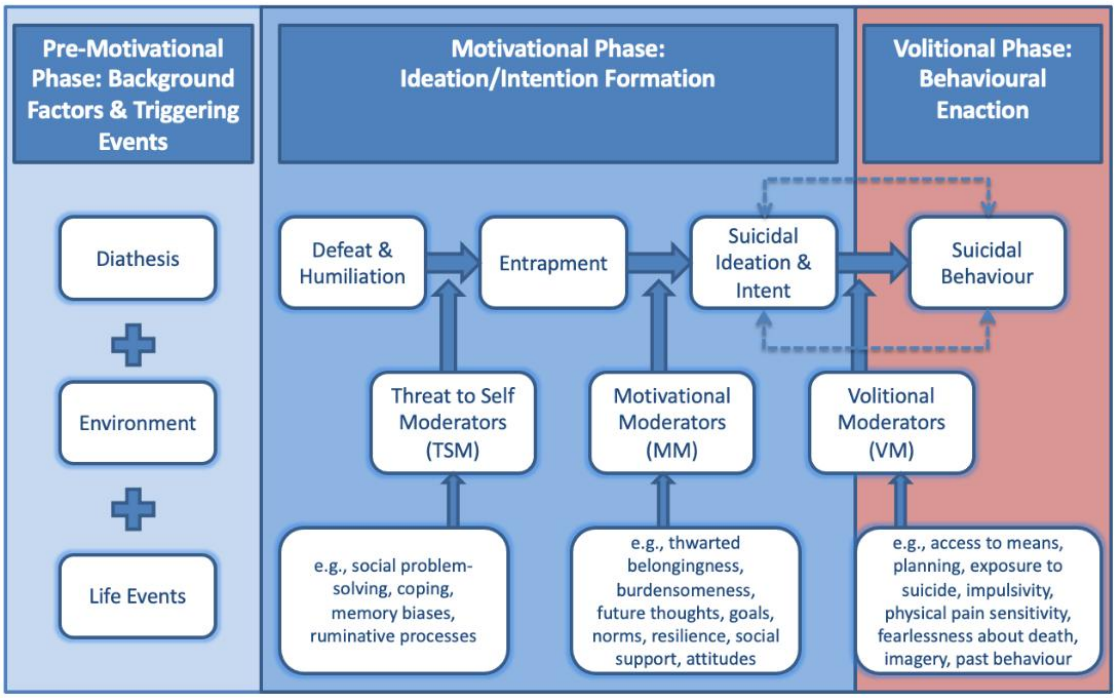

Figure 3-2 The Integrated Motivational-Volitional model. Source: O'Connor and Kirtley (2018)

A recent synthesis of the literature, which included 100 studies testing elements of this model, found support for its three key phases (Souza et al., 2024). However, the review showed that the strongest evidence available was for the association between defeat, entrapment, and suicidal thoughts pathway (Souza et al., 2024). There are no reports in the peer review literature on direct empirical evaluation of this model with respect to masculinity and suicidal thoughts and behaviours in men; however, its key elements may still offer insights into potential causal pathways to explore. For example, men may experience feelings of defeat and entrapment if they feel unable to express their emotions or seek support without compromising their masculine identities, which, according to this model, leads to suicidal thinking. Previous studies have highlighted that "loss of identity" related to masculine role is an important factor in men at a higher risk of suicide such as those struggling with depression (Oliffe et al., 2016; Rice, Kealy, Ogrodniczuk, et al., 2020; Seidler et al., 2016; Sharpley et al., 2014).

Beyond the potential threat to masculine identities, rigid alignment with traditional masculine norms may also encourage other traits, such as like risk-taking behaviours. Risk-taking may be closely related to impulsivity, which is a proposed volitional-moderator in the Integrated Motivational-Volitional model. Impulsivity is also considered a factor that heightens suicide

risk in a number of suicidal behaviour frameworks (Hawton & Pirkis, 2017; Pirkis et al., 2023; Turecki et al., 2019). For instance, rigid alignment to masculine norms of risk-taking and emotional suppression could potentially lower the threshold for acting on suicidal thoughts, particularly in those experiencing male depression (Cui & Fiske, 2021; Oliffe et al., 2016; Oliffe, Rossnagel, et al., 2019). As discussed in Chapter 2, section 2.4, male depression is a key emerging risk factor for suicide in men.

3.3 Similarities and differences between these models

Both the Interpersonal Theory of Suicide and the Integrated Motivational-Volitional Model are ideation-to-action frameworks that explain the progression from suicidal thoughts to behaviours (Klonsky et al., 2018). These models recognise that factors such as social disconnection (thwarted belongingness) and feeling like a burden to society or others (perceived burdensomeness) contribute to the development of suicidal thinking, as this may lead to social disconnection and isolation – a major risk factor for suicide in men, as noted in Chapter 2. In addition, the two theoretical models identify acquired capability for suicide as a crucial factor in enacting suicidal behaviour, acknowledging elements like fearlessness about death and increased pain tolerance in the enactment of suicidal behaviour. However, these models diverge in certain ways that can offer unique insights into the role of masculinity in suicidality among men.

While the Interpersonal Theory of Suicide focuses mainly on interpersonal factors (e.g., thwarted belongingness and perceived burdensomeness) as direct precursors to the desire to end one's life, the Integrated Motivational-Volitional model includes feelings of defeat and entrapment as central factors in the emergence of suicidal thinking and identifies thwarted belongingness and perceived burdensomeness as potential moderators for suicidal thinking. Furthermore, the Integrated Motivational-Volitional model introduces a sequential progression through three distinct phases (pre-motivational, motivational, and volitional), adding a temporal dimension to its framework.

On the other hand, the Interpersonal Theory of Suicide has proven useful in elucidating how traditional masculinity, such as being self-reliant, may potentially lead to suicidal thoughts through thwarted belongingness and perceived burdensomeness (Granato et al., 2015), while risk-taking influences acquired capability (Daruwala et al., 2021; Granato et al., 2015; Perry

et al., 2022), likely through impulsive behaviours and/or access to suicide means. Conversely, the Integrated Motivational-Volitional model integrates a wider range of social, psychological, and environmental factors, providing a comprehensive biopsychosocial framework to understand how societal imposition of masculine norms may contribute to men's suicidal thoughts and behaviours. It is possible that these imposed norms may threaten masculine identities, which are imposed and therefore modelled from a very young age within families and communities (Rice et al., 2018). Therefore, insights from both models can offer a more holistic approach to the understanding of the pathways leading to suicidal thoughts and behaviours among men by recognising how traditional masculine norms may interact with social, cognitive, and behavioural factors.

3.4 Summary

This chapter outlined the two most widely used contemporary models of suicidal thoughts and behaviours: the Interpersonal Theory of Suicide and the Integrated Motivational-Volitional Model (Joiner, 2005; O'Connor, 2011). They offer valuable insights into how suicidal thoughts progress to suicidal behaviours and how societal factors, such as traditional masculine norms, may influence this progression. Cognitive and behavioural factors, such as defeat, entrapment, burdensomeness, and social belonging, may all interact with these norms, contributing to men's heightened suicide risk.

Building on these theoretical foundations, the next chapter presents an overview of the research methodologies. It explains the rationale behind the methods used in the three studies.

Chapter 4: Methodological overview

This chapter outlines the rationale behind the chosen methodologies for the three studies and discusses their broader implications. It provides an overview of the nine research questions and the methodological approaches that underpinned these studies. Additionally, it expands on the methodological information provided in the study-specific chapters (5, 6, and 7), which are published journal articles. This additional methodological information includes details that could not be accommodated in the articles due to journal word-limit requirements.

The aim of this research was to contribute to the suicide prevention literature by examining the role of masculinity using different methodological approaches. These approaches involved a combination of quantitative and qualitative research methodologies, which complemented each other by providing breadth and depth to the research. Thus, a mixed-methods approach was chosen to answer different yet complementary research questions arising from gaps identified in the literature, as outlined in Chapter 2, section 1.1.1. This allowed for triangulation and synthesis of findings across studies, as will be discussed in Chapter 8.

The three studies built on each other and are interconnected. The first study is a bibliometric review that describes the emergence and trajectory of masculinity and suicide research as a distinct field. This review assessed the current state of evidence and identified potential research gaps, as described in Chapter 2, section 2.7, that informed the subsequent studies part of this thesis. The second study is an analytical epidemiological investigation using longitudinal data to explore a potential behavioural mechanism through which traditional masculinity may operate in the context of suicide (see Chapter 6 for more details). The third study is an evaluation of a suicide prevention intervention, the Boys Do Cry campaign (see Chapter 7 for further details), which was designed to address key constructs examined in Study 2, including self-reliance, help-seeking, and suicidality.

4.1 The three studies

This section presents the research questions addressed in each of the three studies, including an overview of the methodological approaches, data collection, and analyses conducted.

4.1.1 Mapping the emergence and trajectory of the field of masculinity and suicide research (Study 1)

Study 1 aimed to explore how masculinity has been studied in relation to suicide over time. By using bibliometric analysis, this study examined trends, key themes, and influential research within the field. The research questions guiding this study were:

1. When did the topic of masculinity first emerge in the suicide literature?
2. How has the research output relating to masculinity and suicide evolved over time?
3. What are the major topics discussed within the masculinity and suicide literature? Have they have changed over time?
4. What are the most influential publications in masculinity and suicide research?

A bibliometric analysis was used to visualise and interpret the data from academic articles to address research questions 1-4 in Study 1. Bibliometric analysis is a method used to explore different aspects of a research field, including aspects such as research productivity, emerging trends, and publication impact over time (Belter, 2015; Bornmann & Leydesdorff, 2014). While Study 1 employed a bibliometric approach to investigate the current state of available evidence, it does not completely omit systematic review methodologies. Systematic review methods are still applied in key areas, such as when designing the search strategy, conducting systematic searches across electronic academic databases, and using a flowchart to outline the stages of identification of studies. Previous bibliometric studies have mapped the broader field of suicide research; however, none have specifically focused on masculinity in relation to suicide (Astraud et al., 2020; Cai et al., 2020), making Study 1 the first of this kind in the field. It also makes a unique contribution to the field of suicide prevention more broadly by mapping the role of masculinity, including its development, in the suicide research field. This helped to clarify the knowledge structure and inform the directions of the research in Studies 2 and 3.

4.1.1.1 Data collection

The data collection process for Study 1 began with the design of a comprehensive search strategy using terms related to masculinity and suicide. The selection of these search terms underwent several iterations, with random checks of the identified records after each iteration to ensure that a high number of relevant records were captured. The full search strategy is outlined in Chapter 5, section 5.3.2. In brief, the strategy involved searching for terms associated with masculinity and suicide within titles, abstracts, keywords, and controlled vocabulary subject headings.

To ensure the interdisciplinary nature of masculinity and suicide research was adequately covered, a research librarian was consulted at this stage; this helped identify the most suitable databases for the study. As a result, the search was conducted across eight electronic academic databases: Web of Science, Scopus, Embase, Academic Search Complete, PsycINFO, Medline, SocINDEX, and CINAHL. These databases were chosen to capture all relevant journal articles for the bibliometric analysis.

4.1.1.2 Bibliometrics

Bibliometrics is a useful method for identifying knowledge structure, including gaps, by exploring various aspects of a field, such as research productivity, emerging trends, and publication impact (Belter, 2015; Bornmann & Leydesdorff, 2014). Despite its advantages, bibliometric analyses have some limitations. One challenge is the lack of established guidelines for conducting and reporting bibliometric analyses, which could lead to inconsistencies and impact on the reproducibility of research. However, systematic review methods may be incorporated into bibliometric studies to prevent this. Another challenge in bibliometric analyses is their heavy reliance on the data sources used, meaning that the choice of database can influence findings and conclusions, a limitation similar to that of traditional systematic reviews (Belter, 2015; Bornmann & Leydesdorff, 2014).

The decision to conduct a bibliometric review was driven by the lack of studies providing a high-level overview of the masculinity and suicide research field, although bibliometric analyses had been conducted more broadly in the field of suicide (Astraud et al., 2020; Cai et al., 2020). Unlike studies that focus on specific research questions, bibliometric studies allow

for the exploration of a field's structure by visually mapping the current state of evidence over time, including identifying influential publications within the field (Belter, 2015; Bornmann & Leydesdorff, 2014).

Several software programs are available to conduct bibliometric analyses. VOSviewer was specifically chosen for its ability to generate, visualise, and explore complex network data maps (Van Eck & Waltman, 2013). VOSviewer is an open-source tool that has been extensively used for text mining and visualising network maps based on bibliographies (Van Eck & Waltman, 2010). Bibliometric analyses, such as those conducted using VOSviewer, employ quantitative research methods to examine relationships between authors, journals, citations, and the content of publications (Broadus, 1987). This approach is particularly useful when working with large volumes of text data, such as journal article content. The process involves several iterative stages to prepare the data and perform the analysis using the VOSviewer software (Van Eck & Waltman, 2013). Table 4-1 outlines the stages involved in extracting terms from the titles and abstracts of journal articles and creating a visualisation map for Study 1.

Table 4-1 Stages involved in the extraction of terms from journal articles and the creation of a visualisation map using VOSviewer in Study 1[a]

Stage	Description
1. Data input	The merged dataset from the eight electronic databases was imported into VOSviewer as a text file.
2. Field selection	Within VOSviewer, the title and abstract fields of the publications were selected as the sources from which to extract key terms as these fields typically contain the most relevant and concise information about the publications.
3. Term extraction	VOSviewer uses Natural Language Processing (NLP) techniques to identify and extract noun phrases (terms) from the selected text fields (in this case, titles and abstracts). These NLP techniques include: • Tokenisation: the text is broken down into individual words or phrases. • Term identification: patterns such as adjective + noun or noun + noun are recognised to identify noun phrases. • Stop word removal: common words like articles, conjunctions, and prepositions (e.g., and, of, the) are removed as they do not have meaningful content. • Lemmatisation: words are reduced to their base form (e.g., “dying” becomes “die”). • Thesaurus application: a thesaurus was added to standardise terms, ensuring that synonymous or spelling differences are treated as the same (e.g., “behavior” and “behaviour”, or “suicide ideation” and “suicidal thoughts”).

Stage	Description
4. Term frequency counting	VOSviewer calculates the frequency of each extracted term across the dataset, allowing the identification of the most commonly occurring terms.
5. Counting methodology	VOSviewer offers different counting options. The binary counting was selected for this analysis. In binary counting, a term that appears multiple times in the title and abstract of a single publication is treated as a single occurrence. This ensures that terms are not overly weighted just because they appear several times in one article.
6. Set minimum occurrence for visualisation map	A minimum occurrence threshold was set for terms to be displayed in the visualisation map. The default threshold of 10 occurrences was applied here, filtering out terms that appeared less frequently.
7. Term selection and relevance score	VOSviewer then suggests including a certain percentage of terms in the visualisation map. By default, 60% of the extracted terms are included. The software also calculates a relevance score for each term, helping to identify and exclude general or irrelevant phrases. The default parameter was used.
8. Revision of the map	Once VOSviewer has created the visualisation map, the map needs to be reviewed so any irrelevant terms (e.g., overly generic terms like “conclusion” or “method”) are excluded.

[a]For more details see Van Eck and Waltman (2010, 2011, 2013).

4.1.1.3 Content analysis

A content analysis was conducted to address research question 3 related to how the major topics discussed within the masculinity and suicide literature have changed over time. This method was chosen as it is considered an appropriate approach for dealing with large amounts of text data, as in Study 1 (Vaismoradi et al., 2013). Content analysis involves measuring the occurrence of words (or terms) within the data (Elo & Kyngäs, 2008). The VOSviewer software was used to extract and count the frequency of terms from the titles and abstracts of articles, as described above, and the dataset was split by epoch, following the methodology described elsewhere (Armfield et al., 2014). Word clouds were then created to visualise and interpret the data. Word clouds are visual representations of text data where the size of each word indicates its frequency or importance within the dataset, thereby helping the researcher to identify patterns in the text or prominent topics by highlighting frequently occurring terms (Heimerl et al., 2014). The package wordcloud2 (Lang & Chien, 2018) from the R software (R Core Team, 2021) was used to create the word clouds for each epoch, with a minimum frequency parameter set to three times for a term to be displayed in the word clouds. This was an iterative process.

4.1.2 Investigating of a potential behavioural mechanism through which masculinity and suicidal thoughts might be related (Study 2)

Building on the findings of Study 1, Study 2 aimed to examine a mechanism that may explain the relationship between masculinity and suicidal thoughts. Specifically, this study investigated whether help-seeking mediates the link between self-reliance – a traditional masculine norm – and suicidal thoughts among men. The research question guiding this study was:

5. Does help-seeking mediate the relationship between the masculine norm of self-reliance and suicidal thoughts among men?

Study 2 was a mediation study using the first two waves of data from the Australian Longitudinal Study on Male Health (Ten to Men; https://aifs.gov.au/tentomen) to address research question 5. Mediation studies aim to explore whether the effect of an independent variable on a dependent variable occurs through a third variable – the mediator (Baron &

Kenny, 1986). In this context, the study examined whether help-seeking mediated the relationship between self-reliance and suicidal thoughts among men.

While previous studies have explored potential factors involved in suicidality, the underlying mechanisms remain relatively under-researched (see Chapter 2 for more details). Only one study from Canada has examined a potential pathway involving help-seeking, but it was limited by its cross-sectional design and small sample size (Houle et al., 2008). Similarly, an Australian study investigated the relationship between conformity to traditional masculine norms and suicidal thoughts using Ten to Men data, but it was also cross-sectional (Pirkis et al., 2017). Therefore, Study 2 addressed these limitations by using two waves of data from a longitudinal study, allowing for a temporal investigation of the proposed mediation effect. Study 2 was the first study to explore whether help-seeking was a mediator of self-reliance and suicidal thoughts using longitudinal data, making a unique contribution to the broad field of suicide that targets potential modifiable factors in men's suicidality.

Longitudinal data, such as that from Ten to Men, offer several advantages. For instance, tracking participants over time allows researchers to observe the development of specific outcomes while ensuring that particular exposures precede these outcomes (Webb et al., 2019). Another benefit of this dataset is the inclusion of the Medicare Benefits Schedule (MBS)-linked data from participants' surveys, which allows for an objective assessment of behaviours, such as help-seeking, throughout the study. Medicare is Australia's publicly funded national healthcare system, which maintains administrative data in the MBS.

However, such studies also present challenges. For example, self-report measures may be influenced by social desirability bias or underreporting due to stigma associated with the outcome (McKenzie et al., 2018; Van de Mortel, 2008). Another challenge relates to differences in measures used over time and discrepancies in respondent data across waves, which affected the selection of waves used, a common problem faced by researchers using this dataset, as mentioned by Volpe et al. (2023).

4.1.2.1 Data sources

Ten to Men is the first Australian longitudinal study on male health (Currier, Pirkis, et al., 2016; Swami et al., 2022). Data have been collected over time through multiple "Waves".

Wave 1 included 16,021 males grouped into three sub-cohorts: boys (10-14 years), young men (15-17 years), and men (18-55). As of 2024, four waves of data have been collected, as shown in Figure 4-1.

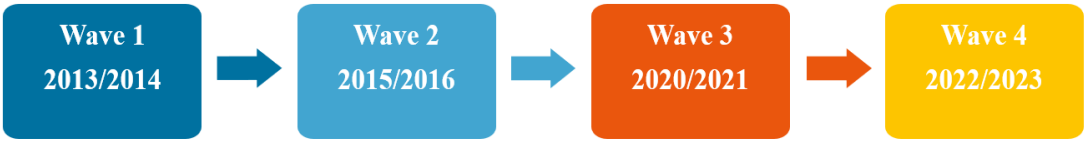

Figure 4-1 Data collection timepoints of the Ten to Men study as of 2024. Adapted from the Australian Institute of Family Studies Ten to Men webinar, conducted in 2023

The decision to only use the first two waves of data was based on the discrepancy in time intervals between the waves; specifically, the period between Waves 2 and 3 was significantly longer than between Waves 1 and 2. Ten to Men also includes linked MBS administrative data, which are collected continuously over time.

The MBS includes item numbers corresponding to services for which Australians are eligible for benefits under the Australian Health Insurance Act 1973 (Australian Government, 2023), including those related to the Better Access initiative. This initiative allows Australians experiencing mental health issues to access up to 10 individual and 10 group subsidised mental health services per year, provided by qualified professionals such as general practitioners and other medical practitioners (with or without mental health skills training), psychiatrists, clinical psychologists, psychologists, occupational therapists, and social workers (Pirkis, Currier, et al., 2022).

The MBS data are provided by the Australian Government and linked with survey data on an ongoing basis by the Australian Institute of Family Studies, the study's data custodians. All datasets, including the linked administrative data, were obtained from the Australian Institute of Family Studies.

Study 2 specifically used data from men aged 18 years and older who participated in Waves 1 and 2 of Ten to Men and had MBS-linked data (eligibility criteria), meaning that young men and boys were excluded. The decision to focus on adult males was driven by the larger sample size in the adult cohort, which allowed for greater statistical power.

This study included nearly 7,000 men and assessed whether self-reliance at an initial time point (Wave 1) was associated with the emergence of suicidal thoughts at a later time point (Wave 2), and if seeking help (between Waves 1 and 2) explained this relationship. The exposure measure was the self-reliance masculine norm measured at Wave 1, while the outcome variable was suicidal thoughts drawn from Wave 2. The mediator variable was help-seeking using item numbers from the Better Access initiative. Several potential confounding variables were drawn from Wave 1, including lifetime suicidal thoughts and attempts, age, region of residence, socioeconomic status, marital status, employment status, stressful life events, Indigenous Australian identity, country of birth, depression, alcohol use, and social support. Table 4-2 provides a detailed list of all variables, including their corresponding names from the Ten to Men and MBS datasets used in Study 2.

Table 4-2 Measures, data collection timepoints, and corresponding variables used in Study 2

Variable	Name of scale, if applicable	Timepoint[a]
Exposure		
Self-reliance	Self-reliance subscale of the Conformity to Masculine Norms Inventory-22 (Mahalik et al., 2003). Items included in the subscale: "*I never ask for help"; "It bothers me when I have to ask for help".*	Wave 1
Outcome		
Suicidal thoughts	Item 9 from the Patient Health Questionnaire (Kroenke et al., 2001). "*Over the past two weeks, how often have you been bothered by thoughts that you would be better off dead, or of hurting yourself in some way?"*	Wave 2
Mediator		
Help-seeking	Item numbers from the Better Access Initiative[b]	Between Waves 1-2
Confounders		
Lifetime suicidal thoughts and attempts	Individual items: *"Have you seriously thought about killing yourself ever in your life?";* "*Have you tried to kill yourself ever in your life?*	Wave 1
Age	Individual item	Wave 1
Region of residence	Australian Statistical Geography Standard, 2011 Census (ASGS) (Australian Bureau of Statistics, 2011a)	Wave 1
Socioeconomic status	Index of Relative Socioeconomic Disadvantage (IRSD) (Australian Bureau of Statistics, 2011b)	Wave 1

Variable	Name of scale, if applicable	Timepoint[a]
Marital status	Individual items	Wave 1
Employment status	Individual items	Wave 1
Stressful life events	Six items from the Social Readjustment Scale (Holmes & Rahe, 1967): *serious personal injury, illness or surgery; break-up of a serious relationship, divorce, or separation; serious conflict with a family member; difficulty finding a job; major loss or damage to personal property; legal troubles or involvement in a court case* (Currier, Pirkis, et al., 2016)	Wave 1
Indigenous Australian identity	Individual item	Wave 1
Country of birth	Individual item	Wave 1
Depression	Individual item: "*Have you been treated for or had any symptoms of depression in the past 12 months?*"	Wave 1
Alcohol use	Alcohol Use Disorders Identification Test (AUDIT) (Babor et al., 2001)	Wave 1
Social support	Medical Outcomes Survey Social Support Survey (MOS-SS) (Sherbourne & Stewart, 1991)	Wave 1

[a]Wave 1 data collection: 2014/2014; Wave 2 data collection: 2015/2016

[b]The Better Access Initiative is part of the Medicare Benefits Schedule, which includes item numbers corresponding to services for which Australians are eligible for benefits under the Australian Health Insurance Act 1973 (Australian Government, 2023). Among these item numbers are those related to the Better Access initiative, a program that enables Australians experiencing mental health difficulties to access up to 10 individual and 10 group subsidised mental health services per year. These services can be provided by general practitioners or other medical practitioners, psychologists, social workers, and occupational therapists (Pirkis, Currier, et al., 2022).

4.1.2.2 Mediation analysis

A mediation analysis was chosen for Study 2 because it is a method used to investigate one or more mechanisms through which an exposure causes an outcome or disease (MacKinnon, 2008; VanderWeele, 2015). The mediation analysis involves three effects: total effect, direct effect and indirect effect. Figure 4-2 is a graphical presentation of a single mediator model where the total effect is decomposed into direct effect and indirect effect using Directed Acyclic Graphs (DAGs).

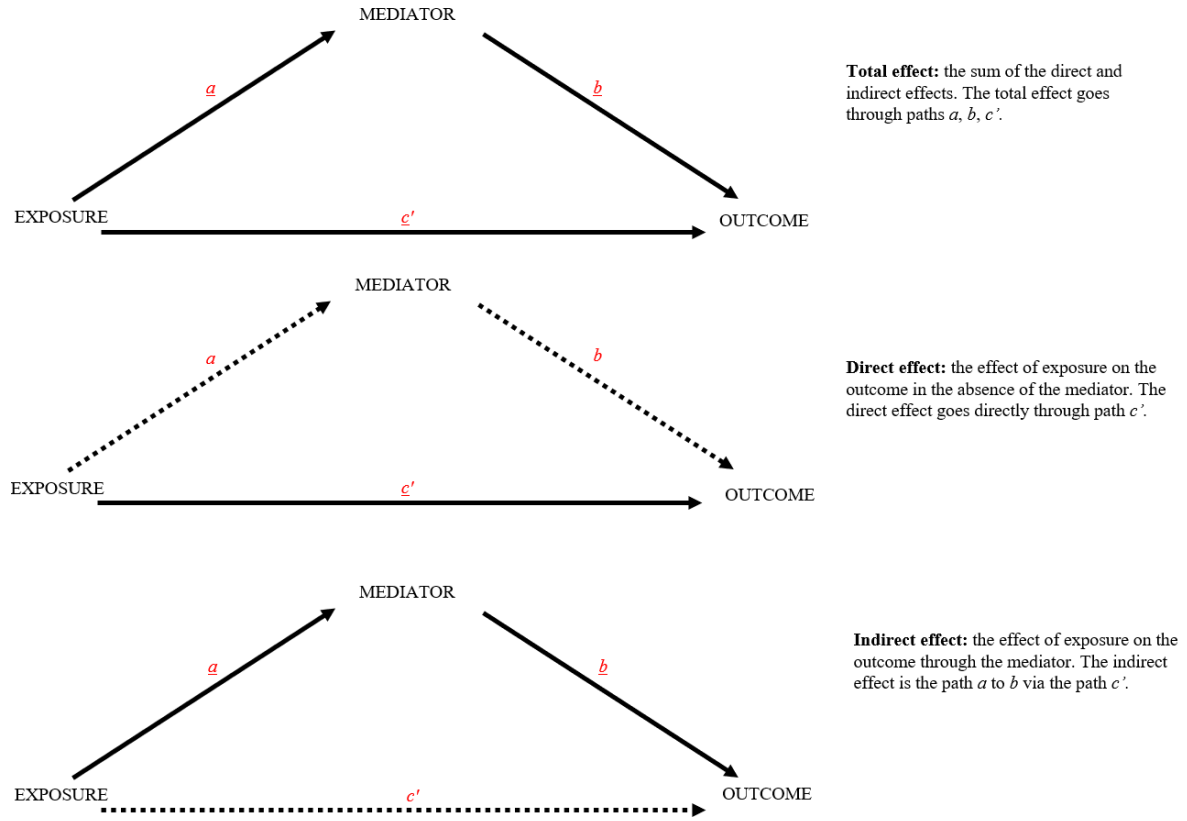

Figure 4-2 Directed Acyclic Graphs showing a single mediator model with the total effect decomposed into direct and indirect effects, adapted from Tönnies et al. (2023)

There are two main frameworks for causal inference in mediation: the traditional approach (Baron & Kenny, 1986) and causal mediation approach (MacKinnon, 2008; VanderWeele, 2015). The traditional approach, while widely used, is limited by its reliance on linear regression for mediator and outcome models, as well as its assumption of no interaction between exposure and mediator variables. These limitations may not reflect real-world scenarios where relationships are likely to be non-linear or where there are complex

relationships involving interaction between exposure and mediator measures. Therefore, causal mediation extends the traditional mediation approach by allowing other regression models, such as logistic regression, and for a potential interaction between exposure and variables.

Considering that previous evidence suggested a potential interaction between traditional masculine norms and help-seeking variables (Yousaf, Grunfeld, et al., 2015; Yousaf, Popat, et al., 2015), it was important to consider a potential interaction between the masculine norm of self-reliance and help-seeking in Study 2. Moreover, Study 2 treated the outcome as the presence or absence of suicidal thoughts, making it a binary variable that required the use of logistic regression – a method not feasible under the traditional approach (MacKinnon, 2008; VanderWeele, 2015). Although causal mediation analysis offers greater flexibility compared to the traditional approach, it still has some limitations related to the assumptions regarding confounding variables, as described by VanderWeele (2015, pp. 24-25):

1. No unmeasured confounding of the exposure-outcome relationship.
2. No unmeasured confounding of the mediator-outcome relationship
3. No unmeasured confounding of the exposure-mediator relationship.
4. There is no mediator-outcome confounder that is affected by the exposure.

Assumption 1 means that all potential confounding variables that might affect the relationship between self-reliance and suicidal thoughts are measured and accounted for in the analysis. Assumption 2 assumes that all potential variables that could influence the relationship between help-seeking and suicidal thoughts are measured and included in the analysis. Assumption 3 requires that all potential cofounders affecting the relationship between self-reliance and help-seeking are measured and controlled for. Assumption 4 means that self-reliance does not influence any confounder that would affect the relationship between help-seeking and suicidal thoughts. Self-reliance (high vs. low) was the exposure variable, suicidal thoughts (presence vs. absence) was the outcome variable, and help-seeking (any help sought vs. no help sought) was the mediator variable). Figure 4-3 illustrates the directed acyclic graph of the hypothesised causal effects of self-reliance and help-seeking on suicidal thoughts, including potential confounding variables, in Study 2.

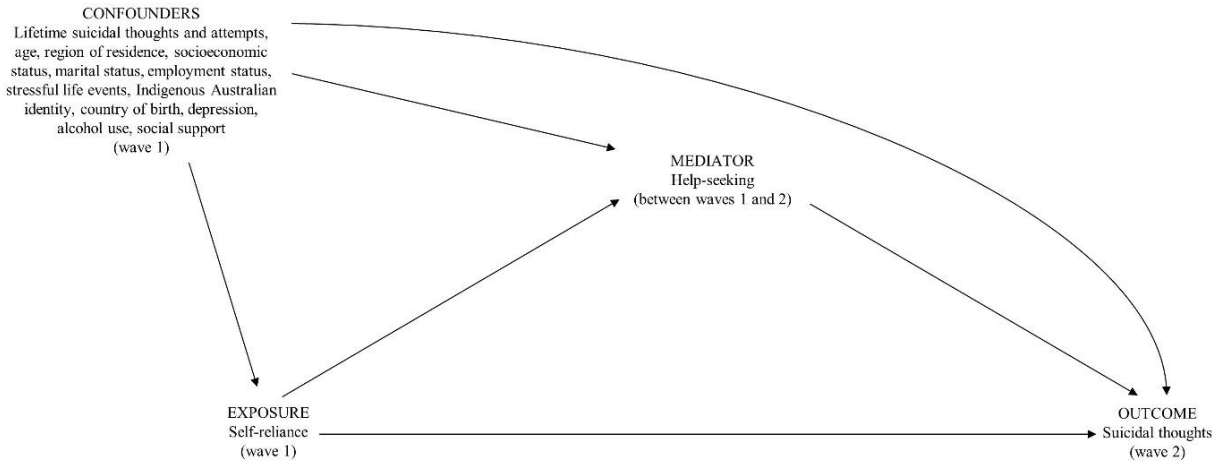

Figure 4-3 Directed acyclic graph showing the hypothesised causal effects of self-reliance and help-seeking on suicidal thoughts in Study 2

4.1.3 Evaluating a suicide prevention intervention designed for men with a focus on masculinity (Study 3)

Study 3 extended the findings from Study 2 by evaluating a real-world suicide prevention intervention (the Boys Do Cry campaign) designed to challenge traditional masculine norms and promote help-seeking. The research questions guiding this study were:

6. What was the reach of the Boys Do Cry campaign, and how did the Twitter users engage with it?
7. What were the highest- and lowest-performing tweets, and how did the Twitter users engage with them?
8. What was the pattern of Twitter activity for campaign-related tweets over the course of the campaign and in the post campaign period?
9. What were the key themes of discussion on Twitter prompted by the Boys Do Cry campaign?

Study 3 was a mixed-methods evaluation of the impact of an intervention designed for men with a lens on masculinity (the Boys Do Cry campaign) using real-world data from Twitter/X. This study combines quantitative and qualitative research methods to provide breadth and depth in understanding the campaign's reach and engagement on this social media platform.

Social media is increasingly being used to deliver mental health interventions, including some with a suicide prevention focus (Harris & Krishnan, 2023; Robinson et al., 2018; Schlichthorst, King, Reifels, et al., 2019; Schlichthorst et al., 2018). In addition, a 2024 review of the literature on mental health interventions delivered through social media found that over three-quarters of the campaigns used Twitter/X (Draganidis et al., 2024); however, only two of the identified studies were on suicide prevention media campaigns. Therefore, evaluating the real-world effects of a novel suicide prevention intervention like the Boys Do Cry campaign was timely. Furthermore, although there is growing interest in suicide prevention interventions focused on masculinity (see Chapter 2, section 2.6, for further details), there is limited empirical evidence assessing their reach and engagement, particularly on social media platforms (Ftanou et al., 2024; Pirkis, King, et al., 2022). Study 3 is the first to empirically evaluate the impact of the Boys Do Cry campaign on Twitter/X, providing valuable insights into its reach and the nature of public engagement with this intervention. Understanding the campaign's reach and engagement can inform the development of future suicide prevention interventions that leverage social media to address men's mental health issues.

Study 3 utilised data from the Boys Do Cry suicide prevention media campaign, described in detail in section 4.1.3.1 below, is part of the Buoy Project (https://lifeinmind.org.au/suicide-prevention/collaborations/buoy-project). As previously discussed in Chapter 2, section 2.6.1, the Buoy Project aimed to test seven suicide prevention interventions promoting help-seeking in boys and men with a focus on masculinity. Research related to one of these interventions, the Boys Do Cry intervention, forms the basis of Study 3.

4.1.3.1 Boys Do Cry

Boys Do Cry was a novel universal suicide prevention media campaign in Australia. At the core of Boys Do Cry is a four-minute music video featuring a large and diverse group of Australian men singing an adapted version of the "Boys Don't Cry" song by the iconic British rock band The Cure (https://boysdocry.com.au/). The lyrics emphasise the importance of men reaching out to others and seeking help when struggling emotionally, challenging the dominant masculine norm of self-reliance in Australian culture. The lyrics are as follows:

Sometimes when we're hurting
and the darkness comes and fills our mind

we feel like we're all alone, without the strength we need to find.

Don't like to talk about it
we bottle it all up inside
we man up like our fathers taught us
hiding the tears in our eyes
but boys do cry
boys do cry.
Your strength is not in silence
but sharing what is in your heart
it's something to be proud of
when what's there is tearing you apart.
It feels good to talk about it
to free yourself from the lies
of the voice that said that men
shouldn't have tears in their eyes
cause boys do cry
boys do cry.

It's time for us to stand together
and show our sons a different way
to turn the tide of darkness
that is taking our mates lives away.
Let's make tomorrow
the day that we start
speaking our feelings
sharing what's hurting our hearts.

[RAP]

I've been guilty of a fake smile, yeah I'm feeling fine -

life of the party but inside I don't feel alive.
Telling all of my closest that it's all good, I'm gonna be alright

cos to let them know I'm a broken soul
that honestly is my kryptonite.
My ego he evil,
manipulate me with lies
that real men are unbreakable,
that real men don't cry.
But real men get help and real men do cry,
I wish I had that convo with my brothers in the sky. RIP.

We can do most anything
when together we stand side by side
making a change for the better
stop hiding the tears in our eyes
cause boys do cry
boys do cry
boys do cry.

Lyrics adapted by Simon Lee
https://boysdocry.com.au/getcracking#lyrics

The broader evaluation of Boys Do Cry involved several elements: a randomised control trial, an analysis of qualitative participant feedback data, and Study 3, an analysis of Twitter/X activity and responses to the online campaign. Figure 4-4 shows a snapshot of the Boys Do Cry public page on Twitter.

Figure 4-4 The Boys Do Cry public page on Twitter

Results from the randomised-controlled trial showed positive effects from watching the Boys Do Cry video on help-seeking intentions in men; however, similar, though less pronounced, effects were also observed in the control group (Nicholas et al., 2022; Nicholas et al., 2024). It is possible that improvement in help-seeking intentions in both groups might be partially due to the study itself serving as an intervention, as all participants attended an online session with a researcher and a study psychologist, which may have had a treatment effect prior to the study. The qualitative study of participant feedback found that most participants provided highly positive feedback on the video. They particularly appreciated the diversity of men featured in the video and the core message advocating for emotional expression and seeking help during challenging times. A minority of participants reported that the musical approach was not ideal.

The Boys Do Cry video was disseminated over several social media platforms – Twitter, Facebook, Instagram, TikTok, and YouTube – as part of a broader multimedia suicide prevention campaign. Study 3 involved an empirical evaluation of the Boys Do Cry campaign on Twitter. Twitter was selected as the campaign was widely engaged with on Twitter and access to data was the most complete. The decision to use Twitter data, rather than data from other platforms, may have implications regarding the target population. Previous research suggests that Twitter tends to attract older populations (Pew Research Center, 2023).

4.1.3.2 Data collection

There were two data collection stages for Study 3. The first stage involved using the R software package academictwitteR (Barrie & Ho, 2021). Appendix A shows the R code used to collect the data using Twitter's Academic Research Application Programming Interface (API). The second data collection stage involved downloading monthly data from the Boys Do Cry campaign's Twitter account using the freely available Twitter Analytics tool from the campaign's page. This tool tracked public page metrics, such as mentions and interactions with the campaign's tweets (Twitter, n.d.).

The difference between the API and Twitter Analytics datasets was primarily related to who generated the content. The API dataset involved user-generated content related to the campaign, while the dataset from the analytics tool provided metrics related to the campaign-generated content. While the user-generated content helped address research question 9 related to the topics of discussion prompted by the campaign, the campaign metrics allowed an evaluation of the campaign's performance (e.g., how many users it reached) on this platform, addressing research questions 6 and 7.

Therefore, using these two datasets, Study 3 had both quantitative and qualitative components. The quantitative component focused on analysing key metrics related to the campaign's tweets, such as reach (the number of times tweets were seen) and engagement (likes, retweets, replies). These metrics were summarised to assess the campaign's visibility and interaction levels over time. The qualitative component involved gathering user-generated tweets related to the campaign during and after the campaign period, specifically relevant to research question 8. A thematic analysis was then conducted to identify key discussion topics and themes emerging from user engagement with the campaign.

4.1.3.3 Thematic analysis

A thematic analysis approach was used to qualitatively analyse the Twitter API data. Thematic analysis is a widely used method to explore, develop, and report patterns (or themes) of meaning present in text-based data (Braun & Clarke, 2006). It is a flexible approach to coding text data, involving deep engagement with the data, where themes are generated through several stages of analysis (Braun & Clarke, 2006, 2019). Therefore, this is

a highly subjective approach, involving interpretation and reflection from the researchers, unlike other methods that do not require as much engagement with the data, such as content analysis (Elo & Kyngäs, 2008). Thematic analysis is ideal when the sample size is small, as it was in Study 3, because it can be time consuming (Vaismoradi et al., 2013). In the initial stages of the thematic analysis in Study 3, two research team members (AN, SSR) independently coded the text of a random sample of 100 tweets to create an initial coding framework where patterns or themes in the dataset were noted. Figure 4-5 illustrates a thematic map of the initial codes developed by each independent coder, showing how the themes were interconnected in Study 3.

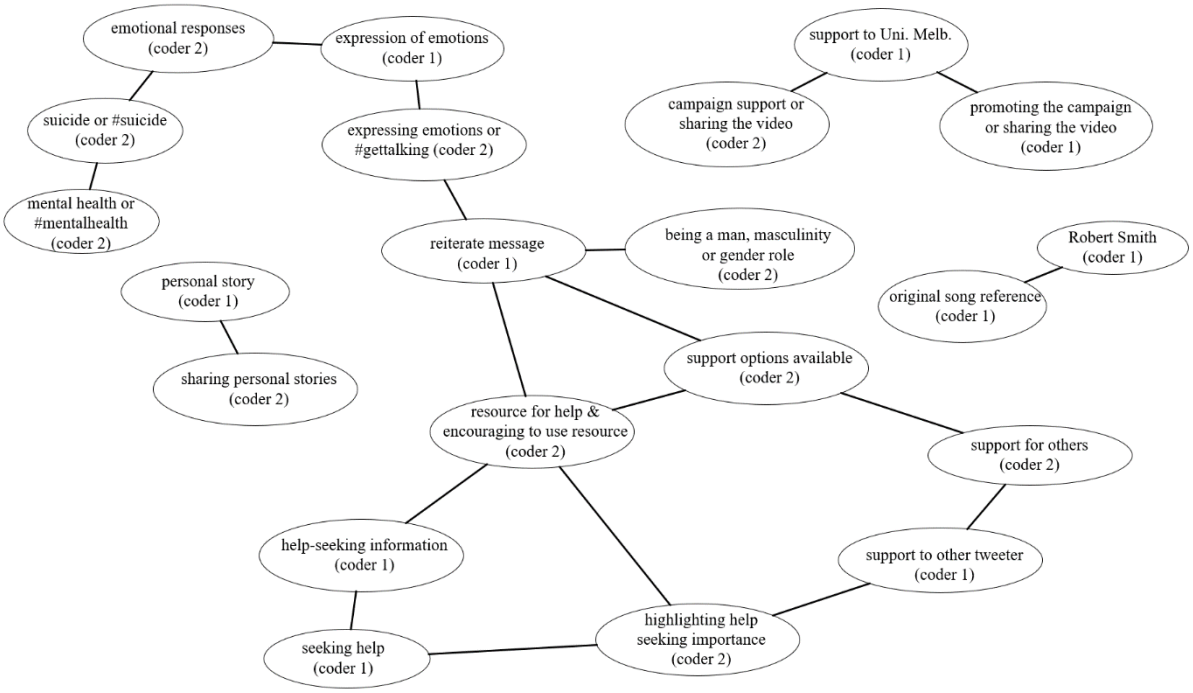

Figure 4-5 Illustration of the initial stage of the mapping exercise, where two independent coders developed an initial coding framework, using Braun and Clarke (2006) approach

After several iterations and discussions, the coders finally agreed on the overarching themes. The final, merged coding sheet included the total number of times themes appeared in the dataset. The created themes were reported within Study 3's published article, which included the total number of times they appeared in the dataset with example of tweets for each theme.

Although thematic analysis is a powerful method for telling stories and generating meaning from text-based data, it has limitations. For instance, the development of the themes is a very subjective process, and researchers could potentially select their data based on preconceived

ideas, which could lead to biases (Braun & Clarke, 2019; Nowell et al., 2017). Therefore, it is possible that if a different pair of researchers were involved in the analysis, other themes would be generated.

4.1.4 Summary of methodology

Table 4-3 below provides a visual summary of how the three studies use the data to address the nine research questions.

Table 4-3 Summary of methodology

	Type of data	Method	Data analysis	Research question*
Study 1	Journal articles from eight academic databases	Review	Bibliometric & content	1 to 4
Study 2	Ten to Men waves 1 and 2, and Medicare Benefits Schedule data	Analytical epidemiological	Causal mediation	5
Study 3	Twitter data	Mixed methods	Descriptive and thematic	6 to 9

*Research questions: 1) When did the topic of masculinity first emerge in the suicide literature?; 2) How has the research output relating to masculinity and suicide evolved over time?; 3) What are the major topics discussed within the masculinity and suicide literature? Have they have changed over time?; 4) What are the most influential publications in masculinity and suicide research?; 5) Does help-seeking mediate the relationship between the masculine norm of self-reliance and suicidal thoughts among men?; 6) What was the reach of the Boys Do Cry campaign, and how did the public engage with it?; 7) What were the highest and lowest performing tweets and how did the public engage with them?; 8) What was the pattern of Twitter activity for campaign-related tweets over the course of the campaign and in the post-campaign period?; 9) What were the key topics of discussion on Twitter prompted by the Boys Do Cry campaign?

4.2 Summary

The three methodological approaches discussed in this chapter demonstrate how combining quantitative and qualitative research methods provided a comprehensive exploration of the relationship between masculinity and suicidal thoughts and behaviours. Study 1 was a bibliometric review mapping the emergence and trajectory of knowledge in the field of masculinity and suicide, which identified potential research gaps to inform the subsequent studies. Building on these findings, Study 2 employed an epidemiological investigation, using longitudinal data to explore a potential causal mechanism between self-reliance and suicidal thoughts, as identified in the literature. Finally, Study 3 evaluated the impact of a real-world intervention, the Boys Do Cry suicide prevention campaign, which targeted key variables (i.e., self-reliance, help-seeking, and suicidality) from Study 2, using social media data from Twitter.

These three studies complement each other by first providing a high-level overview of the masculinity and suicide research field, then diving deeper into specific causal mechanisms, and finally testing an intervention designed to address these issues in a real-world context.

Chapter 5: Study 1 – The origins and evolution of the field of masculinity and suicide: a bibliometric and content analysis of the research field

Study 1 has been published in the *Archives of Suicide Research* in 2022. This chapter presents the text of the published version, with minor edits. Study 1's findings were also disseminated at the following conferences:

1. National Suicide Prevention Conference, 29th April to 2nd May 2024, Adelaide, Australia.
2. International Summit on Suicide Research, 15th to 18th October 2023, Barcelona, Spain.
3. International Association for Suicide Prevention's World Congress, 19th to 23rd September 2023, Piran, Slovenia.

5.1 Abstract

Background

In most countries, men die by suicide at twice the rate of women; masculinity plays an important role in placing men at a greater risk of suicide. This study identifies and describes trends in the topics discussed within the masculinity and suicide literature and explores changes over time.

Methods

Publications relating to masculinity and suicide were retrieved from eight electronic databases and described origins in the field of research by reference to the first decade of publications. The subsequent evolution of the field was then explored by analysis of the content of article titles/abstracts for all years since the topic first emerged, and then separately by three epochs.

Results

A total of 452 publications (1954-2021) was included; research output has grown substantially in the last five years. Early publications framed suicide in the context of severe mental illness, masculinity as a risk factor, and suicidality as being aggressive and masculine. Some differences in themes over time were observed: epoch 1 focused on sex differences in suicidality, a common theme in epoch 2 was relationship to work and its effect on men's mental health and suicidality, and epoch 3 had a focus on help-seeking in suicidality.

Conclusion

The research field of masculinity and suicide is growing strongly, as evidenced by recent increase in publication volume. The structure, content and direction of the masculinity and suicide research are still evolving. Researchers must work with policymakers and practitioners to ensure that emerging findings are translated for use in programs designed to address suicide in boys and men.

Highlights

- Masculinity and suicide as a field is not new, with its origins in the literature dating back to 1954.
- More than half of the total research output in the field (1954-2021) has been published in the last five years.
- Early work focused on individual-level risk factors to male suicide (e.g., severe mental illness), while contemporary research focused on social and cultural determinants of male suicide (e.g., help-seeking).

5.2 Introduction

The World Health Organisation estimates that over 700,000 people die by suicide every year (World Health Organization, 2021a, 2021b). In 2019, the global age-standardised suicide rate was more than double for males than females (12.6 vs 5.4 per 100,000 people, respectively), and this disparity holds true for most countries (World Health Organization, 2021a). Some explanations for this gender inequality in suicide rates have been proposed, including: (i)

choice of method: compared with females, males tend to favour more lethal methods (Mergl et al., 2015); (ii) differences in risk factors: the prevalence of alcohol and drug use is higher amongst males than females (Pompili et al., 2010; Schneider, 2009), and (iii) help-seeking behaviour: males are less likely than females to seek help in times of difficulty (Möller-Leimkühler, 2002). It is also plausible that masculinity – the socially constructed cultural ideal that tells boys and men how they should think, feel, and behave (Connell & Messerschmidt, 2005; Levant & Pryor, 2020c) – may underpin these factors that put men at a greater risk of suicide.

As masculinity is culturally constructed, there are several masculinities, even within individual societies (Levant & Pryor, 2020c). Therefore, masculinity is a heterogeneous construct with multiple dimensions (Pirkis et al., 2017). For example, one of the most cited scales measuring conformity to masculine norms – the 'Conformity to Masculine Norms Inventory' – has validated 11 dimensions: winning, emotional control, risk-taking, violence, dominance, playboy, self-reliance, primacy of work, power over women, disdain for homosexuals, and pursuit of status (Mahalik et al., 2003). However, it appears that only certain dimensions of masculinity are harmful in terms of being linked to suicidal behaviour and/or major suicide risk factors (Cleary, 2012). Those harmful dimensions of masculinity, at least in Western societies, are those that define manhood narrowly and traditionally, emphasising strength, stoicism, and attributing the expression of emotions to weakness (Cleary, 2019); a 2017 meta-analysis (78 samples; 19,453 participants) (Wong et al., 2017) reported conformity to traditional masculine norms such as self-reliance, power over women, and playboy as being robustly associated with poor mental health, a major risk factor for suicide (San Too et al., 2019). Important mental health outcomes found to be related to adherence to these traditional masculine norms included depression, psychological distress/stress, substance use, body image problems, negative social functioning (e.g., loneliness), and less favourable attitudes toward seeking psychological help (Wong et al., 2017). Because social norms and values that influence concepts of masculinity and femininity change over time, there is value in tracking the research in line with these evolving social constructs.

Bibliometrics is defined as the body of research that explores units of publications, citations, and authorship within a field (Broadus, 1987). Bibliometric analyses provide a high-level overview of a field, highlighting trends over time by analysing which publications, journals,

authors, and organisations are the most influential. Further, they can identify and describe trends in the topics discussed in the literature, and how they may change over time. While previous bibliometric studies have mapped the broad suicide literature (Astraud et al., 2020; Cai et al., 2020), we are unaware of studies that have focused specifically on the confluence of masculinity and suicide. Thus, to take stock and inform future research, we aimed to address this important research gap through a bibliometric exploration of the origins and evolution of masculinity and suicide research.

The overall study aim was addressed through four objectives:

Objective 1: to identify and describe when the topic of masculinity first emerged in the suicide literature.

Objective 2: to identify how research output relating to masculinity and suicide has evolved over time.

Objective 3: to identify the major topics discussed within the masculinity and suicide literature, and whether they have changed over time.

Objective 4: to identify the most influential publications in masculinity and suicide research.

5.3 Methods

5.3.1 Tools

A combination of manual database search, and plotting and inspection of publication trends over time was used. All work was conducted using Endnote (v20.1) (The EndNote Team, 2013), Microsoft Excel, R (v4.1.2) (R Core Team, 2021), and VOSviewer software (v1.6.17) (Van Eck & Waltman, 2009, 2010). VOSviewer is a freely available and widely used tool that allows the automation of bibliometric analyses; it was designed to create, visualise, and explore maps of complex network data (Van Eck & Waltman, 2013). VOSviewer has been used to characterise the literature in several health-related fields, including mental health (Chen et al., 2020; Xu et al., 2020), environmental health (Briganti et al., 2019), and digital health (Pai & Alathur, 2020).

5.3.2 Data sources and search strategy

Suicide and masculinity research is cross-disciplinary, with research output found across medicine, allied health, public health, and the social sciences. For this reason, a search strategy was developed to capture the relevant literature as comprehensively as possible.

For objectives 1, 2, and 3, the Web of Science (WoS) Core Collection, Scopus, Embase (via Ovid), Academic Search Complete (via EBSCOhost), PsycInfo (via Ovid), Medline (via Ovid), SocINDEX (via EBSCOhost), and CINAHL (via EBSCOhost) were searched. The search syntax was developed and piloted for WoS (see Appendix B) and then translated for the other sources. The search strategy included free-text terms relating to masculinity and suicide in titles, abstracts, keywords, and controlled vocabulary subject headings (e.g., Medical Subject Headings, [MeSH] for Medline, and Emtree subject headings for Embase). The search was conducted from the inception of each database to 05 November 2021, and inclusion was limited to journal articles published in the English language. The results of the searches were imported into Endnote to allow duplicate publications to be removed. A random check of 10% of the deduplicated data set was then conducted to assess how well the search results matched the intended topic. The search strategy was iteratively refined and rechecked to eliminate any obviously irrelevant publications.

For objective 4, access to citation data was required. Ready access was available to two sources of multidisciplinary citation data (WoS and Scopus). Because there is no consensus on which database provides the greatest coverage (Pranckutė, 2021), pilot searches were conducted to identify which source would provide the best coverage of our topic. It was determined that WoS had slightly greater coverage (4% more publications) than Scopus, and thus WoS source was used to retrieve the citation data. The WoS search syntax (see Appendix B) was identical to the search used for objectives 1, 2, and 3, including filters (journal articles, English language), with the exception that the citation data was retrieved on 18 December 2021.

5.3.3 Data analyses

5.3.3.1 Objective 1: to identify and describe when the topic of masculinity first emerged in the suicide literature

To characterise the origin of research in the field, the earliest publications in the first decade of the literature were downloaded and manually assessed. For each publication, authors' names, publication year, country of publication, and aim of the study were extracted. Those publications were then summarised to characterise the topics discussed in the earliest literature.

5.3.3.2 Objective 2: to identify how research output relating to masculinity and suicide has evolved over time

To quantify output over time, the distribution of publications by year and the cumulative percentage of publications from 1954 to 2021 were plotted and visually inspected.

5.3.3.3 Objective 3a: to identify the major topics discussed within the masculinity and suicide literature

To identify the most prominent topics in the literature, the co-occurrence of terms in the titles/abstracts of all publications' years (1954–2021) were analysed using VOSviewer. Co-occurrence analysis is based on the number of publications in which terms occur together. The VOSviewer algorithm uses natural language processing to find terms as single nouns and/or compound nouns, such as masculinity/hegemonic masculinity, suicide/suicide prevention (Van Eck & Waltman, 2013), thus, counting compound nouns as a single term. The software uses distance-based bibliographic metrics, whereby the closer the distance between two terms on a network map, the more linked they are to each other. VOSviewer also colour codes its clusters in the map within bubbles – with terms that co-occur more frequently having bigger bubbles (Van Eck & Waltman, 2010, 2011, 2013).

VOSviewer does not include common words such as pronouns, articles, and prepositions, and terms that were synonyms (e.g., singular vs. plural forms; British vs. American spellings) or without any meaningful content (e.g., abstract, methods, results, data, date) we merged or

removed from the analyses. Furthermore, when VOSviewer aggregates co-occurrences of terms in titles and abstracts, it shows the number of occurrences of a term and its relevance score (Van Eck & Waltman, 2011). The algorithm determines the most relevant terms by finding the distribution of (second-order) co-occurrences for each term and over all terms in the data set. Then these distributions are compared to each other. The greater the distance (as measured by the Kullback-Leibler distance), the larger the relevance of a term (Van Eck & Waltman, 2011). By default, the software shows 60% of the most relevant terms in the network maps. The binary counting method (Van Eck and Waltman (2013); presence vs. absence of a term in a publication was also used in this analysis.

5.3.3.4 Objective 3b: to explore if and how the topics discussed within the masculinity and suicide literature have changed over time

To explore the evolution of the field over time, discrete analysis epochs were used as per methods described elsewhere (Armfield et al., 2014). It was initially considered dividing the data set into periods where there was a publication growth. However, due to low research activity until 2011 (fewer than 15 publications per year), the corpus of publications was divided into three equal epochs (based on the cumulative percentage), each representing one-third of the total published output. Each epoch's publications were separately imported into VOSviewer, and terms in titles/abstracts were counted using the binary counting method (Van Eck & Waltman, 2013) – presence vs. absence of a term in a publication. The terms and number of occurrences were then imported into R and word clouds for each epoch were created. The word clouds were used to visualise the most prominent terms per epoch.

5.3.3.5 Objective 4: to identify the most influential publications in the masculinity and suicide research

To identify the most influential publications, citation data were downloaded from the WoS database (see section 'Data Sources and Search Strategy', objective 4). The publications were ranked for their influence based on the average citations per year, as older publications have a greater window of opportunity to be cited than more recent publications.

5.4 Results

5.4.1 Search results

The search from the eight databases resulted in 1,331 publications. Ten publications were excluded as they were not journal articles (i.e., they were theses, books, and book sections). A further 869 publications were excluded as they were duplicates, leaving 452 publications for the analyses. Relevant fields, such as author(s), year of publication, journal name, title, abstract, and name of database, were exported for descriptive analyses. Out of 452 publications, 11 (2%) had missing data in the abstract field. It was identified that the WoS database had the greatest number of publications across all databases, with 317 out of 1,331 (24%) publications before deduplication and 304 out of 452 (67%) publications after deduplication. See Figure 5-1 for a flow diagram for the identified records and results within each database.

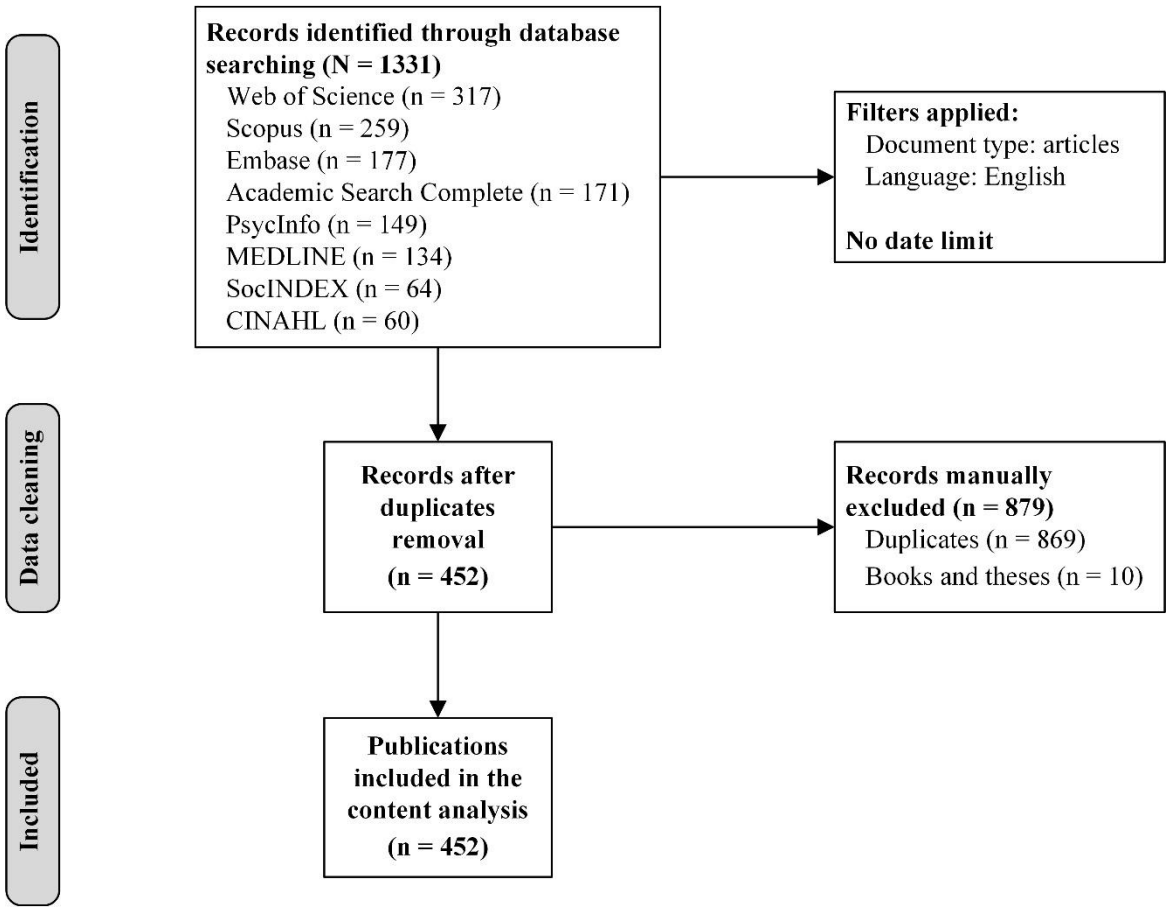

Figure 5-1 Stages of identification of studies. Results as at 05 November 2021

5.4.2 Objective 1: The origins of the field of masculinity and suicide

The first decade of the literature (1954–1964) contained three articles. These publications were published in 1954 (Edelheit, 1954), 1958 (Rubenstein et al., 1958), and 1960 (Stone, 1960), and all three were published in the United States. Edelheit (1954) and Rubenstein et al. (1958) considered masculinity and suicidality in the context of severe mental illness and focused on masculinity being a risk factor in male suicidality, while Stone (1960) focused on characteristics of masculinity such as suicidality in males being 'an impulsive grasping for the active, aggressive masculine role' (p. 29).

5.4.3 Objective 2: The evolution of the field of masculinity and suicide

Between 1954 and 2021, 452 articles relating to masculinity and suicide were published. Figure 5-2 shows the distribution of publications by year. Between 1954 and 2007, the number of publications per year was fewer than 10. Even though the publication numbers increased to 13 in 2008, the research activity was still low from 2008 to 2011 (fewer than 15 publications per year). In 2012, there was a peak in the number of publications (n = 27), with publications in the years between 2012 and 2017 ranging from 16 to 27. In 2018, there was a major increase in the number of publications (n = 54), with publications in the years between 2018 and 2021 ranging from 40 to 59. The highest number of publications over the period was in 2021 (as at 05 November 2021); the upward trajectory appears to be continuing.

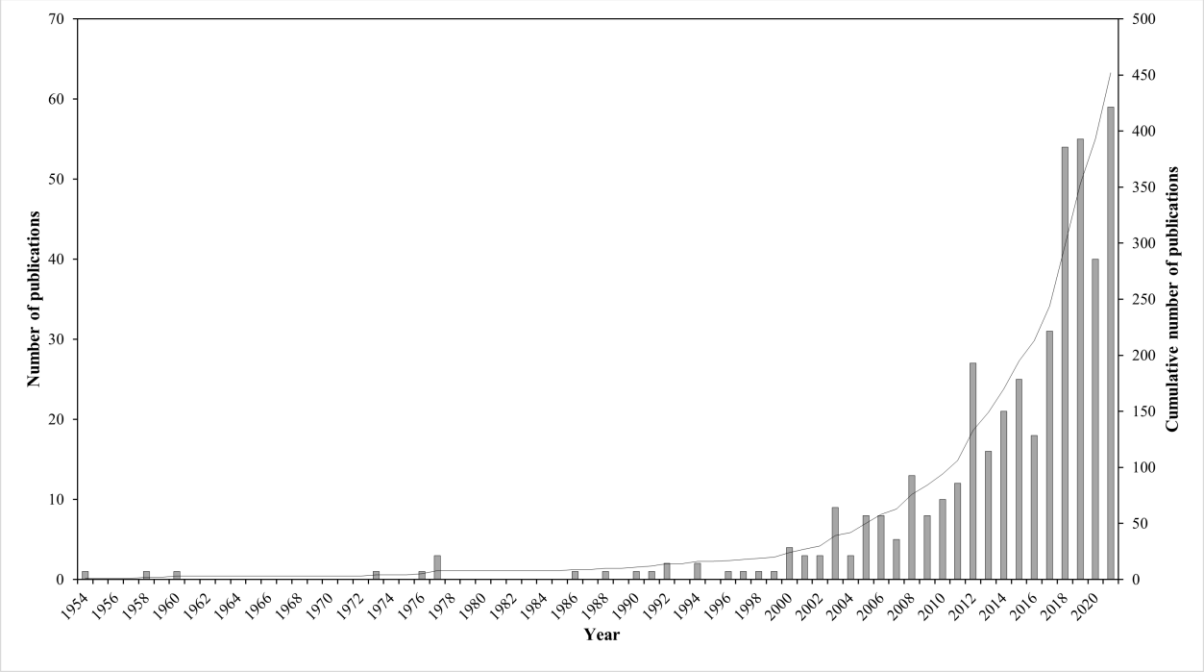

Figure 5-2 Distribution of the masculinity and suicide literature from 1954 to 2021, as at 05 November 2021

5.4.4 Objective 3a: Major topics discussed in the literature

The most prominent terms in the masculinity and suicide literature are shown in Figure 5-3. The terms were clustered by mapping the co-occurrences of terms from titles/abstracts of publications related to masculinity and suicide in the retrieved literature (1954–2021), as at 05 November 2021. Of the 9,184 terms, 143 occurred in at least 10 publications. For each of the 143 terms, a relevance score was calculated and used to select 60% of the most relevant terms. The largest set of linked terms included 86 terms and is shown in Figure 5-3 in five colour-coded clusters.

The red cluster was related to social and cultural elements of masculinity, with terms including social isolation, connection, well-being, stigma, loss, failure, Canada, and Australia. An example of this cluster is a publication (Alston, 2012) that discusses rural male suicide in Australia, and how rural masculinities are constructed in the Australian culture that restrict men's ability to ask for help. The purple cluster was related to the self-reliance component of conformity to masculine norms in suicidality, with terms including conformity, masculine norm, mental health problem, and self-reliance. An example of this cluster is a publication (McDermott et al., 2018) that explores the relationship between intentions to seek

psychological help for suicidal thoughts and conformity to masculine role norms in university students. The green cluster was related to risk factors in men's suicidality, with terms including aggression, anger, male depression, substance use, and suicide risk. An example of this cluster is a publication (Rice et al., 2021) that investigates specific factors often associated with suicide risk in young men – depression symptoms, sexual abuse, and alcohol abuse. The blue cluster was related to mental health treatment, with terms including anxiety, diagnosis, fear, feeling, self-harm, psychotherapy, history, treatment, and patient. An example of this cluster is a publication (Dognin & Chen, 2018) that discusses the interplay of depression, suicidal behaviour, and masculinities in veterans and highlights the role of dynamic interpersonal therapy in helping these men reconstruct their sense of self built in the 'military culture'. Finally, the yellow cluster was related to suicidality in youth, with terms including adolescent, boy, child, girl, peer, school, and young person. An example of this cluster is a publication (King et al., 2020) that investigates the relationship between masculinity and suicidal ideation in adolescents.

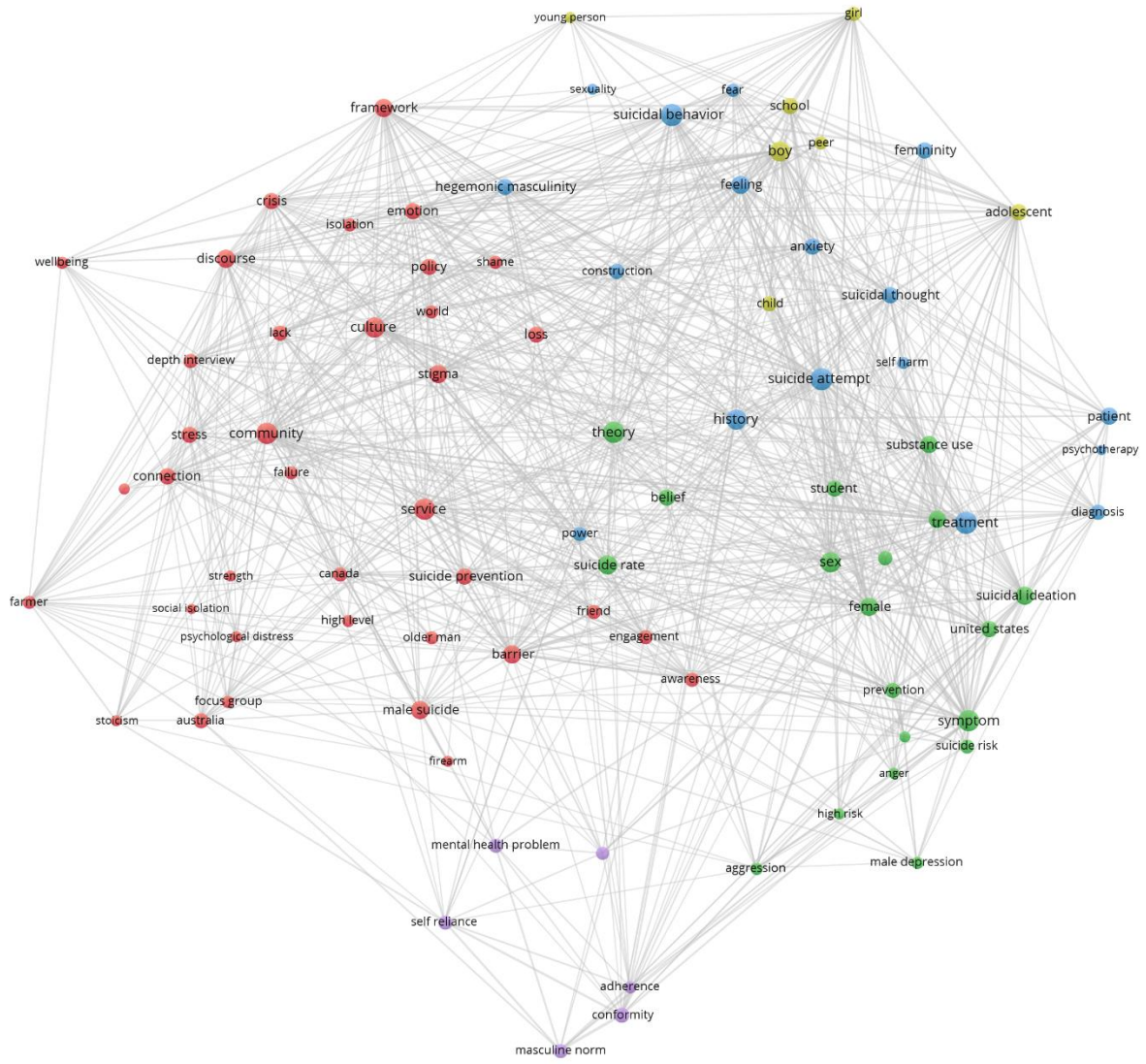

Figure 5-3 Network visualisation map of the co-occurrences of terms in title/abstract for publications related to masculinity and suicide (1954-2021). Colours indicate five clusters of related terms, and size of circles represents the occurrences of terms in titles/abstracts

5.4.5 Objective 3b: The evolution of topics discussed in the literature over time

Epoch 1 (1954–2013) and epoch 2 (2014–2018) had 149 publications each, while epoch 3 (2019–2021) had 154 publications. The number of terms found by VOSviewer from epochs 1 to 3 were 3,186 terms, 3,569 terms, and 4,044 terms, respectively. The process of illustrating key terms according to publication occurrence helps to identify emerging topics. Figure 5-4 shows word clouds for the most commonly occurring terms found in titles/abstracts of the masculinity and suicide literature for each epoch. Six single noun terms were omitted from the word clouds: masculinity, suicide, man, gender, woman, and depression, as they were the

most occurring terms across all epochs and thus did not help to visualise/understand the evolution of topics discussed in the field. However, compound noun terms related to the terms above were included (e.g., suicidal behaviour, hegemonic masculinity, suicide prevention, male depression) as they were not in the top list of most occurring terms for all epochs. For a comprehensive list of the most occurring terms by epoch, including omitted terms, see Appendix B.

According to Figure 5-4, prominent terms in epoch 1 (1954–2013) included sex, suicide attempt, and suicidal behaviour, which can be broadly interpreted as related to sex differences in suicidality. An example of epoch 1 is a publication (Linehan, 1973) that investigates suicidal behaviour as a function of sex in university students, showing evidence for suicide death being considered more masculine than attempted suicide. Prominent terms in epoch 2 (2014–2018) included mental health, relationship, and work, which can be broadly interpreted as related to men's relationship to work and its impact on their mental health and suicidality. An example of epoch 2 is a publication (Oliffe & Han, 2014) that discusses masculinities and men's health, men and work, men's work-related depression and suicide, and men's mental health promotion. Prominent terms in epoch 3 (2019–2021) included help, self-reliance, and barrier, which can be broadly interpreted as characteristics of help-seeking in suicidality. An example of epoch 3 is a publication (Ross et al., 2019) that investigates the effectiveness of a suicide prevention intervention designed to encourage help-seeking and help-offering in men working in construction.

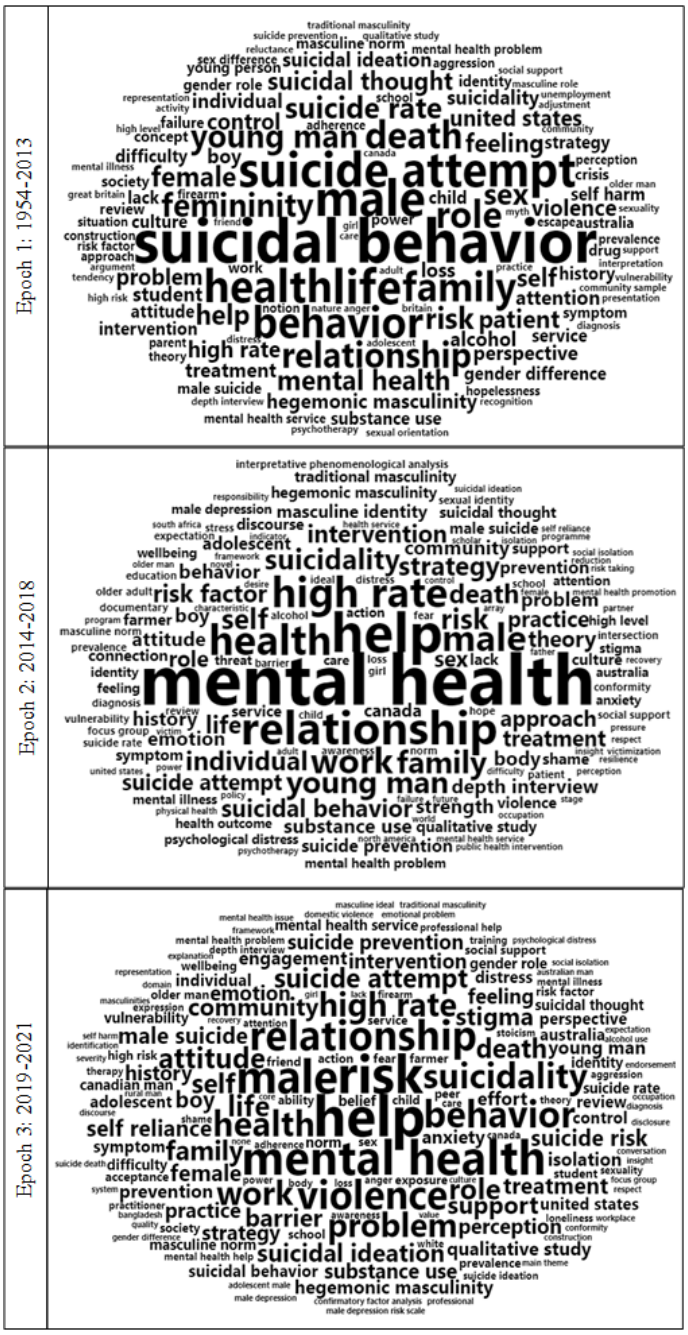

Figure 5-4 Word clouds of the most occurring terms in titles/abstracts for publications related to masculinity and suicide by epoch. Size of font represents the occurrences of terms in titles/abstracts

5.4.6 Objective 4: The most influential publications in masculinity and suicide

The WoS search returned 327 publications with citation data as at 18 December 2021. However, as the earliest publication in this database was from 1991, only publications from epochs 2 and 3 (i.e., 2014-2021, n = 251) were included in this analysis. The publication with the highest citation count per year and total citation count (average of 15.6 citations per year,

78 citations in total) was by Pirkis et al. (2017). This publication describes an Australian cohort study (n = 13,884 adult men) investigating the relationship between conformity to dominant masculine norms and suicidal ideation. Pirkis and colleagues found that self-reliance, a dimension of dominant masculine norms, is a key risk factor for suicidal ideation in men. The publication with the second highest citation count per year was by Rice et al. (2018). This publication is a narrative review by Australian researchers about the mental health of adolescent boys and young men. Synthesised key themes within the review include 'cultural expectations and masculinity'. The authors highlight the issue in Western society whereby boys and men are discouraged to demonstrate vulnerability, weakness, or emotions. They also discussed the modelling of help-seeking behaviours for men, arguing that they are modelled from a very young age within the family of origin and community context. The publication with the third highest citation per year was by (McKenzie et al., 2018). This publication describes a qualitative study conducted in New Zealand that explored the interplay between masculinity, men's everyday social practices, and mental health. This study found four major patterns in men's social relationships: (1) compartmentalising relationships (i.e., differentiating between relationships with men and women); (2) difficulties in confiding and mobilising support in times of difficulty/distress; (3) desire to be independent; and (4) endeavour to create support networks to actively seek support. For the ten most influential masculinity and suicide publications in WoS, see Appendix B.

5.5 Discussion

To the authors' knowledge, this is the first study to report the origins and evolution of research at the confluence of masculinity and suicide. In providing an overview of publication trends and by examining changes in topic foci over time, this study provides new knowledge on the scope, structure, and maturity of the field. This study identified that the masculinity and suicide field originated in the 1950s. However, it was not until recently that the field grew to any degree. This trend is in line with previous bibliometric studies conducted in the field of suicide (Astraud et al., 2020; Cai et al., 2020), where a steady growth was observed from around 2004 onwards; see Figure 1 in Astraud et al. (2020) and Figure 2 in Cai et al. (2020). Furthermore, this bibliometric study found that the earliest publications discussed masculinity and suicide in the context of severe mental illness, suggesting the use of a medical model of suicide by which suicide is mainly an outcome of mental disorders (Isacsson, 2000; Miles, 1977). Although the use of a medical model was

consistent with dominant suicide theories of the time, it is possible that it viewed male suicide and masculinity simplistically, where suicide was an outcome of not fulfilling a role (Stone, 1960) or being mentally ill (Edelheit, 1954; Rubenstein et al., 1958). Leading thinkers in suicide prevention have now moved away from this medical model, viewing suicide as a more complex phenomenon that is influenced by a range of risk factors. Mental illness is only one of these; a range of societal and cultural factors also play a major role in male suicide, including gun policies (Wamser-Nanney, 2021), social isolation (Oliffe, Broom, et al., 2019b), help-seeking behaviour (Ross et al., 2019), and aspects of masculinity (Pirkis et al., 2017).

This study also shows key emergent research areas within the masculinity and suicide literature, with research themes from biology, sociology, and psychology. Emergent research areas included mental health treatment as a means of suicide prevention; risk factors in men's suicidality, including social and cultural elements of masculinity, particularly the traditional masculine norm of self-reliance; and suicide in young people. This broadened focus is consistent with more recent understandings of suicide as a complex phenomenon with many contributing factors.

This study also identified noticeable changes in discussions regarding masculinity and suicide over time. The discussions shifted from focusing solely on individual-level risk factors (e.g., sex and mental illness) to incorporating broader social and cultural determinants (e.g., gender and help-seeking), suggesting that researchers have recently begun to unpack the mechanisms by which male suicide occurs, and the extent to which this is influenced by conformity to masculine norms. This evolving knowledge has given rise to a growing number of suicide prevention campaigns targeting traditional masculinity and help-seeking behaviour in men (King et al., 2018; King et al., 2019; Ross et al., 2019).

5.5.1 Strengths and limitations

This study has several strengths. Firstly, it is the first study to explore the trends and content in the masculinity and suicide field using bibliometric methods. Secondly, we searched eight electronic databases from a wide range of fields, thereby capturing the most relevant literature as comprehensively as possible. A limitation of this study was that the search for the citation count analysis relied on a single source (i.e., WoS), meaning that our list of the

most influential publications may not represent the whole literature. However, this source is one of the most comprehensive indices of peer-reviewed multidisciplinary literature available, including citation data.

5.5.2 Conclusions

This study offers new knowledge in the field of masculinity and suicide. The field of masculinity and suicide has grown considerably in the last few years; however, its structure, content, and direction are still evolving. Researchers must work with policymakers and practitioners to ensure further work is conducted to design and evaluate appropriate interventions, and that emerging findings are translated for use in programs designed to address suicide in boys and men.

5.6 Acknowledgements

We would like to thank Lindy Cochrane (research librarian at the University of Melbourne) for her assistance with the search strategy development.

5.6.1 Ethics approval

Not applicable as the data used in this study are publicly available.

5.6.2 Credit author statement

Simone Scotti Requena: Conceptualisation, Methodology, Formal analysis, Writing – Original Draft; Jane Pirkis: Writing – Review & Editing, Supervision; Dianne Currier: Writing – Review & Editing; Angela Nicholas: Writing – Review & Editing; Adriano A. Arantes: Software, Visualisation; Nigel R. Armfield: Conceptualisation, Methodology, Writing – Review & Editing, Supervision. All authors approved the final version of the manuscript.

5.6.3 Disclosure statement

No potential conflict of interest was reported by the author(s).

5.6.4 Funding

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Chapter 6: Study 2 – Does help-seeking mediate the relationship between the masculine norm of self-reliance and suicidal thoughts among men?

Study 2 has been published in the *Social Psychiatry and Psychiatric Epidemiology* in 2024. This chapter presents the text of the published version, with minor edits.

6.1 Abstract

Purpose

This study aimed to explore the relationship between the masculine norm of self-reliance and suicidal thoughts among Australian men, hypothesising that lack of help-seeking might mediate the relationship between high self-reliance and the emergence of suicidal thoughts.

Methods

This study used data from on the Australian Longitudinal Study on Male Health 'Ten to Men', a prospective longitudinal cohort study that began in 2013/2014 with boys and men aged 10-55 years (N = 16,021) at wave 1. The focus was on men who participated in waves 1 and 2 (2013/2014, 2015/2016) and had linked administrative data. A causal mediation analysis was conducted to quantify the total effect of self-reliance at wave 1 on suicidal thoughts at wave 2, and to investigate the extent of mediation by help-seeking between waves 1 and 2.

Results

High self-reliance was associated with an increased odds of suicidal thoughts (OR = 1.46, 95% CI 1.24–1.72). However, there was no significant mediating effect of a lack of help-seeking on the relationship between self-reliance and suicidal thoughts (OR = 1.00, 95% CI 0.99–1.01).

Conclusion

Findings suggest that highly self-reliant men are at an increased risk of experiencing suicidal thoughts; however, this relationship is not explained by lack of help-seeking. Future studies could explore other potential mechanisms to better understand why highly self-reliant men are more likely to experience suicidal thoughts.

6.2 Introduction

Globally, suicide rates are predominantly higher among males (World Health Organization, 2021a). However, while boys and men are more likely to die by suicide, girls and women are more likely to attempt suicide, a phenomenon referred to in the literature as the 'gender paradox in suicide' (Canetto & Sakinofsky, 1998). In Australia, three-quarters of all suicides are by males, while females have a higher lifetime prevalence of suicidal thoughts and behaviours (18% vs. 15%) (Australian Bureau of Statistics, 2021). Some explanations for this paradox include that, compared with women, men are more likely to choose lethal suicide methods (Mergl et al., 2015), engage in more problematic levels of alcohol and drug use (Pompili et al., 2010; Schneider, 2009), supress emotions (Cui & Fiske, 2021; Oliffe et al., 2016), and seek help for mental health issues less often (Mok et al., 2021; Möller-Leimkühler, 2002, 2003). Another factor that may be contributing to men's high suicide rates is rigid alignment with traditional masculinity (Scotti Requena et al., 2022). 'Masculinity' refers to the social and cultural set of norms that tells men how to think and behave (Cleary, 2019; Connell & Messerschmidt, 2005; Levant & Pryor, 2020c), and it is a multifaceted construct (Wedgwood, 2009). Not all facets of masculinity are associated with suicidality among men, but those that discourage the expression of 'soft emotions' (e.g., sadness and fear) and vulnerability have been shown to increase suicide risk (Cleary, 2012, 2019). This concept is often referred to in the literature as 'hegemonic masculinity' (Connell & Messerschmidt, 2005). Several studies conducted in Australia have found that the masculine norm of 'self-reliance' – the belief that men should be able to deal with problems on their own – is associated with suicidal thoughts among various populations of men (King et al., 2020; Pirkis et al., 2017; Tyler et al., 2022). While not every individual who thinks about suicide will attempt it, suicidal thinking is a key risk factor for suicide (Franklin et al., 2017; Turecki et al., 2019). Contemporary ideation-to-action models of suicidal thoughts and behaviours explore the factors involved in the transition from suicidal thoughts to suicidal

behaviours, with capability for suicide – such as access to means – identified as important factor in this transition (Joiner, 2005; Van Orden et al., 2010). Recent studies conducted in the United States have shown that hegemonic expressions of masculinity are associated with increased capability for suicide, particularly among men (Daruwala et al., 2021; Granato et al., 2015; Perry et al., 2022).

For this reason, it is important to explore putative mechanisms that may lie in the causal pathway of suicide risk, in the attempt to understand how the transition from thinking about suicide to acting on it could be prevented – such as through seeking help. The act of help-seeking can occur from professional sources (e.g., medical doctors, psychologists) or non-professional sources (e.g., family, friends). This study focuses on professional help-seeking, specifically the use of mental health services in Australia.

While unable to definitively identify the causal pathway, the literature suggests that a lack of professional help-seeking is associated with suicidality, influenced by factors such as high self-reliance, a perceived lack of need for treatment, and stigma surrounding suicide and professional help-seeking, particularly among men (Han et al., 2018). In Australia, between 2020 and 2022, males who had a mental health disorder in the last 12 months were less likely to seek professional help than their female counterparts (36% vs. 51%) (Australian Bureau of Statistics, 2022). Some evidence indicates that adherence to traditional masculine norms related to stoicism and strength is associated with men's reluctance to reach out for help (Yousaf, Grunfeld, et al., 2015; Yousaf, Popat, et al., 2015).

One study conducted in Australia found that increased adherence to traditional masculine norms predicted men's negative attitudes toward seeking help for mental health problems (Piatkowski et al., 2023). Similarly, a study of college students in the United States found that increased conformity to masculine norms of self-reliance and emotional control had the strongest associations with reluctance to seek both professional and non-professional help for suicidal thoughts (McDermott et al., 2018). These studies suggest that lack of help-seeking may be a mechanism through which high adherence to the masculine norm of self-reliance contributes to increased suicidal thoughts.

To our knowledge, the Canadian study by Houle et al. (2008) is the only study that has empirically evaluated the role of help-seeking in the relationship between conformity to

traditional masculine norms and suicidal behaviours in men. That study found that adherence to traditional masculine norms was associated with increased risk of suicide attempts through lack of help-seeking and lower perceived social support. While Houle et al.'s study (Houle et al., 2008) provides valuable insights, its results must be interpreted with caution as it lacked statistical power due to its small sample size (n = 80). Thus, it remains to be determined if not seeking help for mental health problems is a mechanism through which adherence to traditional masculine norms increases suicide risk among men. This, in turn, may contribute to men's high suicide rates.

This study aimed to explore the relationship between the masculine norm of self-reliance, help-seeking and suicidal thoughts among Australian men, hypothesising that lack of help-seeking might mediate the relationship between high self-reliance and the emergence of suicidal thoughts.

6.3 Methods

6.3.1 Data sources

This study used data from men (18 years or older) from waves 1 and 2 of the Australian Longitudinal Study on Male Health (Ten to Men) for our exposure, outcome, and confounding variables. Ten to Men is a large prospective longitudinal cohort study (Currier, Pirkis, et al., 2016). Data were collected across several health domains (physical and mental health, health behaviours, social determinants of health, and health knowledge and service use). Participants completed the survey according to their age cohort (boys, young men, and adults). The adult survey was self-administered. Participants had the option to consent for their Medicare Benefits Schedule (MBS) data to be obtained from the Australian Government and linked with their survey data on an ongoing basis. Approximately two-thirds of the sample consented to their MBS administrative data to be linked to the Ten to Men study, with the linkage conducted by the data custodians (Swami et al., 2022). Information on Ten to Men's design and methodology has been described in detail elsewhere (Currier, Pirkis, et al., 2016) and on their website (https://tentomen.org.au/). Briefly, wave 1 of Ten to Men data collection was conducted in 2013/2014, and wave 2, in 2015/2016. A stratified multi-stage cluster random household sampling method was used to recruit a cohort of boys and men

aged 10-55 years (N = 16,021) in wave 1. Three-quarters (74%) of the adult cohort participated in wave 2.

The MBS items related to the Better Access initiative on mental health service use was used for the mediator variable. Medicare is Australia's national government-funded healthcare system, and MBS administrative data include a list of item numbers related to services for which Australians qualify for benefits under the Australian Health Insurance Act 1973 (Australian Government, 2023). These item numbers include those related to the Better Access initiative, which allows Australians with mental health difficulties to access up to 10 individual and 10 group subsidised mental health services per year, from general practitioners or other medical practitioners, psychologists, social workers, and occupational therapists (Pirkis, Currier, et al., 2022).

All datasets were accessed with the approval of the data custodians, the Australian Institute of Family Studies.

6.3.2 Measures

To establish the temporal order and investigate causal relationships, wave 1 data were used for the exposure and confounding variables and wave 2 data for the outcome variable. For the mediator, an aggregate measure of MBS data (between waves 1 and 2 time points) was used. Figure 6-1 shows the directed acyclic graph of the hypothesised causal effects of self-reliance and help-seeking on suicidal thoughts, including potential confounding variables.

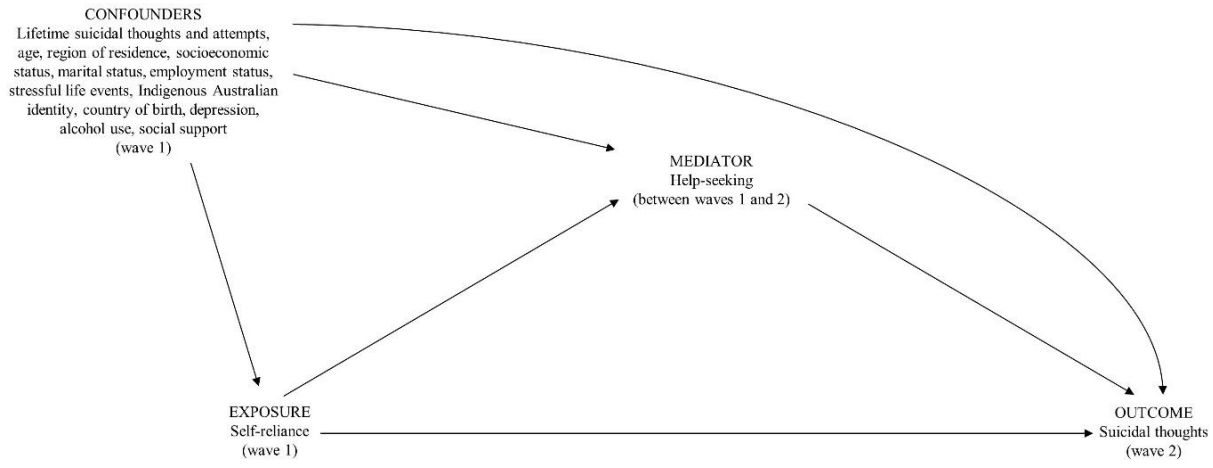

Figure 6-1 Directed acyclic graph showing the hypothesised causal effects of self-reliance and help-seeking on suicidal thoughts

6.3.2.1 Exposure: self-reliance

The exposure variable was the self-reliance subscale of the Conformity to Masculine Norms Inventory (CMNI-22), an abbreviated version of the original 94-item CMNI (Mahalik et al., 2003), measured at wave 1. Evidence shows that the self-reliance factor is associated with suicidal thoughts in Australian men (Pirkis et al., 2017). The CMNI was designed to measure conformity to dominant masculine norms by asking individuals what they think about their actions, thoughts, and feelings and to indicate to what extent they agree with 22 statements (scored 0 'strongly disagree' to 3 'strongly agree'). The self-reliance subscale statements 'I never ask for help' and 'It bothers me when I have to ask for help' was used. Like the other subscales on the CMNI-22, self-reliance is scored from 0 ('lowest conformity') to 6 ('highest conformity') (Mahalik et al., 2003). However, the self-reliance scores were dichotomised into two groups using a method suggested by the CMNI's developers (Mahalik et al., 2005). The raw scores were transformed into T-scores using a mean of 50 and a standard deviation of 10. T-scores of 50 or below indicate moderate or extreme nonconformity to the self-reliance norm, while T-scores above 50 suggest moderate or extreme conformity to the self-reliance norm. For simplicity, 'moderate or extreme nonconformity to the self-reliance norm' is referred as low self-reliance and 'moderate or extreme conformity to the self-reliance norm' as high self-reliance.

6.3.2.2 Outcome: suicidal thoughts

The outcome variable was a single item from the Patient Health Questionnaire (PHQ-9) measured at wave 2, which asks, 'Over the past two weeks, how often have you been bothered by thoughts that you would be better off dead, or of hurting yourself in some way?'. Like the other items on the PHQ-9, this item is scored as 0 'not at all', 1 'several days', 2 'more than half the days', or 3 'nearly every day' (Kroenke et al., 2001). It was considered the presence of suicidal thoughts individuals who scored 1 or above on this item.

6.3.2.3 Mediator: help-seeking

The mediator was help-seeking. Better Access MBS item numbers were used as an objective measure of help-seeking. Individuals who had used any Better Access mental health services

between Ten to Men waves 1 and 2 survey completion dates were deemed to have sought help (see Appendix C for Better Access MBS item numbers).

6.3.2.4 Confounders

Putative confounding variables were drawn from wave 1, which included lifetime suicidal thoughts and attempts, age, region of residence, socioeconomic status, marital status, employment status, stressful life events, Indigenous Australian identity, country of birth, depression, alcohol use, and social support.

Individuals were identified as having experienced lifetime suicidal thoughts and attempts at wave 1 if they responded 'Yes' to either of the following questions: 'Have you seriously thought about killing yourself ever in your life?' or 'Have you tried to kill yourself ever in your life?'. Age was dichotomised (18-34; 35-55). Region of residence was based on the Australian Statistical Geography Standard (ASGS) remoteness area classifications in the 2011 Census: major cities, inner regional, and outer regional (Australian Bureau of Statistics, 2011a). For socioeconomic status, the disadvantage area of residence from the Index of Relative Socioeconomic Disadvantage (IRSD) 2011 Census based on quintiles (quintile 1 'greatest disadvantage' to quintile 5 'least disadvantage') was used (Australian Bureau of Statistics, 2011b). Marital status (never married/widowed/divorced/separated; married/de facto), employment status (unemployed; employed/not looking for work), and stressful life events in the past 12 months (no life events in the past 12 months; any life events in the past 12 months) were dichotomised. The items of stressful life events were derived from a modified version of the Social Readjustment Scale (Holmes & Rahe, 1967) and included 24 items. Only the items that were shown to be associated with suicidal thoughts in Australian men were used, that is (1) serious personal injury, illness or surgery; (2) break-up of a serious relationship, divorce, or separation; (3) serious conflict with a family member; (4) difficulty finding a job; (5) major loss or damage to personal property; and (6) legal troubles or involvement in a court case (Currier, Spittal, et al., 2016). Indigenous Australian identity was also dichotomised (Non-Indigenous; Aboriginal or Torres Strait Islander) and country of birth (overseas; Australia). The presence of depression in the past 12 months was derived from a single item: 'Have you been treated for or had any symptoms of depression in the past 12 months?'. Alcohol use was derived from the Alcohol Use Disorders Identification Test (AUDIT), categorised as harmful/hazardous or not harmful/hazardous (Babor et al., 2001).

Social support was measured using the Medical Outcomes Survey Social Support Survey (MOS-SS) Emotional Information subscale that can be scored from 0 to 100, with lower scores indicating lower social support (Sherbourne & Stewart, 1991).

6.3.3 Eligibility criteria

Participants were included if they were 18 years or older at wave 1, completed the wave 2 survey, had MBS data available between the wave 1 and 2 survey completion dates, and had complete data on the exposure and outcome variables.

Figure 6-2 shows that of the 13,891 men aged 18 years and older who completed the adult survey at wave 1, 10,339 (74%) completed the wave 2 survey. Of the adult sample, 7,096 (69%) had MBS linked data available between waves 1 and 2 survey completion dates, likely due to participants' withdrawal or non-consent for data linkage (Swami et al., 2022). A total of 6,971 out of 7,096 men (98%) had complete data on self-reliance at wave 1 (exposure) and suicidal thoughts at wave 2 (outcome) measures, which was considered to be the eligible sample.

Comparing the baseline characteristics of men included in our study (eligible sample) with those of men who participated in wave 1 but were not in the eligible sample, it was found that men who were not included in our study were more likely to be younger, residing in outer regional areas of Australia, and have lower socio-economic status (see Appendix C).

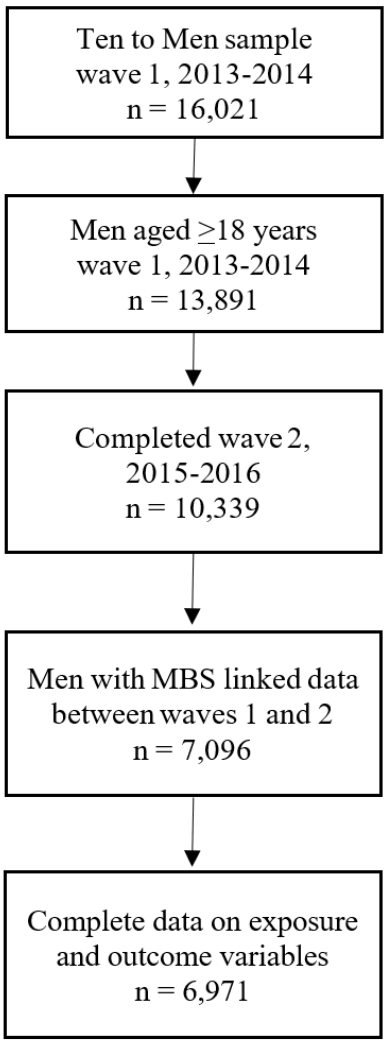

Figure 6-2 Flowchart for the sample eligibility. MBS: Medicare Benefits Schedule

6.3.4 Statistical analysis

Sample characteristics at wave 1 were described by showing the proportion of individuals per exposure (low or high self-reliance) group. The distribution of mediator (help-seeking) and outcome (suicidal thoughts) by self-reliance (exposure) group was also summarised. A causal mediation analysis was conducted to quantify the total effect of self-reliance on suicidal thoughts, decomposing the total effect into natural direct and indirect effects. The natural direct effect represents the pathway between the exposure (self-reliance) and outcome (suicidal thoughts), operating through pathways other than the mediator (help-seeking). The natural indirect effect reflects the extent to which the exposure (self-reliance) impacts the outcome (suicidal thoughts) through the mediator (help-seeking) (VanderWeele, 2016).

The natural direct effect compared the effect of being exposed versus unexposed (high self-reliance vs. low self-reliance) on the outcome (suicidal thoughts) while setting the mediator (help-seeking) fixed at the value that would have naturally occurred if unexposed. The natural indirect effect represents the estimated odds ratio in suicidal ideation (or the likelihood of experiencing suicidal ideation) if all individuals were exposed (high self-reliance) but their mediator (help-seeking) value would have if unexposed (low self-reliance). The total effect represents the sum of the natural direct and indirect effects, and it is the effect (assuming adjustment for confounders) of the self-reliance on the suicidal ideation in the absence of help-seeking. Logistic regression models were employed to specify variables and control for potential confounders. Given the evidence regarding the relationship between the broader construct of masculinity and help-seeking (Yousaf, Grunfeld, et al., 2015; Yousaf, Popat, et al., 2015), the exposure-mediator interaction terms were also included in the models, where individuals in the high self-reliance group would have a different help-seeking value than those in the low self-reliance group.

A number of sensitivity analyses was conducted to investigate whether the results remained consistent under different conditions. Specifically, the same causal mediation analysis described above was performed with (1) a different timepoint for the help-seeking mediator (i.e., any help sought after wave 1 survey completion and 15 days prior to wave 2 survey completion) to confirm whether the findings were related to participants seeking help while they were experiencing suicidal ideation or not, as the suicidal ideation measure asked about thoughts of suicide in the past two weeks; (2) the original six levels of self-reliance (ranging from 0 for ‘lowest conformity’ to 6 for ‘highest conformity’) to check whether the decision to dichotomise the exposure variable affected the findings; (3) using a linear regression model with a continuous measure of help-seeking (i.e., the number of times individuals sought help between waves 1 and 2) to explore the possibility of a dose-response effect for help-seeking; and (4) without the exposure-mediator interaction term to check whether there was an interaction between the self-reliance and help-seeking measures, an approach recommended by VanderWeele (2015) on causal mediation studies.

All analyses were conducted in Stata (Version 18.0), with the ‘mediate’ package for causal mediation analysis (StataCorp, 2023).

6.4 Results

6.4.1 Descriptive characteristics

Table 6-1 shows the eligible sample characteristics by self-reliance group at wave 1. Compared with men in the low self-reliance group, a greater proportion of men in the high self-reliance group reported lifetime suicidal thoughts or attempts; were younger; lived in areas of greatest disadvantage; were never married or were widowed, divorced or separated; were unemployed; had stressful life events in past 12 months; were Aboriginal or Torres Strait Islander; were born in Australia; were treated for depression in the past year; and had harmful or hazardous alcohol use. Men in the low self-reliance group had higher levels of social support than men in the high self-reliance group.

Table 6-1 Participant characteristics at wave 1 among men who (i) completed both waves 1 and 2 surveys, (ii) had Medicare Benefits Schedule data between waves 1 and 2, and (iii) had complete data on the exposure and outcome variables

	All, N = 6,971 (100%)		Low self-reliance, n = 3,914 (55%)		High self-reliance, n = 3,143 (45%)		Standardised difference[a]
	n	%	n	%	n	%	%
Lifetime suicidal thoughts or attempts							
No	5,559	79.7	3,274	84.7	2,285	73.5	-27.22
Yes	1,378	19.8	579	15.0	799	25.7	27.22
Missing	34	0.5	11	0.3	23	0.7	
Age (years)							
18-34	2,267	32.5	1,215	31.4	1,052	33.9	5.15
35-55	4,704	67.5	2,649	68.6	2,055	66.1	-5.15
Region of residence							
Major cities	4,168	59.8	2,344	60.7	1,824	58.7	-3.99
Inner regional	1,581	22.7	880	22.8	701	22.6	-0.51
Outer regional	1,222	17.5	640	16.6	582	18.7	5.69
Socioeconomic status							
Quintile 1 (greatest disadvantage)	1,207	17.3	599	15.5	608	19.6	10.71
Quintile 2	1,317	18.9	714	18.5	603	19.4	2.37
Quintile 3	1,575	22.6	884	22.9	691	22.2	-1.53
Quintile 4	1,461	21.0	820	21.2	641	20.6	-1.45
Quintile 5 (least disadvantage)	1,411	20.2	847	21.9	564	18.2	-9.42
Marital status							
Never married/widowed/separated[b]	2,066	29.6	1,031	26.7	1,035	33.3	14.71
Married/de facto	4,854	69.6	2,808	72.7	2,046	65.9	-14.71
Missing	51	0.7	25	0.6	26	0.8	
Employment status							
Unemployed	462	6.6	211	5.5	251	8.1	10.51
Employed/not looking for work	6,480	93.0	3,640	94.2	2,840	91.4	-10.51
Missing	29	0.4	13	0.3	16	0.5	
Stressful life events[c]							
No life events in past 12 months	4,188	60.1	2,499	64.7	1,689	54.4	-20.98
Any life events in past 12 months	2,707	38.8	1,329	34.4	1,378	44.4	20.98
Missing	76	1.1	36	0.9	40	1.3	
Indigenous Australian identity							

	All, N = 6,971 (100%)		Low self-reliance, n = 3,914 (55%)		High self-reliance, n = 3,143 (45%)		Standardised difference[a]
	n	%	n	%	n	%	%
Non-Indigenous	6,809	97.7	3,788	98.0	3,021	97.2	-4.74
Aboriginal or Torres Strait Islander	130	1.9	61	1.6	69	2.2	4.74
Missing	32	0.5	15	0.4	17	0.5	
Country of birth							
Overseas	1,478	21.2	882	22.8	596	19.2	-8.98
Australia	5,476	78.6	2,972	76.9	2,504	80.6	8.98
Missing	17	0.2	10	0.3	7	0.2	
Depression							
Not treated in past 12 months	5,897	84.6	3,377	87.4	2,520	81.1	-17.90
Treated in past 12 months	983	14.1	438	11.3	545	17.5	17.90
Missing	91	1.3	49	1.3	42	1.4	
Alcohol use							
Not harmful/hazardous	4,232	60.7	2,464	63.8	1,768	56.9	-14. 56
Harmful/hazardous	2,269	32.5	1,150	29.8	1,119	36.0	14.56
Missing	470	6.7	250	6.5	220	7.1	
Social support[d] (mean, SD)	70	26.1	75	23.8	64	27.6	-41.67
Missing	128	1.8	59	1.5	69	2.2	

[a]For binary or categorical confounders, the standardised difference is the difference of proportions, which is the average of the combined variance, divided by the pooled standard deviation. For continuous confounders, the standardised difference is the difference of means, divided by the pooled standard deviation.
[b]Separated or divorced.
[c]Refers to the following life events: serious personal injury, illness or surgery; break-up of a serious relationship, divorce, or separation; serious conflict with a family member; difficulty finding a job; major loss or damage to personal property; and legal troubles or involvement in a court case.
[d]Per 1 unit increase on the Medical Outcomes Survey Social Support Survey.

Table 6-2 shows the distribution of the mediator (help-seeking) between waves 1 and 2 and suicidal thoughts (outcome) in wave 2 by the self-reliance (exposure) group. The number of individuals who sought help between waves 1 and 2 was higher in the high self-reliance group (n = 391, 13%) compared with the low self-reliance group (n = 362, 9%). The proportion of participants with suicidal thoughts at wave 2 was higher for men in the high self-reliance group (n = 461, 15%) compared with men in the low self-reliance group (n = 275, 7%).

Table 6-2 Distribution of mediator (help-seeking) and outcome (suicidal thoughts) by exposure (self-reliance) group among men who (i) completed both wave 1 and wave 2 surveys, (ii) had Medicare Benefits Schedule data between waves 1 and 2 survey completion, and (iii) complete data on the self-reliance (exposure) and suicidal thoughts (outcome) variables

	All, N = 6,971 (100%)		Low self-reliance, n = 3,864 (55%)		High self-reliance, n = 3,107 (45%)		Standardised difference[a]
	n	%	n	%	%	%	%
Help-seeking between waves 1 and 2							
No help	753	10.8	3,502	90.6	2,716	87.4	-10.30
Any help			362	9.4	391	12.6	10.30
Suicidal thoughts at wave 2	6,235	89.4					
No	736	10.6	3,589	92.9	2,646	85.2	-24.89
Yes	753	10.8	275	7.1	461	14.8	24.89

[a]The standardised difference for categorical variables is the difference of proportions, which is the average of the combined variance, divided by the pooled standard deviation.

6.4.2 Causal mediation analysis

Table 6-3 shows that being in the high self-reliance group at wave 1 was associated with 46% higher odds of reporting suicidal thoughts at wave 2 (OR = 1.46, 95% CI 1.24–1.72).

However, there was no significant indirect effect of help-seeking on the relationship between self-reliance and suicidal thoughts (OR = 1.00, 95% CI 0.99-1.01).

Table 6-3 Estimates of the direct and indirect effects mediated through help-seeking for the association between self-reliance on suicidal thoughts among men, complete cases[a] (n = 6,230)

	OR	95% CI
Natural indirect effect	1.00	0.99, 1.01
Natural direct effect	1.46	1.24, 1.72
Total effect	1.46	1.24, 1.72

[a]Complete cases for all variables in the models, including confounders.

6.4.3 Sensitivity analysis

Sensitivity analysis of variable coding factors confirmed that the results were not related to participants seeking or not help in the two weeks prior to experiencing suicidal thoughts at wave 2; there was still no mediating effect of help-seeking in the relationship between self-reliance and suicidal thoughts at wave 2 (see Appendix C). Dichotomising the self-reliance scores did not affect the results; there was no significant mediating effect of help-seeking using the original six-level scores of self-reliance (see Appendix C). There was no mediating effect in the relationship between self-reliance and suicidal thoughts even when we considered a dose-response effect for help-seeking (see Appendix C). Finally, no difference was observed between the causal mediation estimates with versus without the interaction term between exposure and mediator (see Appendix C), suggesting that self-reliant men were not less likely to seek help than non-self-reliant men in this study.

6.5 Discussion

This study aimed to investigate the relationship between the masculine norm of self-reliance, help-seeking, and suicidal thoughts among Australian men, hypothesising that reduced help-seeking might mediate the relationship between high self-reliance and emergent suicidal thoughts. It was found that even after controlling for potential confounders, highly self-reliant men were at increased odds of experiencing the onset of suicidal thoughts, suggesting that

self-reliance is a factor in the emergence of suicidal thinking among men. This finding aligns with prior research conducted in Australia showing the longitudinal association of self-reliance with suicidal thoughts among young men (King et al., 2020) and cross-sectionally among men (Pirkis et al., 2017; Tyler et al., 2022). However, it was also found that the fact that highly self-reliant men were more likely to experience an episode of suicidal thoughts was not due to their being less likely to seek help. This finding contrasts with Houle et al. (2008) who found that among Canadian men conformity to masculine norms was related to suicidal attempts through help-seeking, perceived social support, and mental state. This discrepancy in findings may be due to design differences between the two studies. For example, the Canadian study used self-reported data on help sought from family and friends in the context of stressful life events, while this study relied on objective data on professional mental health service use to indicate help-seeking behaviour and treated stressful life events as a potential confounder. It is possible that receiving help from professional sources, such as government-funded mental health services, as opposed to non-professional sources like family and friends, may impact health outcomes, including suicidality. This is because there is evidence that help-seeking intentions from professional versus non-professional sources differ with regard to the new onset of suicidal thoughts (Tsindos et al., 2024).

Furthermore, there may be multiple other potential pathways involved in the relationship between self-reliance and suicidal thoughts. For example, emotional control has been suggested as one behavioural mechanism through which highly self-reliant men are more likely to experience suicidal thoughts. A 2024 study conducted in the United States by found that thought suppression mediated the relationship between self-reliance and suicidality among men; however, contrary to their expectations, self-reliance alone did not predict suicidality. The findings from Genuchi (2024) and this study highlight the importance of cross-cultural replications in the field.

Another putative pathway is that men who highly conform to the masculine norm of self-reliance may perceive themselves as burden to others and isolate themselves, which in turn may lead to suicidal thoughts. A recent study conducted with military personnel in the United States found a positive association between self-reliance and two components of the Interpersonal Theory of Suicide that are linked to suicidal desire – thwarted belongingness and perceived burdensomeness (Daruwala et al., 2021). ‘Thwarted belongingness’ is understood as perceptions of being alone or isolated, while ‘perceived burdensomeness’ is

related to feelings of being a burden to others. This framework has been extensively applied in the literature to understand suicide risk, including how suicidal desire and capability for suicide are related. It has been suggested that the most serious form of suicidal desire occurs when both thwarted belongingness and perceived burdensomeness are present (Van Orden et al., 2010).

It is worth noting that the lack of statistical support for the hypothesis that help-seeking might mediate the relationship between self-reliance and suicidal thoughts should be reconsidered for other age groups. There were some suggestions in the data that this relationship might vary by age, so this hypothesis should not be rejected for other age cohorts. It is still to be determined if help-seeking mediates or not the relationship between self-reliance and suicidal thoughts among young men. Clearly, suicidality among men is complex and influenced by a broad range of individual and contextual factors and not a single norm or masculine construct (Hawton & Pirkis, 2017). However, future work should explore the causal relationships between self-reliance and other constructs identified in the literature including emotional control, thwarted belongingness, and perceived burdensomeness in addition to attending to differences in putative causal pathways at different life stages for men.

6.5.1 Limitations

There are methodological considerations to account for when interpreting the results of this study. Although the sample was large, about half of the men who participated in wave 1 were not eligible for inclusion due to not consenting to data linkage or being lost to follow-up at wave 2. Differences between those who were eligible and those who were not may limit the generalisability of our findings. Furthermore, this study relied on men using Better Access as a source of psychological help-seeking, so we do not know if men sought help from other sources not covered by the Better Access initiative, including state-funded services (e.g., mental health inpatient units, emergency departments, and community mental health teams), non-professional help (e.g., family and friends), or other MBS-funded services not part of the Better Access initiative (e.g., visits to private psychiatrists), as the Better Access program only accounts for Australia's primary mental health care (Pirkis, Currier, et al., 2022).

As a measure of suicidal thoughts, a single item from the PHQ-9 that captures, over the past two weeks, both "passive" suicidal thoughts (thinking about being better off dead) and

"active" suicidal thoughts (thoughts of self-harm), commonly used for depression screening, was used. However, when compared to a structured clinical interview, this item has shown high specificity and good sensitivity for screening suicidal thoughts (Uebelacker et al., 2011). It is also noted that PHQ-9 measures suicidal thoughts while the high rates are deaths by suicide among males. Evidence however suggests that both thoughts and attempts are equally predictive risk factors for suicide death, at least in individuals with depression (Li et al., 2022), highlighting the importance of studying risky behaviours to prevent deaths. Another limitation related to PHQ-9 is that it only measured suicidal thoughts proximal to wave 2. Therefore, except for the most recent two weeks prior to wave 2, it is not known whether individuals had experienced suicidal thoughts at any other points between waves 1 and 2.

Furthermore, the causal mediation analysis conducted in this study relies on strong assumptions (VanderWeele, 2016). Natural direct and indirect effects can only be interpreted if four assumptions related to the control of confounders are met: (1) absence of unmeasured exposure-outcome confounding; (2) absence of unmeasured mediator-outcome confounding; (3) absence of unmeasured exposure-mediator confounding; (4) absence of unmeasured mediator-outcome confounding influenced by the exposure. It is likely that not all four assumptions have been met in this study (VanderWeele, 2016). Considering that the outcome measure was self-reported, misclassification bias and residual confounding may be present. Residual confounding from other unmeasured variables is also possible, as these variables could be associated with both the exposure and the outcome despite the inclusion of multiple potential confounders.

6.5.2 Conclusions

This study acknowledges the complexity of suicidal thoughts and behaviours and presents findings that have not been reported previously. It provides further evidence of the association between the self-reliance masculine norm and suicidal thoughts among Australian men. However, help-seeking did not explain this effect, which has implications for suicide prevention interventions targeting men. Further research is needed to explore alternative pathways through which self-reliance predicts suicidal thinking among men. Improving this knowledge will benefit not only men but also our broader society.

6.6 Statements and declarations

6.6.1 Contributions

Simone Scotti Requena: Conceptualisation, Methodology, Formal analysis, Data interpretation, and Writing – original draft. Jane Pirkis: Conceptualisation, Methodology, and Writing – review & editing. Vikas Arya: Conceptualisation, Software, and Writing – review & editing. Angela Nicholas: Conceptualisation, and Writing – review & editing. Dianne Currier: Conceptualisation, Methodology, Supervision, Data interpretation, and Writing – review & editing.

6.6.2 Funding

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6.6.3 Data availability

The data sets used in this study are not publicly available due to data user and confidentiality agreements prohibiting this. The Ten to Men data are available at the Australian Data Archive (doi:10.26193/JDE1TD) with approval of the data custodians, the Australian Institute of Family Studies.

6.6.4 Ethics approval

This study was approved by the Human Research Ethics Committee (HREC No. 2023-27313-43271-3) at the University of Melbourne, Australia, in accordance with the National Health and Medical Research Council's National Statement on Ethical Conduct in Human Research and the Declaration of Helsinki.

6.6.5 Competing interests

The authors declare that they have no conflict of interest.

6.6.6 Acknowledgements

The research on which this paper is based was conducted as part of the Australian Longitudinal Study on Male Health (Ten to Men) by The University of Melbourne. We are grateful to the Australian Government Department of Health for funding and to the boys and men who provided the data. Ten to Men is managed by the Australian Institute of Family Studies. Ten to Men research data is the intellectual property of the Commonwealth. The findings and views expressed in this paper solely belong to the authors and do not necessarily represent those of the Australian Institute of Family Studies or the Australian Government Department of Health. We gratefully acknowledge the contribution of Dr Janine Stubbs and A/Prof Graham Hepworth from the Statistical Consulting Centre at the University of Melbourne for their guidance in reporting the quantitative aspects of this paper.

Chapter 7: Study 3 – An evaluation of the Boys Do Cry suicide prevention media campaign on Twitter: mixed methods approach

Study 3 has been published in the *JMIR Formative Research* in 2023. This chapter presents the text of the published version of the published version, with minor edits. Study 3's findings were also disseminated at the Mental Health PhD Program Conference, 1-2 November 2023, at the University of Melbourne, Australia.

7.1 Abstract

Background

In most countries, men are more likely to die by suicide than women. Adherence to dominant masculine norms, such as being self-reliant, is linked to suicide in men in Western cultures. A suicide prevention media campaign, 'Boys Do Cry', was designed to challenge the 'self-reliance' norm and encourage help-seeking in men. A music video was at the core of the campaign, which was an adapted version of the 'Boys Don't Cry' song from 'The Cure'. There is evidence that suicide prevention media campaigns can encourage help-seeking for mental health difficulties.

Objective

This study aimed to explore the reach, engagement, and themes of discussion prompted by the Boys Do Cry campaign on Twitter.

Methods

Twitter analytics data were used to investigate the reach and engagement of the Boys Do Cry campaign, including analysing the characteristics of tweets posted by the campaign's hosts. Throughout the campaign and immediately after, Twitter data derived from the Twitter Application Programming Interface were also used to analyse the tweeting patterns of users related to the campaign. In addition, the content of Boys Do Cry-related tweets during the campaign period was qualitatively analysed.

Results

During the campaign, Twitter users saw the tweets posted by the hosts of the campaign a total of 140,650 times and engaged with its content a total of 4477 times. The 10 highest-performing tweets by the campaign hosts involved either a video or an image. Among the 10 highest-performing tweets, the first was one that included the campaign's core video; the second was a screenshot of the tweet posted by Robert Smith, the lead singer of The Cure, sharing the Boys Do Cry campaign's video and tagging the campaign's hosts. In addition, the pattern of Twitter activity for the campaign-related tweets was considerably higher during the campaign than in the immediate postcampaign period, with half of the activity occurring during the first week of the campaign when Robert Smith promoted the campaign. Some of the key topics of discussions prompted by the Boys Do Cry campaign on Twitter involved users supporting the campaign; referencing the original song, band, or lead singer; reiterating the campaign's messages; and having emotional responses to the campaign.

Conclusions

This study demonstrates that a brief media campaign such as Boys Do Cry can achieve good reach and engagement and can prompt discussions on Twitter about masculinity and suicide. Such discussions may lead to greater awareness about the importance of seeking help and providing support to those with mental health difficulties. However, this study suggests that longer, more intensive campaigns may be needed in order to amplify and sustain these results.

7.2 Introduction

Suicide is a significant public health issue worldwide, with more than 700,000 people dying by suicide every year (World Health Organization, 2021a). In 2019, the global age-standardised suicide death rate was two times greater for males than females (World Health Organization, 2021a). In Australia, males were three times more likely to die by suicide than females (18.6 vs 5.8 suicide deaths per 100,000 people) in 2020 (Australian Bureau of Statistics, 2021). There are multiple factors contributing to a higher suicide risk among men compared to women. These factors include men's tendency to employ more lethal suicide

methods (Mergl et al., 2015), engage in higher levels of problematic alcohol and drug use (Pompili et al., 2010; Schneider, 2009), express depression symptoms less frequently (Cui & Fiske, 2021; Oliffe et al., 2016), experience lower social connectedness (Milner et al., 2015), and seek emotional support less often (Möller-Leimkühler, 2002, 2003) than women. It is noteworthy that symptoms of depression in men are accompanied by social withdrawal and increased isolation (Rice et al., 2013).

It is also possible that traditional masculinity, the cultural set of norms dictating how men should think and behave (Cleary, 2019; Connell & Messerschmidt, 2005; Levant & Pryor, 2020c), may underline all these factors that make men more vulnerable to suicide. Cleary (2019) suggests that the Western view of masculinity imposes an ideal for men fostering strength and stoicism over the expression of 'soft' emotions (e.g., sadness). Pirkis and colleagues found that self-reliance, a dominant masculine norm in Western countries, was associated with suicidal thinking in a large sample (n=13,884) of Australian men (Pirkis et al., 2017). Similarly, a large evidence synthesis of 78 studies comprising 19,453 individuals found that adherence to certain masculine norms, such as self-reliance, emotional control, power over women, and being a playboy, was strongly associated with risk factors for suicidal thoughts and behaviours (Wong et al., 2017). For this reason, it is crucial to create opportunities for discussions and awareness-building around masculinity and suicide. Media campaigns can contribute by promoting suicide and masculinity-related discussions, such as through social media (Schlichthorst, King, Reifels, et al., 2019; Schlichthorst et al., 2018; Thorn et al., 2020). A systematic review of 20 studies found that suicide prevention media campaigns can improve attitudes toward suicide, including by improving help-seeking; the authors also highlighted the lack of evidence to determine what types of campaign messaging work best in such interventions (Pirkis et al., 2019). A randomised controlled trial of an Australian suicide prevention media campaign focused on challenging adherence to traditional masculine norms found that the campaign influenced conversations about masculinity and suicide on Facebook and Twitter (Schlichthorst, King, Reifels, et al., 2019; Schlichthorst, King, Turnure, et al., 2019; Schlichthorst et al., 2018). However, relatively few other suicide prevention media campaigns, including their follow-on discussions, have been evaluated, particularly ones targeting men (Pirkis et al., 2019; Struszczyk et al., 2019).

In collaboration with an independent film production company (Heiress Films) and an advertising company (The Hallway), and with guidance from several Australian suicide

prevention and men's health community organisations, Boys Do Cry, a suicide prevention media campaign designed to challenge adherence to masculine norms such as self-reliance and encourage help-seeking was developed. At the core of the campaign was a video of a diverse group of Australian men singing an adapted version of the song 'Boys Don't Cry' from the British rock band 'The Cure'. The adapted lyrics relate to the importance of men talking to others and reaching out for help if they are struggling emotionally (for the adapted lyrics, see Boys Do Cry: https://boysdocry.com.au/getcracking#lyrics). The video also included a well-known Australian First Nations artist and rapper, Dallas Woods, singing part of the lyrics in rap.

The Boys Do Cry campaign was publicly released on November 21, 2021, and the video was made available through Twitter, Facebook, Instagram, TikTok, and YouTube. In addition, a website was developed (https://boysdocry.com.au/) which served as a hub of resources for the campaign. The website's home page included a link to the video and pages pointing to practical information about how to reach out for help when struggling emotionally (Get Talking), how to help someone going through a difficult period (Get Listening), and how to get involved in the campaign (Get Cracking). The website also included several links to external support services provided by national nongovernment organisations. Some of these specialised in men's mental health (e.g., MensLine, Mates4Mates, and Brother to Brother), and others were more general (e.g., Lifeline, Suicide Call Back Service, and Beyond Blue). The campaign ran for 19 weeks in two phases. Phase 1 ran from 21 November to 31 December 2021, and encouraged people to watch the video. Phase 2 ran from 1 January to 31 March 2022, and encouraged people to take action by getting help or talking to a friend who is struggling.

The evaluation of the Boys Do Cry campaign included a randomised controlled trial of the effects of the video on help-seeking intentions that was conducted before the campaign was launched (Nicholas et al., 2022). This study reports on an additional component of the evaluation that aimed to explore the reach, engagement, and discussion themes prompted by the Boys Do Cry campaign on Twitter.

The study's aim was addressed through four research questions:

1. What was the reach of the Boys Do Cry campaign, and how did the Twitter users engage with it?
2. What were the highest- and lowest-performing tweets, and how did the Twitter users engage with them?
3. What was the pattern of Twitter activity for campaign-related tweets over the course of the campaign and in the postcampaign period?
4. What were the key themes of discussion on Twitter prompted by the Boys Do Cry campaign?

7.3 Methods

7.3.1 Data collection

To address the research questions, Twitter data from two sources were used: (1) Twitter analytics; and (2) Twitter application programming interface (API). Figure 7-1 shows the time frames for the campaign periods and the research questions covered by each data source.

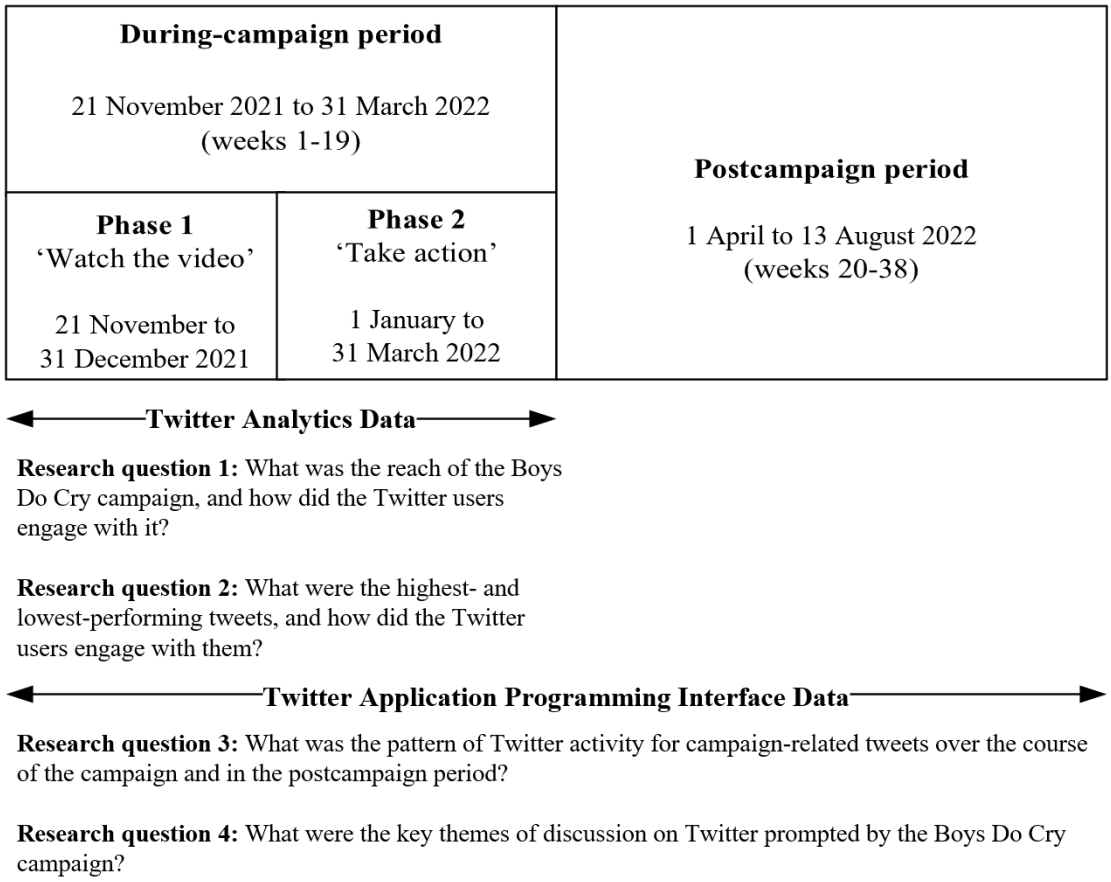

Figure 7-1 Periods of the 19-week Boys Do Cry suicide prevention campaign aimed at promoting help-seeking among Australian men experiencing mental health difficulties (during-campaign period) versus the 19-week period after the campaign (postcampaign) and the research questions covered by each data source.

7.3.1.1 Twitter analytics data

To address research questions 1 and 2, Twitter data were downloaded using the Twitter analytics tool. This tool is available to all Twitter users; it tracks user metrics such as top-performing tweets and mentions, the number of times a tweet is seen on Twitter, and the number of engagements (total number of times users engaged with a tweet). The Twitter analytics tool allows users to freely download their data.

On 21 November 2022, monthly tweet activity metrics were downloaded from the campaign's hosts (@BoysDoCry2021) for the active campaign period (during campaign), which included the two phases of the campaign. The monthly data files were then combined

into one data set. These data allowed the identification and description of the campaign's reach and users' engagement with the campaign. Reach was described as the number of times users saw a tweet posted by @BoysDoCry2021 and engagement as the number of times users interacted with @BoysDoCry2021 tweets (i.e., an aggregated measure for clicks anywhere on @BoysDoCry2021 tweets, including retweets, replies, follows, likes, links, hashtags, embedded media, username, profile photo, or tweet expansion) (Twitter, n.d.). A total of 247 tweets were posted by the @BoysDoCry2021 account during the campaign. Less than one-quarter of the tweets (51 of 247) were @BoysDoCry2021 replies to other users.

7.3.1.2 Twitter Application Programming Interface data

To address research questions 3 and 4, the Twitter API was used. There are several Twitter API streams; the Academic Research Twitter API was used after submitting a project proposal to Twitter. This free-of-charge data collection method is no longer available due to recent changes in Twitter's business model (Barnes, 2023).

On 30 November 2022, Twitter data were collected using the R package 'academictwitteR' (Barrie & Ho, 2021). Tweets containing the terms 'boysdocry' or 'boysdocry2021' were searched for from all Twitter users worldwide. The search period included the 19 weeks of tweet activity while the campaign was active (during campaign) and the 19 weeks after the campaign ended (postcampaign). Unrelated trends that involved the search term 'boysdocry,' such as tweeting 'boysdocry' to promote a song from the Eurovision Song Contest and tweets in languages other than English were excluded. Only variables of interest were stored for the analyses, including tweet ID, tweet text, date and time the tweet was created, type of tweet (original, quoted, and retweet), and reactions to the tweet (e.g., number of likes, retweets, link clicks, and follows).

Figure 7-2 shows the flow diagram for the inclusion and exclusion stages (research questions 3 and 4) using Twitter API data. There were 1900 tweets containing the keywords 'boysdocry' or 'boysdocry2021' throughout the during-campaign period and postcampaign period. A total of 535 tweets were excluded as they were based on unrelated trends (e.g., Boys Do Cry song from the Eurovision contest or from another singer). A further 47 tweets were excluded as they were in languages other than English, leaving 1318 tweets for the quantitative analysis in research question 3 using the Twitter API data. For the qualitative

analysis (research question 4), 903 ‘retweets’ were excluded as they did not include any new text data. However, 86 ‘quotes’, were retained as they are similar to retweets but with new text data added (i.e., the user adds a comment in someone else’s tweet). During the data coding stage, 36 false positives and 142 tweets coming from the campaign hosts (@BoysDoCry2021) were manually excluded. This left 237 tweets for the qualitative analysis.

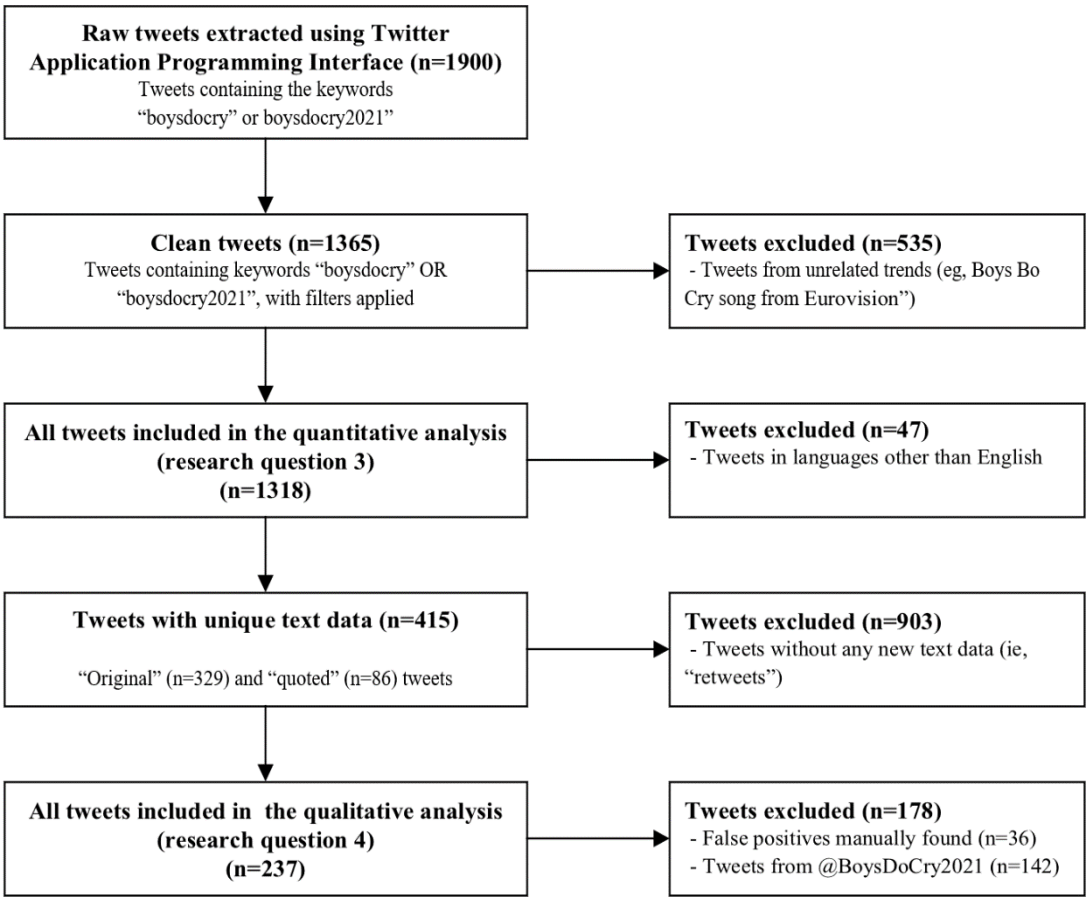

Figure 7-2 Inclusion and exclusion stages for the quantitative analysis (research question 3) and qualitative analysis (research question 4) for the Twitter Application Programming Interface data.

7.3.2 Data analyses

Quantitative analyses were conducted to answer research questions 1 to 3 and qualitative analysis to answer research question 4. For the analyses, R (version 4.2.2) (R Core Team,

2022) (package ‘tidyverse,’ version 1.3.2 (Wickham et al., 2019)) and Excel (Microsoft Corp) were used.

For research questions 1 and 2, Twitter analytics data were used. For research question 1, the frequencies and averages were calculated for reach and engagement with the campaign during the campaign’s active period. For research question 2, tweet performance was described based on engagement with tweets posted by the campaign’s hosts, @BoysDoCry2021. First, all tweets posted by @BoysDoCry2021 were ordered based on the total number of times users reacted to those tweets. Second, the 10 highest- and lowest-performing tweets were checked, and their content types manually coded. Tweet content type was based on their primary visual content, as the interest was in identifying what type of strategy (e.g., attaching a visual component or having a purely text-based tweet) attracted more reactions, so tweets could be either a (1) video, (2) image, or (3) link. For instance, if a tweet involved an image or video and a link, it was coded it as under image or video, so all links were checked to confirm if they involved any visual component. Videos were either embedded in the tweet or links to the campaign’s video (either through YouTube or through the campaign’s homepage). Tweets classified under ‘link’ were therefore purely text-based content. It was noted that the 10 lowest-performing tweets included @BoysDoCry2021 replies or mentions to users without meaningful data (e.g., ‘@username brilliant thread’), so the next lowest-performing tweets with meaningful content were coded in those instances.

For research question 3, the Twitter API data were used to calculate the number of campaign-related tweets per week and their frequencies were plotted by campaign period (during-campaign vs postcampaign). Then the average number of tweets was calculated by campaign period. For research question 4, a subset of the Twitter API data was used to conduct the qualitative analysis. This data subset only included tweets in the English language. Retweets were excluded as they did not have any new text data and had the potential to bias the results. Tweets coming from the campaign’s hosts were also excluded, as the primary goal was to explore the audience discussions prompted by the campaign. Braun and Clarke (2006) methodology for thematic analysis was followed, which allows identification of key themes by allocating codes to text. The thematic analysis of tweets was conducted in six stages: (1) SSR and AN independently read a random sample of 100 tweets and noted down initial ideas for codes representing major presenting themes; (2) they then discussed those initial codes and created a preliminary coding framework; (3) SSR and AN independently recoded the

same sample using the established framework; (4) then they discussed any discrepancies and revised the coding framework; (5) they coded independently the remaining data using the revised framework and discussed further discrepancies until they reached consensus; and (6) they created a thematic map, which included the number of times tweets were coded under each theme.

7.3.3 Ethics approval

This study was approved by the Human Research Ethics Committee at the University of Melbourne (HREC No. 2022-25141-34361-3). All research was conducted in accordance with the National Health and Medical Research Council's National Statement on Ethical Conduct in Human Research and the Declaration of Helsinki.

7.4 Results

7.4.1 Research question 1: What was the reach of the Boys Do Cry campaign and how did the Twitter users engage with it?

The 247 tweets posted by @BoysDoCry2021 were seen a total of 140,650 times by Twitter users during the campaign. Users engaged a total of 4477 times with those 247 tweets. Table 7-1 shows the total reach and engagement by campaign phase. Phase 1 had a considerably greater reach than phase 2; tweets from phase 1 were seen a total of 105,195 times, while tweets from phase 2 were seen a total of 35,455 times. Similarly, users engaged with @BoysDoCry2021 phase 1 tweets more frequently (a total of 3412 times) than tweets from phase 2 (a total of 1065 times).

Table 7-1 Summary statistics for reach and engagement with tweets posted by @BoysDoCry2021 during-campaign period by campaign phase

	Phase 1[a] (n=116 tweets)	Phase 2[b] (n=131 tweets)	Total (N=247 tweets)
Reach[c]			
Users, n (%)	105,195 (74.8)	35,455 (25.2)	140,650 (100)
Median (IQR)	196 (101-433.2)	133 (82.5-302.5)	159 (86-373)
Minimum-maximum	8-27,529	9-2403	8-27529
Engagement[d]			
Users, n (%)	3412 (76.2)	1065 (23.8)	4,477 (100)
Median (IQR)	7 (3-13.5)	5 (2-11)	6 (2-12)
Minimum-maximum	0-748	0-53	0-748

[a]Phase 1: 'Watch the video' phase was from 21 November to 31 December 2021.

[b]Phase 2: 'Take action' phase was from 1 January to 31 March 2022.

[c]Number of times Twitter users saw @BoysDoCry2021 tweets.

[d]Number of times Twitter users reacted to @BoysDoCry2021 tweets.

7.4.2 Research question 2: What were the highest- and lowest-performing tweets and how did the Twitter users engage with them?

A total of 9 out of 10 of the highest-performing tweets were from phase 1, while 7 out of 10 of the lowest-performing tweets were from phase 2. Table 7-2 shows the type of engagement with the 10 highest- and lowest-performing campaign tweets (in descending order of engagement) by content type. All the 10 highest-performing tweets included some visual content, either a video (5/10, 50%) or an image (5/10, 50%). Likewise, the 10 highest-performing tweets involved sharing the campaign's video or an image or screenshot promoting the campaign video. Among the 10 highest-performing tweets, the highest-performing tweet was the first tweet posted by @BoysDoCry2021, and it included the campaign's core video embedded in the tweet.

> *Each day in Australia, an average of 7 men take their own lives. Together we can change the stats. Introducing a new mental health campaign #BoysDoCry which aims to encourage men to get talking when they are struggling with their #MentalHealth. https://t.co/9AVe8TYKaM* (with 748 engagements)

The second highest-performing tweet was a screenshot of the tweet posted by Robert Smith, the lead singer of The Cure, who wrote and performed the original song, shared the campaign's video on YouTube and tagged the campaign account (i.e., @BoysDoCry2021).

> *Huge 🤘 to @RobertSmith from @TheCure for sharing our adaptation of his song, and for supporting #mensmentalhealth! Watch the music video now: https://t.co/HOEkCBcfKU #BoysDoCry2021 #RobertSmith #TheCure #GetTalking #MentalHealthMatters https://t.co/Hu2Y8xZkw7* (with 641 engagements)

The 10 lowest-performing tweets shared either a link (7/10, 70%) or an image (3/10, 30%). A total of 9 out of 10 of the 10 lowest-performing tweets involved sharing information related to masculinity, help-seeking resources, or broad resources such as articles and interviews. Examples of tweets posted by @BoysDoCry2021 with the lowest engagement are:

> *'When society creates an impossible standard of #masculinity to maintain, nobody wins.' Interesting #newstudy published in Social Psychological and Personality Science @SPSPnews <link> #Relationships #Sociology* (with 1 engagement)

> *If you need support @LifelineAust have a 24/7 telephone counselling and crisis support line that's free to call on 13 11 14. You can also visit our website for a list of organisations that can help on our website: https://t.co/CuKsKcOUD5* (no engagements)

Table 7-2 Types of engagement with the 10 highest and lowest performing tweets by content type

	Highest-performing tweets			Lowest-performing tweets		
	Video[a]	Image[b]	Total	Link[c]	Image[b]	Total
Frequency, n (%)	5 (50)	5 (50)	10 (100)	7 (70)	3 (30)	10 (100)
Sum of all engagements[d], n	1383	1093	2476	4	0	4
Sum of detail expands[e]	395	180	575	0	0	0
Sum of likes	237	216	453	3	0	3
Sum of media engagements[f]	182	266	448	0	0	0
Sum of URL clicks	224	136	360	1	0	1
Sum of profile visits	158	182	340	0	0	0
Sum of retweets	163	65	228	0	0	0
Sum of hashtag clicks	15	46	61	0	0	0
Sum of replies	5	2	7	0	0	0
Sum of new followers[g]	3	0	3	0	0	0
Sum of app opens[h]	1	0	1	0	0	0

[a]Embedded video or external link to video.

[b]Picture or screenshot.

[c]URL to external source that is not a video.

[d]Total number of times users have engaged with @BoysDoCry2021 tweets. 'Engagement' refers to clicking anywhere on a tweet, including detail expands, likes, profile visits, retweets, hashtags, replies, new follows, app opens, and media engagements. See Twitter for further details.

[e]Clicking or expanding a tweet's details.

[f]Engaging with a media-based tweet.

[g]New followers acquired based on a tweet.

[h]Clicking or opening external applications through a tweet.

7.4.3 Research question 3: What was the pattern of Twitter activity for campaign-related tweets over the course of the campaign and in the postcampaign period?

In total, 1237 out of 1318 (93.9%) tweets were related to the Boys Do Cry campaign on Twitter in the during-campaign 19-week period (excluding campaign-generated tweets),

while there were 81 out of 1318 (6.1%) campaign-related tweets in the postcampaign 19-week period. The summary statistics of weekly tweet counts by campaign period are shown in Table 7-3. The average number of weekly tweets during the campaign was 24 (IQR 15.5-36), while the average number of weekly tweets for the postcampaign period was 2 (IQR 1.5-5). Appendix D shows the campaign-related Twitter activity per week and by period (during-campaign and postcampaign). About half of the campaign-related tweets (n=608) were posted during week 1 of the campaign. The next highest campaign-related Twitter activities were during weeks 2 and 3, with over 130 tweets per week. During the campaign, three-quarters of all tweets were posted from weeks 1 to 4. Postcampaign, there were fewer than 10 campaign-related tweets in most weeks, except for weeks 25 and 26, which had 15 tweets each.

Table 7-3 Summary statistics of weekly tweet counts by campaign period[a]

	During-campaign period	**Postcampaign period**
Frequency, n (%)	1237 (93.9)	81 (6.1)
Median (IQR)	24 (15.5-36)	2 (1.5-5)
Minimum-Maximum	5-608	0-15

[a]Twitter Application Programming Interface data.

7.4.4 Research question 4: What were the key themes of discussion on twitter prompted by the Boys Do Cry campaign?

Table 7-4 shows the 11 key themes that were constructed from the thematic analysis of the 237 unique campaign-related tweets. More than 90% of the qualitative coding fell under five themes. The 237 campaign-related unique tweets were a subset of the Twitter Application Programming Interface data; it only included tweets in the English language and with new text data (i.e., not retweets); see Figure 7-2 for further details.

The most common theme was ‘campaign support’ (235/534, 44.0%). This theme was about showing support for the Boys Do Cry campaign by sharing its video or the link to its website or mentioning the campaign handle (@BoysDoCry2021). Examples of tweets for campaign support are:

@BoysDoCry2021 We are more than happy to support such an amazing campaign 👏 keep up the great work!

Such a powerful important message… to all my male #firefighter and #firstresponder colleagues and friends. This could save your life #SuicidePrevention #FRNSW https://t.co/ldHg9YQX4x

The second most frequent theme was ‘reference to original song/band/lead singer’ (81/534, 15.2%). This theme included tweets that cited the original song, band or its lead singer. Examples of tweets coded under the reference to original song/band/lead singer theme are:

@RobertSmith @BoysDoCry2021 It's no surprise, but always a pleasure, to see you and The Cure supporting a strong cause ❤ (but allow me to miss you and the guys so much)

@RobertSmith @username @BoysDoCry2021 Beautiful, I’ve always thought this is the emotion from where you wrote this song.

‘Reiterate the message’ was the third most common theme (67/534, 12.5%). This theme was related to tweets that incorporated core messages from the campaign around men reaching out for help when struggling and challenging traditional masculine ideas. Examples of tweets for reiterate the message are:

#boysdocry
when the going gets tough, get talking
Love this <link>

Sometimes old messages need replacing - this is one of those times. @BoysDoCry #MentalHealth https://t.co/WIJak25tSi

The fourth most frequent theme was ‘emotional response’ (65/534, 12.2%). This theme involved tweets referencing emotional reactions in response to the campaign. Examples of tweets coded under this theme are:

Our men are broken. I know a lot over 40 that I worry about their mental health going forward. Hopefully hearing from other men to talk about their innermost feelings will help someone out there!

It feels awesome to have a big cry! Not a weakness but a strength https://t.co/fTNNqQwS7C @RobertSmith @BoysDoCry2021 Heartwarming ❤️❤️

The fifth most common theme was 'mental health-related hashtags' (45/534, 8.4%). The mental health-related hashtags theme included tweets with hashtags such as #suicide, #mentalhealth, and #mensmentalhealth. Examples of tweets coded under this theme are:

Absolutely spot on. Gents, it's OK not to be OK, and men DO cry. We lose far too many of you to suicide and we need to break the stigma NOW. #boysdocry #SuicidePrevention #MentalHealthMatters <link>

I'm listening
#BreakTheBias #Mentalhealth #boysdocry <link>

Table 7-4 Thematic analysis of 237 campaign-related unique tweets

Theme[a]	Description	Frequency, n (%)
Campaign support	Tweets showing support to the campaign, sharing the campaign video, or mentioning the campaign handle (@BoysDoCry2021).	235 (44)
Reference to original song/band/lead singer	Tweets mentioning the original song (Boys Don't Cry), band (The Cure), or its lead singer (Robert Smith).	81 (15.2)
Reiterate the message	Tweets restating the campaign message, not just sharing the video or campaign link, or mentioning the campaign handle; also, tweets challenging traditional masculine ideas.	67 (12.5)
Emotional response	Tweets capturing emotional responses to the campaign or video, including using emotion-related	65 (12.2)

Theme[a]	Description	Frequency, n (%)
	emojis (💔 or 🙏) in the tweet and textual emotional reactions (e.g., wow, beautiful).	
Mental health-related hashtags	Tweets containing mental health-related hashtags (e.g., #suicide, #suicideprevention, #mentalhealth, #mensmentalhealth).	45 (8.4)
Personal story	Tweets capturing someone sharing a personal story about themselves or someone close to them.	14 (2.6)
Support to others	Tweets showing support to other users.	10 (1.9)
Help-seeking resource	Tweets providing information or resource to help-seeking or encouraging the use of this resource.	7 (1.3)
Proud participant	Tweets about a proud participant involved in the campaign.	5 (0.9)
Negative to the campaign	Tweets criticising or saying something negative about the campaign.	3 (0.6)
Seeking help	Someone asking for help.	2 (0.4)

[a]Tweets could be coded under more than one theme.

7.5 Discussion

7.5.1 Overview

This study is part of a larger evaluation of the Boys Do Cry campaign. In this study, the campaign's reach, engagement, and themes of discussion prompted by the Boys Do Cry campaign on Twitter were explored. In assessing the content of conversations elicited by this campaign, new insights regarding the critical elements for crafting future suicide prevention media campaigns targeting boys and men were provided.

This study shows that the Boys Do Cry campaign reached a large number of Twitter users, prompting them to engage with its content. The most effective aspect for eliciting engagement was the addition of visual content in the campaign's tweets. Evidence suggests that including visual content is an important strategy in public health communication because

images have the potential to increase people's attention to key health messages, especially when there is an emotional response to them (Houts et al., 2006). Notably, the level of response to the campaign on Twitter was similar to the reach and engagement indicators observed in the campaign's website analytics, suggesting that Twitter is a useful platform for hosting awareness and behaviour change campaigns of this type.

Most public campaign-related Twitter activity occurred during the first week of the Boys Do Cry campaign, when an international celebrity – Robert Smith from The Cure – tweeted about the campaign. However, it is also likely that many campaign followers were more interested in the campaign when it was new. This may be a characteristic of this type of health promotion campaign; for example, another study monitoring suicide and depression discussions on Twitter over time (176 million tweets) found that Twitter activity faded quite rapidly following expected events, such as mental health campaigns, compared to unexpected events, such as a celebrity death by suicide (McClellan et al., 2017).

This study also examined the key discussion themes prompted by the Boys Do Cry campaign. Key among these themes was that people supported the campaign and reinforced its messages. This finding may reflect a desire to challenge masculine norms, such as the notion that boys and men should not cry and should keep their emotions in check, even in difficult times. Evidence suggests that the masculine norm of self-reliance is associated with suicidal thinking in men (Pirkis et al., 2017) and thus may be a target for interventions to reduce suicidal thinking and acts. Another major topic of discussion prompted by the campaign was related to the original song by The Cure, Boys Don't Cry. It is possible that a well-known song by a famous band with a prominent lead singer may have assisted in promoting the campaign's message. There are suggestions from elsewhere that celebrities may play an important role in the delivery of messages in public health media campaigns (Brown & Matviuk, 2010; Moskowitz et al., 1997).

These findings are in part similar to those from a Twitter evaluation of another suicide prevention media campaign focused on challenging traditional masculinity, called 'Man Up' (Schlichthorst et al., 2018). It is noted that the core component of the Man Up campaign was a three-part documentary that included nearly three hours of content, while the Boys Do Cry campaign had a four-minute music video at its centre. Despite this difference, this study shows that the Boys Do Cry campaign did promote discussions on the importance of shifting

old views related to traditional masculine norms in the same way reported for Man Up. Examples of tweets with this sentiment related to the Boys Do Cry campaign included: ‘Sometimes old messages need replacing - this is one of those times’; ‘when the going gets tough, get talking’. Perhaps because of its longer format and opportunity to explore more issues, the Man Up campaign elicited a broader range of themes and additional discussion around masculine norms (e.g., what it means to be a man, father, or raise boys (Schlichthorst et al., 2018)) compared to the Boys Do Cry campaign.

7.5.2 Limitations and strengths

This study had some limitations. The search query for the Twitter API only searched for the string ‘boysdocry’ (i.e., ‘boysdocry’ or ‘boysdocry2021’), so it is possible that it did not collect tweets that used the term ‘boys do cry’ with spaces. However, the pilot searches revealed that the inclusion of spaces in the query would return more false positives than could feasibly be managed manually, so spaced terms were not included. Another limitation is the potential bias in this study sample based on the demographics of Twitter users, as there are documented differences on social media preferences by age group (Pew Research Center, 2023). This study also had some strengths. This is one of the few studies to evaluate a suicide prevention media campaign targeted at men using Twitter data (Pirkis et al., 2019; Schlichthorst et al., 2018). Finally, a rigorous method of data collection was used – the Twitter API – to conduct this study and understand the key topics of discussion prompted by the Boys Do Cry campaign.

7.5.3 Conclusions

Social media platforms offer another avenue through which to engage with boys and men on the topic of masculinity and suicide. This study demonstrates that a brief media campaign such as Boys Do Cry can achieve good reach and engagement and can prompt discussions on Twitter around the issue, which may lead to greater awareness about the importance of seeking help and providing support. However, this study suggests that longer, more intensive campaigns may be needed in order to amplify and sustain these results.

7.6 Acknowledgements

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7.7 Data availability

The data collected and analysed during this study are available from the corresponding author on reasonable request.

7.8 Authors’ contributions

SSR, JP, and AN conceptualised and designed the study. JP, SL, JT, JC, and AN designed the multimedia campaign. SL wrote the lyrics used in the video, which are core to the Boys Do Cry campaign. DC provided guidance on study design, including ethical issues. JP secured funding for the Buoy Project, within which the Boys Do Cry project sits. JT collected the data across media. SSR extracted and analysed the data under the supervision of MC and AN. SSR drafted the manuscript. AN read and edited the first draft of the manuscript, and all authors commented on subsequent drafts. All authors read and approved the final manuscript.

7.9 Conflicts of Interest

None declared.

Chapter 8: Discussion

This chapter synthesises the findings from the three studies presented in Chapters 5, 6, and 7. It then considers these findings with respect to previous research and two contemporary models of suicidal thoughts and behaviours, as described in Chapter 3. The chapter also discusses the implications of these findings for suicide prevention policy and practice and suggests future research directions.

8.1 Summary of findings

The key findings from the three studies can best be summarised by referring to the specific research objectives presented in Chapter 1.

8.1.1 Describing the emergence and trajectory of the field of masculinity and suicide research

Study 1 addressed the research objective to describe the emergence and trajectory of the field of masculinity and suicide research. Gathering data from eight electronic academic databases, Study 1 mapped the origins and evolution of the field of masculinity and suicide research. The findings showed that although the concept of masculinity was referenced in suicide literature as early as 1954, it was not until recent years that the field experienced a major growth in the number of articles published. Over half of the articles were published in the last five years (2017-2021). Early research focused on suicide as an inherently masculine act and mainly linked suicide to mental illness (Edelheit, 1954; Rubenstein et al., 1958; Stone, 1960). In contrast, contemporary research shifted the focus towards exploring social and cultural determinants of health, such as how certain traditional masculine norms impact help-seeking attitudes or behaviours for suicidal thoughts and behaviours (King et al., 2018; King et al., 2019; Ross et al., 2019).

Therefore, although early on the field it was quite narrow and somewhat “blunt” in its focus, over time it has expanded and has become much more nuanced. The increased interest in masculinity and suicide may relate to the fact that many countries are grappling with the fact

that suicides by men outnumber those by women by a factor of 3:1 (World Health Organization, 2021a).

Study 1's findings suggest that emerging subfields are starting to develop within masculinity and suicide research. Potential subfields included studies related to social and cultural elements of masculinity, the role of self-reliance and other traditional masculine norms in suicidality, major individual risk factors like substance abuse and male depression, tailored mental health treatments, and masculinity and suicidality among young people. However, the field's structure, content, and direction are still evolving, and more time is needed to gain a clearer picture of this field's full development and structure.

8.1.2 Investigating a potential behavioural mechanism through which the masculine norm of self-reliance and suicidal thoughts might be related in men

Study 2 addressed the research objective to investigate a potential behavioural mechanism through which the masculine norm of self-reliance and suicidal thoughts might be related in men. It drew on data from the first two waves of the Australian Longitudinal Study on Male Health and administrative data from the Medicare Benefits Schedule to explore the relationship between help-seeking, self-reliance, and suicidal thoughts. The hypothesis was that professional help-seeking mediated the relationship between self-reliance and suicidal thoughts. Findings showed that highly self-reliant men were 1.46 times more likely to experience suicidal thoughts than men in the low self-reliance group (OR = 1.46, 95% CI 1.24-1.72). However, contrary to expectations, help-seeking did not mediate the relationship between self-reliance and suicidal thinking (OR = 1.00, 95% CI 0.99-1.01). Other factors related to psychological processes may be in the causal pathway of the relationship between self-reliance and suicidal thoughts, such as those related to emotional control. For instance, a 2024 study conducted in the United States found that thought suppression mediated the relationship between self-reliance and suicidality among men (Genuchi, 2024). Another study from the United States showed that self-reliance was associated with thwarted belongingness and perceived burdensomeness, psychological processes that, according to the Interpersonal Theory of Suicide, lead to suicidal desire/thoughts (Joiner, 2005; Van Orden et al., 2010).

8.1.3 Evaluating a suicide prevention intervention designed for men with a focus on masculinity

Using data from Twitter, Study 3 addressed the research objective to evaluate a suicide prevention intervention designed for men with a focus on masculinity – the 'Boys Do Cry' suicide prevention media campaign. Study 2 showed that the campaign reached 140,650 Twitter users and gained 4,477 interactions (or engagements) with its content, demonstrating significant public resonance with this campaign on Twitter. The inclusion of visual content, such as images, in the campaign's tweets, to promote its core messages, was particularly effective in prompting engagement from the public.

The thematic analysis revealed that the major topics of discussion prompted by the Boys Do Cry campaign included support for the campaign, reinforcing its core messages (e.g., 'When the going gets though, get talking'), and references to The Cure, as the Boys Do Cry lyrics were based on their song 'Boys Don't Cry'. Findings also suggested that Robert Smith's tweet showing support for the campaign helped to promote the campaign's core messages around the idea that it is acceptable (and important) for men to seek help when in distress and to support other mates, suggesting that the Boys Do Cry campaign sparked meaningful conversations around masculinity and suicide on this social media platform.

8.1.4 Summary of collective findings

To summarise, Study 1 described the trajectory of masculinity and suicide research over time, indicating that the field has expanded significantly in recent years. Building on these findings, Study 2 was designed to investigate a specific mechanism through which masculinity may operate in the context of suicide, thereby contributing further to the field by exploring a possible explanation for the link between masculinity and suicide. Although Study 2 did not provide statistical evidence that professional help-seeking mediated the relationship between masculinity and suicidal thoughts, this does not negate the idea that reaching out to partners, friends, and family may still be a helpful strategy in preventing suicide. Adherence to masculine norms like self-reliance may lead men who are struggling to bottle up their feelings, whereas talking about their problems may be protective against suicidal thinking. A number of media-based suicide prevention campaigns have taken the approach of encouraging men to speak up if they are going through tough times (e.g., Man

Up, Man Therapy, and Movember) in order to address this problem. Study 3 evaluated one example of such campaigns.

8.2 Strengths and limitations of the research

8.2.1 Strengths

This PhD work has several strengths. One overarching strength is that each study builds on the findings of the previous one. Study 1 identified the masculine norm of self-reliance as consistently appearing in the literature as a key risk factor for suicide. However, the mechanisms underlying this relationship was not well explored in the literature. Study 2 addressed this gap, and Study 3 then evolved from Study 2's findings by empirically evaluating a suicide prevention approach that targeted the self-reliance masculine norm.

Another strength of this research program is that each study used different, but complementary, research methods and data sources. Data sources and research methods were carefully selected to ensure they were the most appropriate sources and methods available. In addition, the use of a combination of quantitative and qualitative methods (i.e., mixed methods) enabled the studies to answer a set of different but complementary research questions. This approach also supported methodological and data triangulation across studies to provide a deeper understanding of the issue as well as to reveal further information that would not have come to light if only one methodology was used (Heale & Forbes, 2013; Thurmond, 2001). Therefore, the triangulation of data sources and methodologies has not only strengthened the overall validity of findings, but also provided a more comprehensive understanding of the field.

Each individual study also has unique strengths. A key strength of Study 1 was the number of electronic databases used, with eight quality-controlled academic databases providing a comprehensive view of relevant information across disciplines, acknowledging masculinity and suicide as a cross-disciplinary field. Another strength was the use of rigorous systematic review methods to select relevant literature (e.g., developing a thorough search strategy). Additionally, employing software to extract terms from the titles and abstracts of all publications enabled a more reproducible framework for future studies.

A unique strength of Study 2 was the use of administrative data from the Australian government's Medicare Benefits Schedule as an objective measure of professional help-seeking behaviour for the mediator variable. Administrative data provide a more reliable behavioural measure than self-reported data, avoiding recall bias and allowing for the observation of behaviour over time (Webb et al., 2019). Another strength of this study was the use of two waves of data, enabling the establishment of temporal order among variables and facilitating the investigation of a potential causal relationship by ensuring that exposure measurement preceded outcome measurement.

In Study 3, a unique strength was the double-coding of qualitative data. Having two independent researchers code the same dataset ensured consistency, reliability, and validity of the qualitative analysis, a key strategy in qualitive research (Armstrong et al., 1997; Mays & Pope, 2000). Another strength was the use of a rigorous data collection method via the Twitter Application Programming Interface. Moreover, Study 3 stands out as one of the few high-quality empirical evaluations of a suicide prevention campaign on social media, as highlighted in a recently published evidence synthesis (Draganidis et al., 2024).

8.2.2 Limitations

There are some limitations common to all three studies, and others that were specific to each individual study. For instance, all three studies relied on existing data sources. Thus, some bias may have been introduced as not all available information might have been captured in the existing data sources. Nevertheless, the absence of evidence does not guarantee that the 'factor' missed contributes to suicidal thoughts or behaviours, and such limitation is inherent to any research relying on existing data. In addition, two of the studies (Study 1 and Study 2) were conducted within the Australian context only. As masculinity is culturally dependent, this limits the cultural generalisability of these studies findings. It is noteworthy that this is one of the main challenges of working with masculinities (Levant & Pryor, 2020a).

There were also some specific limitations to each study. For example, Study 1 relied on published journal articles, excluding unpublished work, dissertations, books, and grey literature. Although this approach helped to keep only quality-controlled material, the synthesis of evidence presented may not represent the full spectrum of work conducted on

masculinity and suicide over the years. Another limitation from the first study is that it only included articles in English, which come predominantly from Western countries. This approach may have neglected important research conducted in languages other than English, limiting the generalisability of the findings to other languages. However, it is possible that there is limited publishing in other languages as evidence shows that most of the suicide research, regrettably, sits in the West (Cai et al., 2020).

There were some specific limitations to Study 2. For example, the focus on suicidal thoughts as an outcome measure limits the finding's generalisability to the full spectrum of suicidal behaviours. It is acknowledged by contemporary models of suicidal thoughts and behaviours that factors influencing the progression from suicidal thoughts to suicidal behaviours are not the same from those associated with the onset of suicidal thoughts alone (Joiner, 2005; O'Connor, 2011; O'Connor & Kirtley, 2018; Van Orden et al., 2010). Another limitation of this study involved focusing on help-seeking behaviour from professional sources using Medicare administrative data. For this reason, it is possible that Study 2 did not capture the full extent of men's help-seeking behaviours, such as self-help strategies or help sought from non-professionals, such as friends, partners, and religious leaders. Although this may have led to an underestimation of help-seeking behaviour more generally, the rationale for focusing on professional help-seeking instead of informal behaviours was due to the fact that Australian men are more reluctant to seek help from professional sources compared to women (Australian Bureau of Statistics, 2023b).

Another specific limitation of Study 2 was related to the self-reported measures for the exposure (self-reliance) and the outcome (suicidal thoughts) variables, which may have been subject to either social desirability bias or underreporting due to suicide-related or mental-health related stigma (McKenzie et al., 2018; Van de Mortel, 2008), a common issue with self-report data. For example, participants might over-report self-reliance if it is viewed as a socially desirable trait, aiming to present themselves in a favourable light. Conversely, they might under-report suicidal thoughts due to stigma. This combination of over-reporting self-reliance and under-reporting suicidal thoughts could distort the observed association between the two variables, potentially leading to an underestimation or overestimation of the actual effects in the study. Additionally, the study's sample consisted of men only, potentially limiting the generalisability of the findings to other populations such as boys, adolescents, and non-binary individuals assigned male or female at birth. It is possible that the relationship

between masculinity and mental health outcomes may be different in these populations; see Cooper et al. (2023) for one example. Finally, the study used only the first two waves of data and therefore it did not capture longer effects; however, using just two waves of data still allowed temporal ordering of the measures, where exposure preceded the outcome.

Study 3 also had some unique limitations. For example, the Boys Do Cry evaluation was limited to the Twitter platform only, while the Boys Do Cry campaign was promoted on several other social media platforms. It is, therefore, possible that Study 3's findings do not reflect the full engagement of this campaign across all platforms. Evidence shows that Facebook, Instagram, and YouTube users have different demographic characteristics and engagement patterns (Pew Research Center, 2023), and these were not captured in the study. Similarly, the Study 3 analysis relied on publicly available tweets, which may not represent the views of all of those who may have seen the campaign. It is possible that social media users systematically differ from those who do not use social media networks (Hargittai, 2007), potentially introducing some selection bias; however, this campaign was media-targeted. Finally, the decision to analyse the topics of discussion only during the active period of the campaign limited the evaluation of the longer-term impact of this campaign on Twitter, although user Twitter activity was observed after the post-campaign period.

In summary, while the strengths and limitations outlined above provide valuable context for this research, they also inform its overall contributions. The next section discusses how these findings advance our understanding of masculinity and suicide, and highlights directions for future inquiry.

8.3 Contributions to knowledge

8.3.1 Considering findings with respect to previous research

Some findings expand upon previous literature, while others were unexpected. Given the relative newness of the field of masculinity and suicide research and the complexity of the questions involved, this pattern is understandable. The field is still developing, and many unanswered questions and gaps remain. Although previous literature has provided numerous suggestions and insights, it has not yet established definitive conclusions. This section

considers the findings of the three studies in relation to previous research, highlighting areas of agreement, divergence, and opportunities for future exploration.

For example, the increased scientific attention to masculinity and suicide not only reflects trends identified in earlier bibliometric studies (Astraud et al., 2020; Cai et al., 2020) but also extends our understanding by mapping how masculinity and suicide emerged as a distinct research field only in the late 2000s. This shift likely coincided with the broader recognition of suicide as public health priority and increased funding for research. Earlier scientific literature was predominantly grounded in biomedical models that focused on individual factors, such as clinical or biological aspects (Turecki & Brent, 2016), reflecting a historical emphasis on suicide as an outcome of psychiatric diagnoses (Harris & Barraclough, 1997). Although these factors remain important, they provide an incomplete picture by overlooking the role of social and cultural determinants, such as gender-related norms, in shaping suicide risk.

In this light, Study 1's findings not only support the increasing attention to sociocultural factors in recent years but also build on previous research by mapping the evolution of masculinity's role in suicide research. The study reveals a shift in scientific discussions from focussing solely on individual risk factors (e.g., mental illness) to incorporating broader social determinants of health (e.g., gender). It is now understood that the suicide research field has moved away from predominantly medical models to incorporating more multilayered frameworks recognising suicide risk as a complex issue influenced by multiple factors (Pirkis et al., 2024; Pirkis et al., 2023; Turecki et al., 2019).

Similarly, in Study 2, the finding that self-reliance was related to higher odds of experiencing suicidal thoughts builds upon international and Australian research that has documented the negative impact of strict adherence to traditional masculine norms on mental health outcomes in general (Wong et al., 2017) and specifically on suicidal thoughts and behaviours (Coleman, 2015; Coleman et al., 2020; King et al., 2020; Pirkis et al., 2017). This work expands on early research showing that self-reliance was predictive of suicidal thoughts in Australian men in cross-sectional data (Pirkis et al., 2017). However, Study 2's unexpected finding – that help-seeking did not mediate the relationship between self-reliance and suicidal thoughts – challenges prevailing assumptions in the literature. Prior studies have suggested that reluctance to seek help among men could be a key mechanism through which adherence

to traditional masculine norms exacerbates mental health problems (Mackenzie et al., 2006; Seidler et al., 2016; Yousaf, Popat, et al., 2015). One possible explanation for this discrepancy is the focus on professional help-seeking in Study 2. While the study did not provide statistical evidence that professional help-seeking mediated the relationship between masculinity and suicidal thoughts, this does not negate the potential importance of informal support systems.

Adherence to masculine norms like self-reliance may lead men to avoid professional services but still seek assistance through channels more aligned with masculine ideals, such as self-help strategies, substance use, or reaching out to partners or spouses (Eggenberger et al., 2023; Oliffe, Rossnagel, et al., 2019; Reily et al., 2024). Therefore, as previously discussed, focusing solely on professional help-seeking may result in overlooking other forms of support that self-reliant men might utilise, which could explain the lack of mediation found in Study 2. This suggests that a more holistic approach to understanding help-seeking is required to fully unpack the role of self-reliance in influencing when and where men might seek help for managing mental health, distress, and suicidality.

The findings from the evaluation of the ‘Boys Do Cry’ suicide prevention media campaign on Twitter in Study 3 expands upon previous research demonstrating the important role of media campaigns in suicide prevention (Duthie et al., 2024; Ftanou et al., 2024; Pirkis et al., 2019; Robinson et al., 2016). Similar to the ‘Man Up’ media-based campaign on social media (Schlichthorst, King, Reifels, et al., 2019; Schlichthorst et al., 2018), the ‘Boys Do Cry’ campaign was effective in engaging the public and promoting discussions around suicide prevention. While ‘Man Up’ elicited a broader range of themes and deeper discussions around masculine norms (e.g., what it means to be a man or a father, and to raise boys), this difference is likely related to its format as a three-part documentary with nearly three hours of wide-ranging content, compared to the ‘Boys Do Cry’ campaign’s four-minute music video. Nonetheless, Study 3 demonstrates that different formats of campaigns have the potential to raise awareness, reduce stigma, and change attitudes and behaviours, including reluctance to seek help for mental health issues like suicidal thoughts (Duthie et al., 2024; Pirkis et al., 2019; Robinson et al., 2016). Moreover, the ‘Boys Do Cry’ campaign, as a universal intervention targeting men through a lens of masculinity, builds on recommendations emphasising the importance of gender-sensitive approaches in suicide prevention among men (Oliffe, Rossnagel, et al., 2019).

The effectiveness of media campaigns in changing actual behaviours remains uncertain as randomised controlled trials have shown mixed results. For example, a universal intervention from the United States, 'Man Therapy', showed that the intervention was not better than the control group in improving suicidal thinking (Frey et al., 2023). Similarly, the 'Boys Do Cry' trial showed that watching the 'Boys Do Cry' video was as effective as watching the control video in improving help-seeking intentions in a large sample of Australian men (Nicholas et al., 2022; Nicholas et al., 2024). On the other hand, the trial findings from 'Man Up' showed that watching its three-part documentary was more effective than watching the control documentary in improving help-seeking intentions (King et al., 2018). These findings raise questions about the extent to which the dose of these campaigns affects the outcomes. For example, they may need to be longer to have an impact on suicidal thinking or behaviours. Supporting this, a recent evidence synthesis of 38 suicide prevention media campaign evaluations found stronger evidence for media campaigns in improving awareness and knowledge of suicide but less evidence for improving help-seeking intentions and behaviours, underscoring the lack of literature on the dosage effect in these campaigns (Ftanou et al., 2024).

Selective suicide prevention interventions with a focus on masculinity and targeting specific men at higher risk for suicide have shown some promising results. Examples include the 'Shoulder to Shoulder' campaign in the United States, which aimed to challenge the 'hypermasculine' norm within the Army by encouraging soldiers to seek help for mental health problems instead of relying solely on themselves. It has been argued that although this campaign did not change the suicide rates among men in the United States, it provided an alternative to the dominant military culture by promoting close male friendships and emotional openness (Kieran, 2021). In Australia, 'Mates in Construction' targets men working in the construction industry and has been shown to be effective in increasing suicide awareness, reducing stigma, and improving mental health literacy and help-seeking intentions (Gullestrup et al., 2023). Likewise, the 'Alive and Kicking Goals!' program for young Indigenous Australian men successfully promoted suicide prevention literacy and raised awareness (Tighe & McKay, 2012).

The 'Boys Do Cry' campaign aligns with several other interventions currently underway in Australia, such as 'Breaking the Man Code', 'Ahead of the Game', 'Men in Mind',

‘Specialist Lifeline Services’, ‘MATES in Manufacturing’, and ‘Conversations about Suicide’. What all these interventions have in common is that they challenge the self-reliance masculine norm and promote help-seeking behaviour as a masculine act too, which may indirectly address public and self-stigma towards suicide. While some of them are universal interventions targeting boys and adolescents, such as ‘Breaking the Man Code’ and ‘Ahead of the Game’ (King et al., 2022; Vella et al., 2021), ‘MATES in Manufacturing’ and ‘Conversations about Suicide’ are a mixture of universal and selective interventions (LaMontagne et al., 2022; Oostermeijer et al., 2022), and purely selective interventions are ‘Men in Mind’ and ‘Specialist Lifeline Services’ (Pirkis et al., 2022; Seidler et al., 2022).

In summary, the ‘Boys Do Cry’ campaign not only expands upon local and international initiatives designed for men focusing on masculinity, but the findings from Study 3 demonstrate the potential of universal suicide prevention interventions on promoting mental health and challenging traditional norms. It also supports calls from other researchers for more empirical work in this field (Frey et al., 2023; King et al., 2018; Schlichthorst, King, Turnure, et al., 2019; Schlichthorst et al., 2018). This is because gender-sensitive strategies for suicide prevention acknowledge the impact of societal and cultural expectations on men’s suicide risk. Consequently, such campaigns challenge established norms at a population level, which, in turn, may ultimately reduce suicide risk in the target population. The positive reception and engagement observed in the ‘Boys Do Cry’ campaign’s Twitter evaluation highlight the relevance of media-based and gender-sensitive interventions within suicide prevention efforts targeting men.

8.3.2 Considering findings with respect to contemporary models of suicidal thoughts and behaviours

Although this thesis was not designed to explicitly test any theories of suicidal thoughts and behaviours, it is worth considering the findings from the three studies in the context of the two most influential contemporary models of suicidal thoughts and behaviours – the Interpersonal Theory of Suicide (Joiner, 2005; Van Orden et al., 2010) and the Integrated Motivational-Volitional Model (O'Connor, 2011; O'Connor & Kirtley, 2018). These theoretical models, described in detail in Chapter 3, explore the factors involved in the progression from the emergence of suicidal thoughts to suicidal behaviours.

In brief, the Interpersonal Theory of Suicide proposes that feelings of isolation and feelings of being a burden to others lead to suicidal thoughts, but these thoughts only progress to serious suicidal behaviours if capability for suicide is present. The Integrated Motivational-Volitional Model suggests that feeling trapped in an unbearable situation triggers suicidal thinking. In this model, factors like thwarted belongingness and perceived burdensomeness act as moderators, while progression to suicidal behaviours depends on factors such as access to means, impulsivity, and fearlessness about death. These frameworks enhance our understanding of how factors like masculinity may influence suicidal thoughts and behaviours, offering insights into potential targeted prevention strategies.

As documented in Study 1, the shift in scientific discussions towards incorporating social and cultural factors may be considered consistent with both the Interpersonal Theory of Suicide and the Integrated Motivational-Volitional Model insofar as they acknowledge the interplay between individual, interpersonal, and societal influences on suicide risk. Traditional masculine norms, such as self-reliance, may contribute to suicidal thoughts by increasing feelings of isolation and beliefs of being a burden to others. In addition, masculine norms of emotional stoicism and sensation seeking or risk-taking may increase capability for suicide, likely by fostering impulsive behaviour. Providing more direct evidence are a number of studies from the United States exploring different components of the Interpersonal Theory of Suicide in relation to traditional masculinity that have found that adherence to the traditional masculine norm of self-reliance is positively associated with perceived burdensomeness and thwarted belongingness (Daruwala et al., 2021). Moreover, adherence to norms of sensation seeking and emotional stoicism have been linked to an increased capability for suicide (Daruwala et al., 2021; Granato et al., 2015; Perry et al., 2022).

In Study 2, the lack of mediation by professional help-seeking was unexpected and signalled the need to consider a broader range of factors that may play a role in the causal pathway between self-reliance and suicidal thoughts including potentially defeat, entrapment, thwarted belongingness or perceived burdensomeness (O'Connor & Kirtley, 2018). This is consistent with findings from studies which have examined self-reliance and the Interpersonal Theory of Suicide directly. For example, adherence to the traditional masculine norm of self-reliance has been shown to intensify feelings of thwarted belongingness and perceived burdensomeness. Daruwala et al. (2021) showed that self-reliance was positively associated with perceived burdensomeness and thwarted belongingness. Highly self-reliant men might

avoid seeking help not only because they believe they should handle their own problems but also to avoid burdening others, which may lead or increase feelings of isolation, and these are key components leading to suicidal desire according to the Interpersonal Theory of Suicide.

From the perspective of the Integrated Motivational-Volitional Model, highly self-reliant men may experience an internal struggle between protecting their masculine identities and needing support from others. This tension may lead to feelings of defeat and entrapment, which are proposed precursors to suicidal thoughts in this model. According to this theory, perceived burdensomeness and thwarted belongingness still play a role in the emergence of suicidal thinking; however, unlike in the other model, they are considered motivational moderators (O'Connor & Kirtley, 2018)**.**

The Boys Do Cry campaign, which focused on challenging self-reliance and encouraging men to express vulnerability by seeking help, may thus be understood as directly addressing thwarted belongingness, perceived burdensomeness, defeat, and entrapment. The campaign may have reduced feelings of isolation and the belief that one is a burden to others, which are key factors leading to suicidal thinking according to the Interpersonal Theory of Suicide. For instance, the campaign's video showed a diverse group of men joining forces in a community hall to promote its messages, with lyrics that challenged those constructs: "Sometimes when we're hurting, and the darkness comes and fills our mind, we feel like we're all alone, without the strength we need to find. […] Your strength is not in silence, but sharing what is in your heart, it's something to be proud of…".

Furthermore, the campaign's encouragement of open discussions about emotions and mental health, particularly on social media, may have helped to dismantle rigid expectations of self-reliance and emotional stoicism. According to the Integrated Motivational-Volitional Model, this reduction of psychological processes, such as defeat and entrapment, can prevent the progression from suicidal thoughts to suicidal behaviours. The Boys Do Cry campaign may have alleviated these feelings by providing socially acceptable means for men to cope with distress without violating their masculine identities. Therefore, it could be argued that the Boys Do Cry campaign addresses social and cultural factors contributing to suicidality among men by reframing help-seeking as a masculine behaviour rooted in strength and resilience rather than weakness.

8.4 Implications for suicide prevention policy and practice

As noted in the introduction to this thesis, there is a large and enduring disparity in suicide rates between men and women. In many countries, the suicide rate among men is over three times higher than that of women (World Health Organization, 2021a). This significant gender gap has persisted over time and is particularly evident in high-income countries. In Australia, for example, males account for three-quarters of all suicides – a disparity that has remained consistent for at least the past ten years (Australian Bureau of Statistics, 2023a) Acknowledging the seriousness of the problem, many countries have developed National Suicide Prevention Strategies to guide their suicide prevention efforts (World Health Organization, 2018). These strategies increasingly acknowledge that suicide is not simply a clinical issue but one that is underpinned by a vast array of social determinants, including public policies, cultural and societal values, and macroeconomic factors, and that certain population groups are disproportionately impacted by suicide (Pirkis et al., 2024; Pirkis et al., 2023). With respect to directly addressing the disproportionate burden of suicide among men, an unpublished post-hoc analysis of 29 national suicide prevention strategies from several different countries, included in a study by Schlichthorst et al. (2023), showed that only two-thirds of these strategies made explicit reference to "male suicide" or "suicides by men", with most of them discussing the issue purely in statistical terms.

Experts have begun advocating for a whole-of-government approach to suicide prevention, where all sectors are responsible for decisions that impact health and health inequities, not just the health sector (Pirkis et al., 2024; Pirkis et al., 2023). Pirkis and colleagues have proposed a public health approach to suicide prevention which addresses social determinants – including public policies, cultural and societal values, and macroeconomic factors – and individual risk factors – including sociodemographic characteristics, clinical factors, and contextual factors (Pirkis et al., 2024). They suggest that social determinants should be addressed through universal interventions at the population level, such as suicide prevention media campaigns, income protection policies, and minimum wage legislation, while individual risk factors are targeted through selective interventions, such as financial counselling and drug and alcohol programs, or indicated interventions like crisis support services and targeted mental health services (Pirkis et al., 2024; Pirkis et al., 2023). However,

there is still considerable work to be done in shifting to such an integrated, multi-level approach.

In the Australian context, the recently released Draft National Suicide Prevention Policy (released on 10 September 2024) is structured around a whole-of-government approach to ensure accountability at all levels of government (Australian Government, 2024). The policy focuses on the interplay between social determinants and individual risk factors that lead someone to experience suicidal thoughts and behaviours. It also acknowledges that men are one of the priority groups in suicide prevention, emphasising the importance of universal interventions, as proposed by Pirkis and colleagues. However, the reality on the ground, as evidenced by Bassilios et al. (2024) on government-funded suicide prevention, is that most efforts are selective or indicated in their approach, highlighting a major gap in universal prevention strategies that address the broader social determinants driving suicidal distress.

Another relevant strategy in Australia is the National Men's Health Strategy 2020-2030 (Australian Government Department of Health, 2020). This strategy acknowledges that males are disproportionately affected by suicide and highlights the urgent need to address these health inequities through targeted policy and practice. It identifies suicide as one of the health conditions affecting all priority groups of males. The strategy advocates for a gendered approach to health, proposing six principles for action: (1) the provision of male-centred information, programs, and services; (2) the need for transparency and accountability; (3) the importance of building on what is already present; (4) ensuring equity is what motivates investment and action; (5) the need for focusing on prevention; and (6) the acknowledgement of the influence of gender on health.

The findings of the three studies are discussed in relation to these six principles for action, as proposed by the National Men's Health Strategy and informed by the National Suicide Prevention Strategy for Australia's Health System (Australian Government Department of Health, 2020; National Suicide Prevention Project Reference Group, 2020).

8.4.1 The provision of male-centred information, programs, and services

Study 1 showed that adherence to traditional masculine norms, particularly self-reliance, is a key contributory factor heightening suicide risk among men. It is therefore crucial that

universal suicide prevention programs, as described in the National Suicide Prevention Strategy (National Suicide Prevention Project Reference Group, 2020), that are specifically designed for boys and men, directly address these gendered norms. Study 2 found that self-reliance is associated with the emergence of suicidal thinking independently of professional help-seeking among men. This suggests that interventions should not only focus on encouraging men to seek professional help but also address the underlying masculine norms that contribute to reluctance in seeking support, promoting other informal support systems. Study 3 demonstrated that suicide prevention media campaigns like the Boys Do Cry campaign can successfully engage men by challenging traditional masculine stereotypes and promoting healthier expressions of masculinity.

Contemporary research from Australia and overseas have begun designing such suicide prevention interventions with a focus on masculinity (Efimoff et al., 2021; Frey et al., 2023; Gullestrup et al., 2023; Kieran, 2021; Schlichthorst et al., 2018; Tighe & McKay, 2012). More recently, one emerging program of work in Australia – the Buoy Project – has started to address this through universal, selective, and indicated interventions designed for boys and men with a lens on masculinity (see Chapter 2, section 2.6.1, where each intervention in this project is described in detail), in line with what is recommended by the National Suicide Prevention Strategy (Australian Government Department of Health, 2020).

8.4.2 The need for transparency and accountability

Study 2 highlighted that traditional interventions focusing solely on promoting professional help-seeking may not fully address men's needs or change behaviour. Study 3 emphasised the importance of evaluating brief media-based campaigns, which may raise awareness but not necessarily lead to behaviour change (Gould et al., 2024; Nicholas et al., 2024). However, there is still limited evidence regarding the dose effect of such campaigns required to change behaviour (Ftanou et al., 2024).

It is important that governments invest in robust evaluations of suicide prevention programs to determine which strategies are effective, involving target populations with lived experience to ensure these strategies meet their needs. It is also important to recognise the challenge in measuring the impact of interventions in terms of changes in suicide rates, and the necessity of identifying robust intermediary outcomes.

8.4.3 The importance of building on what is already present

Study 1 identified emerging subfields of research within masculinity and suicide, such as suicidality in boys and young men; this existing knowledge can be leveraged to enhance current initiatives. Furthermore, Study 3 provided evidence that national campaigns like Boys Do Cry can be expanded; for example, by increasing the duration of the campaign's exposure, the effects of the campaign may also be extended, as observed in the Man Up evaluations (King et al., 2018; Schlichthorst, King, Reifels, et al., 2019; Schlichthorst et al., 2018). Scaling up evidence-based programs such as Boys Do Cry or Man Up can be facilitated through sharing knowledge and collaborating with on-the-ground organisations involved in men's mental health and suicide prevention in Australia, such as MensLine, Mates4Mates, and Brother to Brother.

8.4.4 Ensuring equity is what motivates investment and action

According to the strategy, ensuring equity involves prioritising groups of men known to be more at risk of ill-health, including suicide. These groups include Aboriginal and Torres Strait Islander peoples, individuals from socio-economically disadvantaged backgrounds, people living in rural and remote areas, individuals with disabilities, those from culturally and linguistically diverse backgrounds, members of the LGBTIQ+ community, veterans, socially isolated individuals, and people involved in the criminal justice system (Australian Government Department of Health, 2020). Study 1 showed that an emerging subfield is young men and boys, suggesting that they are a sub-population of increasing interest, and potentially indicating a focus on earlier intervention. Therefore, it is important that developers of selective interventions for high-risk groups draw on emerging research to inform decisions. Targeted programs for boys and men also need to address a range of other social determinants known to be important suicide risk factors in men, such as substance abuse and social isolation (Fisher et al., 2020; Motillon-Toudic et al., 2022). Examples of selective suicide prevention programs include Shoulder to Shoulder for soldiers in the United States, Mates in Construction for construction workers in Australia, and Alive and Kicking Goals! for First Nations Australians (see section 2.6.). All three of those populations are known to be at higher risk of suicide (Gullestrup et al., 2023; Kieran, 2021; Tighe & McKay, 2012).

8.4.5 The need for focusing on prevention

Findings from Study 2 showed that self-reliance is related to suicidal thinking in men, independent of professional help-seeking behaviour. This suggests that other forms of help-seeking might be crucial, particularly at an early stage. Intervening early in men's lives, such as during adolescence, to challenge the adoption of self-reliance as a norm and strengthen other forms of help-seeking, like support from peers and family, may be a way forward in prevention efforts. For example, upskilling informal sources of support and adapting well-established, successful prevention programs with young people, like Mental Health First Aid for Teens, could be beneficial (Hart et al., 2020; Ng et al., 2021).
For this reason, informal help-seeking should be explored to determine if this lack of mediation persists and whether highly self-reliant men rely solely on informal support. Emerging evidence from a large cohort of Australian men showed that intentions to seek informal help are associated with lower odds of developing suicidal thoughts, whereas this was not the case for intentions to seek professional help (Tsindos et al., 2024). Therefore, it seems appropriate that suicide prevention strategies designed for men target more than just professional help-seeking behaviour, such as promoting help-seeking from community services, friends, and partners/spouses.

The three studies' findings have implications for the development of universal, selective, and indicated interventions (Pirkis et al., 2024; World Health Organization, 2018):

- **Universal interventions** targeting the entire general population and addressing specific risk factors for suicide could involve public health campaigns that directly challenge and reframe the self-reliance norm. For example, media campaigns like Boys Do Cry have the potential to raise awareness of the important link between self-reliance and suicidality. Such programs can deconstruct rigid masculine stereotypes and promote healthier masculinities – such as viewing vulnerability as a sign of strength rather than weakness – potentially tackling stigma, as recently shown by Efimoff et al. (2021) in their evaluation of the Canadian suicide prevention program, the DUDES Club. Another potentially fruitful avenue to challenge the norm of self-reliance through a universal intervention is educational programs for younger populations. Currently, initiatives being tested in Australia, such as Breaking the Man Code and Ahead of the Game, target boys and adolescents in school and sport

settings, respectively (King et al., 2022; Vella et al., 2021). These programs may promote mental health literacy and challenge harmful stereotypes early in life by fostering open discussions among boys and young men about mental health.

- **Selective interventions** focusing on sub-populations with a higher risk for suicide could target self-reliance among men who have experienced job loss or relationship breakdowns. Tailored programs could provide support in navigating these challenges while addressing the influence of self-reliance on coping mechanisms or behaviours. Example of such interventions that are currently being tested in Australia include MATES in Manufacturing and Conversations about Suicide (LaMontagne et al., 2022; Oostermeijer et al., 2022).
- **Indicated interventions** tailored for men experiencing suicidal thoughts or behaviours could include therapy involving discussions about the link between masculine norms of self-reliance and suicidality. Mental health professionals can incorporate strategies to help men recognise the impact of self-reliance on their mental health and encourage the utilisation of both professional and informal support networks, such as the Men in Mind and Specialist Lifeline Services programs currently being tested in Australia (Pirkis, King, et al., 2022; Seidler et al., 2022).

8.4.6 The acknowledgement of the influence of gender on health

All three studies collectively highlight how societal and cultural expectations of masculinity can impact men's mental health and suicide risk. The direct relationship between self-reliance and suicidal thoughts underscores the profound influence of certain gender norms on health outcomes. Incorporating discussions of gender norms and their impact on health into public health initiatives and professional training is essential; however, as Pirkis and colleagues note, this needs to extend beyond the health sector (Pirkis et al., 2024).

While a number of programs in Australia have already started addressing this issue, more research is needed to deepen our understanding of how masculinity influences men's health behaviours and outcomes, as the field is still in its infancy.

8.5 Future research

Building on the contributions of the three studies conducted as part of this thesis, there are various opportunities to further advance this field of research.

One key area for future research is conducting a meta-analytic synthesis of the relationship between adherence to masculine norms and suicidality. While the bibliometric review in Study 1 and the narrative review in Chapter 2 provided an overview of the current state of knowledge, a meta-analysis could offer further insights. Recent meta-analyses have examined the relationship between adherence to masculine norms and mental health outcomes or alcohol use, but not suicidality specifically (Wong et al., 2017; Zamboanga et al., 2024). Therefore, such a meta-analysis could investigate studies that have explored the relationship between the Conformity to Masculine Norms Inventory (Mahalik et al., 2003) and suicide-related outcomes. Pooling data from various studies could reveal the strength and effect sizes of these relationships, thereby informing evidence-based strategies and guiding future research priorities in men's mental health.

Another important avenue for research is exploring other potential mechanisms linking self-reliance and suicidal thoughts beyond professional help-seeking. The findings from Study 2 suggest that professional help-seeking did not mediate this relationship, indicating that other factors may be at play. Future research could investigate whether seeking help from informal sources, such as partners, friends, or family, mediates the relationship between self-reliance and suicidal thoughts in men. A 2024 study conducted with Australian men found that intentions to seek informal help were associated with lower odds of developing suicidal thoughts, whereas this was not the case for intentions to seek professional help (Tsindos et al., 2024). However, it remains unclear whether highly self-reliant men differ from less self-reliant men in their use of informal support. Investigating this could enhance our understanding of how to encourage effective help-seeking behaviours among men who adhere strongly to the self-reliance norm.

Moreover, considering that Study 2 focused on adults, future research should examine younger populations. Young people are known to seek less help from professional sources than adults, and traditional masculinity may play a role in this behaviour (Clark et al., 2020;

Radez et al., 2021). A 2024 evidence synthesis has highlighted a significant lack of research into boys' and young men's help-seeking behaviours for mental health problems (Sheikh et al., 2024). Replicating Study 2 with a younger cohort would help determine whether the results align with those found in adult males, offering additional insights for suicide prevention efforts.

Future studies could further explore the applicability of the Interpersonal Theory of Suicide and the Integrated Motivational-Volitional Model in the context of masculinity and suicide (Joiner, 2005; O'Connor, 2011). Emerging research from the United States has begun applying these theories in the context of masculinity using samples of men and women (Daruwala et al., 2021; Granato et al., 2015; Perry et al., 2022). Measuring key constructs of both theories, such as thwarted belongingness, perceived burdensomeness, defeat, and entrapment, in relation to adherence to masculine norms could deepen our understanding of the psychological processes involved. Additionally, future research should examine how the relationship between masculinity and suicidal thoughts and behaviours manifests across different gender identities – including women, transgender, non-binary, and gender-diverse individuals – recognising the diversity and complexity of gender expressions.

Building on the evaluation of the Boys Do Cry campaign in Study 3, future research could examine the long-term impact of such campaigns if continued for longer periods. The question of the "dose" of the campaign – whether campaigns that are longer and/or more prominent are more likely to have an impact – is yet to be explored. Some research suggests that longer exposure to campaign messages could possibly enhance their effectiveness (Ftanou et al., 2024; King et al., 2018; Nicholas et al., 2024). Evaluating the campaign's reach and engagement on other social media platforms like YouTube, Facebook, and Instagram could also provide valuable insights, although this may be challenging due to current terms and conditions set by platforms like Meta Inc. (see https://developers.facebook.com/docs).

Additionally, future evaluations of campaigns should ideally combine multifaceted approaches like those used in the Boys Do Cry campaign. For instance, the randomised controlled trial of the Boys Do Cry campaign allowed evaluation of the effect of watching the intervention video on behavioural outcomes (Nicholas et al., 2024), while the multimedia campaign promoted awareness by using public health messaging and potentially engaging

communities at a national level. This approach aligns with National Suicide Prevention Strategy recommendations, as multifaceted strategies are more likely to produce intended effects (Krysinska et al., 2015; National Suicide Prevention Project Reference Group, 2020). However, it is noteworthy that suicide prevention strategies delivered on social media are still in their infancy (Pirkis et al., 2024). Therefore, more research is needed to understand the full impact of delivering such messages on social media, as well as the effects of integrating social media campaigns with other intervention strategies.

8.6 Summary and conclusions

This chapter synthesised the findings from the three studies in this thesis, highlighting the evolving nature of masculinity and suicide research. The field is still young but growing, and the results contribute to a deeper understanding of how traditional masculine norms, particularly self-reliance, influence male suicide risk. Although help-seeking from professional sources did not mediate the relationship between self-reliance and suicidal thoughts, media campaigns like Boys Do Cry show promise in sparking meaningful discussions on the topic.

Collectively, the three studies underscore the importance of addressing masculinity in suicide prevention efforts. Using two contemporary models of suicidal thoughts and behaviours as frameworks, the Interpersonal Theory of Suicide and the Integrated Motivational-Volitional Model, this PhD work offered a deeper understanding of how traditional masculine norms contribute to suicidal thoughts and behaviours. The studies also highlight important implications for suicide prevention policy and practice, suggesting that national strategies should incorporate gender-sensitive approaches that directly address harmful masculine norms. Interventions targeting men must address not only help-seeking behaviours but also the underlying norms and beliefs that contribute to psychological distress and hinder effective coping.

Notwithstanding these contributions, limitations such as cultural generalisability and reliance on existing data sources highlight the need for continued research in diverse contexts and using varied methodologies. For instance, the cultural specificity of masculinity means that findings from the Australian context may not generalise globally, and reliance on existing

data may not capture all relevant factors. Overall, the studies contribute to a growing body of literature recognising the importance of sociocultural factors in understanding and preventing suicide among men. The findings highlight the complexity of the relationship between masculinity and suicidal thoughts and behaviours, reinforcing the need for multifaceted interventions.

It is now evident that traditional masculine norms like self-reliance are contributory factors to suicide risk in men, though the exact mechanisms remain unclear. Reframing help-seeking as a masculine behaviour could enhance suicide prevention efforts for men and presenting help-seeking as a sign of strength and resilience rather than weakness, harmful stereotypes can be dismantled while healthier masculinities are promoted. Finally, future research should continue to explore the role of masculinity in suicide risk, as masculinity is likely an underlying factor putting men at higher risk of suicide. Testing interventions that challenge harmful masculine norms and promote more positive masculinities could be a way forward in suicide prevention, ultimately contributing to improved mental health outcomes for men.

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Appendix A. Code for collecting data on Boys Do Cry tweets

```r
# Data Extraction: Twitter Data on "Boys Do Cry"
# Author: Simone Scotti Requena
# Source: https://cran.r-project.org/web/packages/academictwitteR/vignettes/academictwitteR-intro.html

# Load required libraries
library(academictwitteR)
library(tidyverse)
library(tidytext)
library(stringr)
library(lubridate)

# Set up the Twitter Bearer Token for API access
# TWITTER_BEARER=YOUR_BEARET_TOKEN
get_bearer()

# Define Twitter Query Parameters
# This section retrieves tweets containing "boysdocry" or "boysdocry2021" hashtags from November 2021 to August 2022

##### Twitter Query Execution #####
# Remove the existing folder (if any) to store fresh results
if (file.exists("json")) {
  unlink("json", recursive = TRUE)
}

# Fetch all tweets related to "boysdocry" or "boysdocry2021" within the specified date range
get_all_tweets(
  query = "boysdocry OR boysdocry2021",
  start_tweets = "2021-11-01T00:00:00Z",
  end_tweets = "2022-08-31T00:00:00Z",
  data_path = "json",
  bind_tweets = FALSE,
  n = Inf
)

##### Data Processing #####
# Bind the JSON tweet data into a tidy data frame
tweets_all <- bind_tweets(
  data_path = "json",
  output_format = "tidy"
)

##### Save the Extracted Data #####
# Save the tidy data frame in RDS and Excel formats
saveRDS(tweets_all, file = "raw data/tweets_all.RDS")
rio::export(tweets_all, file = "raw data/tweets_all.xlsx")
```

R code for data collection of Boys Do Cry campaign-related tweets using Twitter's Academic Research Application Programming Interface (API).

Appendix B. Study 1 – Supplementary materials

Table S1. Syntax used in the Web of Science Core Collection database

#	**Query**
1	TS=(masculinit*)
2	TS=("masculine norm*" OR "masculine role*" OR "masculine behaviour*" OR "masculine behavior*" OR "masculine gender")
3	#1 OR #2
4	TS=(suicid*)
5	TS=("assisted suicide*" OR "suicide bomb*" OR "suicide gene*" OR "suicide attack*" OR cell* OR nonsuicid* OR non-suicid*)
6	#4 NOT #5
7	#3 AND #6
8	#3 AND #6 and English (Languages)
9	#3 AND #6 and English (Languages) and Articles or Review Articles or Early Access (Document Types)

Table S2. Most occurring terms, per epoch, in titles/abstracts of the masculinity and suicide retrieved publications, as at 05 November 2021

term	1954-2013 *n*	1954-2013 %	2014-2018 *n*	2014-2018 %	2019-2021 *n*	2019-2021 %	*N*
man	83	56%	86	58%	96	56%	265
suicide	77	52%	82	55%	82	53%	241
masculinity	71	48%	62	42%	62	40%	195
depression	36	24%	41	28%	36	27%	113
woman	38	26%	29	19%	33	19%	100
gender	27	18%	22	15%	31	14%	80
mental health	11	7%	32	21%	23	21%	66
help	11	7%	25	17%	27	16%	63
male	20	13%	17	11%	22	11%	59
relationship	14	9%	21	14%	20	14%	55
health	18	12%	19	13%	17	12%	54
risk	12	8%	13	9%	25	8%	50
life	19	13%	11	7%	14	7%	44
high rate	9	6%	19	13%	16	12%	44
behavior	17	11%	9	6%	18	6%	44
suicidal behavior	24	16%	11	7%	8	7%	43
family	16	11%	14	9%	13	9%	43
suicide attempt	19	13%	10	7%	13	6%	42
death	15	10%	12	8%	13	8%	40
role	15	10%	10	7%	14	6%	39
work	6	4%	16	11%	16	10%	38
suicidality	8	5%	13	9%	17	8%	38
young man	13	9%	14	9%	9	9%	36
self	10	7%	13	9%	13	8%	36
violence	9	6%	7	5%	19	5%	35
problem	9	6%	9	6%	16	6%	34
attitude	7	5%	9	6%	14	6%	30
treatment	8	5%	10	7%	11	6%	29
strategy	7	5%	12	8%	10	8%	29
individual	8	5%	12	8%	8	8%	28
intervention	7	5%	11	7%	10	7%	28
boy	8	5%	9	6%	11	6%	28
sex	12	8%	10	7%	6	6%	28
female	11	7%	4	3%	11	3%	26
history	7	5%	9	6%	10	6%	26
feeling	10	7%	6	4%	10	4%	26
substance use	7	5%	9	6%	10	6%	26
community	4	3%	9	6%	12	6%	25
practice	4	3%	10	7%	10	6%	24
suicidal ideation	8	5%	4	3%	12	3%	24

Note. Number of occurrences (*n*) and proportion (%) of terms occurring in titles/abstracts of publications (binary counting method used: only the presence of a term in each document counted as an occurrence). The total number of publications per epoch are as follows: "epoch 1" 1954-2013 = 149 publications, "epoch 2" 2014-2018 = 149 publications, "epoch 3" 2019-2021 = 154 publications.

Table S3. The most influential masculinity and suicide publications in Web of Science

Rank	Author	Title	Journal	Total citations	Citations per year
1	Pirkis et al. (2017)	Masculinity and suicidal thinking	Social Psychiatry and Psychiatric Epidemiology	78	15.6
2	Rice et al. (2018)	Adolescent and young adult male mental health: transforming system failures into proactive models of engagement	Journal of Adolescent Health	48	12.0
3	McKenzie et al. (2018)	Masculinity, social connectedness, and mental health: men's diverse patterns of practice	American Journal of Men’s Health	38	9.5
4	Oliffe et al. (2016)	Stigma in male depression and suicide: a Canadian sex comparison study	Community Mental Health Journal	55	9.2
5	Affleck et al. (2018)	Men’s mental health: social determinants and implications for services	Canadian Journal of Psychiatry-Revue Canadienne de Psychiatrie	36	9.0
6	Oliffe et al. (2019)	Men’s depression and suicide	Current Psychiatry Reports	27	9.0
7	Bryant and Garnham (2015)	The fallen hero: masculinity, shame and farmer suicide in Australia	Gender Place and Culture	60	8.6

Rank	Author	Title	Journal	Total citations	Citations per year
8	Reisner et al. (2014)	Using a two-step method to measure transgender identity in Latin America/the Caribbean, Portugal, and Spain	Archives of Sexual Behavior	67	8.4
9	Rinehart et al. (2020)	Longitudinal effects of gendered harassment perpetration and victimization on mental health outcomes in adolescence	Journal of Interpersonal Violence	16	8.0
10	Canetto (2017)	Suicide: why are older men so vulnerable?	Men and Masculinities	39	7.8

Note. Ranks were based on the average count of citations per year from 2014 to 2021 in Web of Science, as at 18 December 2021.

References for Table S3

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Appendix C. Study 2 – Supplementary materials

Supplementary Table 1 List of Better Access Medicare Benefit Schedule (MBS) item numbers

Category	Sub-category	Provider	Item number[a]
Associated MBS items	Mental health consultation	General Practitioners	2713
Associated MBS items	Mental health consultation	Other Medical Practitioners	279
Associated MBS items	Initial patient consultation	Psychiatrists	296, 297, 299
Associated MBS items	Preparation of a mental health treatment plan	General Practitioners (without mental health skills training)	2700, 2701, 2702
Associated MBS items	Preparation of a mental health treatment plan	General Practitioners (without mental health skills training)	2715, 2717, 2710
Associated MBS items	Preparation of a mental health treatment plan	Other Medical Practitioners (without mental health skills training)	272, 276
Associated MBS items	Preparation of a mental health treatment plan	Other Medical Practitioners (without mental health skills training)	281, 282
Associated MBS items	Preparation of a psychiatrist assessment and management plan	Psychiatrists	291
Associated MBS items	Review of a mental health treatment plan	General Practitioners	2712, 2719
Associated MBS items	Review of a mental health treatment plan	Other Medical Practitioners	277
Associated MBS items	Review of a psychiatrist assessment and management plan	Psychiatrists	293
Associated MBS items	3 Step Mental Health Process	General Practitioners	2574, 2575, 2577, 2578
Associated MBS items	3 Step Mental Health Process	Other Medical Practitioners	2704, 2705, 2707, 2708
Initial 10 individual sessions	Focused psychological strategies treatment services	General Practitioners	2721, 2723, 2725, 2727, 2729, 2731
Initial 10 individual sessions	Focused psychological strategies treatment services	Other Medical Practitioners	283, 285, 286, 287, 371, 372
Initial 10 individual sessions	Psychological therapy health services	Clinical Psychologists	80000, 80005, 80010, 80015, 80001, 80011
Initial 10 individual sessions	Focused psychological strategies treatment services	Psychologists	80100, 80105, 80110, 80115, 80101, 80111
Initial 10 individual sessions	Focused psychological strategies treatment services	Occupational Therapists	80125, 80130, 80135, 80140, 80126, 80136
Initial 10 individual sessions	Focused psychological strategies treatment services	Social Workers	80150, 80155, 80160, 80165, 80151, 80161
Group sessions	Group psychological therapy health services	Clinical Psychologists	80020, 80021
Group sessions	Group focused psychological strategies services	Psychologists	80120, 80121
Group sessions	Group focused psychological strategies services	Occupational Therapists	80145, 80146
Group sessions	Group focused psychological strategies services	Social Workers	80170, 80171

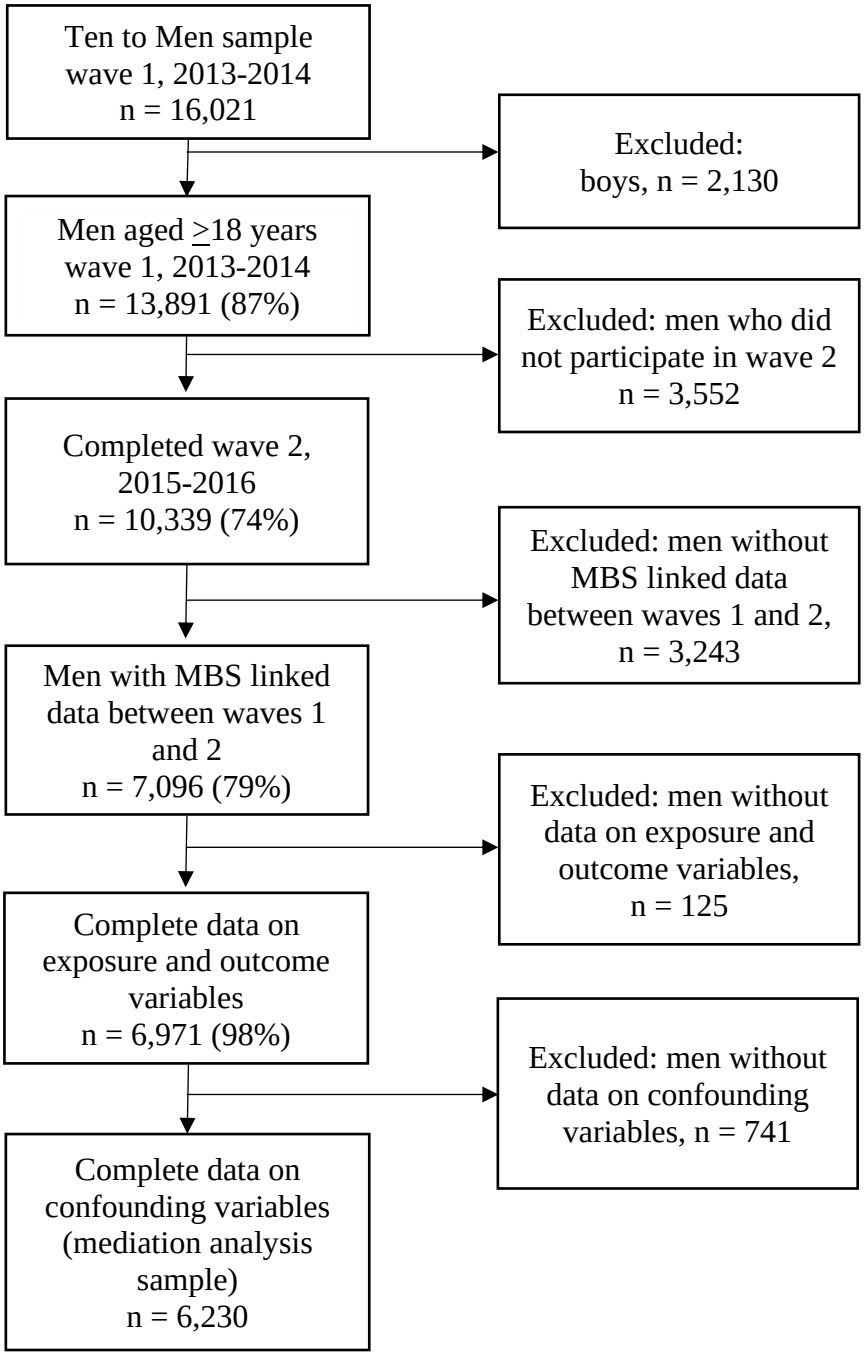
[a]Item numbers were taken from the evaluation of Better Access by Pirkis, Currier, et al. (2022) https://www.health.gov.au/sites/default/files/2022-12/main-report-evaluation-of-the-better-access-initiative.pdf

Supplementary Table 2. Comparison of baseline characteristics among (a) all men who participated in wave 1, (b) men who participated in both waves and had linked MBS data and complete data on exposure and outcome variables (eligible sample), and (c) men who participated in wave 1 but are not in the eligible sample

All men who participated in wave 1	Total (N=13,891)	Missing	Eligible: Men who participated in waves 1 and 2, with linked MBS data and complete data on exposure and outcome variables	Total (N=6,971)	Missing	Men who participated in wave 1 but are not in the eligible sample	Total (N=6,920)	Missing
Self-reliance (exposure)		252 (1.8%)	Self-reliance (exposure)		0	Self-reliance (exposure)		252 (3.6%)
Low	7,502 (54.0%)		Low	3,864 (55.4%)		Low	3,638 (52.6%)	
High	6,137 (44.2%)		High	3,107 (44.6%)		High	3,030 (43.8%)	
History of suicidal attempt or thoughts		292 (2.1%)	History of suicidal attempt or thoughts		34 (0.5%)	History of suicidal attempt or thoughts		258 (3.7%)
No	10,959 (78.9%)		No	5,559 (79.7%)		No	5,400 (78.0%)	
Yes	2,640 (19.0%)		Yes	1,378 (19.8%)		Yes	1,262 (18.2%)	
Age			Age			Age		
18-34	5,125 (36.9%)		18-34	2,267 (32.5%)		18-34	2,858 (41.3%)	
35-57	8,766 (63.1%)		35-57	4,704 (67.5%)		35-57	4,062 (58.7%)	
Region of residence		2 (0.0%)	Region of residence		0	Region of residence		2 (0.0%)
Major Cities	8,194 (59.0%)		Major Cities	4,168 (59.8%)		Major Cities	4,026 (58.2%)	
Inner Regional	3,075 (22.1%)		Inner Regional	1,581 (22.7%)		Inner Regional	1,494 (21.6%)	
Outer Regional	2,620 (18.9%)		Outer Regional	1,222 (17.5%)		Outer Regional	1,398 (20.2%)	
Socioeconomic status		2 (0.0%)	Socioeconomic status		0	Socioeconomic status		2 (0.0%)
Greatest disadvantage	2,641 (19.0%)		Greatest disadvantage	1,207 (17.3%)		Greatest disadvantage	1,434 (20.7%)	
2	2,623 (18.9%)		2	1,317 (18.9%)		2	1,306 (18.9%)	
3	3,124 (22.5%)		3	1,575 (22.6%)		3	1,549 (22.4%)	
4	2,829 (20.4%)		4	1,461 (21.0%)		4	1,368 (19.8%)	
Least disadvantage	2,672 (19.2%)		Least disadvantage	1,411 (20.2%)		Least disadvantage	1,261 (18.2%)	
Marital status		150 (1.1%)	Marital status		51 (0.7%)	Marital status		99 (1.4%)
Never married/ Widowed/ Divorced/ Separated	4,554 (32.8%)		Never married/ Widowed/ Divorced/ Separated	2,066 (29.6%)		Never married/ Widowed/ Divorced/ Separated	2,488 (36.0%)	

All men who participated in wave 1	Total (N=13,891)	Missing	Eligible: Men who participated in waves 1 and 2, with linked MBS data and complete data on exposure and outcome variables	Total (N=6,971)	Missing	Men who participated in wave 1 but are not in the eligible sample	Total (N=6,920)	Missing
Married/de facto	9,187 (66.1%)		Married/de facto	4,854 (69.6%)		Married/de facto	4,333 (62.6%)	
Employment status		325 (2.3%)	Employment status		29 (0.4%)	Employment status		296 (4.3%)
Unemployed	1,134 (8.2%)		Unemployed	462 (6.6%)		Unemployed	672 (9.7%)	
Employed/Out of workforce	12,432 (89.5%)		Employed/Out of workforce	6,480 (93.0%)		Employed/Out of workforce	5,952 (86.0%)	
Stressful life events in the past 12 months		448 (3.2%)	Stressful life events in the past 12 months		76 (1.1%)	Stressful life events in the past 12 months		372 (5.4%)
No	7,913 (57.0%)		No	4,188 (60.1%)		No	3,725 (53.8%)	
Yes	5,530 (39.8%)		Yes	2,707 (38.8%)		Yes	2,823 (40.8%)	
Aboriginal or Torres Strait Islander		107 (0.8%)	Aboriginal or Torres Strait Islander		32 (0.5%)	Aboriginal or Torres Strait Islander		75 (1.1%)
No	13,455 (96.9%)		No	6,809 (97.7%)		No	6,646 (96.0%)	
Yes	329 (2.4%)		Yes	130 (1.9%)		Yes	199 (2.9%)	
Country of birth		49 (0.4%)	Country of birth		17 (0.2%)	Country of birth		32 (0.5%)
Overseas	3,255 (23.4%)		Overseas	1,478 (21.2%)		Overseas	1,777 (25.7%)	
Australia	10,587 (76.2%)		Australia	5,476 (78.6%)		Australia	5,111 (73.9%)	
Treated for or had depression in the past 12 months		312 (2.2%)	Treated for or had depression in the past 12 months		91 (1.3%)	Treated for or had depression in the past 12 months		221 (3.2%)
Not treated in past 12 months	11,785 (84.8%)		Not treated in past 12 months	5,897 (84.6%)		Not treated in past 12 months	5,888 (85.1%)	
Treated in past 12 months	1,794 (12.9%)		Treated in past 12 months	983 (14.1%)		Treated in past 12 months	811 (11.7%)	
Alcohol use		1,292 (9.3%)	Alcohol use		470 (6.7%)	Alcohol use		822 (11.9%)
Not harmful/hazardous	8,138 (58.6%)		Not harmful/hazardous	4,232 (60.7%)		Not harmful/hazardous	3,906 (56.4%)	
Harmful/hazardous	4,461 (32.1%)		Harmful/hazardous	2,269 (32.5%)		Harmful/hazardous	2,192 (31.7%)	
Social Support (Mean, SD)	69.8 (26.6)	620 (4.5%)	Social Support (Mean, SD)	70.2 (26.1)	128 (1.8%)	Social Support (Mean, SD)	69.4 (27.0)	492 (7.1%)

Supplementary Fig. 1 Detailed flowchart for the sample eligibility and analytic samples. MBS: Medicare Benefits Schedule.



Supplementary Table 3 Causal mediation analysis of self-reliance on suicidal ideation with mediation through help-seeking (help sought after wave 1 survey completion and 15 days before wave 2 survey completion)

	OR	95% CI
Natural indirect effect	1.00	0.99, 1.01
Natural direct effect	1.46	1.24, 1.71
Total effect	1.46	1.24, 1.72

OD = odds ratio

Supplementary Table 4 Causal mediation analysis of self-reliance on suicidal ideation with mediation through help-seeking across 6 levels of exposure

	OR	95% CI
Natural indirect effect		
(1 vs 0)	1.04	0.91, 1.19
(2 vs 0)	0.99	0.95, 1.03
(3 vs 0)	1.00	0.97, 1.03
(4 vs 0)	0.99	0.95, 1.03
(5 vs 0)	1.00	0.99, 1.01
(6 vs 0)	0.98	0.90, 1.06
Natural direct effect		
(1 vs 0)	1.04	0.54, 2.00
(2 vs 0)	1.10	0.62, 1.95
(3 vs 0)	1.50	0.84, 2.66
(4 vs 0)	1.70	0.95, 3.03
(5 vs 0)	1.56	0.79, 3.08
(6 vs 0)	2.04	1.01, 4.10
Total effect		
(1 vs 0)	1.08	0.56, 2.06
(2 vs 0)	1.09	0.62, 1.92
(3 vs 0)	1.49	0.84, 2.65
(4 vs 0)	1.68	0.94, 3.00
(5 vs 0)	1.56	0.79, 3.08
(6 vs 0)	1.99	0.99, 4.02

OD = odds ratio

Supplementary Table 5 Causal mediation analysis of self-reliance on suicidal ideation with mediation through help-seeking as a continuous measure

	RD	**95% CI**
Natural indirect effect	-0.0002	-0.0011, 0.0008
Natural direct effect	0.0330	0.0184, 0.0477
Total effect	0.0329	0.0182, 0.0475

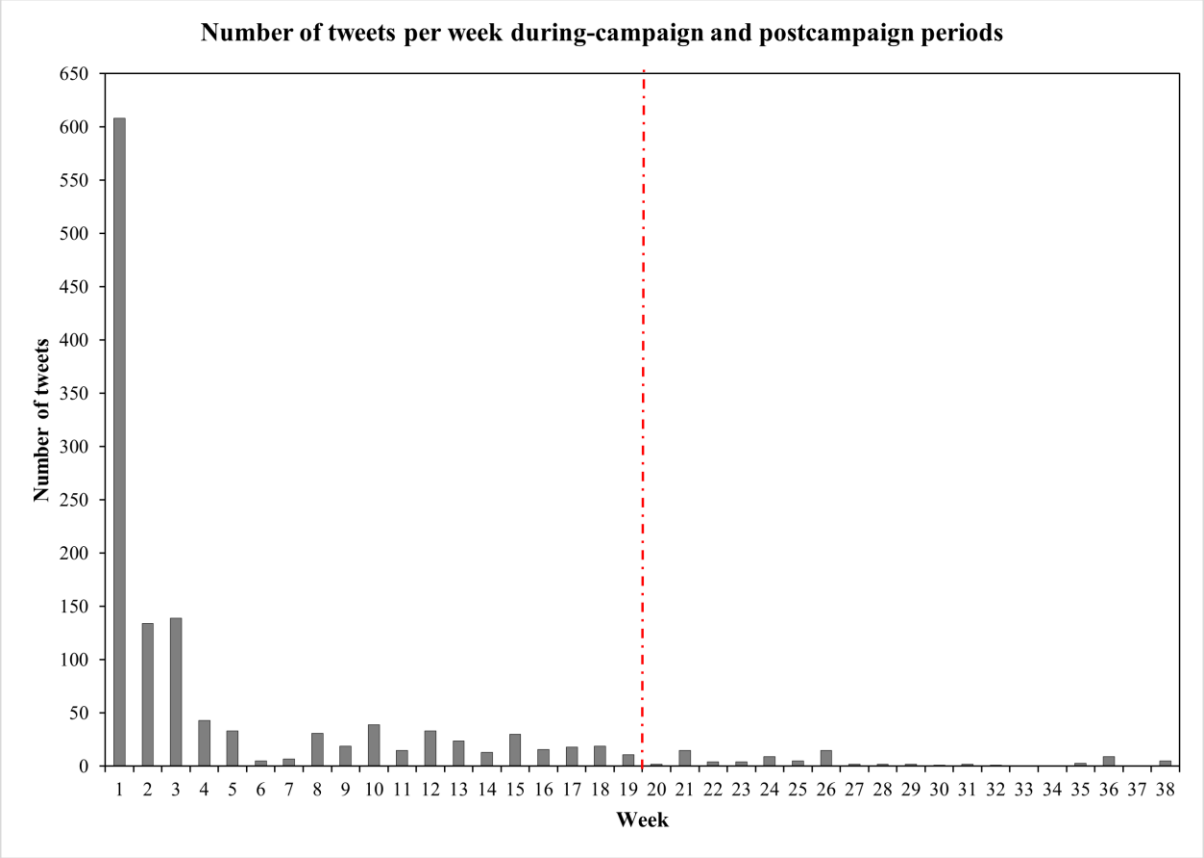
RD = risk differences

Supplementary Table 6 Causal mediation analysis of self-reliance at wave 1 on suicidal ideation at wave 2 with mediation through help-seeking between waves 1 and 2 (n = 6,230), without the exposure–mediator interaction term included in the model

	OR	**95% CI**
Natural indirect effect	1.00	0.99, 1.02
Natural direct effect	1.46	1.24, 1.72
Total effect	1.46	1.24, 1.72

OD = odds ratio

Appendix D. Study 3 – Supplementary materials



Number of campaign-related tweets per week during-campaign (week 1 to 19) and postcampaign (week 20 to 38) periods.