# Externalising and Prototypic Depressive Symptomology in Older Men: Implications for Depression Screening in Men Across the Lifespan

Danielle Alyce Herreen

School of Psychology,

The University of Adelaide

*This thesis is submitted in fulfilment of the requirements for the degree of*

*Combined Doctor of Philosophy/Master of Psychology (Clinical)*

April 2022

## Table of Contents

## List of Tables

### Chapter 2



### Chapter 3

**Chapter 4**



**Chapter 5**

## List of Figures

**Chapter 1**



**Chapter 2**



**Chapter 3**



**Chapter 4**

**Chapter 5**

## List of Abbreviations

Common abbreviations appearing across multiple thesis chapters are as follows:

| | |
|---|---|
| AAQ-II | Acceptance and Action Questionnaire |
| ACT | Acceptance and commitment therapy |
| AIC | Akaike information criterion |
| AMMII | Aging Men's Masculinity Ideologies Inventory (AMMII) |
| ANOVA | Analysis of variance |
| ASGS | Australian Statistical Geography Standard |
| BDI-PC | Beck Depression Inventory for Primary Care |
| BIC | Bayesian information criterion |
| CES-D | Centre for Epidemiological Studies Depression Scale |
| CFA | Confirmatory factor analysis |
| CFI | Comparative fit index |
| CFQ-7 | Cognitive Fusion Questionnaire |
| CMIM/DF | Normalised Chi-square |
| CMNI-22 | Conformity to Masculine Norms Inventory |
| Cronbach's $\alpha$ | Cronbach's coefficient alpha |
| DSM-5 | Diagnostic and Statistical Manual of Mental Disorders 5th Edition |
| DSM-5-TR | Diagnostic and Statistical Manual of Mental Disorders 5th Edition Text Revision |
| EFA | Exploratory factor analysis |
| GDS | Geriatric Depression Scale |
| GFI | Goodness of fit index |

| | |
|---|---|
| GIDS | Gender Inclusive Depression Scale |
| GLM | Generalised linear models |
| GMDS | Gotland Male Depression Scale |
| GP | General Practitioner |
| GRCS | Gender Role Conflict Scale |
| ICD-11 | International Classification of Diseases 11$^{th}$ Edition |
| IRSD | Index of Relative Socioeconomic Disadvantage |
| K10 | Kessler Psychological Distress Scale |
| KMO | Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy |
| MDD | Major depressive disorder |
| MDRS | Male Depression Risk Scale |
| $MDRS_{EFA}$ | MDRS 33-item set defined using exploratory factor analysis |
| MDS | Masculine Depression Scale |
| MLE | Maximum likelihood estimation |
| MSS | Male Symptoms Scale |
| PHQ-9 | Patient Health Questionnaire |
| PHQ-A | Patient Health Questionnaire for Adolescents |
| RMSEA | Root mean square error of approximation |
| SPSS | Statistical Package for the Social Sciences |
| SRMR | Standardised root mean residual |
| TLI | Tucker-Lewis index |
| TTM | Ten to Men: The Australian Longitudinal Study on Male Health |
| UK | United Kingdom |
| US | United States |

**Abstract**

A growing body of evidence suggests that some men with depression present with externalising or male-type symptoms such as substance misuse, anger, risk-taking, emotion suppression, and somatic complaints. It has been argued that this presentation may potentially constitute a male phenotypic variant of the disorder. This has been theorised to result from masculine gender role socialisation emphasising stoicism and avoidance of emotional vulnerability. These symptoms fall outside the predominantly internalising prototypic symptoms (e.g., low mood, anhedonia) listed in current depression criteria (e.g., DSM-5-TR) and screening tools. Thus, although many men do present with prototypic symptoms of depression, exclusive use of prototypic screening tools may fail to identify some males at risk of depression—and by extension—suicide. However, despite increased research attention in this area, there is a paucity of studies exploring the relationship between adherence to masculine norms and prototypic and externalising depressive symptomology in older men. Furthermore, current tools assessing externalising symptoms have not been purposefully validated in older men, who are at increased risk of suicide. The overarching aim of this thesis was therefore to extend research on men's symptoms of depression with a focus on older males, exploring age differences in adherence to masculine norms and prototypic and externalising depressive symptomology. Four studies were completed to address these aims.

The first study (Chapter 2) involved secondary analysis of a large population sample of men aged 15-55 years (*N* = 14,516) to examine age group differences in conformity to masculine norms and its impact on self-reported prototypic depression symptoms and depression history. The findings indicated that although overall conformity to masculine norms declined with age, extreme conformity to masculine norms in the oldest age group

(i.e., those 51-55 years) was associated with increased risk of clinically significant prototypic depression symptoms. Extreme conformity to masculine norms also decreased the likelihood of men reporting that they had received treatment for, or experienced symptoms of, depression in the preceding twelve months. However, this relationship was not evident in those aged 51-55 years. Importantly, this study demonstrated that only some masculine norms, particularly self-reliance, appear to be problematic in the context of men's mental health when strictly adhered to.

The second study (Chapter 3) examined whether the Male Depression Risk Scale (MDRS-22; Rice et al., 2013) is a valid measure of externalising and male-type symptoms of depression in older males. This was achieved through analysis of data collected from a large community survey of younger (*n* = 510; 18-64 years) and older (*n* = 439; 65-93 years) men. The findings indicated that the MDRS-22 is a psychometrically valid measure of externalising and male-type symptoms of depression in older men and is significantly linked to prototypic depression symptoms and previous depression diagnoses in younger and older men. However, with a length of 22 items, the MDRS-22 is impractical for wide-scale use in time-limited primary care settings, particularly if used alongside prototypic depression screening tools.

Thus, the third study (Chapter 4) focused on developing a short form of the MDRS to make it more useful and accessible in primary care settings. This was done via data collected as part of the same community survey as Study 2. The MDRS-22 was refined to a brief seven item measure (MDRS-7) which included all six domains from the original tool. Findings also indicated that the MDRS-7 detected unique cases of men who score below threshold on widely used prototypic measures of depression, and that MDRS-7 scores are significantly linked to psychological distress and current suicidality for men. Moreover, the MDRS-7 was

also shown to be effective at predicting elevated prototypic depression symptoms at follow-up.

The final study (Chapter 5) involved follow-up data obtained from the community sample involved in Studies 2 and 3. This study (*N* = 326 men) focused on better understanding possible mechanisms through which adherence to masculine norms impacts men's mental health. Specifically, this study examined the mediating role of psychological inflexibility in the relationship between conformity to masculine norms and prototypic and externalising symptoms of depression in men. Findings indicated that psychological inflexibility significantly mediated the relationship between conformity to masculine norms and depression (both prototypic and externalising symptomology) and suggest that psychological inflexibility is more strongly linked with poor mental health than conformity to masculine norms.

Overall, the studies reported in this thesis advance current understanding of older men's symptoms of depression, highlighting the importance of examining externalising symptoms of depression in men across the lifespan, and the potential utility of increasing psychological flexibility in men with strict adherence to masculine norms as a means of improving mental health outcomes. Clinical implications, strengths, limitations, and recommendations for future research are discussed.

## Declaration

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university of other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university of other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

I acknowledge that copyright of published works contained within this thesis resides with the copyright holder(s) of those works.

I also give permission for the digital version of my thesis to be made available on the web, via the University's digital research repository, the Library Search, and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

I acknowledge the support I have received for my research through the provision of an Australian Government Research Training Program Scholarship and a CSIRO Supplementary Scholarship.

**Published Manuscripts:**

**Herreen, D.,** Rice, S. M., Currier, D., Schlichthorst, M., & Zajac, I. T. (2021). Associations between conformity to masculine norms and depression: Age effects from a population study of Australian men. *BMC Psychology, 9*(1)*,* 32-42. https://doi.org/10.1186/s40359-021-00533-6

**Herreen, D.,** Rice, S. M., Ward, L., & Zajac, I. T. (2021). Extending the Male Depression Risk Scale for use with older men: The effect of age on factor structure and associations with psychological distress and history of depression. *Aging & Mental Health,* 1-9. https://doi.org/10.1080/13607863.2021.1947966

**Herreen, D.,** Rice, S. M., & Zajac, I. T. (2022). Brief assessment of male depression in clinical care: Validation of the Male Depression Risk Scale short form in a cross-sectional study of Australian men. *BMJ Open, 12*. https://doi.org/10.1136/bmjopen-2021-053650

**Manuscript Under Review:**

**Herreen, D.,** Rice, S. M., & Zajac, I. T. (2022). Psychological inflexibility mediations the relationship between conformity to masculine norms and depression: Support for a transdiagnostic approach to working therapeutically with men. *Journal of Contextual Behavioral Science.*

**Conference Presentations:**

**Herreen, D.,** Rice, S. M., Ward, L., & Zajac, I. T. (2021, July). *Masculinity and depression: Conformity to masculine norms across age groups.* Paper presented at the 32nd International Congress of Psychology, Prague, Czech Republic (virtual attendance).

**Herreen, D.,** Rice, S. M., Zajac, I. T. (2021, September). *Brief assessment of male depression in clinical care: Validation of the Male Depression Risk Scale Short Form*. Poster presented at the 31st International Association of Suicide Prevention World Congress, Gold Coast, Australia (virtual attendance).

**Herreen, D.,** Rice, S. M., Zajac, I. T. (2021, September). *Brief assessment of male depression in clinical care: Validation of the Male Depression Risk Scale Short Form*. Poster presented at the 15th Annual Florey Postgraduate Research Conference, Adelaide, Australia.

Danielle Alyce Herreen

8 April 2022

**Acknowledgements**

There are many people I would like to thank for their support and encouragement throughout my PhD journey. Foremost, I would like to express my sincere gratitude to my supervisory team. To my principal supervisor, Dr Ian Zajac, thank you for your continuous professional and personal support throughout all stages of my academic and clinical training. I am incredibly grateful for your guidance towards fostering my career and for encouraging me to believe in myself. Associate Professor Simon Rice, this work truly would not have been possible without the significant contributions you have made to the field. Thank you for sharing your knowledge and for your responsiveness, dependability, and reassurance throughout my candidature. Finally, Dr Lynn Ward, thank you for always making the time to listen and offer your wisdom, positivity, and sense of humour.

This work would not have been possible without the financial support of the Australian Government Research Training Program Scholarship and a Supplementary Scholarship provided by the Commonwealth Scientific and Industrial Research Organisation (CSIRO). In addition to the financial support I received from CSIRO, I am thankful for the ongoing research and administrative support that has been provided to me. I would also like to acknowledge the support of my colleagues from the Master of Psychology, PhD, and combined programs. Special thanks go to Hugh and Joyce for your support and friendship throughout the last four years. Thanks must also go to the participants involved in the research who made this all possible and to the organisations who helped advertise and promote this project.

Nobody has been more important to me in the pursuit of this project than my family and friends. Special thanks to my wonderful friends, Mary and Daisy. I am forever grateful for the love and friendship you have shown me throughout this journey and for keeping me

grounded. To my family, thank you for your unconditional love and support. Mum and Dad, I am so lucky to have you as my parents. Thank you for always being interested in and supportive of everything I choose to pursue. I hope I make you proud. I would also like to thank my sister, Nicole, for her endless support and encouragement and for communicating with me through memes when that's all my brain could handle.

Finally, I wish to thank the three great loves of my life: my incredibly supportive husband, Tyson, and my two cats, Yoko and Gus. Tyson, thank you for the compromises you have made throughout the last four years and for your tireless support through the ups and downs. I couldn't have done it without you.

# Preface

## Background

Depression is the leading cause of disability worldwide, affecting an estimated 322 million people globally each year (World Health Organization, 2017). Depression engenders significant challenges for individuals, families, and healthcare systems, and significantly increases risk of death by suicide (Ribeiro et al., 2018). In most countries, women are twice as likely to be diagnosed with depression than men (Salk et al., 2017), yet men account for more than three-quarters of deaths by suicide (Australian Bureau of Statistics, 2020; World Health Organization, 2014). Older men are at particularly high risk of death by suicide, with the highest age-specific suicide rate in men aged 85 years and above (Australian Bureau of Statistics, 2019a; World Health Organization, 2014).

It has been proposed that strict adherence to traditional masculine norms may contribute to poor mental health outcomes and potential underdiagnosis of depression in men (Rice et al., 2021). Traditional masculine norms typically encourage stoicism, independence, and avoidance of emotional vulnerability (Addis et al., 2010; Oliffe & Phillips, 2008). Therefore, men with strict adherence to these norms may suppress their emotions and avoid seeking help when experiencing psychological distress, increasing their risk of mental health problems such as depression (Mankowski & Smith, 2016). In addition, some men may present with externalising symptoms of depression such as anger, risk-taking, and substance misuse that are more congruent with masculine role norms but are not captured by current diagnostic criteria and prototypic screening tools for depression (Call & Shafer, 2018; Rice et al., 2013; Wide et al., 2011).

**Problem Statement**

Despite a considerable number of studies demonstrating a relationship between conformity to masculine norms and poor mental health outcomes in men, meta-analytic findings suggest that the absolute size of this effect is relatively small (Wong et al., 2017). In addition, it appears to be specific masculine characteristics, such as self-reliance, that are particularly problematic in the context of men's mental health (Pirkis et al., 2017; Wong et al., 2017). However, limited studies have examined the influence of age on the relationship between masculine norms and prototypic (e.g., DSM-5-TR) symptoms of depression and population-based studies are lacking.

Research relating to externalising symptoms of depression in older adults has also been largely unexplored, notwithstanding growing evidence that some men report a phenotypic variant of depression comprising a range of externalising (e.g., anger and aggression, substance misuse, and risk-taking) and male-type symptoms (e.g., emotion suppression and somatic complaints). Compounding this issue is a lack of appropriate male-specific screening tools that have been validated with older men. The Male Depression Risk Scale (MDRS-22; Rice et al., 2013) has received significant research attention in recent years, with studies demonstrating its ability to detect men at risk of depression and suicide (e.g., Rice, Kealy, et al., 2019; Rice, Ogrodniczuk, et al., 2019; Zajac et al., 2020). However, most studies using the MDRS-22 focus on younger and middle-aged men, and it remains unclear whether the MDRS-22 is appropriate for use with older men. This is a significant oversight, especially when considering the increased risk of suicide amongst this cohort. Furthermore, the length of the MDRS-22 (22 items) may prohibit its use in time-restricted primary care settings, limiting its potential clinical utility.

**Aims**

The overarching aim of this thesis was to extend research on the expression of symptoms of depression in men to older males, investigating age group differences in adherence to masculine norms and prototypic symptoms of depression, examining the psychometric properties of a measure of externalising and male-type symptoms of depression in older men, and exploring possible mechanisms underlying the relationship between adherence to masculine norms and depression in men across the lifespan. One secondary analysis and three cross-sectional, quantitative studies were conducted in order to:

1. Examine age group differences in conformity to masculine norms and the extent to which conformity to masculine norms is related to prototypic symptoms of depression and self-reported depression history in older men (Study 1)

2. Determine whether the MDRS-22 is a psychometrically valid measure of externalising and male-type symptoms of depression in older men (Study 2)

3. Reduce the MDRS-22 to a short form version to facilitate its use in primary care (Study 3)

4. Investigate possible mechanisms (i.e., psychological inflexibility) through which conformity to masculine norms is associated with prototypic and externalising symptoms of depression (Study 4)

**Significance**

Improved understanding of the role of strict adherence to masculine norms for men across the lifespan and its relationship to depression could help inform mental health

promotion programs and facilitate more effective psychological treatment. In addition, increased understanding and assessment of men's symptomatic experience of depression across the lifespan may lead to improvements in the detection and treatment of mental health problems in men—and by extension—suicide. With the number of older men living with depression predicted to rise in accordance with demographic ageing of the population, this goal is especially important.

**Overview of Thesis Structure**

This Combined PhD/Master of Psychology (Clinical) thesis is formatted as 'thesis by publication'. This thesis comprises six chapters, including four studies: one secondary analysis and three cross-sectional studies.

This thesis begins by reviewing the broader academic literature to provide context for the studies presented in Chapters 2 to 5. Chapter 1 provides an overview of the literature relating to depression, gender and age-related differences in depression, the relationship between conformity to masculine norms and the expression of symptoms of depression in men across the lifespan, and the assessment of depression in men. Furthermore, this chapter provides an overview of the studies designed to address the thesis' aims and objectives.

Following the introductory chapter, four chapters are presented, incorporating three published, peer-reviewed research papers and one paper currently under review, each contributing to the overall aims of the thesis. A preamble is provided before each study, highlighting the rationale for the study and relevance to the overarching aims of the thesis. These papers are presented in manuscript format, with the same typeset as the main body of the thesis.

Chapter 2 outlines a secondary analysis of a large population sample of men aged 15-55 years. This paper, published in *BMC Psychology*, examined age group differences in conformity to masculine norms and prototypic depression symptoms and self-reported depression history.

Chapter 3 outlines a cross-sectional study involving a large sample of younger and older men. This paper, published in *Aging & Mental Health*, examined the psychometric properties of the MDRS-22 in younger and older males, exploring relationships between prototypic symptoms of depression and self-reported depression history.

Chapter 4 extends the findings from Chapter 3, using data from the same community sample. This paper, published in *BMJ Open,* focused on developing a short form of the MDRS to facilitate its use in primary care settings with men across the lifespan. Relationships between the MDRS short form, current suicidality, and psychological distress were examined. In addition, the ability of the MDRS short form to detect elevated prototypic symptoms of depression at follow-up was explored.

Chapter 5 considers possible mechanisms through which adherence to masculine norms impacts depression in men using follow-up data obtained from the community sample involved in studies two and three. This study, currently under review in the *Journal of Contextual Behavioral Science,* focused on the possible mediating effect of psychological inflexibility on prototypic and externalising symptoms of depression. In addition, this study considered whether this mediating effect varies as a function of age.

These studies were prepared in adherence with the specific guidelines of each journal. There are minor differences in terminology used throughout the different studies as requested by the reviewers. The American Psychological Association (Seventh Edition) formatting has been used throughout this thesis, alongside British English spelling.

Accordingly, there may be minor formatting differences in the published/submitted versions of these studies relative to those presented within these chapters. References for all chapters are provided collectively at the end of the thesis. Acronyms are spelt out in full on first use and frequently used acronyms are included in the List of Abbreviations. Tables and Figures are presented within the chapters and supplementary material is provided at the end of each chapter.

Finally, Chapter 6 synthesises the major findings from the four studies and their contribution to the broader literature. The clinical implications, strengths, and limitations of this research are acknowledged, and suggestions for future research are discussed.

# Chapter 1: Introduction and Literature Review

This combined PhD/Master of Psychology (Clinical) thesis examined differences in the expression of symptoms of depression in men across the lifespan. The purpose of this first chapter is to review relevant information and literature on the diagnosis of depression, the impact of depression, and gender and age-related differences in depression. In addition, this chapter provides an overview of research on the relationship between conformity to masculine norms and depression, and the assessment of depression in men. Furthermore, this chapter aims to highlight gaps in the existing research literature, to review related theories and concepts, and to provide an outline of the studies designed to address the thesis' aims and objectives.

## 1.1 Overview of Depression and Diagnostic Criteria

Depressive disorders are the leading cause of disability worldwide (World Health Organization, 2017). Major depressive disorder (MDD) is the most common depressive disorder, resulting in a combination of affective, somatic, and cognitive changes that significantly impact on psychosocial functioning and quality of life (Malhi & Mann, 2018). The application of diagnostic criteria alongside clinical judgement is required to provide a diagnosis of MDD which is typically made by a mental health professional or primary care physician (Australian Institute of Health and Welfare, 2021). The two main diagnostic classification systems used internationally are the Diagnostic and Statistical Manual of Mental Disorders (5th Edition., Text Revision.; DSM-5-TR; American Psychiatric Association,

2022)[1] and the International Classification of Diseases (11th Edition.; ICD-11; World Health Organization, 2019). Although both diagnostic systems are widely used within healthcare settings, the DSM is the main classification system used for mental health research due to its clearly defined criteria and overlap with many existing screening tools (Malhi & Mann, 2018).

A diagnosis of MDD as per the DSM-5-TR is dependent on the presence of at least five of the nine key symptoms persisting throughout the majority of the day for a minimum of two weeks—at least one of which must be depressed mood or anhedonia (American Psychiatric Association, 2022). The other seven possible symptoms include appetite or weight disturbances, concentration difficulties, psychomotor agitation or retardation, loss of energy or fatigue, insomnia or hypersomnia, feelings of worthlessness or excessive guilt, and suicidal ideation or recurrent thoughts of death (Uher et al., 2014). These symptoms must cause significant distress and/or impairment in functioning to receive a diagnosis (American Psychiatric Association, 2022). Notwithstanding the existence of established symptom criteria, depression can manifest in many forms with different combinations of symptoms (Herrman et al., 2019). Thus, diagnosing MDD has proven to be challenging because of existing criteria which, at least to some extent, ignore the heterogeneity in presentations of this illness (Goldberg, 2011; Lieblich et al., 2015).

### *1.1.1 Impact of Depression*

Depression (e.g., MDD)—either alone or comorbid with other mental health conditions—has a significant impact on a range of important outcomes with personal, societal, and economic consequences (Malhi & Mann, 2018). In addition to significantly

[1] The DSM-5-TR was released in March 2022. The studies presented within this thesis were prepared and submitted before the new iteration was released and thus refer to the DSM-5. There have been no changes to diagnostic criteria for MDD in the DSM-5-TR. The DSM-5-TR is discussed further in section 6.5.

diminishing quality of life (Schofield et al., 2019), depression is associated with increased all-cause morbidity and mortality (Cuijpers et al., 2014; Lotfaliany et al., 2018) and more frequent use of healthcare services and hospitalisations than those without depression (McLaughlin, 2011). According to the 2020 Global Burden of Disease Study, depressive disorders resulted in 49.4 million disability-adjusted life years (i.e., the number of years of healthy life lost to either mortality or disability) globally (COVID-19 Mental Disorders Collaborators, 2021). Moreover, the annual cost of depression (e.g., direct costs of depression treatment and indirect costs of lost income due to reduced productivity and absenteeism from work) in Australia is estimated to be AUD $12.6 billion (Harvey et al., 2017). The most severe consequence of depression is suicide attempt or death by suicide (Möller-Leimkühler, 2003; Nordentoft et al., 2011). Although some suicides occur without prior depression or mental health problems, meta-analytic findings demonstrate that individuals with depression have a seven-fold higher risk of suicide attempt compared to non-depressed persons (Cai et al., 2021).

### *1.1.2 Prevalence of Depression*

The prevalence and incidence of depression varies considerably across countries and studies, largely due to inconsistent measurement and study design factors (Kessler & Bromet, 2013). According to recent research by Levis et al. (2019), prevalence rates based on self-report tools were on average 14% higher compared to estimates obtained through diagnostic interviews. Global estimates, however, suggest that around 4.4% of the population, or 322 million people are living with depression each year—the majority of them women, young people, and the elderly (World Health Organization, 2017). The lifetime prevalence of depression is around 15-18%, with close to one in five people experiencing a major depressive episode at some point in their lifetime (Malhi & Mann, 2018). In Australia,

prevalence estimates are amongst the highest in the world (World Health Organization, 2017), with the most recent Australian National Health Survey indicating that around one in ten people (10.4%) were affected by depression between 2017-2018 (Australian Bureau of Statistics, 2018). Depression typically has its onset during young adulthood (Kessler & Bromet, 2013). However, more than 75% of individuals who have suffered from a major depressive episode will experience subsequent episodes throughout the life course, highlighting the chronic and pervasive nature of the disorder (McLaughlin, 2011).

Despite convincing evidence of interventions that decrease the impact of depression (e.g., Linde et al., 2015), prevalence rates are rising globally (World Health Organization, 2017). This is particularly evident when considering the major stressors that people around the world have faced as a result of the COVID-19 pandemic (COVID-19 Mental Disorders Collaborators, 2021). For example, a recent meta-analysis suggests that prevalence rates for depression are now up to seven times higher than they were in 2019 (Bueno-Notivol et al., 2021). Another study estimated an additional 53.2 million cases of depression globally due to the COVID-19 pandemic (COVID-19 Mental Disorders Collaborators, 2021). This increase is believed to be due to a number of factors including the unpredictable nature of COVID-19, social isolation, financial stress, loss of control and personal freedoms, and concern for one's own health and wellbeing and the health and wellbeing of others (Bueno-Notivol et al., 2021). This considerable rise in the number of people living with depression, in conjunction with the significant impact it has on individuals, their families, and healthcare systems, highlights the need for increased understanding of the disorder to improve its management.

## 1.2 Depression in Men

Men are diagnosed with and treated for depressive disorders at a significantly lower rate than women, with epidemiological research indicating that depression rates in men are approximately half those of women (Kessler et al., 2003). In Australia, MDD is reported to affect around one in eight men across their lifetime, compared to one in six women (Beyond Blue, 2022). This difference has been largely attributed to a supposed reluctance of men to seek-help for depression (Seidler et al., 2016). However, recent findings demonstrate that many men, including those with a high burden of depressive symptoms, do in fact engage with healthcare services (Australian Institute of Family Studies, 2020; Martin et al., 2021). In addition, epidemiological studies involving random sampling strategies which are not biased by self-selection still report increased prevalence of depression amongst women (Smith et al., 2018). The gender difference in diagnoses of depression appears in Western and most non-Western countries (Martin et al., 2013; Van de Velde et al., 2010) and has been referred to as one of the most robust findings in all psychiatric epidemiology (Cyranowski et al., 2000).

Recently, Salk et al. (2017) conducted two meta-analyses on depression diagnoses and depressive symptoms to explore gender differences across the lifespan. The two meta-analyses included nationally representative samples each synthesising data from over 1.7 million men and women from more than 90 different nations. At age 12, females were three times more likely to have a diagnosis of depression compared to males. Although this difference diminished to some extent during adulthood, depression was diagnosed at a relatively consistent 2:1 female to male ratio throughout the lifespan and into old age. Depressive symptoms were also more prevalent in females than males. However, effect sizes in relation to gender differences in symptoms across age were lower relative to

differences in depression diagnoses. This finding suggests that more men appear to be experiencing depressive symptomology than are diagnosed with the disorder.

### *1.2.1 Is Being Male Truly Protective?*

Due to the lower incidence rates for men in comparison to women, depression research has routinely focused on examining women's purported greater susceptibility to depression, with being male often considered a protective factor (Addis, 2008; Cavanagh et al., 2017). Possible explanations for this female preponderance include biological (e.g., hormones; Albert, 2015), psychological (e.g., rumination; Nolen-Hoeksema, 2012), and social (e.g., gender stratification and inequality; Kuehner, 2017) factors. Notwithstanding substantial research, the gender difference in the prevalence of depression remains for many researchers "well-documented, poorly understood and multifactorial" (Kunst et al., 2019, p. 1).

Despite lower rates of depression diagnoses in males, men are over-represented among statistics for risk-taking and anti-social behaviours such as physical violence and substance misuse (Brownhill et al., 2005; Seidler et al., 2016). In addition, although women have higher rates of non-fatal suicidal behaviour, men have significantly higher rates of death by suicide compared to females, with men consistently accounting for more than three-quarters of all suicide deaths in Australia (Australian Bureau of Statistics, 2020) and other Western countries (World Health Organization, 2014). In fact, six men die each day in Australia due to suicide and it is the leading cause of death for males aged between 15 and 44 years (Australian Bureau of Statistics, 2019a). The discrepancy between higher rates of suicide alongside lower diagnoses of depression in men is particularly concerning given that depression is a significant risk factor for suicidal ideation, suicide plan, suicide attempt, and death by suicide (Cai et al., 2021; Ribeiro et al., 2018). There is growing consensus among

researchers, clinicians, professional organisations, and government agencies that a proportion of men who die by suicide with no prior depression may actually have depression that is undiagnosed (Addis, 2008; American Psychological Association, 2018; Australian Institute of Family Studies, 2020; Australian Psychological Society, 2017; Cavanagh et al., 2017; Martin et al., 2013; Rice et al., 2013).

### 1.3 Depression in Older Adults

The world is experiencing an unprecedented demographic shift towards older adults, typically defined in developed countries as those aged 65 years and above (Australian Institute of Health and Welfare, 2017; Laidlaw & Pachana, 2009). In Australia, the size of our older cohort is continuing to grow and is projected to more than double by 2057 (Australian Institute of Health and Welfare, 2017). However, despite positive trends in longevity, longer life is not always accompanied by comparatively better health and wellbeing (Christensen et al., 2009). Ageing patterns in the Australian population present upcoming challenges for our health and aged-care systems, including more people living longer with mental health concerns, and more people developing mental health problems in older age (Australian Institute of Health and Welfare, 2015).

Although depression is not a normal part of the ageing process (Pachana, 2014), older adults have a greater risk of developing a depressive disorder due to the cumulative effect of multiple risk factors including increased physical health problems, chronic pain, bereavement, loss of independence, and declining social support (Rodda et al., 2011; Wilkinson et al., 2018). Depression generally presents with similar symptoms in both younger and older adults (Fiske et al., 2009). However, older adults have been found to report increased somatic symptoms such as weight loss and fatigue, relative to younger

adults (Kok & Reynolds, 2017; Rodda et al., 2011). Depression in older adults tends to be more chronic in nature compared to younger populations (Schaakxs et al., 2018; Wilkinson et al., 2018). Moreover, depression in older adults is associated with increased functional and cognitive impairment (Fiske et al., 2009), elevated risk of dementia (Kuring et al., 2020), and more frequent and longer acute hospitalisations (Muir-Cochrane et al., 2014).

### *1.3.1 Prevalence of Depression in Older Adults*

Consistent with findings pertaining to younger and middle-aged adults, prevalence rates of depression in older adults vary considerably across studies due to methodological differences (Pirkis et al., 2009), with estimates ranging from 1-49% (Djernes, 2006). According to a recent review of 20 studies involving 18,953 participants, the global prevalence of depression in older adults is approximately 13.3% (Abdoli et al., 2021). In Australia, it is estimated that around 10-15% of older adults living in the community, and around 50% of those living in residential aged-care facilities suffer from elevated symptoms of depression (Amare et al., 2020; Australian Institute of Health and Welfare, 2015). However, depression in older adults is commonly underdiagnosed and undertreated (Allan et al., 2014; Rodda et al., 2011). For example, meta-analytic research examining GP's recognition of depression in older adults (aged 60 years and above) revealed that less than 50% of depression cases were identified in primary care settings (Mitchell et al., 2010). This is believed to be largely due to both older adults and health professionals misattributing symptoms of depression as a natural reaction to illness or the ageing process itself (Chew-Graham & Ray, 2016; Fiske et al., 2009).

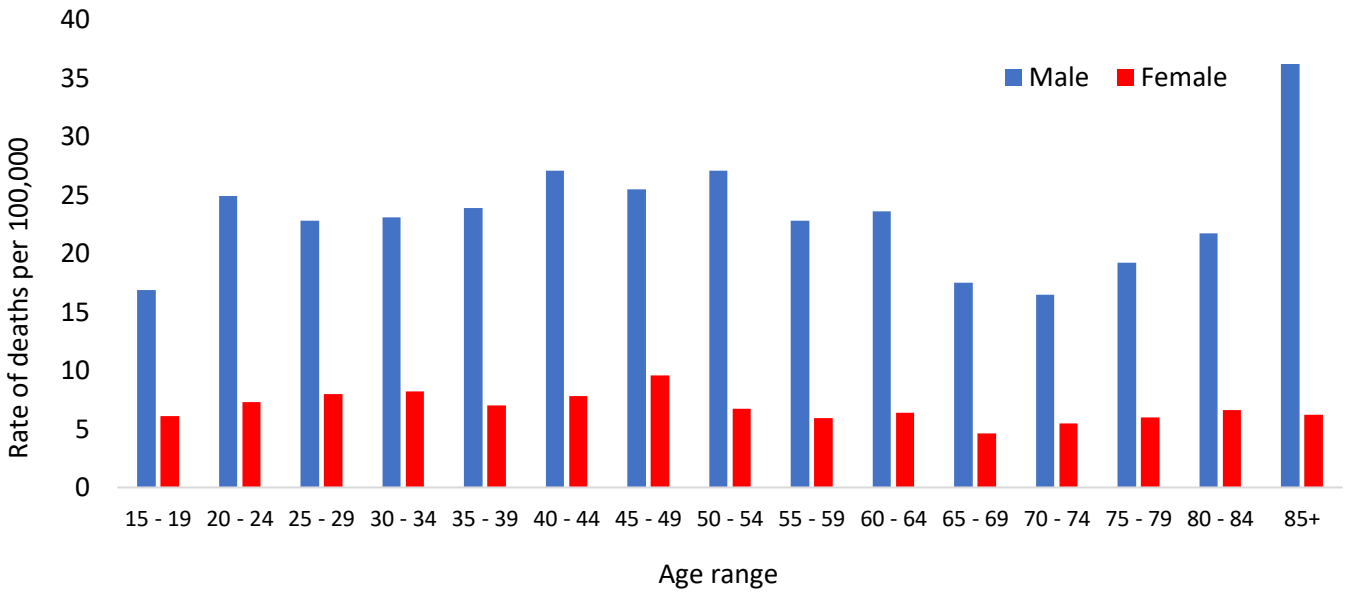
### *1.3.2 Suicide Rates in Older Men*

The juxtaposition of lower reported diagnoses of depression amid higher suicide rates is also found in older males (Almeida et al., 2016). As shown in Figure 1, suicide rates

in Australia are higher in men compared to women throughout the life course, with the rate of suicide among men aged 85 years and above being the highest of any age or gender group (Australian Bureau of Statistics, 2019a). While there may be several factors contributing to the higher rates of death by suicide in older males including physical illness (Almeida et al., 2016) and social disconnectedness (Conejero et al., 2018), suicide research has consistently identified depression as a key risk factor for suicide attempt and death by suicide in older adults (Almeida et al., 2012; King, Schlichthorst, et al., 2020; Murphy et al., 2018; Wiktorsson et al., 2010).

**Figure 1**

*2020 Age-Specific Suicide Rates in Australia by Sex*




*Note.* Adapted from *Causes of Death, Australia*, by Australian Bureau of Statistics, 2020 (https://www.abs.gov.au/statistics/health/causes-death/causes-death-australia/latest-release). In the public domain.

The increased suicide rates seen in older men in Australia and worldwide (World Health Organization, 2014) highlight the need for better detection and diagnosis of depression amongst this group. In other words, these findings suggest that there may be a number of depressed older men who are not diagnosed and therefore remain untreated for their depression (Apesoa-Varano et al., 2018; Hurd Clarke & Lefkowich, 2018). With rates of depression and suicide set to rise in accordance with demographic ageing of the population (Australian Institute of Health and Welfare, 2015; Cui & Fiske, 2020), there is an urgent need to improve the recognition and understanding of depression and how its presentation may differ across the lifespan.

### 1.4 Conformity to Masculine Norms and Men's Mental Health

In every age group, men have a higher risk of serious chronic disease and death relative to women (Courtenay, 2003). Gender, viewed as a socially constructed category, is a key determinant of men's health and wellbeing, rather than just a means by which two biologically different sexes can be categorised (Johnson et al., 2012). Through the process of gender role socialisation, boys and men are influenced by societal expectations of what are acceptable and unacceptable masculine behaviours and attitudes (Galambos, 2013; Smith et al., 2018). According to Connell (1995), the terms 'traditional masculinity' or 'hegemonic masculinity' represent the culturally dominant ideal and prescriptive form of what it means to be a man. Gender socialisation paradigms assert that masculinity must be 'performed' through symbolic and behavioural demonstrations to others, as well as rejecting those whose demonstrations are deemed insufficient (Addis & Mahalik, 2003). The theorist, Courtenay (2003), suggests that health-behaviours are one way through which masculinity can be enacted.

The underlying characteristics associated with hegemonic masculinity include anti-femininity, success, and toughness (Mankowski & Smith, 2016). As such, in Western cultures, men are typically encouraged to adhere to masculine norms emphasising stoicism, independence, and unemotionality (Addis et al., 2010; Sileo & Kershaw, 2020). Adherence to masculine norms can be adaptive (Brooks, 2010), particularly when enacted flexibly (Mahalik et al., 2003; Spendelow & Seidler, 2020). However, rigid conformity to traditional masculine norms can contribute to cognitions and behaviours that place men at risk of poor physical and mental health outcomes, including depression (Mahalik et al., 2007; Mahalik & Rochlen, 2006).

### *1.4.1 Theoretical Models for Understanding the Relationship Between Conformity to Masculine Norms and Men's Mental Health*

Multiple theories have been proposed to explain the relationship between adherence to masculine norms and men's mental health. According to the gender role conflict theory (O'Neil, 2008), rigid adherence to masculine norms can result in psychological distress, particularly when forced to behave in ways that are inconsistent with traditional masculine norms such as by seeking help (Yousaf et al., 2015). Men undergoing gender role transitions or developmental changes over the lifespan (e.g., becoming a father or retiring from work) may experience heightened levels of gender role conflict (O'Neil, 2008; Robbins et al., 2016). The gender role strain paradigm (Pleck, 1995), however, argues that for many men, restrictive masculine norms create several forms of strain, as boys and men struggle to satisfy the contradictory and unrealistic standards of masculine behaviour and attitudes (Levant, 2011). Such strains are presumed to place boys and men at risk for emotional challenges such as depression and to create barriers to coping flexibly (Addis et al., 2010; Mankowski & Smith, 2016). It is, however, important to acknowledge that

masculinity is not a homogenous, universal construct (Pirkis et al., 2017). Rather, the concept of masculinities in the plural, recognises the fluid and constantly evolving nature of masculinity (Beel et al., 2018; Seidler et al., 2019). For example, some men adhere to traditional masculine norms in specific contexts or moments in their lives and not in others (Mahalik et al., 2003).

### *1.4.2 Research on the Relationship Between Conformity to Masculine Norms and Men's Mental Health*

The Conformity to Masculine Norms Inventory (CMNI; Mahalik et al., 2003) is amongst the most widely used psychometric measures of masculinities within the research literature (Gerdes & Levant, 2018). The CMNI is a self-report scale that assesses an individual's conformity (or non-conformity) to 11 subscales reflecting affective, behavioural, and cognitive dimensions of dominant Western masculine norms. The 11 norms identified by Mahalik et al. (2003) include dominance, power over women, violence, playboy attitudes, disdain for homosexuals, pursuit of status, emotional control, primacy of work, winning, risk-taking, and self-reliance. A considerable body of research has demonstrated that rigid conformity to masculine norms is associated with poor mental health outcomes, including psychological distress and depression symptoms, (Iwamoto et al., 2018; Mahalik et al., 2003), substance misuse (Liu & Iwamoto, 2007), reduced mental health literacy (Milner et al., 2019), and maladaptive coping behaviours in response to depressive symptoms (Mahalik & Rochlen, 2006). In addition, adherence to masculine norms has consistently been associated with reduced help-seeking behaviour and unfavourable attitudes toward seeking psychological treatment amongst men (Addis & Mahalik, 2003; Levant et al., 2009; McDermott, Smith, et al., 2018; Seidler et al., 2016; Smith et al., 2018; Wong et al., 2017).

This is likely due to the belief that seeking help compromises masculine identity due to a perceived loss of control and admission of vulnerability (Johnson et al., 2012).

In a recent meta-analytic synthesis of research focusing on conformity to masculine norms and mental health-related outcomes based on a combined sample of 19,453 participants, conformity to masculine norms was positively associated with negative mental health (e.g., depression, psychological distress, substance use, body image disturbance), as well as inversely related to positive mental health (e.g., life satisfaction, self-esteem, social wellbeing) and psychological help seeking (e.g., attitudes toward seeking professional psychological help) (Wong et al., 2017). However, the small effect sizes for positive and negative mental health ($r \geq .10$), compared to the medium effect sizes for psychological help-seeking ($r \geq -.31$), suggest that an individual's conformity to masculine norms has a potentially greater impact on help-seeking behaviours than on mental health outcomes. Moreover, when considering the impact of specific masculine norms, only three of the 11 subscales were significantly, consistently, and robustly related to adverse mental health outcomes. These include the subscales assessing domains of self-reliance, playboy, and power over women. When examining these effects more closely, self-reliance was the subscale most strongly related to poorer mental health outcomes. This finding is consistent with recent research demonstrating that self-reliance is associated with poorer mental health and increased risk of suicide in a population study of men (Milner et al., 2018; Pirkis et al., 2017), as well as studies indicating that subscales differ in their associated outcomes (Gerdes & Levant, 2018). Together, these findings challenge the notion that all aspects of masculinity are inherently harmful to men's mental health.

### *1.4.3 Conformity to Masculine Norms as a Proxy for Psychological Inflexibility*

The abovementioned findings highlight the need for future research to explore possible mechanisms underlying the relationship between adherence to masculine norms and men's mental health. Indeed, emerging research suggests that the relationship between masculinities and men's mental health may operate through a learned rigidity in coping styles and a reduced repertoire of coping strategies (Spendelow & Seidler, 2020). For example, men with strict adherence to masculine norms emphasising the importance of self-reliance and emotional control may be more inclined to suppress their emotions and less likely to utilise adaptive coping strategies in response to distress (Cheng, 2005; Rice et al., 2011). Given the lack of evidence-based interventions to shift conformity to masculine norms in mental health settings, viewing masculinities through a coping styles framework may lead to important insights into working therapeutically with high conforming men.

Specifically, psychological inflexibility is a transdiagnostic process which reflects the tendency to become entangled with difficult thoughts and attempts to avoid unwanted internal experiences (Bardeen & Fergus, 2016; Hayes et al., 2012). This construct shares many similarities with strict adherence to masculine norms, including a rigid approach to intrapersonal experiences (Spendelow & Joubert, 2018). Importantly, existing therapeutic modalities aimed to increase psychological flexibility exist that could be leveraged in clinical settings. Thus, future research aimed at better understanding possible contributing pathways between masculine norms and men's mental health (e.g., psychological inflexibility), as well as age-related differences, will be an important undertaking.

### *1.4.4 Ageing and Masculinities*

Age is often acknowledged as an important factor in the context of masculinities (Pompper, 2010; Strough et al., 2007). However, there is a lack of empirical studies involving

men who are middle-aged, older, or in the later stages of life (Levant, Webster, et al., 2020; Tannenbaum & Frank, 2011). As a result, the role of masculinities for older men, particularly in relation to mental health, has been largely ignored (Robbins et al., 2016). This is a significant oversight, especially when considering demographic ageing of the population, both in Australia and worldwide (Australian Institute of Health and Welfare, 2017).

In Western cultures, ageing is commonly associated with a loss of functions that, to varying degrees, contradict traditional masculine norms (i.e., beliefs that men should be physically strong and in control) (Rochelle, 2015; Smith et al., 2007). Consequently, the abundance of societal messages that can be internalised in older men is likely to affect their perceptions of both themselves and their role in society (Robbins et al., 2016). Some researchers have suggested that the role adjustments associated with common events of older age such as retirement from work, or declining physical health, may create opportunities for men to reconstruct their masculine beliefs to less constraining ones (Hurd Clarke & Lefkowich, 2018; Peak & Gast, 2014). In contrast, other studies indicate that some men may struggle to redefine masculine norms with age (Robbins et al., 2016; Rochelle, 2015; Vafaei et al., 2016), and experience difficulties with coping flexibly due to their gender role socialisation and the influence of hegemonic masculinity scripts that foster self-reliance and independence (Canetto, 2017; King, Dow, et al., 2020; Tannenbaum & Frank, 2011).

In an attempt to address this gap, Rice et al. (2011) examined age group differences in conformity to masculine norms and prototypic symptoms of depression in two online community samples (total *N* = 1,223) of males aged 18-64 years. The findings indicated that although conformity to masculine norms decreased with age, the strength of its relationship with prototypic depression symptoms increased with age. These findings indicate that masculine norms may have differential impacts on men's mental health across the lifespan.

For example, it has been suggested that older men with a strict, inflexible adherence to masculine norms such as self-reliance may view ageing-related challenges as exceptionally distressing (Jensen et al., 2010; King, Dow, et al., 2020; Oliffe et al., 2011). Notwithstanding this contribution, the study by Rice et al. (2011) used an online, non-representative sample and it did not examine the relationship between specific masculine norms and depression, thus further research is needed to corroborate these findings.

### *1.4.5 Masculinities and Depressive Symptom Presentation*

In contrast to literature demonstrating that adherence to masculine norms can increase men's risk of poor mental health outcomes including depression (e.g., Wong et al., 2017), these same norms may also reduce men's likelihood of reporting or experiencing prototypic depressive symptoms (Call & Shafer, 2018; Smith et al., 2018; Wide et al., 2011). For example, recent meta-analytic findings demonstrated that individuals with higher self-reported adherence to masculine gender norms experienced lower levels of prototypic depression compared to individuals with lower adherence (Lin et al., 2021). Although the authors concluded that masculinity may have a protective effect against the development of depression (Lin et al., 2021), evidence suggests the relationship between masculinities and depression is more nuanced and reflects the ways in which men are socialised to express their distress (Cole & Davidson, 2018; Oliffe & Phillips, 2008).

### *1.4.6 Theoretical Frameworks for Understanding Depression in Men*

Although no single theory has guided the study of men's depression, four frameworks described by Addis (2008) have been used to conceptualise the role of gender in men's depression: 1) the sex differences framework, 2) the masked depression framework, 3) the masculine depression framework, and 4) the gendered responding framework. The sex differences framework proposes that depression occurs as the same

illness in men and women, although there may be minor phenotypic variations in its presentation. However, findings pertaining to the sex differences framework are inconsistent (e.g., Cavanagh et al., 2016) and focusing on oppositional gender binaries precludes consideration of the socially constructed nature of gender and important individual differences in men's experience and expression of depression (Martin et al., 2013; Seidler et al., 2016). The masked depression framework hypothesises that men suffer from prototypic depression, but symptoms are masked by men's response to the underlying disorder as a result of adherence to traditional masculine norms (Rabinowitz & Cochran, 2008). However, exploration of this framework is problematic due to the inability to measure concealed experiences (Stewart, 2020).

The masculine depression framework suggests that some men's depression is phenotypically different from prototypic depression, incorporating symptoms consistent with standard diagnostic criteria, in addition to externalising and male-type symptoms (Rice, 2011). Hence, men may experience symptoms that are consistent with DSM-5-TR diagnostic criteria for depression, but may deny experiencing depressive symptoms given that internalising prototypic symptoms of depression are incongruent with masculine role expectations. Although this framework has received the most empirical support to date, studies have focused primarily on convenience samples of undergraduate Caucasian males (Addis, 2008). Finally, the gendered responding framework proposes that there are differences in men and women's responses to depression, as well as negative affect in general (Martin et al., 2013). This framework has received considerably less research attention compared to the other frameworks (Addis, 2008). However, there is growing evidence to support the notion that gender socialisation plays a role in how men express and respond to a wide range of emotions (Nolen-Hoeksema, 2012; Price et al., 2018).

## 1.5 Externalising Symptoms of Depression in Men

Empirical evidence suggests that strict adherence to masculine norms may result in men minimising prototypic symptoms of depression such as sadness, anhedonia, and hopelessness, and instead, expressing their distress in ways that are more congruent with dominant masculine ideals (Oliffe et al., 2019; Rice et al., 2013). As such, men may be more likely to present with externalising symptoms such as alcohol and drug misuse (Cavanagh et al., 2016), risk-taking, irritability, and anger (Brownhill et al., 2005; Genuchi & Valdez, 2015; Macdonald et al., 2020), as well as male-type symptoms such as emotion suppression and somatic complaints (Oliffe & Phillips, 2008; Rice et al., 2013; Rice, Kealy, Oliffe, Seidler, et al., 2018).

The notion that depressive symptomology among men may differ from prototypic symptoms of depression stems from the pioneering research on male depression by Rutz et al. (1995). The Gotland Study was a Swedish effort to ameliorate the high suicide rate on the rural island of Gotland, by providing GPs with several days of intensive training in recognising conventional (i.e., DSM-III) depression (Rutz et al., 1995). The program was shown to be successful in reducing the rates of suicide in females. However, the program appeared to have little effect on reducing rates of suicide in males. The overrepresentation of depression in females juxtaposed with higher rates of suicide amongst men led to the suggestion that depression in men is underdiagnosed, and by extension, untreated by GPs (Rutz et al., 1997). As a result, the Gotland study team proposed a male depressive syndrome characterised by a range of externalising symptoms not captured in diagnostic criteria and commonly used screening tools. These symptoms included externalising domains such as aggression, impulsivity, substance use, and irritability (Rutz et al., 1997).

Over the past two decades, there have been a growing number of studies investigating externalising symptoms that differentiate a phenotypic variant of depression among men. One of the most influential studies, drawn from a nationally representative sample from the United States (US), demonstrated that men with depression were significantly more likely to report symptoms of substance misuse, anger and aggression, irritability, and risk-taking over prototypic internalising symptoms (Martin et al., 2013). In addition, this large (*N* = 5,692) retrospective study demonstrated that sex differences in depression prevalence were eliminated when externalising depressive symptoms that are not listed in current diagnostic criteria were included in assessments.

Meta-analytic research provides further support for the presence of externalising symptoms of depression in men. A recent systematic review and meta-analysis by Cavanagh et al. (2017) synthesised 32 studies addressing sex differences in men and women with depression, comprising a total of 108,260 participants. The findings revealed that men with depression reported substance misuse, poor impulse control, and risk-taking at a greater frequency and intensity compared to women (Cavanagh et al., 2017). Moreover, a recent review by Whittle et al. (2015) examined 17 studies focusing on men's strategies used to cope with depression and suicidality. Findings indicated that men experiencing psychological distress overwhelmingly reported externalising and male-type coping strategies such as use of drugs, risk-taking, irritability, and suppression of emotions (Whittle et al., 2015) consistent with symptoms of male depression in other studies (e.g., Rutz et al., 1995). This highlights the underlying complexity in determining what constitutes a symptom of depression in men versus a coping strategy as a response to the condition, and whether it is even possible to differentiate between the two.

### *1.5.1 Externalising Symptoms of Depression in Older Men*

Most research to date has focussed on externalising symptoms in young to middle-aged adults and findings regarding these symptoms in older men are scarce (Price et al., 2018). In an attempt to bridge this gap, Price et al. (2018) explored the relationship between masculine traits, prototypic depression symptoms and externalising depressive symptoms in younger (18 to 30 years) and older (aged 60+ years) men and women. The results revealed that for both age groups (and genders), endorsement of masculine traits was associated with significantly fewer prototypic depressive symptoms, relative to externalising symptoms. However, the study comprised only a small sample of older men (*n* = 36) which precludes in depth analyses and highlights the need for further research with larger samples.

Findings from qualitative studies provide additional support for the possible presence of externalising and male-type depression symptoms in older men. Specifically, older men with depression have been shown to report denying or suppressing outward expressions of emotional pain (Apesoa-Varano et al., 2018; Jensen et al., 2010; Oliffe et al., 2013), increased anger and irritability (Oliffe et al., 2011; Oliffe et al., 2013), and to exhibit aggressive behaviour (Apesoa-Varano et al., 2015; Jensen et al., 2010). To the extent that older men display externalising depressive symptoms, it follows that existing measures that rely on disclosure of prototypic symptoms are likely to contribute to the underdiagnosis of depression in older men. Together, these findings suggest that gender-sensitive assessments of depression in older men may detect additional cases and may also identify distinct factors or behaviours that place depressed older men at risk of poor physical and mental health outcomes (Hinton et al., 2006).

### *1.5.2 Unresolved Questions Regarding Externalising Symptoms of Depression in Men*

Despite considerable empirical evidence suggesting that men's expression of depression comprises a broader range of symptomology that is not captured by diagnostic and commonly used screening tools (Call & Shafer, 2018; Genuchi, 2015; Mauvais-Jarvis et al., 2020), this remains a contested space (Kuehner, 2014). Specifically, it has been proposed that externalising symptoms fail to conform to the prototype of MDD and thus should not be labelled depression (Kuehner, 2017). Similarly, existing diagnostic criteria does not account for depression symptoms as differentiated by sex (Rice, Kealy, Oliffe, & Ogrodniczuk, 2018). Moreover, it is unclear whether this range of externalising symptoms reflect problematic coping strategies (Whittle et al., 2015), a predisposing risk factor for depression in men (Cavanagh et al., 2017), or should instead be considered part of the prodromal phase of a unique manifestation of depression in men (Rice, Kealy, Ogrodniczuk, et al., 2020). However, externalising symptoms not only affect men's wellbeing, but also the wellbeing of women, children, and communities (Wilson & Durbin, 2010). Moreover, externalising symptoms have been found to have direct links with both current and past suicide attempt (Cui & Fiske, 2021; Rice, Ogrodniczuk, et al., 2019; Streb et al., 2021; Zajac et al., 2020) and are thus important factors to consider in the assessment and treatment of depression in men (Cavanagh et al., 2017; Rice, Kealy, Oliffe, & Ogrodniczuk, 2018).

## 1.6 Assessment and Screening of Externalising Symptoms of Depression in Men

Self-report tools are the most common means of screening for symptoms of concern in an individual (Lakkis & Mahmassani, 2015). Commonly used prototypic measures (e.g., those that correspond to DSM-5-TR diagnostic criteria) include the Patient Health Questionnaire (PHQ; Kroenke et al., 2001), the Beck Depression Inventory for Primary Care

(BDI-PC; Beck et al., 1997), and the Centre for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Specific self-report measures for older adults include the Geriatric Depression Scale (GDS; Yesavage et al., 1982), offering a simplified "yes/no" response format (Balsamo et al., 2018). These measures typically take around 5-10 minutes to complete and are frequently used in research and primary care settings (Lakkis & Mahmassani, 2015). However, existing diagnostic criteria and screening tools have been widely criticised as insensitive to important gender differences in the way men express symptoms of psychological distress (Genuchi & Mitsunaga, 2015). Accordingly, male-specific depression screening tools have been developed to assess a broader range of symptoms that align with men's gender role socialisation (Oliffe et al., 2019; Rice, Kealy, Seidler, et al., 2020). These tools account for more nuanced, externalising symptoms of depression, such as anger, risk-taking, and substance misuse. A brief review of key assessment tools is provided below.

### *1.6.1 Gotland Male Depression Scale*

Recognising the need to improve the assessment of depression in men, the Gotland Male Depression Scale (GMDS; Zierau et al., 2002) was the first self-report tool designed to assess men's externalising depressive symptomology, based on the seminal work of Rutz et al. (1997) discussed in section 1.5.1. The GMDS includes 13 items assessing externalising symptoms such as aggression, irritability, and overconsumption of alcohol and drugs, as well as prototypic depressive symptoms including low mood, fatigue, and sleep disturbances. Although the GMDS has been influential in precipitating much needed research into male depression, the psychometric properties of the GMDS have been criticised due to a number of studies failing to replicate the *a priori* two-factor structure (e.g., Möller-Leimkühler & Yücel, 2010; Rice et al., 2017). In addition, a study by Möller-Leimkühler and Yücel (2010)

demonstrated that females endorsed all but two items (i.e., feeling burned out and empty and overconsumption of alcohol and other drugs) of the GMDS to a greater extent than males, raising conceptual questions regarding the role of externalising symptoms in females (Rice et al., 2013).

### *1.6.2 'For Men Only' Depression Prompt List*

Although not strictly a screening instrument, Brownhill et al. (2003) developed the 'For Men Only' Prompt List to facilitate conversations regarding mental health between men and their GPs in primary care. The prompt list asks questions relating to perceptions of health, work, and family satisfaction, social support, major life events, and other issues the doctor should know about. The prompt list also includes 20 'yes/no' questions that reflect issues relating to men's experience of depression and coping. While the prompt list has been shown to be successful in guiding GPs to ask questions relevant to men's experience and expression of depression (Brownhill et al., 2003), it does not appear to have been subsequently examined.

### *1.6.3 Male Symptoms Scale and Gender Inclusive Depression Scale*

In their influential study exploring sex differences in depression using a nationally representative US sample, Martin et al. (2013) developed the Male Symptoms Scale (MSS) and Gender Inclusive Depression Scale (GIDS). The MSS includes six constructs proposed to reflect externalising symptoms of depression (i.e., risk-taking, alcohol and drug use, hyperactivity, stress, irritability, and hyperactivity) and two non-externalising symptoms (i.e., sleep disturbance and loss of interest in pleasurable activities). The GIDS included all the MSS symptoms as well as seven prototypic symptoms of depression (e.g., depressed mood, fatigue). As discussed above, Martin et al. (2013) demonstrated that prevalence rates of depression in men were in fact higher than women when the MSS was used, and

prevalence rates between sexes were equivalent when assessing both prototypic and externalising symptoms (as per the GIDS). However, as this study involved secondary data analysis, not all externalising constructs identified in the literature could be included and many of the items assessed lifetime conditions, rather than current symptoms. In addition, responding to items with either a yes or a no prevents analysis of symptom severity, and two of the externalising symptoms in the MSS (i.e., stress and hyperactivity) appear more closely related to prototypic symptoms than externalising symptoms of depression often identified in the literature. Moreover, neither of these scales appear to have been utilised and examined in subsequently published studies.

### *1.6.4 Masculine Depression Scale*

The Masculine Depression Scale (MDS; Magovcevic & Addis, 2008) is another tool designed to assess symptoms characteristic of a masculine phenotypic variant of depression. The MDS comprises an internalising subscale assessing prototypic symptoms (33 items), and an externalising symptoms subscale assessing masculine externalising behaviours (11 items). Although the MDS has been used in a number of studies (e.g., Genuchi & Mitsunaga, 2015; Price et al., 2018), it has been criticised for its two-dimensional structure and the necessary evaluation of its psychometric properties in diverse samples remains to be assessed (Rice et al., 2013). In addition, the MDS was developed in a small sample of men (*n* = 102) and does not allow for examination of broader subdomains. Moreover, at 44 items, the length of the MDS is arguably impractical for use in clinical settings such as primary care, where consultation times are limited, and screening tools need to be brief (Lakkis & Mahmassani, 2015).

### *1.6.5 Male Depression Risk Scale*

As a result of the limitations of the abovementioned male-specific depression rating scales, Rice and colleagues sought to design a psychometrically sound and multidimensional depression screening tool for men. The Male Depression Risk Scale (MDRS-22; Rice et al., 2013) was developed in line with best practice scale development guidelines (DeVellis, 2016). Following thorough review of the literature, an initial set of 82 items representing nine broad domains relevant to men's experiences of depression were identified. Using exploratory and confirmatory factor analyses, these 82 items were reduced to a 22-item tool, measuring six domains assessing externalising symptoms[2] (i.e., risk-taking, anger and aggression, drug use, alcohol use) and male-type symptoms (i.e., somatic complaints and emotion suppression). The scale format of the MDRS-22 was chosen to enable a continuous measurement of each construct, with responses to items made in reference to the past month using an 8-point Likert scale. The MDRS-22 is the male-specific depression rating scale with the strongest psychometric properties and was thus selected to be the assessment focus of this research program.

### *1.6.6 Research Using the Male Depression Risk Scale*

Findings from empirical studies using the MDRS-22 have been promising. Specifically, the MDRS-22 has been validated in general populations of Australian, Canadian, and German men, with results demonstrating that the MDRS-22 adheres to the theorised factor structure (Rice et al., 2013; Rice, Ogrodniczuk, et al., 2019; Walther et al., 2021). Results have also demonstrated significant relationships between MDRS-22 scores and adherence

[2] Throughout this thesis, MDRS-22 symptoms are commonly referred to as 'externalising' symptoms for simplicity and in keeping with existing literature. However, I acknowledge that not all domains are truly externalising in nature (e.g., emotion suppression). Thus, 'male-type' and 'male-typical' are also used interchangeably to reflect this as requested by reviewers.

to masculine norms (Rice et al., 2013), and that the MDRS-22 exhibits excellent test re-rest reliability (Rice et al., 2015; Rice, Kealy, Seidler, et al., 2020). In addition, findings indicate that scores on the MDRS-22 are significantly correlated with prototypic depression criteria (Rice et al., 2016; Rice et al., 2015; Rice et al., 2013; Walther et al., 2021), and that it is sensitive over time to negative life events (Rice et al., 2015).

Studies have also explored the relationship between the MDRS-22 and suicidality. For example, Rice, Ogrodniczuk, et al. (2019) revealed that the MDRS-22 identified 85% of men with a recent (previous four weeks) suicide attempt compared to the PHQ-9, which only identified 54% of recent male suicide attempts. Similar findings were reported by Cui (2020) who demonstrated that the MDRS-22 significantly predicted suicide risk over and above prototypic depression measures in a large US sample. In addition, Rice, Oliffe, Kealy, et al. (2018) demonstrated that men with an externalising depression symptom profile were significantly more likely to have had a recent suicide plan or to have attempted suicide within the previous four weeks, compared to asymptomatic men.

More recently, Zajac et al. (2020) examined the prevalence of prototypic (i.e., PHQ-9), externalising (i.e., MDRS-22), and mixed depressive symptoms (i.e., those who scored high on both the PHQ-9 and MDRS-22), and their relation to mental illness and suicide risk in a representative sample of Canadian males. Results revealed that those men experiencing only externalising symptoms (11%), and those men with mixed symptoms (12%) were at significantly increased risk of psychological distress as well as current suicide risk. This is a particularly important finding, highlighting the ability of the MDRS-22 to detect at-risk men as well as unique cases of men who are unrecognised using prototypic measures. Although it is likely that trained and experienced mental health or primary care clinicians are able to identify men's depression that is manifesting as externalising symptoms during an

assessment, the studies reviewed above highlight the potential benefits of utilising male-specific tools in primary care settings to improve the identification of at-risk men, thus facilitating access to mental health care (Rice, Oliffe, Kealy, et al., 2018).

### *1.6.7 Limitations of the Male Depression Risk Scale*

The MDRS-22 has facilitated important research and increased understanding of depression in men. However, to date, use of the MDRS-22 has been limited to research, with no studies examining the utility of the MDRS-22 in detecting men's depression and, importantly, suicide risk in clinical settings. It is possible that at 22 items, its length and response format (i.e., 8-point Likert scale) may prohibit its use in time-poor primary care settings where screening tools need to be brief (Hutton & Gunn, 2007; Rice, Kealy, Seidler, et al., 2020). In addition, although older males have not been purposefully excluded from existing studies using the MDRS-22 (e.g., Rice, Oliffe, Kelly, et al., 2018), they are poorly represented and to date, no studies have considered the psychometric properties of the MDRS-22 with older men. Thus, it remains unclear whether the MDRS-22 in its current form is appropriate for use with men across the lifespan.

## 1.7 Summary

Depression is the leading cause of disability worldwide, affecting approximately 322 million people globally each year (World Health Organization, 2017). Although women are diagnosed with depression approximately twice as often as men (Salk et al., 2017), men account for more than three-quarters of deaths by suicide in Australia (Australian Bureau of Statistics, 2020) and most countries around the world (World Health Organization, 2014). Older men are at particularly high risk of death by suicide, with the highest age-specific suicide rate in men aged 85 years and above (Australian Bureau of Statistics, 2019a; World

Health Organization, 2014). With depression known to significantly increase suicide risk (Cai et al., 2021; Ribeiro et al., 2018), these findings suggest that depression may be underdiagnosed and thus undertreated in men (Cavanagh et al., 2017; Martin et al., 2013).

Adherence to masculine norms, defined as the societal expectations of how a man 'should be' (Mahalik et al., 2003), is an important factor in men's experience of depression (Addis et al., 2016). A considerable number of studies indicate that conformity to traditional masculine norms is associated with increased risk of depression in men. However, the absolute size of this effect is small, and it appears to be specific masculine characteristics, such as self-reliance, that are particularly problematic in the context of men's mental health (Wong et al., 2017). Moreover, limited studies have examined the role of age on the relationship between masculine norms and depression, and population-based research is lacking.

In addition to increasing men's risk of depression, conformity to masculine norms can also influence how men express their symptoms of depression (Oliffe et al., 2019). Some depressed men have been shown to report a phenotypic variant of depression including a range of externalising (e.g., anger and aggression, substance misuse, risk-taking) and male-type symptoms (e.g., emotion suppression, somatic complaints) that align with men's gender role socialisation (Rice, Kealy, Seidler, et al., 2020; Rice, Ogrodniczuk, et al., 2019). However, these symptoms are not included in current diagnostic criteria and commonly used screening tools for depression (Genuchi & Mitsunaga, 2015; Mauvais-Jarvis et al., 2020).

In an attempt to improve the assessment of depression in men, various male-specific depression screening tools have been developed. However, many of these scales have significant psychometric issues. The Male Depression Risk Scale (MDRS-22; Rice et al., 2013)

was designed to address limitations of existing measures and has received significant research attention in recent years, with studies demonstrating its ability to detect unique cases of men at risk for depression and suicide. However, most studies using the MDRS-22 focus on younger and middle-aged men, and it remains unclear whether the MDRS-22 is appropriate for use with older men. This is a significant oversight, given the demographic ageing of the population and the increased risk of suicide amongst this cohort. Furthermore, the MDRS-22 in its current form is arguably too long for use in time-limited primary care settings, constraining its potential clinical utility.

### 1.8 Aims of Thesis

The overarching aim of this thesis was therefore to extend research on men's symptoms of depression to older males. Specifically, this thesis aimed to investigate age differences in adherence to masculine norms and prototypic symptoms of depression, examine the psychometric properties of the MDRS-22 in older adults and develop a short form version for rapid use in primary care, and explore possible mechanisms (i.e., psychological inflexibility) through which conformity to masculine norms is associated with depression in men. Four studies were completed to address these aims.

The first study (Chapter 2) involved secondary data analysis of a large population sample of men aged 15-55 years ($N$ = 14, 516) to examine age group differences in conformity to masculine norms and the extent to which strict adherence to masculine norms influences prototypic depression symptoms and self-reported depression history in older men.

The second study (Chapter 3) examined the psychometric properties of the MDRS-22 in a large community sample of younger ($n$ = 510; 18-64 years) and older ($n$ = 439; 65-93

years) men. Relationships between the MDRS-22 and prototypic symptoms of depression and self-reported depression history were examined.

The third study (Chapter 4) involved the development and preliminary validation of a short form of the MDRS to facilitate its use in time-limited primary care settings using data from the same community survey as Study 2. Relationships between the MDRS short form, current suicidality, and psychological distress were examined. In addition, the ability of the MDRS short form to detect cases of prototypic depression at follow-up was explored.

Finally, the fourth study (Chapter 5) examined possible mechanisms through which adherence to masculine norms is associated with depression in men using follow-up data obtained from the community sample involved in Studies two and three. Specifically, this study focused on the possible mediating effect of psychological inflexibility on both prototypic and externalising depressive symptomology, as well as whether this mediating effect varies as a function of age.

# Chapter 2: Study 1 – Associations Between Conformity to Masculine Norms and Depression: Age Effects from a Population Study of Australian Men

## 2.1 Preamble

This chapter consists of a published paper entitled 'Associations Between Conformity to Masculine Norms and Depression: Age Effects from a Population Study of Australian Men', which has been published in *BMC Psychology*.

As highlighted in the preceding chapter, multiple studies have examined the relationship between conformity to masculine norms and prototypic symptoms of depression in men (Wong et al., 2017). However, extant research has focused primarily on younger men and population-based research is lacking. Therefore, this study aimed to examine age group differences in conformity to masculine norms and the extent to which strict adherence to masculine norms impacts self-reported prototypic symptoms of depression and 12-month depression history in a large population study of Australian men.

The published paper is presented in manuscript format as per journal style guidelines, with the same typeset as the rest of the thesis. Tables and Figures are presented throughout the text. Supplementary material for this paper is provided at the end of the chapter. A complete list of all references for the thesis, including those for this paper, is provided at the end of the thesis.

## 2.2 Statement of Authorship

**Associations Between Conformity to Masculine Norms and Depression: Age Effects from a Population Study of Australian Men**

Published in *BMC Psychology*, February 2021

Herreen, D., Rice, S. M., Currier, D., Schlichthorst, M., & Zajac, I. T. (2021). Associations between conformity to masculine norms and depression: Age effects from a population study of Australian men. *BMC Psychology, 9*(1)*,* 32-42. https://doi.org/10.1186/s40359-021-00533-6

*Principal Author*

| | | | |
|---|---|---|---|
| Name of Principal Author (Candidate) | Danielle Herreen | | |
| Contribution to the Paper | Developed rationale for the study and devised aims with supervisors. Performed data analysis and interpretation. Drafted, wrote, and submitted article, then revised and responded to reviewer comments. Acted as corresponding author. | | |
| Overall Percentage (%) | 80 | | |
| Certification | This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper. | | |
| Signature | | Date | 8 April 2022 |

## *Co-Author Contributions*

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

| | | | |
|---|---|---|---|
| Name of Co-Author | Associate Professor Simon Rice | | |
| Contribution to the Paper | Assisted with development of study aims and design. Supervised development of the work and provided input regarding analysis of data. Provided guidance on the preparation of manuscript and editorial and structural feedback. | | |
| Signature | | Date | 8 April 2022 |

| | | | |
|---|---|---|---|
| Name of Co-Author | Dr Dianne Currier | | |
| Contribution to the Paper | Provided input regarding analysis of data. Provided editorial and structural feedback. | | |
| Signature | | Date | 28 March 2022 |

| | | | |
|---|---|---|---|
| Name of Co-Author | Dr Marisa Schlichthorst | | |
| Contribution to the Paper | Provided input regarding analysis of data. Provided editorial and structural feedback. | | |
| Signature | | Date | 29 March 2022 |

| | | | |
|---|---|---|---|
| Name of Co-Author | Dr Ian Zajac | | |
| Contribution to the Paper | Assisted with development of study aims and design. Assisted in analysis of data. Supervised preparation of manuscript and provided editorial and structural feedback. | | |
| Signature | | Date | 8 April 2022 |

## 2.3 Abstract

*Background:* Strict adherence to masculine norms has been associated with deleterious consequences for the physical and mental health of men. However, population-based research is lacking, and it remains unclear whether ageing influences adherence to masculine norms and the extent to which mental health problems like depression are implicated.

*Method:* This study reports on data from 14,516 males aged 15-55 years who participated in Wave 1 of the Australian Longitudinal Study of Male Health (Ten to Men). Group differences in self-reported conformity to masculine norms (CMNI-22), current depressive symptoms (PHQ-9), and self-reported 12-month depression history were examined for males aged 15-17 years, 18-25 years, 26-35 years, 36-50 years, and 51-55 years. Generalised linear models were used to examine the relationships between these variables across age groups.

*Results:* Conformity to masculine norms decreased significantly with age. However, models predicting depression generally showed that higher conformity to masculine norms was associated with an increased risk of current depressive symptoms, especially in the oldest age group. Conversely, higher conformity was associated with a decreased likelihood

of a self-reported 12-month depression history, although nuances were present between age groups, such that this trend was not evident in the oldest age group.

*Conclusion:* Findings provide important insights into the complex relationship between conformity to masculine norms and depressive symptoms across the lifespan and further highlight the importance of mental health campaigns that address the complexities of gendered help-seeking behaviour for men.

*Keywords:* depression, masculinity, mental health, ageing, lifespan

## 2.4 Introduction

Depression is a common mental health problem that engenders significant challenges for the individual, their families, and healthcare systems worldwide (Malhi & Mann, 2018). Although women are diagnosed with depression twice as often as men (Salk et al., 2017), men experience higher rates of substance abuse and dependence (Cole & Davidson, 2018), and are three times more likely to die by suicide (World Health Organization, 2017). There is considerable evidence that strict adherence to masculine norms—the socioculturally prescribed expectations and standards of what it means to be a man—are associated with poorer mental health outcomes and reduced help-seeking amongst men (Seidler et al., 2016; Wong et al., 2017). In a Western context, males are often socialised in ways that reinforce norms of self-reliance, stoicism, and avoidance of negative emotions (Wide et al., 2011). While these characteristics can be adaptive and result in economic and social benefits to men (Iwamoto et al., 2018), they can also contribute to cognitions and behaviours that increase the risk of mental health problems including depression (McDermott, Levant, et al., 2018). Despite increased research interest in the relationship between masculine norms and mental health in recent years, it remains unclear

how, if at all, age influences adherence to masculine norms and whether experiences of depression are implicated.

Age is often acknowledged as an important factor throughout the masculinity literature (Pompper, 2010), yet there remains a paucity of research extending beyond early adulthood, particularly in the context of mental health. From a developmental perspective, gendered expectations become especially salient to youth during adolescence and throughout emerging adulthood (Galambos, 2013). During this stage of life, social acceptance is central to behaviour, illustrated by heightened pressure to adhere to stereotypical gender roles (Kagesten et al., 2016; O'Neil, 2008). In contrast, theory and research indicate less rigid gender roles throughout the middle and older years (Cournoyer & Mahalik, 1995). Ageing is associated with a loss of functions that, to varying degrees, contradict the standards of masculinity (i.e., beliefs such as men should be physically strong) (Rochelle, 2015). Some research suggests that older men may reconstruct their masculine beliefs to less constraining ones in response to life changes (Hurd Clarke & Lefkowich, 2018). Other studies suggest, however, that some men struggle to reframe their masculinity attitudes with ageing (Rochelle, 2015; Vafaei et al., 2016) and continue to view their health and its deterioration through a masculine lens (Tannenbaum & Frank, 2011). As such, men with a strict, inflexible adherence to traditional masculine norms may face increasingly negative consequences through ageing as they attempt to conserve their masculinity, for example, by avoiding professional help (Oliffe et al., 2011).

One of the most frequently used measures for assessing adherence to masculine norms is the Conformity to Masculine Norms Inventory (CMNI; Mahalik et al., 2003). While limited research has considered how conformity to masculine norms changes across the lifespan, some studies have shown that younger adults report higher CMNI scores compared

to older adults (Rice et al., 2016; Rochelle, 2015). When considering adherence to specific masculine norms (i.e., CMNI subscales), younger adults have been found to score higher on factors assessing violence, risk-taking, and winning, whilst middle-aged and older adults scored higher on measures of self-reliance and emotional control (Smiler, 2006). Even fewer studies have considered associations between masculine norms and depression across the lifespan. In an attempt to overcome this gap, Rice and colleagues (2011) analysed two samples of Australian males aged 18-64 and found that whilst CMNI scores decreased with age, the strength of its relationship with depression actually increased with age (Rice et al., 2011). Notwithstanding this contribution, the study by Rice and colleagues used an online, non-representative sample and it failed to consider the relationship between specific masculine norms and depression, nor the impact of age on these relationships.

Given the compelling evidence that masculinity-related constructs are associated with men's psychological health (Wong et al., 2017), and the theorised benefits of addressing gender role conflict throughout the lifespan (Pleck, 1995), further research is needed to improve our understanding of how age differences may impact on the relationship between masculine norms, specific domains of masculinity, and measures of depression. Accordingly, this study utilised data from the baseline wave of Ten to Men: The Australian Longitudinal Study on Male Health (Pirkis, Macdonald, et al., 2016). Based on the research above, it was hypothesised that younger males would report higher conformity to masculine norms compared to older age groups. In addition, it was hypothesised that specific masculine norms would be differentially related to depressive symptoms and that the strength of these relationships would vary across age groups. Specifically, given recent meta-analytic findings suggesting that self-reliance may be the strongest predictor of poorer mental health outcomes (e.g., Wong et al., 2017), it was hypothesised that self-reliance

would be associated with increased depressive symptoms. Finally, we expected that higher conformity to masculine norms would predict an increased likelihood of reporting clinically significant depressive symptoms, as well as a self-reported 12-month depression history in all age groups.

## 2.5 Method

### *2.5.1 Data Source*

The study population consisted of 14,516 males aged 15-55 years who participated in the baseline wave (Wave 1) of the Australian Longitudinal Study on Male Health (Ten to Men). Ten to Men is the largest, all-male, national cohort study devoted to male health to be conducted internationally to date (Pirkis, Macdonald, et al., 2016). Further information regarding the study design and methodology used in Ten to Men is available elsewhere (see Currier et al., 2016). A brief summary is provided here.

Recruitment and data collection for Wave 1 took place between October 2013 and July 2014 across Australia using a multi-stage stratified cluster random sampling strategy, where the primary unit of sampling was the household. Eligible participants were males aged 10-55 years who resided within private dwellings in the selected sampling regions, were proficient in English, and were Australian citizens or permanent residents. Participants provided information around five broad domains relevant to male health (i.e., physical health, mental health and wellbeing, social determinants of health, health-related behaviours, and health service utilisation and health knowledge) via a self-report paper questionnaire. The conduct of Wave 1 was approved by the University of Melbourne Health Sciences Human Ethics Sub-Committee (HREC 1237897 and 1237376) and conformed to the principles embodied in the Declaration of Helsinki. Participants aged 18-55 years provided

written consent, and participants aged 17 or younger provided written assent and a parent/guardian provided written consent.

### *2.5.2 Outcome Measures*

**2.5.2.1 Current Depressive Symptoms.** Current depressive symptoms were assessed by the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001). The PHQ-9 is a validated depression screening tool and is frequently used in both research and clinical practice. The PHQ-9 corresponds to DSM-5 diagnostic criteria for major depressive disorder (American Psychiatric Association, 2013) and assesses nine symptoms present over the preceding two-week period (e.g., *"Feeling down, depressed, or hopeless"*). Participants rate their responses on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*almost every day*). For males aged 15-17 years, an adolescent-tailored version of the same instrument was used which includes an item assessing irritability per DSM-5 criteria for respondents < 18 years (PHQ-A; Johnson et al., 2002). Scores on the PHQ-9 and PHQ-A were combined to create a total PHQ-9 score for the sample. Cronbach's alpha in the present study was .86 for the adolescent version and .88 for the adult version, demonstrating good internal consistency. The PHQ-9 has been shown to have high sensitivity and specificity for detecting major depressive disorders, with a score of 10 and above indicative of clinically significant depressive symptoms (Kroenke et al., 2010). Higher scores reflect greater severity of depressive symptoms.

**2.5.2.2 Self-Reported 12-Month Depression History.** Self-reported 12-month depression history was ascertained using a single question. Participants were asked: *"Have you been treated for or had any symptoms of this condition in the past 12 months?"*. This question format was derived from the Australian Health Survey (Australian Bureau of Statistics, 2013a) and provides a more objective measure of depression.

### *2.5.3 Predictor Variables*

**2.5.3.1 Conformity to Masculine Norms.** Conformity to masculine norms was assessed by the short form of the Conformity to Masculine Norms Inventory (CMNI-22; Hamilton & Mahalik, 2009; Mahalik et al., 2003). The CMNI-22 is an abbreviated version of the original 94-item instrument which was designed to measure the extent to which individuals conform to masculine norms dominant in Western culture (e.g., *"It bothers me when I have to ask for help"*). Participants are asked to think about their own actions, feelings, and beliefs and indicate their level of agreement with each of 22 statements which are scored on a 4-point Likert scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*).

The CMNI-22 consists of the two highest loading items for each of the original 11 factors to yield factor scores (i.e., the sum of each pair of items) and a total masculinity score. The 11 factors form subscales of the CMNI and include: 1) work; 2) risk-taking; 3) dominance; 4) heterosexual presentation; 5) emotional control; 6) winning; 7) power over women; 8) pursuit of status; 9) violence; 10) playboy; and 11) self-reliance. In the current study, Cronbach's alpha was .66 for the total score. This is consistent with previous studies (e.g., Owen, 2010) and is within the generally accepted range (Taber, 2018). Higher CMNI-22 scores reflect greater conformity to masculine norms.

**2.5.3.2 Age.** For statistical modelling, participants were assigned to age group categories consistent with those utilised by Rice and colleagues (Rice et al., 2011). The categories were chosen to reflect developmentally distinct groups (Arnett, 2007) and were as follows: 15-17 years, 18-25 years, 26-35 years, 36-50 years, and 51-55 years.

### *2.5.4 Covariates*

We accounted for the influence of two socio-demographic covariates that could contribute to our variables of interest. Participant's socio-economic status was determined

on the basis of their area of residence, using percentages from the Index of Relative Socioeconomic Disadvantage (IRSD; Australian Bureau of Statistics, 2013b). Lower IRSD scores indicate relatively greater disadvantage. Region of residence was defined according to the Remoteness Area classification of the Australian Statistical Geography Standard (ASGS), and comprised major cities, inner regional areas, and outer regional areas (Australian Bureau of Statistics, 2016). These covariates were included as main effects in all statistical models, but their influence was considered out-of-scope and therefore results are not reported for brevity.

### *2.5.5 Statistical Analyses*

The present study focused on males aged 15-55 years (*N* = 14,916) who participated in Wave 1 of the Ten to Men study. Participants who completed less than 80% of the CMNI-22 and PHQ-9 (*n* = 398) were excluded from the dataset. Data for a further two individuals regarding their ASGS region was missing and they were also excluded. The refined sample for analytic purposes was *N* = 14,516 cases. Existing recommendations relating to the use of TTM data indicate weighting is necessary for estimating population parameters. However, the requirement to weight data is largely redundant in the instance of estimating associations (Spittal et al., 2016). Therefore, given the present aim was to examine relationships between age, masculine norms, and measures of depression, data were not weighted for the analyses described herein. To facilitate scoring of the CMNI-22 and PHQ-9, missing item-level data for these scales were replaced with the intra-individual mean for that scale. Participants were then assigned to age group categories as described above. Participants were also assigned to CMNI categories using the approach described by Mahalik et al. (2005) by converting raw scores to transformed scores. Four categories were constructed to reflect extreme non-conformity to masculine norms, moderate non-

conformity, moderate conformity, and extreme conformity. In addition to examining PHQ-9 total scores, we created a binary variable with scores ≥ 10 indicating clinically significant depressive symptoms, consistent with published cut-off scores for the PHQ-9 (Kroenke et al., 2010).

Generalised linear models (GLMs) using maximum likelihood estimation were conducted to examine the relationships between variables. Model assumptions were found to be upheld by inspection of scatter plots and histograms of residuals and predicted values. For the model examining the relationship between CMNI factors and current depressive symptoms measured using the PHQ-9, we used a Guassian distribution. A backwards elimination method ($p > .05$) was employed to iteratively remove non-significant CMNI factor by age interactions to arrive at the final model. For this model with PHQ-9 total score as the dependent variable, results are reported as standardised betas. For models with categorical outcomes (i.e., CMNI category and 12-month depression history), a binary distribution and logit link function was used, and odds ratios are reported. For age group interactions, the reference category used was 51-55 years, while for CMNI interactions, the reference category was extreme non-conformity. All models were adjusted for the covariates described above and data were analysed using SPSS (Version 26.0).

### 2.6 Results

Descriptive statistics for the overall sample are presented in Table 1. The majority of the sample resided in metropolitan areas, were born in Australia, and were of heterosexual orientation. Around 1 in 10 participants reported clinically significant depressive symptoms (PHQ-9 ≥ 10) or a 12-month history of depression. Comparisons of the TTM cohort with the Australian male population are reported elsewhere (see Pirkis, Currier, et al., 2016) and

highlight that despite some minor differences, the TTM sample mirrors the general population reasonably well.

**Table 1**

*Sociodemographic Characteristics for the Overall Sample*

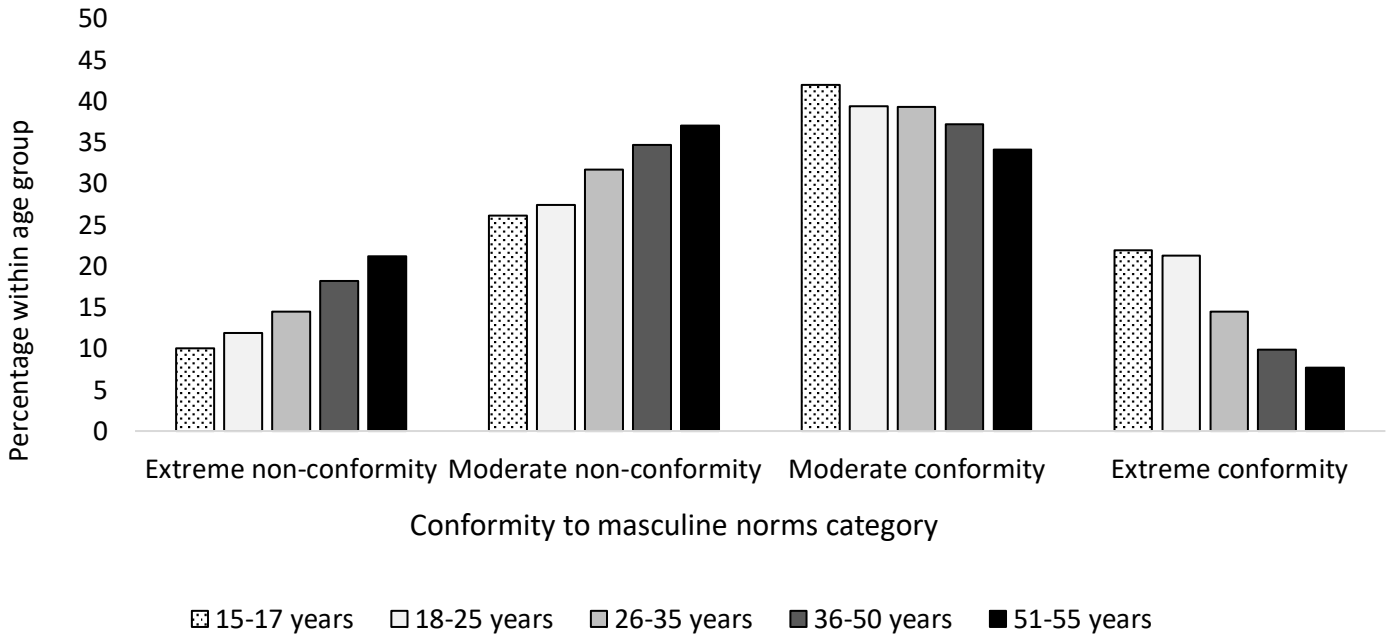
| | N | % |
|---|---|---|
| Age categories (M, *SD*) | | |
| 15-17 years (15.98, *0.81*) | 986 | 6.8 |
| 18-25 years (21.42, *2.31*) | 2196 | 15.1 |
| 26-35 years (30.81, *2.86*) | 3,141 | 21.6 |
| 36-50 years (43.15, *4.27*) | 6,205 | 42.8 |
| 51-55 years (52.86, *1.33*) | 1,988 | 13.7 |
| Region | | |
| Major cities | 8,559 | 59.0 |
| Inner regional areas | 3,222 | 22.2 |
| Outer regional areas | 2,735 | 18.8 |
| Country of birth | | |
| Australia | 11,179 | 77.0 |
| Overseas | 3,294 | 22.7 |
| Did not report | 43 | 0.3 |
| Sexuality | | |
| Heterosexual | 13,190 | 90.9 |
| Bisexual/homosexual/other | 652 | 4.5 |
| Not sure | 311 | 2.1 |
| Did not report | 363 | 2.5 |
| Education [a] | | |
| Pre year 12 | 1,826 | 13.5 |
| Year 12 | 2,000 | 14.8 |
| Certificate/diploma | 6,136 | 45.3 |
| Undergraduate degree | 2,092 | 15.5 |
| Postgraduate degree | 1,241 | 9.2 |
| Did not report | 235 | 1.7 |
| Employment status [a] | | |
| Employed | 11,472 | 84.8 |
| Unemployed | 1,115 | 8.2 |
| Not in labour force | 815 | 6.0 |
| Did not report | 128 | 0.9 |
| Marital status [a] | | |
| Never married | 3,510 | 25.9 |
| Widowed/divorced/separated | 883 | 6.5 |
| Married/de-facto | 9,012 | 66.6 |
| Did not report | 125 | 0.9 |
| Clinically significant depressive symptoms (PHQ-9 ≥ 10) | 1,905 | 13.1 |
| 12-month depression history | 1,822 | 12.6 |

*Note.* [a] Participants aged 15-17 were not asked this question.

The likelihood of being in the extreme conformity to masculine norms category decreased with age (see Figure 1). Chi-square analysis supported this trend, $\chi^2(12) = 433.87$, $p < .001$, with significantly higher than expected numbers of participants in the extreme non-conformity and moderate non-conformity categories in older age groups.

**Figure 1**

*Conformity to Masculine Norms Category by Age Group*




Next, we explored the effect of each of the 11 conformity to masculine norms inventory (CMNI) factors (i.e., subscales) on depressive symptoms (PHQ-9 total score) including their interactions with age. Descriptive statistics for CMNI factors for each age group are available in the Supplementary Table 1 accompanying this paper. Results of the final multivariable model are shown in Table 2. Age was a significant predictor of current depressive symptoms with those aged 51-55 having lower mean PHQ-9 scores than the 15-17, 18-25, and 26-35 year-old groups. In terms of CMNI factors, work, dominance, risk-

taking, heterosexual presentation, violence, and status were all significant predictors of current depressive symptoms and this did not differ across age groups. Of these, only violence was significantly positively related to depressive symptoms, whilst the other factors were inversely related (i.e., higher levels were associated with less depressive symptoms). Significant interaction effects with age existed for playboy, power over women, self-reliance, and winning. The influence of playboy on depressive symptoms was significantly stronger in all age groups relative to those aged 51-55 years. In contrast, winning had a significantly stronger influence on depressive symptoms in the 51-55 group compared to all others. Self-reliance was also more strongly linked to depressive symptoms in those aged 51-55 years compared to all groups other than those aged 18-25 years. Finally, power over women was more strongly related to depressive symptoms in the 51-55 group relative to those aged 15-17 and 18-25 years but was comparable to those aged 26-35 and 36-50.

**Table 2**

*Current Depressive Symptoms (Standardised PHQ-9 Scores) Predicted by Age and Conformity to Masculine Norms (Standardised CMNI-22 Factors)*

| | β [b] | *p* value | 95% CI |
|---|---|---|---|
| (Intercept) | 0.11 | **.00** | [0.05, 0.17] |
| Age [a] | | | |
| 15-17 | 0.08 | **.03** | [0.01, 0.16] |
| 18-25 | 0.14 | **.00** | [0.08, 0.20] |
| 26-35 | 0.09 | **.00** | [0.03, 0.14] |
| 36-50 | 0.05 | .06 | [0.00, 0.10] |
| CMNI factors | | | |
| Work | -0.05 | **.00** | [-0.06, -0.03] |
| Playboy | 0.01 | .60 | [-0.03, 0.06] |
| Winning | 0.08 | **.00** | [0.03, 0.13] |
| Self-reliance | 0.33 | **.00** | [0.29, 0.38] |
| Dominance | -0.03 | **.00** | [-0.04, -0.01] |
| Risk-taking | -0.03 | **.00** | [-0.05, -0.02] |
| Emotional control | -0.01 | .36 | [-0.02, 0.01] |
| Heterosexual presentation | -0.02 | **.03** | [-0.04, 0.00] |
| Power over women | 0.00 | .87 | [-0.05, 0.04] |
| Violence | 0.05 | **.00** | [0.03, 0.07] |
| Status | -0.02 | **.01** | [-0.04, -0.01] |
| Age x Playboy [a] | | | |
| 15-17 | 0.11 | **.00** | [0.04, 0.19] |
| 18-25 | 0.07 | **.02** | [0.01, 0.13] |
| 26-35 | 0.12 | **.00** | [0.06, 0.17] |
| 36-50 | 0.06 | **.04** | [0.00, 0.11] |
| Age x Winning [a] | | | |
| 15-17 | -0.09 | **.01** | [-0.16, -0.02] |
| 18-25 | -0.12 | **.00** | [-0.18, -0.06] |
| 26-35 | -0.11 | **.00** | [-0.17, -0.05] |
| 36-50 | -0.08 | **.00** | [-0.14, -0.03] |
| Age x Self-reliance [a] | | | |
| 15-17 | -0.09 | **.02** | [-0.16, -0.02] |
| 18-25 | -0.03 | .26 | [-0.09, 0.02] |
| 26-35 | -0.10 | **.00** | [-0.15, -0.04] |
| 36-50 | -0.06 | **.02** | [-0.11, -0.01] |
| Age x Power over women [a] | | | |
| 15-17 | -0.09 | **.02** | [-0.16, -0.01] |
| 18-25 | -0.07 | **.03** | [-0.13, -0.01] |
| 26-35 | -0.01 | .70 | [-0.07, 0.05] |
| 36-50 | -0.02 | .55 | [-0.07, -0.04] |

*Note.* All models adjusted for Index of Relative Social Disadvantage (IRSD) and Remoteness Area. CMNI-22 = Conformity to Masculine Norms Inventory. Bold *p* values are significant at $p < .05$.

[a] Reference group for age is the 51-55 age group. [b] Interaction terms represent the difference in β's between the comparison group and reference group.

The interaction between age, CMNI category, and different indices of depression (i.e., PHQ ≥ 10, self-reported 12-month depression history) are presented in Table 3. Extreme conformity to masculine norms was associated with a higher likelihood of reporting clinically significant depressive symptoms but only in the 36-50, and 51-55 age groups. The relationship between CMNI category and self-reported 12-month depression history was more varied. The overall trend is such that higher conformity tended to be associated with a lower likelihood of reporting a 12-month depression history. However, differences were present across groups and this trend was not present for those aged 51-55 years.

**Table 3**

*Influence of Age and Conformity to Masculine Norms Category on Different Indices of Depression*

| | Currently depressed [a] | | | 12-month depression [b] | | |
|---|---|---|---|---|---|---|
| | OR [c] | *p* value | 95% CI | OR | *p* value | 95% CI |
| (Intercept) | 0.17 | **.00** | [0.12, 0.23] | 0.30 | **.00** | [0.23, 0.40] |
| Age | | | | | | |
| 15-17 | 1.61 | .15 | [0.84, 3.10] | 0.65 | .21 | [0.33, 1.28] |
| 18-25 | 2.03 | **.00** | [1.29, 3.18] | 0.84 | .43 | [0.55, 1.29] |
| 26-35 | 1.39 | .13 | [0.91, 2.12] | 0.86 | .40 | [0.60, 1.23] |
| 36-50 | 1.05 | .80 | [0.72, 1.53] | 0.93 | .66 | [0.69, 1.26] |
| 15-17 | | | | | | |
| Moderate non-conformity [d] | 0.88 | .70 | [0.45, 1.72] | 0.71 | .39 | [0.33, 1.54] |
| Moderate conformity | 0.62 | .16 | [0.32, 1.20] | 0.42 | **.03** | [0.19, 0.90] |
| Extreme conformity | 1.22 | .60 | [0.62, 2.37] | 0.45 | .07 | [0.19, 1.05] |
| 18-25 | | | | | | |
| Moderate non-conformity [d] | 0.70 | .08 | [0.48, 1.04] | 0.69 | .08 | [0.45, 1.05] |
| Moderate conformity | 0.98 | .89 | [0.68, 1.40] | 0.59 | **.01** | [0.39, 0.88] |
| Extreme conformity | 1.03 | .88 | [0.70, 1.53] | 0.59 | **.03** | [0.37, 0.94] |
| 26-35 | | | | | | |
| Moderate non-conformity [d] | 0.77 | .12 | [0.55, 1.07] | 0.73 | **.05** | [0.53, 1.00] |
| Moderate conformity | 0.95 | .77 | [0.70, 1.31] | 0.64 | **.01** | [0.47, 0.88] |
| Extreme conformity | 1.37 | .09 | [0.96, 1.97] | 0.64 | **.03** | [0.43, 0.95] |
| 36-50 | | | | | | |
| Moderate non-conformity [d] | 1.18 | .17 | [0.93, 1.49] | 0.84 | .09 | [0.69, 1.03] |
| Moderate conformity | 1.31 | **.02** | [1.04, 1.64] | 0.80 | **.03** | [0.65, 0.98] |
| Extreme conformity | 1.70 | **.00** | [1.28, 2.28] | 0.77 | .08 | [0.58, 1.03] |
| 51-55 | | | | | | |
| Moderate non-conformity [d] | 1.36 | .12 | [0.92, 2.01] | 0.84 | .31 | [0.61, 1.17] |
| Moderate conformity | 1.26 | .27 | [0.84, 1.87] | 0.84 | .31 | [0.60, 1.18] |
| Extreme conformity | 2.45 | **.00** | [1.48, 4.06] | 1.41 | .15 | [0.89, 2.24] |

*Note.* All models adjusted for Index of Relative Social Disadvantage (IRSD) and Remoteness Area. Bold *p* values are significant at $p < .05$.

[a] Based on published cut-off scores indicating clinically significant symptoms (PHQ-9 scores ≥ 10). [b] Based on self-reported 12-month history of depression. [c] OR relative to the 51-55 group within conformity to masculine norms category. [d] Reference category is extreme non-conformity.

## 2.7 Discussion

Recent years have seen an increase in research exploring the relationship between masculine norms and mental health (Wong et al., 2017). However, population-based research is lacking, and few studies have purposefully considered the impact of age on adherence to masculine norms, and the extent to which mental health problems like depression are implicated as a result of higher conformity. This is a significant oversight, particularly when considering the demographic ageing of the population both in Australia and internationally (Australian Institute of Health and Welfare, 2017). Accordingly, this study aimed to address this gap by exploring how age differences may impact on the relationship between conformity to masculine norms and current depressive symptoms, as well as self-reported 12-month depression history.

In the present study, overall degree of conformity to masculine norms decreased across the lifespan, with the likelihood of being in a higher conformity category decreasing with age. These findings support our hypothesis and are consistent with existing research (Rice et al., 2011; Rochelle, 2015; Smiler, 2006) and theory (Cournoyer & Mahalik, 1995; O'Neil, 2008) demonstrating less rigid gender roles in older men. The results also revealed an overall effect of age on depressive symptoms with those aged 51-55 years reporting significantly lower depressive symptoms compared to all age groups except for those aged 36-50 years. These findings are consistent with population estimates among Australian males demonstrating a higher incidence of mental health problems in younger adults that attenuates with age (Australian Bureau of Statistics, 2009).

Numerous studies have demonstrated that adherence to masculine norms can be both beneficial and detrimental to men's health (Iwamoto et al., 2018). Thus, focusing solely

on total CMNI scores can mask important insights into specific dimensions of masculinity that may be uniquely associated with depressive symptomology (Gerdes & Levant, 2018; Mahalik et al., 2005). Consistent with our hypothesis, adherence to masculine norms was shown to be differentially related to current depressive symptoms in a multivariable model that accounted for all CMNI factors. Our results show that in this broad population sample of Australian males, increased conformity to masculine norms emphasising the importance of work, dominance, risk-taking, heterosexual presentation, and status was associated with less depressive symptoms (although we acknowledge that some of these behaviours may negatively impact others and/or affect the quality of men's relationships). Whilst the magnitude of these associations was negligible, these findings are somewhat inconsistent with those in a recent meta-analysis which reported that increased conformity to heterosexual presentation, dominance, risk-taking, and status was associated with poorer mental health outcomes, and that conformity to the masculine norm of primacy of work was unrelated to mental health outcomes (Wong et al., 2017). This is likely due to methodological differences in the current study, including a large population sample as well as variation in relation to the mental health outcome measures. An additional difference of particular note is that the current findings were derived from a robust multivariable model that accounted for the *simultaneous* influence of all CMNI factors on depressive symptoms as opposed to considering them univariately. Therefore, these inverse effects are what emerge *after* accounting for the detrimental influence of factors such as self-reliance and winning and highlight that it is these particular domains of masculinity that are problematic. Failure to account for the multivariable influences of masculinity can lead to spurious conclusions regarding the effect of distinct aspects of this on mental health outcomes.

When considering interactions between specific masculine norms and age, some aspects of masculinity appear to be more problematic for men in terms of depressive symptoms at different stages of life. For example, the impact of high adherence to playboy on depressive symptoms was significantly stronger in younger males compared to older males. It is possible that younger men may feel increased pressure to demonstrate their manhood through their sexual presentation but may not be successful in practice. This could result in increased stress which in turn may confer risk for depressive symptoms. In contrast, adherence to norms such as winning, self-reliance, and power over women generally had a stronger association with depressive symptoms for older men, relative to younger age groups. The impact of these norms on depressive symptoms is consistent with previous findings demonstrating detrimental impacts on mental health and psychological help-seeking (Wong et al., 2017). It is likely that strong adherence to power over women will negatively impact interpersonal relationships, while adherence to norms emphasising winning may impact on help-seeking which may be perceived as a sign of failure or loss of control (Iwamoto et al., 2010; McDermott, Levant, et al., 2018). Thus, an inability to resolve internalised expectations around these norms as an individual ages may be particularly problematic in terms of depressive symptomology.

Out of all the CMNI factors, self-reliance had the strongest impact on depressive symptoms. This is particularly important to consider given the consistent association between self-reliance and poorer mental health outcomes, as well as research demonstrating increased adherence to this with older age (Rochelle, 2015; Smiler, 2006). In addition, a recent study using Ten to Men data demonstrated that self-reliance is a significant risk factor for suicidal ideation (Pirkis et al., 2017). The CMNI-22 assesses self-reliance in relation to help-seeking (e.g., "*I never ask for help").* Thus, males who strongly

endorse this norm may be less likely to reach out to family, friends, or professionals for help when experiencing mental health problems, increasing the risk of depression (Iwamoto et al., 2018; Mahalik et al., 2003). It is plausible that ageing-related changes create greater gender role conflict with regards to self-reliance, presenting multiple challenges for older high conforming males.

Adherence to masculine norms also appears to influence how men acknowledge and respond to depression. In this study, higher conformity to masculine norms was associated with an increased likelihood of reporting clinically significant depressive symptoms in those aged 36-50 and 51-55 years. Thus, while younger males were more likely to be in the higher conforming categories, extreme conformity to masculine norms appears to be particularly problematic for older males. These findings support our hypothesis and are consistent with those by Rice and colleagues who demonstrated that the relationship between masculinity and depression increased with age (Rice et al., 2011). In terms of self-reported 12-month depression history, increased conformity to masculine norms tended to be associated with a decreased likelihood of a study participant reporting that they had received treatment for, or experienced symptoms of, depression in the preceding 12 months. Interestingly, this association was not evident in those aged 51-55 years, and just exceeded ($p$ = .08) the statistical significance threshold in those aged 36-50. Whilst one could speculate reasons for the discrepancy in results between current depression and 12-month depression as it relates to masculinity—such as a reluctance to access health services or poor insight regarding their symptomology—further research is required to adequately explain this difference.

### *2.7.1 Clinical Implications*

The present findings have a number of important implications for men's health. Notwithstanding some nuances between age groups, the overall trend of an inverse relationship between masculinity and self-reported 12-month depression history highlights the fact that higher conforming males are likely not receiving treatment for their depressive symptoms. While the present study did not examine attitudes toward help-seeking or mental health stigma, these findings suggest that masculine norms negatively impact help-seeking attitudes. This is consistent with previous studies demonstrating that increased adherence to masculine norms is associated with poorer attitudes toward help-seeking in general, as well as for mental health problems specifically (Addis & Mahalik, 2003). It is also possible that when men do present in primary care their depressive symptoms may not be recognised because males may not describe their symptoms in a prototypical way, but rather as a pattern of externalised symptomology (e.g., Cavanagh et al., 2017; Martin et al., 2013). Furthermore, there may be reluctance to admit to experiencing depressive symptoms, such as sadness, that could be perceived as a sign of weakness (Wide et al., 2011). In the oldest group aged 51-55 years, extreme conformity was not linked to a lower likelihood of reporting a 12-month history of depression. This might reflect older men engaging with the healthcare system more frequently due to other concerns, possibly a result of chronological ageing challenges, thus the opportunity for the detection of depression may increase.

Improving our understanding of how adherence to masculine norms changes over the lifespan, as well as the impact this may have on mental health could help facilitate more effective psychological treatment and inform the development of mental health promotion programs and policies. Consideration of the ways in which mental health services could be

targeted and delivered to high conforming males may help reduce men's reluctance to engage with mental health treatment. In addition, clinicians working with high conforming males could help male clients develop more flexibility in relation to what it means to be a man (Mahalik et al., 2005), as well as how ageing may impact on perceptions of masculinity (Tannenbaum & Frank, 2011). This may be particularly important for older males undergoing important life transitions (O'Neil, 2008).

### *2.7.2 Limitations and Suggestions for Future Research*

We believe this study is the first to systematically examine the relationship between conformity to masculine norms and measures of depression across age groups using a population sample of males. Nevertheless, this study is not without its limitations. Notably, the use of cross-sectional data limits our ability to make any firm conclusions about how ageing impacts on conformity to masculine norms as group differences may reflect cohort effects rather than developmental effects. Future studies should explore longitudinal patterns in order to strengthen our understanding of how individuals change their gender role beliefs with increasing age. A further limitation relates to the age of participants. The oldest men in this study were aged 55 years and future research with chronologically older men is still needed to elucidate how ageing impacts on adherence to masculine norms and how this may relate to mental health difficulties. In addition, this study excluded males who were not sufficiently proficient in English, which may have implications for the representation of particular cultural groups.

Other limitations include the exclusive use of self-report measures, including the lack of screening and diagnosis of depression by a clinician. It is also important to acknowledge that the CMNI scale was developed in the US and whilst frequently used with Australian samples, it may not have identified specific masculine norms relevant to the Australian

context. In addition, the CMNI-22 total scale only has moderate internal consistency. However, the current study also examined the CMNI subscales which have been suggested to yield more meaningful results (Gerdes & Levant, 2018). There are several versions of the CMNI, ranging from 11 to 94 items (Owen, 2010). Most recently, a 30-item version was developed, with preliminary results demonstrating superior psychometric properties to previous versions (Levant, McDermott, et al., 2020). Future research should consider the use of these longer scales to further validate these findings. Furthermore, it has been suggested that men who conform to masculine norms might exhibit depressive symptomology more readily through externalising symptoms that fall outside the current diagnostic criteria (Martin et al., 2013). Thus, future studies should include multiple measures of depression, including measures assessing externalising symptoms to ensure a more inclusive assessment of depression amongst males (Rice et al., 2013).

## 2.8 Conclusion

The findings from the present study provide important insights into the complex relationship between conformity to masculine norms and depression across the lifespan in the largest all-male, national cohort study to be conducted internationally to date. Specifically, this study demonstrated that while conformity to masculine norms declines with age, higher adherence to masculine norms appears to be significantly linked with depressive symptomology and mostly in older males aged 36-to-55 years. Furthermore, this study demonstrates that only some aspects of masculinity appear to be problematic in the context of men's mental health. Furthering our understanding of the impact of ageing on conformity to masculine norms as well as the nuanced relationship between masculinity

and mental health outcomes is an important step for improving the mental health of men across the lifespan.

**Supplementary Table 1**

*Descriptive Statistics for Subscale Scores on the Conformity to Masculine Norms Inventory (CMNI-22) and the PHQ-9 by Age Group*

| | Age group | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 15-17 years | | 18-25 years | | 26-35 years | | 36-50 years | | 51-55 years | |
| Factor [a] | Mean | *SD* | Mean | *SD* | Mean | *SD* | Mean | *SD* | Mean | *SD* |
| Work | 3.03 | 1.30 | 2.87 | 1.28 | 2.63 | 1.24 | 2.52 | 1.16 | 2.53 | 1.13 |
| Playboy | 1.68 | 1.45 | 1.83 | 1.49 | 1.62 | 1.37 | 1.53 | 1.30 | 1.46 | 1.28 |
| Self-reliance | 2.43 | 1.22 | 2.68 | 1.25 | 2.58 | 1.15 | 2.58 | 1.10 | 2.62 | 1.10 |
| Winning | 2.52 | 1.27 | 2.57 | 1.22 | 2.55 | 1.11 | 2.42 | 1.02 | 2.29 | 0.99 |
| Dominance | 2.43 | 1.18 | 2.51 | 1.12 | 2.59 | 1.10 | 2.46 | 1.06 | 2.35 | 1.10 |
| Risk-taking | 3.00 | 1.32 | 3.06 | 1.30 | 2.89 | 1.19 | 2.65 | 1.13 | 2.47 | 1.10 |
| Emotional control | 3.30 | 1.44 | 3.23 | 1.49 | 3.11 | 1.36 | 3.16 | 1.32 | 3.20 | 1.29 |
| Heterosexual presentation | 3.54 | 1.71 | 2.84 | 1.67 | 2.76 | 1.55 | 2.95 | 1.54 | 3.09 | 1.57 |
| Power over women | 1.16 | 1.10 | 1.23 | 1.06 | 1.26 | 1.02 | 1.29 | 1.00 | 1.28 | 1.02 |
| Violence | 2.84 | 1.45 | 2.79 | 1.45 | 2.55 | 1.46 | 2.28 | 1.43 | 2.09 | 1.44 |
| Status | 3.54 | 1.10 | 3.52 | 1.07 | 3.49 | 1.01 | 3.23 | 0.98 | 2.99 | 1.04 |
| PHQ-9 | 4.32 | 4.67 | 4.97 | 5.18 | 4.57 | 4.65 | 4.30 | 4.71 | 4.11 | 4.95 |

*Note.* [a] Each factor is scored from 0 (lowest conformity) to 6 (highest conformity).

# Chapter 3: Study 2 – Extending the Male Depression Risk Scale for Use with Older Men: The Effect of Age on Factor Structure and Associations with Psychological Distress and History of Depression

## 3.1 Preamble

This chapter consists of a published paper entitled 'Extending the Male Depression Risk Scale for Use with Older Men: The Effect of Age on Factor Structure and Associations with Psychological Distress and History of Depression', which has been published in *Aging and Mental Health*.

The previous chapter demonstrated that conformity to masculine norms increases the risk of prototypic symptoms of depression, particularly amongst middle-aged and older men. Research suggests that conformity to masculine norms may also increase the likelihood of men experiencing externalising symptoms of depression that are more consistent with masculine role norms (Oliffe et al., 2019; Rice et al., 2013). However, few studies have considered whether older men experience externalising symptoms of depression, and it remains unclear whether existing male depression measures are appropriate for use with older men. Therefore, this study aimed to examine whether the Male Depression Risk Scale (MDRS-22; Rice et al., 2013) is a psychometrically valid measure of externalising symptoms of depression in older men.

The published paper is presented in manuscript format as per journal style guidelines, with the same typeset as the rest of the thesis. Tables and Figures are presented throughout the text. Supplementary material for this paper is provided at the end of the chapter. A complete list of all references for the thesis, including those for this paper, is provided at the end of the thesis.

## 3.2 Statement of Authorship

**Extending the Male Depression Risk Scale for Use with Older Men: The Effect of Age on Factor Structure and Associations with Psychological Distress and History of Depression**

Published in *Aging & Mental Health*, July 2021

Herreen, D., Rice, S. M., Ward, L., & Zajac, I. T. (2021). Extending the Male Depression Risk Scale for use with older men: The effect of age on factor structure and associations with psychological distress and history of depression. *Aging & Mental Health,* 1-9. https://doi.org/10.1080/13607863.2021.1947966

*Principal Author*

| | | | |
|---|---|---|---|
| Name of Principal Author (Candidate) | Danielle Herreen | | |
| Contribution to the Paper | Developed rationale for the study and devised aims with supervisors. Planned and carried out data collection and performed data analysis. Drafted, wrote, and submitted article, then revised and responded to reviewer comments. Acted as corresponding author. | | |
| Overall Percentage (%) | 85 | | |
| Certification | This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper. | | |
| Signature | | Date | 8 April 2022 |

## *Co-Author Contributions*

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

| | | | |
|---|---|---|---|
| Name of Co-Author | Associate Professor Simon Rice | | |
| Contribution to the Paper | Assisted with development of study aims and design. Supervised development of the work and provided input regarding analysis of data. Provided guidance on the preparation of manuscript and editorial and structural feedback. | | |
| Signature | | Date | 8 April 2022 |

| | | | |
|---|---|---|---|
| Name of Co-Author | Dr Lynn Ward | | |
| Contribution to the Paper | Assisted with development of study aims and design. Supervised development of the work and provided input regarding analysis of data. Provided guidance on the preparation of manuscript and editorial and structural feedback. | | |
| Signature | | Date | 8 April 2022 |

| | | | |
|---|---|---|---|
| Name of Co-Author | Dr Ian Zajac | | |
| Contribution to the Paper | Assisted with development of study aims and design. Supervised development of the work and provided input regarding analysis of data. Supervised the preparation of manuscript and editorial and structural feedback. | | |
| Signature | | Date | 8 April 2022 |

### 3.3 Abstract

*Objectives:* The Male Depression Risk Scale (MDRS-22) is a self-report scale that assesses externalising and male-typical depression symptoms with promising psychometric properties reported in young-to-middle aged men. However, studies are yet to consider the psychometric properties of the MDRS-22 in older men. This study examined the psychometric properties of the MDRS-22 in both younger and older males and its relationship to prototypic depression symptoms and self-reported depression history.

*Method:* A community sample of younger (*n* = 510; 18-64 years) and older (*n* = 439; 65-93 years) males completed the original 82 MDRS items from which the MDRS-22 was derived, the Patient Health Questionnaire (PHQ-9), and provided information regarding previous depression diagnoses. Exploratory and confirmatory factor analyses were used to examine factor structure. Generalised linear models examined the relationship between externalised and male-typical symptoms with prototypic depression symptoms in younger and older men.

*Results***:** Model fit indices demonstrated that the MDRS-22 performs well in older males. Results also revealed that the MDRS-22 is associated with prototypic depression symptoms and a previous depression diagnosis in both age groups.

*Conclusion:* Results support the psychometric validity of the MDRS-22 as a measure of externalising and male-typical depression symptoms in older men. Use of scales such as the MDRS-22 may help to improve the detection of depression in men across the lifespan and may also identify factors that put men at risk of poor physical and mental health outcomes.

*Keywords:* depression, mental health, men's health, age, lifespan

## 3.4 Introduction

Depression is a major public health concern in older adults, typically defined as those aged 65 years and above (Rodda et al., 2011). Beyond the immediate impacts on wellbeing and quality of life, depression in older adults is associated with higher rates of morbidity (Chew-Graham & Ray, 2016), significant functional and cognitive impairment (Fiske et al., 2009), and more frequent and longer acute hospitalisations (Muir-Cochrane et al., 2014). The exact prevalence of depression in older people is largely unknown, partly due to reliance on self-report measures that are not considered diagnostic (Balsamo et al., 2018). However, within Australia, estimates range from 10-15% of older adults living in the community and more than 50% of those living in residential aged-care facilities (Australian Institute of Health and Welfare, 2015). Throughout the lifespan, women are twice as likely to meet criteria for major depressive disorder compared to men (Salk et al., 2017; Zunzunegui et al., 2007). However, despite the lower purported prevalence of depression in men, their suicide rate is more than three times higher than women in most countries (World Health Organization, 2014). This discrepancy is even more pronounced for older males aged 70 years and above who have the highest age-specific suicide rate worldwide (World Health Organization, 2014). While there are many plausible reasons for the excess

mortality due to male suicide, one potential and largely unexplored factor, at least in older men, concerns current diagnostic and screening criteria for depression (Addis, 2008; Martin et al., 2013; Oliffe & Phillips, 2008).

Growing evidence suggests that for some men, depression may be experienced and exhibited more readily through externalising symptoms that fall outside current diagnostic criteria, leading to an underdiagnosis of depression in men (Addis, 2008; Cavanagh et al., 2017; Mauvais-Jarvis et al., 2020; Rice, Ogrodniczuk, et al., 2019). This phenotypic variant of the disorder is theorised to result from masculine socialisation emphasising emotional stoicism and avoidance of negative affect (Rice et al., 2013; Wide et al., 2011). For example, research by Martin et al. (2013) exploring sex differences in depression using a nationally representative US sample demonstrated that while men endorsed many prototypic internalising symptoms of depression (e.g., low mood), they were significantly more likely to report symptoms of aggression, substance use, anger, and risk-taking behaviours compared to women. In addition, when externalising symptoms were included in the assessment of depression, gender differences in the overall prevalence of the disorder disappeared. Epidemiological and meta-analytic studies report similar findings regarding externalising symptoms including substance use and risk-taking as important diagnostic markers of depression in men (Cavanagh et al., 2016; Cavanagh et al., 2017). These findings suggest that assessments that consider externalising symptoms of depression in addition to prototypic depression symptoms may detect additional cases in men and may also identify factors that put depressed men at risk of poor physical and mental health outcomes.

A number of male-specific depression rating scales have been developed in an attempt to improve the assessment and identification of depression in men. The Gotland Male Depression Scale (GMDS; Zierau et al., 2002) was the first screening tool designed to

measure both prototypic (e.g., low mood, hopelessness) and male-typical depression symptoms in men (e.g., aggression, irritability) and has received significant attention from academics. Although the GMDS has been influential in precipitating research into men's mental health, there are several limitations with its use and psychometric properties as outlined previously by Rice et al. (2013). A range of additional male-specific depression rating scales have been published in an attempt to address these limitations (e.g., Brownhill et al., 2003; Magovcevic & Addis, 2008; Martin et al., 2013). However, these subsequent scales lack psychometric studies that have replicated their factor structure, and their validity in diverse samples has not been assessed.

One of the more recently developed and widely used measures for assessing externalising and male-typical depression symptoms is the Male Depression Risk Scale (MDRS; Rice et al., 2013). The MDRS-22 was developed and validated in Australia with samples of young-to-middle aged adults. The MDRS-22 measures six broad domains assessing externalising symptoms including anger and aggression, drug use, alcohol use, and risk-taking, as well as non-externalising manifestations including emotion suppression and somatic symptoms. To date, studies have confirmed the six-factor structure of the MDRS-22 in Australian (Rice et al., 2013) and Canadian samples (Rice, Ogrodniczuk, et al., 2019), demonstrated stable internal consistency and sensitivity to negative life events (Rice et al., 2015), and demonstrated sensitivity to recent suicide attempts and suicidal ideation relative to traditional depression measures (Rice, Ogrodniczuk, et al., 2019; Rice, Oliffe, Kelly, et al., 2018). Of particular clinical relevance is the recent finding that the MDRS-22 detects unique cases of men who are missed by prototypic measures of depression yet exhibit significant suicide risk (Zajac et al., 2020).

Whilst older males have not been purposefully excluded from existing studies using the MDRS-22 (e.g., Rice, Kealy, et al., 2019; Rice, Oliffe, Kelly, et al., 2018), they are poorly represented and to date, no studies have considered the psychometric properties of the MDRS-22 in older men. In fact, there has been limited research focusing on externalising depression symptoms in older men in general, with the exception of Price et al. (2018) who recently demonstrated that older (aged 60+) males who endorsed masculine traits reported significantly fewer prototypic depression symptoms relative to externalising and male-typical symptoms as measured by the Male Depression Scale (MDS; Magovcevic & Addis, 2008). However, as older adults often display symptoms of depression that differ from younger and middle-aged adults (Fiske et al., 2009) and given potential variation in degree of adherence to gender norms as a function of age (Herreen et al., 2021), the efficacy of male-specific measures of depression in older men must be validated to determine their potential utility.

The present study aimed to address this important gap by examining whether the MDRS-22 is a useful and valid measure of externalising and male-typical symptoms in older men. To achieve this, this study examined the validity of the MDRS-22 in both younger and older males, as well as its relationship to prototypic depression symptoms and self-reported depression history. Given limited research on the presence of externalised and male-typical symptoms of depression in older males, our approach was focussed on the psychometric properties of the scale as well as its association to the aforementioned outcomes.

## 3.5 Method

### *3.5.1 Participants and Procedure*

Participants were 510 younger males aged 18 to 64 years (*M* = 45.43, *SD* = 14.56) and 439 older males aged 65 to 93 years (*M* = 72.79, *SD* = 5.88). Data were collected between August and November 2019 using an online questionnaire as part of a larger study on men's mental health. Eligible participants were Australian residents over the age of 18 years who considered themselves fluent in English. Given the MDRS-22 was primarily designed as a screening tool for men in the wider community (Rice et al., 2013), a non-clinical community cohort was targeted for sampling. Participants were recruited via paid advertisements displayed to Australian members of the *Facebook* social networking site and through promotion of the study to community organisations. Participants from local community organisations were given the option to complete a paper version of the survey and *n* = 5 older males completed a paper version.

Participation was incentivised with a prize draw of three AUD $150 vouchers. Respondents were informed at the beginning of the online questionnaire that participation was voluntary, that they could withdraw at any time prior to the submission of the data, and that their anonymity and confidentiality would be maintained. Participants whose responses indicated an elevated risk of depression according to moderate-severe cut-off scores for the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) were presented with options for seeking help (e.g., contacting their General Practitioner, a mental health professional, or crisis support services). Ethics approval was obtained from the University of Adelaide Human Research Ethics Committee and the Commonwealth Scientific and Industrial

Research Organisation (CSIRO) Health and Medical Human Research Ethics Committee prior to commencement of the study (approval number H-2019-109).

### *3.5.2 Measures*

**3.5.2.1 Demographics.** Participants reported their age, gender, relationship status, employment status, level of education, and household income.

**3.5.2.2 Male Depression Risk Scale (MDRS-22).** Externalising depression symptoms were assessed by the Male Depression Risk Scale (MDRS-22; Rice et al., 2013). The MDRS-22 contains twenty-two self-report items designed to assess six broad domains of externalising and male-specific depression symptoms present in the last month including drug use, alcohol use, anger and aggression, risk-taking, emotion suppression, and somatic symptoms. However, this item set was previously derived through modelling of data in primarily young-to-middle aged participants (Rice et al., 2013). For this reason, and given the broad effects of chronological ageing, we included the original 82-item set from which the current MDRS-22 was derived (Rice, 2011).

In addition to the six domains assessed in the MDRS-22, the full 82-item MDRS (hereinafter referred to as the MDRS) was designed to assess three additional domains of avoidance, irritability and stress, and hostility, isolation, and relational discord (see Appendix A). These nine hypothesised domains were identified based on thorough review of the literature and item content validity was assessed by expert review. Furthermore, given that 5-point rating scales have been shown to yield higher quality data than those with 6 or more points (Revilla et al., 2013; Simms et al., 2019), we replaced the original 8-point Likert scale used in the MDRS-22 with a condensed 5-point Likert scale ranging from 0 (*none of the time*) to 4 (*all of the time*). Internal consistency of the MDRS-22 in the current study for both younger and older males was high ($\alpha$ = .87 in both groups).

**3.5.2.3 Patient Health Questionnaire (PHQ-9).** Prototypic depression symptoms were assessed by the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001). The PHQ-9 is a well-validated and commonly used measure that corresponds to DSM-5 diagnostic criteria for major depressive disorder (American Psychiatric Association, 2013) and assesses nine symptoms present over the preceding two-week period (e.g., "*Feeling down, depressed, or hopeless"*). Participants respond on a 4-point Likert scale ranging from 0 (*not at all*) to 3 (a*lmost every* day). Total scores on the PHQ-9 range from 0 (no depressive symptoms) to 27 (severe depressive symptoms). A score of 10 and above is indicative of clinically significant depressive symptoms (Kroenke et al., 2010). Within the current study, internal consistency of the PHQ-9 was high for both younger ($\alpha$ = .92) and older ($\alpha$ = .91) males.

**3.5.2.4 Self-Reported History of Depression.** Self-reported history of depression was ascertained using a single question. Participants were asked: "Have you ever been diagnosed with depression?". They responded by selecting either (a) No; (b) Yes, but it is no longer impacting me; or (c) Yes, and I continue to be impacted by depression.

### *3.5.3 Statistical Analyses*

Given the focus on assessing the psychometric properties of the MDRS, all participants (*N* = 949) who provided complete data for these items were included in the factor analyses. Of these participants, *n* = 11 did not provide complete data for the PHQ-9, and *n* = 33 did not provide a response to the question regarding history of depression; the total *N* for models using these variables is provided in Figures 2 and 3.

IBM SPSS Statistics (Version 26.0) was used to generate descriptive statistics, zero-order correlations and generalised linear models (GLMs). Assumptions of GLMs were considered through inspection of scatter plots and histograms of residuals and predicted

values, with model results reported as standardised betas. JASP (Version 0.13.1; JASP Team, 2020) was utilised for the exploratory and confirmatory factor analytic models and we report the following fit indices: Chi-square goodness of fit (χ2), normalised Chi-square (CMIN/DF), comparative fit index (CFI); the Tucker-Lewis index (TLI); the goodness of fit index (GFI); the root mean square error of approximation (RMSEA); and the Akaike and Bayesian information criterion (AIC, BIC). In line with recommendations by Hu and Bentler (1999), conventional model fit criteria were used (i.e., CFI > .95; TLI > .95; GFI >.95; RMSEA < .09).

### 3.6 Results

Table 1 presents the characteristics of study participants. Overall, age groups tended to differ as expected. There was a higher proportion of older men who reported themselves as married/defacto or widowed/divorced/separated, compared to younger men; a greater proportion of whom reported being single. Some differences were also apparent for education, with more of the older sample completing year 11 or below, whilst the proportion achieving a bachelor's degree was higher in the younger sample. Household income appeared on average to be lower in older compared to younger men, consistent with the majority of this group reporting themselves as being retired.

**Table 1**

*Sociodemographic Characteristics of Participants*

| Variable | Younger men (< 65) | Older men (≥ 65) |
|---|---|---|
| *n* | 510 | 439 |
| Age range | 18-64 | 65-93 |
| Age, *M* (*SD*) | 45.43 (14.56) | 72.79 (5.88) |
| Relationship status, *n* (%) | | |
| Single (never married) | 118 (23.1) | 12 (2.7) |
| Widowed/divorced/separated | 68 (13.3) | 92 (21.0) |
| Married/de-facto | 322 (63.1) | 332 (75.6) |
| Prefer not to say | 2 (0.4) | 3 (0.7) |
| Employment status, *n* (%) | | |
| Employed full-time | 227 (44.5) | 22 (5.0) |
| Employed part-time | 37 (7.3) | 18 (4.1) |
| Employed casually | 67 (13.1) | 14 (3.2) |
| Not employed or unpaid work | 94 (18.4) | 13 (3.0) |
| Retired | 73 (14.3) | 370 (84.3) |
| Prefer not to say | 12 (2.4) | 2 (0.5) |
| Highest level of education, *n* (%) | | |
| Year 11 or below | 49 (9.6) | 81 (18.5) |
| Year 12 | 52 (10.2) | 48 (10.9) |
| Certificate/diploma | 154 (30.2) | 133 (30.3) |
| Bachelor's degree | 139 (27.3) | 74 (16.9) |
| Graduate certificate/diploma | 43 (8.4) | 39 (8.9) |
| Postgraduate degree | 72 (14.1) | 56 (12.8) |
| Prefer not to say | 1 (0.2) | 8 (1.8) |
| Household income, *n* (%) | | |
| <$35,000 | 136 (26.7) | 141 (32.1) |
| $35,000-$65,000 | 91 (17.8) | 156 (35.5) |
| $65,000-$105,000 | 100 (19.6) | 80 (18.2) |
| $105,000-$160,000 | 97 (19.0) | 31 (7.1) |
| >$160,000 | 65 (12.7) | 12 (2.7) |
| Prefer not to say | 21 (4.1) | 19 (4.3) |

*Note*. % may not equal 100 due to rounding.

### *3.6.1 Exploratory Factor Analysis*

Previous MDRS-22 studies have used samples of predominantly younger males and there is potential for ageing to impact on the suitability of items comprising this scale as well as its factor structure. Therefore, using the group of older men, we adopted an exploratory approach utilising the original pool of 82 items from which the MDRS-22 was derived. Exploratory factor analysis (EFA) with maximum likelihood estimation and promax rotation was used. Prior to the first EFA, one MDRS item had zero variance (i.e., all participants selected the same response category) and was excluded. Bartlett's test of sphericity was significant ($p < .001$) and the KMO value was 0.93, indicating the 81 items were appropriate for EFA. Subsequent solutions were iteratively modified by removing items with low communalities (≤ 0.40), resulting in a reduced set of 52 items. At this point, cross-loading (> 0.30 across multiple factors) and poorly loading (≤ 0.30) items were excluded, arriving at a further reduced set of 42 items.

Examination of the scree plot suggested the presence of 6 factors for the 42-item set and a subsequent solution constrained to this explained 63.6% of the total variation. Nineteen items on the first factor reflected the domains of emotion suppression, hostility, irritability, somatic symptoms, and risk-taking. The seven emotion suppression items had the strongest loadings ($M = 0.76$), providing indication of the nature of the underlying domain. For this reason, we retained only those items assessing emotion suppression and, consistent with the somatic domain in the current MDRS-22, somatic items were retained for the final solution and a seventh factor was permitted.

Results of the final seven-factor solution with 33 items are provided in Table 2. These factors combined to explain 70.6% of total variance. As can be seen, there is clear distinction between the domains with regards to item content except for the aggression

factor, which was loaded by items addressing verbal and physical aspects. Correlations between factors are weak to moderate in magnitude with greater variance shared between the domains of aggression, anger, emotion suppression, and somatic complaints. This final solution includes six of the domains captured in the original MDRS-22 with one additional factor reflecting anger appearing to emerge in older males. Comparison with the original MDRS-22 shows that this $MDRS_{EFA}$ solution retains 77.3% (17 items).

**Table 2**

*Summary of $MDRS_{EFA}$ Item Loadings in Older Men (n = 439)*

| Item | *M* | *SD* | 1. Emotion suppression | 2. Aggression | 3. Alcohol use | 4. Drug use | 5. Risk-taking | 6. Anger | 7. Somatic symptoms |
|---|---|---|---|---|---|---|---|---|---|
| I refused help for my problems | 0.57 | 1.05 | 0.46 | | | | | | |
| I had a hard time putting my negative feelings into words | 0.71 | 1.02 | 0.57 | | | | | | |
| **I tried to ignore feeling down** | 1.34 | 1.26 | 0.63 | | | | | | |
| I tried my hardest to ignore my feelings | 0.96 | 1.13 | 0.73 | | | | | | |
| I preferred to keep quiet about feeling bad | 1.45 | 1.33 | 0.70 | | | | | | |
| **I covered up my difficulties** | 1.21 | 1.21 | 0.94 | | | | | | |
| **I bottled up my negative feelings** | 1.28 | 1.15 | 0.94 | | | | | | |
| **I overreacted to situations with aggressive behaviour** | 0.41 | 0.70 | | 0.44 | | | | | |
| I took my anger out on other people without due cause | 0.17 | 0.46 | | 0.73 | | | | | |
| **I was verbally aggressive to others** | 0.20 | 0.49 | | 0.80 | | | | | |
| I shouted at others | 0.33 | 0.67 | | 0.78 | | | | | |
| I yelled at others | 0.23 | 0.56 | | 0.85 | | | | | |
| **I verbally lashed out at others without being provoked** | 0.15 | 0.45 | | 0.86 | | | | | |
| **I stopped feeling so bad while drinking** | 0.38 | 0.92 | | | 0.81 | | | | |
| I thought about drinking alcohol frequently | 0.41 | 0.88 | | | 0.87 | | | | |
| **I drank more alcohol than usual** | 0.47 | 0.89 | | | 0.88 | | | | |
| **I needed to have easy access to alcohol** | 0.44 | 0.91 | | | 0.92 | | | | |
| **I needed alcohol to help me unwind** | 0.52 | 0.94 | | | 0.93 | | | | |
| I craved drugs | 0.17 | 0.53 | | | | 0.65 | | | |
| **I used drugs to cope** | 0.07 | 0.36 | | | | 0.80 | | | |
| **I sought out drugs** | 0.11 | 0.43 | | | | 0.80 | | | |
| **Using drugs provided temporary relief** | 0.10 | 0.43 | | | | 0.81 | | | |
| I thought about drugs frequently | 0.10 | 0.44 | | | | 0.86 | | | |
| **I stopped caring about the consequences of my actions** | 0.21 | 0.59 | | | | | 0.49 | | |
| I was more reckless | 0.20 | 0.54 | | | | | 0.66 | | |
| I took more risks that might result in injury to myself or others | 0.13 | 0.41 | | | | | 0.72 | | |
| **I took unnecessary risks** | 0.15 | 0.46 | | | | | 1.05 | | |
| I wanted to smash things | 0.16 | 0.46 | | | | | | 0.43 | |
| **It was difficult to manage my anger** | 0.31 | 0.64 | | | | | | 0.80 | |
| It took more effort than usual to control my temper | 0.29 | 0.63 | | | | | | 0.92 | |
| **I had unexplained aches and pains** | 0.74 | 0.93 | | | | | | | 0.65 |
| Any existing pains felt much worse | 1.08 | 1.06 | | | | | | | 0.70 |
| I experienced worsening physical health | 0.96 | 1.04 | | | | | | | 0.63 |

*Note.* Bolded items comprise the 22-item Male Depression Risk Scale (MDRS-22). See Table 4 for the complete list of MDRS-22 items.

### *3.6.2 Confirmatory Factor Analysis*

Given the item set derived using EFA (hereinafter referred to as $MDRS_{EFA}$) shared significant overlap with the items and domains in the original scale, we examined the suitability of the original MDRS-22 structure in older men using confirmatory factor analysis (CFA). For comparative purposes, we also generated fit statistics for the $MDRS_{EFA}$ as well as for younger males. In each structural model (MDRS-22 and $MDRS_{EFA}$), factors were specified to load onto a single higher-order MDRS factor.

**Table 3**

*Fit Statistics for the $MDRS_{EFA}$ and the MDRS-22 for Younger and Older Groups*

| Model | Age group | $\chi^2$ | df | CMIN/DF | RMSEA [95% CI] | GFI | CFI | TLI | AIC | BIC |
|---|---|---|---|---|---|---|---|---|---|---|
| $MDRS_{EFA}$ | Younger | 1368.47 *** | 488 | 2.80 | 0.059 [0.056, 0.063] | 0.857 | 0.923 | 0.917 | 34846.01 | 35155.12 |
| | Older | 1384.01 *** | 488 | 2.84 | 0.065 [0.061, 0.069] | 0.842 | 0.904 | 0.896 | 22391.04 | 22689.21 |
| MDRS-22 | Younger | 503.32 *** | 203 | 2.48 | 0.054 [0.048, 0.060] | 0.919 | 0.947 | 0.939 | 24587.61 | 24799.33 |
| | Older | 433.25 *** | 203 | 2.13 | 0.051 [0.044, 0.057] | 0.919 | 0.949 | 0.942 | 16328.44 | 16532.67 |

*Note.* MDRS-22 = Male Depression Risk Scale 22. $MDRS_{EFA}$ = 33-item set defined using EFA, as shown in Table 2. $\chi^2$ = Chi-square goodness of fit statistic; *df* = degrees of freedom; CMIN/DF = normalised Chi-square; RMSEA = root mean square error of approximation; GFI = goodness of fit Index; CFI = comparative fit index; TLI = Tucker-Lewis index; AIC = Akaike information criterion; BIC = Bayesian information criterion.

*** $p < .001$.

Fit statistics for the different models are provided in Table 3. Direct statistical comparison cannot be performed due to the use of different items across the models. However, lower RMSEA and normalised chi-square values are evident for the MDRS-22 in comparison to the $MDRS_{EFA}$ in both age groups. In addition, the GFI, CFI, and TLI values are all higher for the MDRS-22 models. Taken overall, this suggests better fit of the original MDRS-22 compared to the $MDRS_{EFA}$ in both age groups. Item loadings from the CFA of the MDRS-22 are provided in Table 4.

**Table 4**

*Item Loadings of the Confirmatory Factor Analysis (CFA) of the MDRS-22*

| Factor | Scale item | Loading | |
|---|---|---|---|
| | | Younger (*n* = 510) | Older (*n* = 439) |
| Emotion suppression | I tried to ignore feeling down | 0.67 | 0.62 |
| | I bottled up my negative feelings | 0.86 | 0.89 |
| | I covered up my difficulties | 0.84 | 0.86 |
| | I had to work things out by myself | 0.48 | 0.51 |
| Anger & aggression | I was verbally aggressive to others | 0.78 | 0.72 |
| | I verbally lashed out at others without being provoked | 0.70 | 0.68 |
| | I overreacted to situations with aggressive behaviour | 0.75 | 0.77 |
| | It was difficult to manage my anger | 0.76 | 0.73 |
| Alcohol use | I needed to have easy access to alcohol | 0.83 | 0.88 |
| | I needed alcohol to help me unwind | 0.95 | 0.93 |
| | I drank more than usual | 0.86 | 0.88 |
| | I stopped feeling so bad while drinking | 0.77 | 0.82 |
| Drug use | Using drugs provided temporary relief | 0.94 | 0.88 |
| | I used drugs to cope | 0.90 | 0.71 |
| | I sought out drugs | 0.90 | 0.82 |
| Risk-taking | I took unnecessary risks | 0.81 | 0.72 |
| | I stopped caring about the consequences of my actions | 0.70 | 0.72 |
| | I drove dangerously or aggressively | 0.45 | 0.40 |
| Somatic symptoms | I had stomach pains | 0.70 | 0.70 |
| | I had regular headaches | 0.63 | 0.68 |
| | I had more heartburn than usual | 0.47 | 0.60 |
| | I had unexplained aches and pains | 0.66 | 0.65 |
| MDRS-22 domains | Emotion suppression | 0.70 | 0.76 |
| | Anger & aggression | 0.64 | 0.70 |
| | Alcohol use | 0.43 | 0.43 |
| | Drug use | 0.37 | 0.35 |
| | Risk-taking | 0.71 | 0.71 |
| | Somatic symptoms | 0.69 | 0.79 |

Given that both solutions are well matched with regards to domains measured, we considered the overlap of measurement between the MDRS versions. Table 5 provides the correlations between the total scores and domains for each of the age groups. Domain correlations were close to unity for both older and younger samples with the exception of the somatic symptom's subscale; although this correlation can also be considered sufficiently strong to indicate linear dependence. Total scores were near perfectly correlated.

**Table 5**

*Correlations Between Factors Derived from the $MDRS_{EFA}$ and the MDRS-22 Solutions for Younger and Older (italics) Groups*

| MDRS-22 | Total score | | Emotion suppression | | Drug use | | Alcohol use | | Somatic symptoms | | Risk-taking | | Anger & aggression | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $MDRS_{EFA}$ | 0.96 | *0.97* | | | | | | | | | | | | |
| Emotion suppression | 0.73 | *0.83* | 0.91 | *0.92* | | | | | | | | | | |
| Drug use | 0.55 | *0.45* | 0.20 | *0.26* | 0.97 | *0.94* | | | | | | | | |
| Alcohol use | 0.67 | *0.66* | 0.30 | *0.29* | 0.27 | *0.24* | 0.99 | *0.99* | | | | | | |
| Somatic symptoms | 0.59 | *0.65* | 0.53 | *0.53* | 0.18 | *0.28* | 0.18 | *0.27* | 0.71 | *0.74* | | | | |
| Risk-taking | 0.66 | *0.62* | 0.38 | *0.39* | 0.33 | *0.22* | 0.37 | *0.36* | 0.28 | *0.42* | 0.91 | *0.92* | | |
| Aggression | 0.56 | *0.56* | 0.30 | *0.39* | 0.14 | *0.13* | 0.18 | *0.20* | 0.33 | *0.35* | 0.40 | *0.34* | 0.93 | *0.92* |
| Anger | 0.60 | *0.63* | 0.44 | *0.47* | 0.15 | *0.19* | 0.19 | *0.23* | 0.39 | *0.47* | 0.45 | *0.46* | 0.81 | *0.76* |

*Note.* MDRS-22 = Male Depression Risk Scale 22. $MDRS_{EFA}$ = 33-item set defined using EFA, as shown in Table 2. MDRS-22 factors are presented horizontally and $MDRS_{EFA}$ factors are presented vertically.

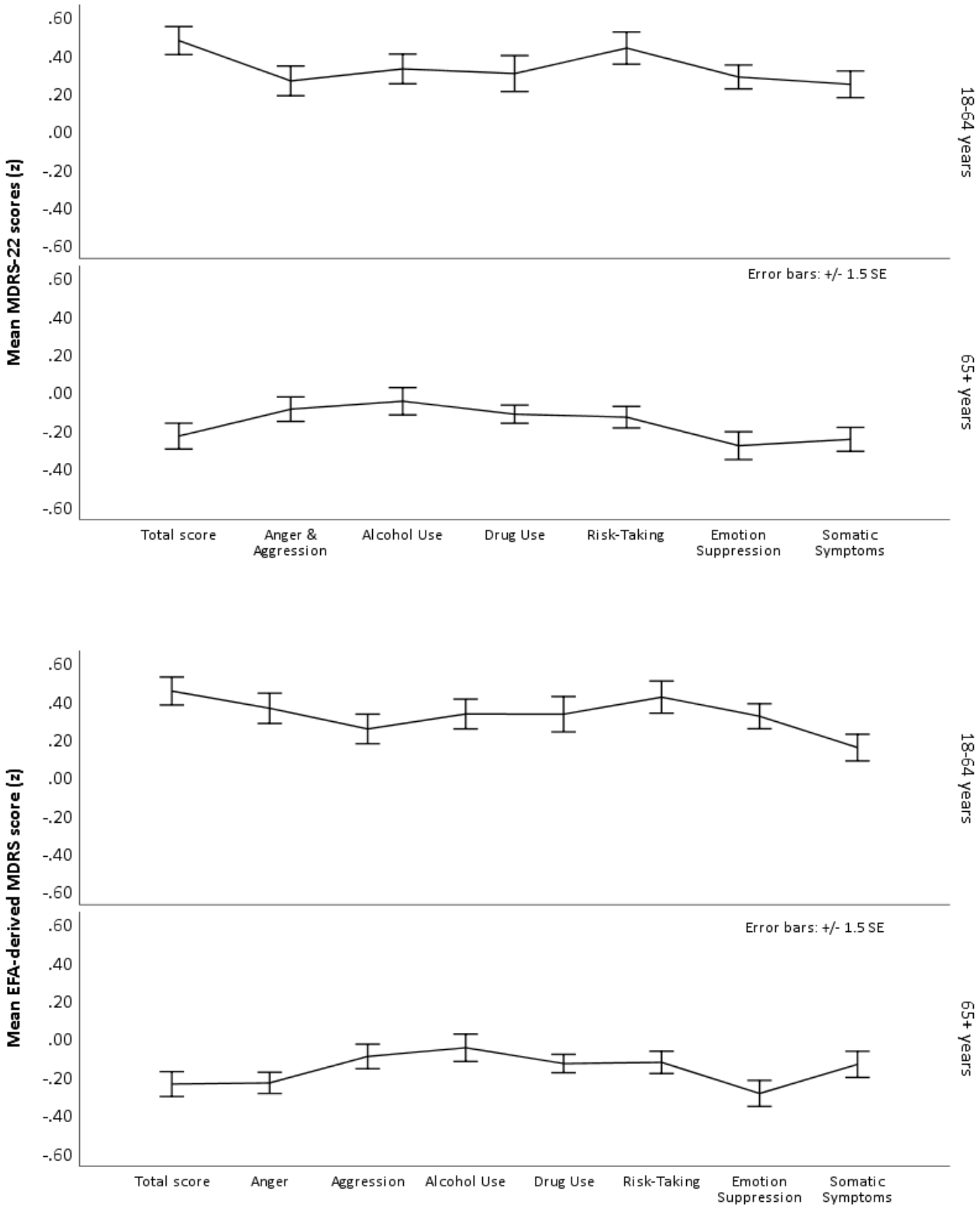
All correlations are significant at $p < .001$.

### *3.6.3 Age Differences on the MDRS-22 and MDRS$_{EFA}$ Solutions*

Independent samples t-tests revealed significant differences (all $p < .001$) between younger and older groups for all MDRS-22 and MDRS$_{EFA}$ scores. As can be seen in Figure 1, the younger group scored significantly higher on all domains. The average effect size of the difference (Cohen's *d*) for the MDRS-22 was $d = 0.48$ ($Min_d = 0.33$, $Max_d = 0.68$), with similar effect sizes present for the MDRS$_{EFA}$ solution ($Mean_d = 0.47$, $Min_d = 0.29$, $Max_d = 0.68$).

**Figure 1**

*Standardised Scores on the MDRS-22 and $MDRS_{EFA}$ for Younger (n = 510) and Older (n = 439) Males*



### *3.6.4 The Relationship Between the MDRS-22, $MDRS_{EFA}$ and Prototypic Depression Symptoms*

The relationship between the two solutions and prototypic depression symptoms were explored through a series of GLMs. Each model compared the effect of age, MDRS score (domain and overall) and the interaction between these on depressive symptoms measured by the PHQ-9. All variables were standardised to aid interpretation. Results of these models are shown in Table 6. As can be seen, all scores for both the MDRS-22 and $MDRS_{EFA}$ domains were significantly related to depressive symptoms. Age also consistently predicted PHQ-9 scores, with younger participants reporting higher depressive symptoms than older participants. Finally, interaction effects were present for the emotion suppression, drug use, and risk-taking domains of the MDRS. The influence of emotion suppression on depressive symptoms was significantly stronger for the younger group compared to the older group. Conversely, the association of risk-taking and drug use with depressive symptoms was stronger in the older group. These interaction effects were consistent for both the MDRS-22 and $MDRS_{EFA}$ models.

**Table 6**

*Relationship Between the MDRS and Current Depressive Symptoms (PHQ-9 Total Scores) by Age*

| | | β | | | | | |
|---|---|---|---|---|---|---|---|
| Scale | Factor | Age[a] | 95% CI | Factor[b] | 95% CI | Age x factor | 95% CI |
| MDRS-22 | Total score | 0.32 | [0.23, 0.41] | 0.65 | [0.58, 0.71] | 0.03 | [-0.06, 0.11] |
| | Emotion suppression | 0.40 | [0.31, 0.49] | 0.56 | [0.50, 0.62] | 0.26*** | [0.17, 0.34] |
| | Anger & aggression | 0.65 | [0.54, 0.76] | 0.43 | [0.34, 0.51] | 0.01 | [-0.10, 0.12] |
| | Alcohol use | 0.71 | [0.59, 0.83] | 0.30 | [0.22, 0.39] | -0.07 | [-0.18, 0.04] |
| | Drug use | 0.72 | [0.60, 0.84] | 0.35 | [0.22, 0.49] | -0.22** | [-0.37, -0.08] |
| | Risk-taking | 0.56 | [0.45, 0.67] | 0.52 | [0.43, 0.62] | -0.14* | [-0.25, -0.02] |
| | Somatic symptoms | 0.52 | [0.42, 0.63] | 0.54 | [0.45, 0.62] | 0.02 | [-0.08, 0.13] |
| $MDRS_{EFA}$ | Total score | 0.31 | [0.22, 0.39] | 0.69 | [0.63, 0.76] | 0.01 | [-0.07, 0.09] |
| | Emotion suppression | 0.34 | [0.26, 0.43] | 0.65 | [0.59, 0.71] | 0.15*** | [0.07, 0.23] |
| | Anger | 0.49 | [0.38, 0.60] | 0.54 | [0.44, 0.63] | -0.03 | [-0.14, 0.09] |
| | Aggression | 0.67 | [0.56, 0.79] | 0.35 | [0.25, 0.44] | 0.03 | [-0.09, 0.14] |
| | Alcohol use | 0.70 | [0.58, 0.82] | 0.31 | [0.23, 0.39] | -0.06 | [-0.16, 0.05] |
| | Drug use | 0.69 | [0.57, 0.81] | 0.43 | [0.30, 0.56] | -0.27*** | [-0.42, -0.13] |
| | Risk-taking | 0.56 | [0.45, 0.66] | 0.53 | [0.44, 0.62] | -0.11* | [-0.22, -0.01] |
| | Somatic symptoms | 0.62 | [0.53, 0.72] | 0.52 | [0.45, 0.60] | 0.09 | [-0.01, 0.19] |

*Note.* MDRS-22 = Male Depression Risk Scale 22. $MDRS_{EFA}$ = 33-item set defined using EFA, as shown in Table 2. Reference group = older males.

[a] all $p < .001$. [b] all $p < .001$.

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

### *3.6.5 Influence of Moderate Depression and Lifetime Depression on the MDRS-22 and $MDRS_{EFA}$ Solutions*

The final GLM analyses considered the influence of moderate depression – classified as a score ≥ 10 on the PHQ-9—and self-reported history of depression on total MDRS scores. As shown in Figure 2, individuals with moderate depression scored significantly higher on the MDRS-22 and the $MDRS_{EFA}$ than the non-depressed group (both $p < .001$). A significant interaction with age was evident for the MDRS-22 ($p = .03$) and a trend towards an interaction evident for the $MDRS_{EFA}$ ($p = .07$). Bonferroni adjusted pairwise comparisons showed significant age differences in those classified as not depressed (all $p < .001$), but no significant age effects in those classified as moderately depressed (both $p \geq .51$). For the models considering depression history (see Figure 3), there were significant main effects of age and self-reported depression history (all $p < .001$) on both MDRS-22 and $MDRS_{EFA}$ scores, but no significant interaction effects (all $p \geq .36$).

**Figure 2**

*Influence of Current Depression (PHQ-9) on MDRS Solutions for Younger (n = 505) and Older (n = 433) Males*

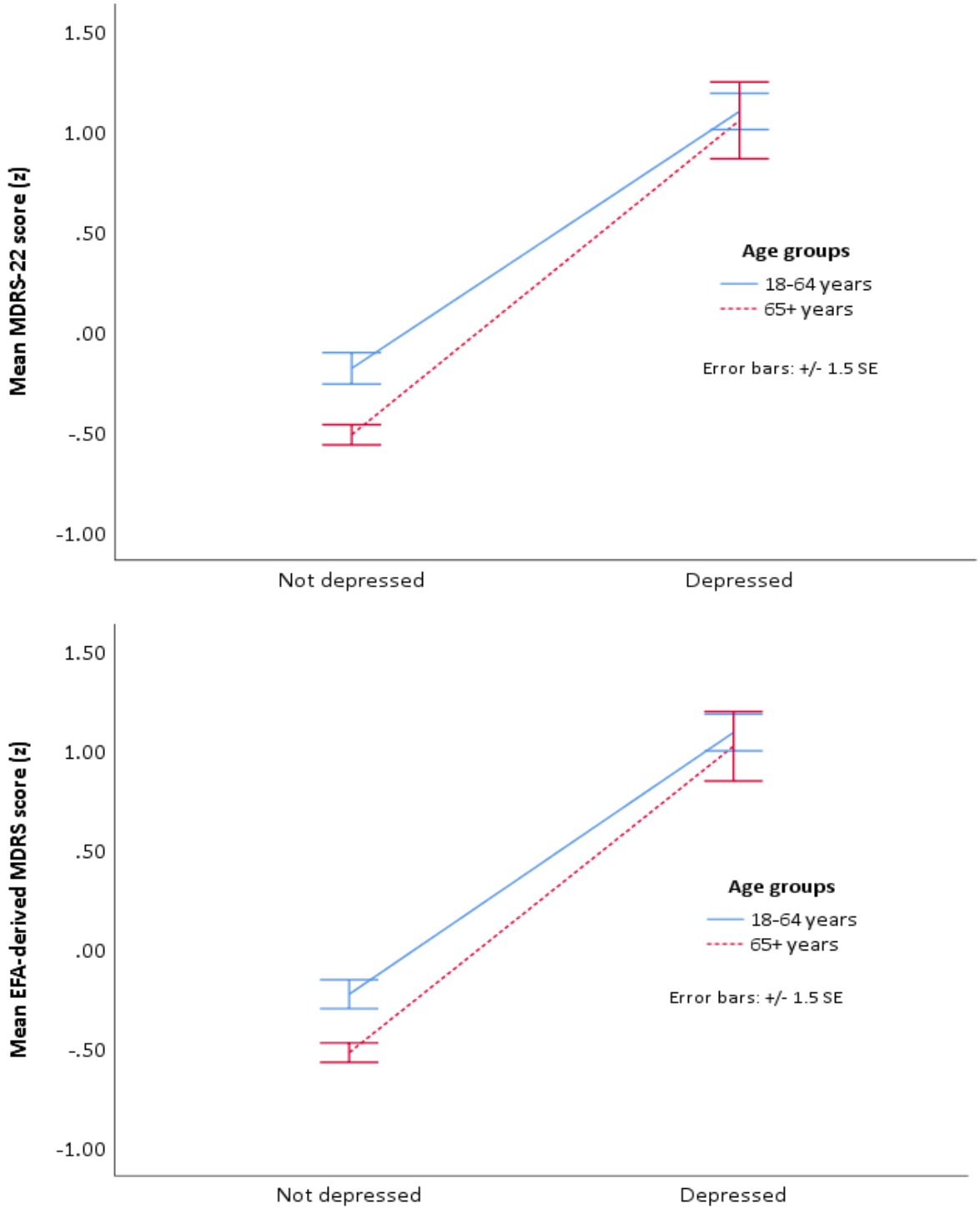
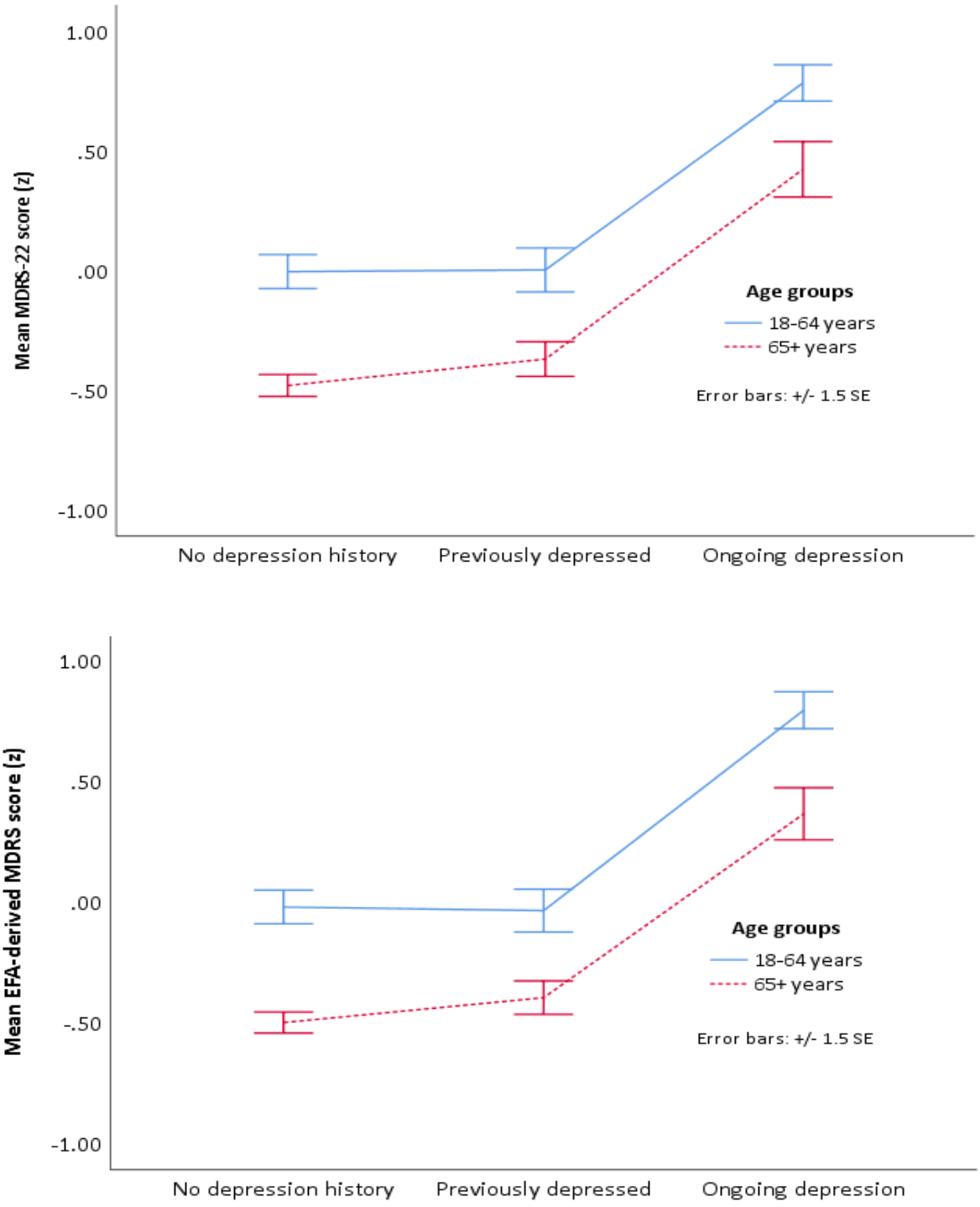


**Figure 3**

*Influence of Lifetime Depression on MDRS Solutions for Younger (n = 493) and Older (n = 423) Males*



## 3.7 Discussion

There is a growing body of evidence that some men present with externalising symptoms linked with depression that are not included in current diagnostic and screening criteria (Mauvais-Jarvis et al., 2020). The Male Depression Risk Scale (MDRS-22) is the most widely psychometrically validated scale assessing externalising and male-typical depression symptoms in young-to-middle aged men. However, its psychometric properties have not yet been established with older males who have been shown to have commensurate risk of suicide and a correspondingly low prevalence of diagnosed depression (World Health Organization, 2014). This study is the first to comprehensively examine the psychometric properties of the MDRS-22 across age groups and its relationship to prototypic symptoms of depression.

Due to the limited research on externalising depression symptoms in older men to date, this study examined whether the MDRS-22 is an appropriate measure of externalising and male-typical depression symptoms in older males, or whether a different item set might be more suitable. Therefore, we examined the original pool of 82 items from which the MDRS-22 was derived. Despite the emergence of some different items for older males, over three quarters of the items detected in the EFA-derived solution were shared with the MDRS-22 and the scale items differentiated into appropriate symptom sub-domains. The main difference was that in the MDRS-22, items measuring aggression and anger merged into one subscale, whereas in the EFA-derived MDRS, these items loaded separately. This may suggest that older men may experience anger without being aggressive, whereas for younger men, these symptoms may tend to coincide, potentially a result of changes in testosterone levels and adaptive responding (Barry & Owens, 2019). Moreover, analysis of domain-overlap indicated that both the EFA-derived MDRS and MDRS-22 were almost

identical with regards to their measurement of symptoms, as all scores correlated near unity. It is therefore not surprising that the MDRS-22 was shown to be a superior fit to the data. This is a particularly important result, highlighting the robustness of the MDRS-22 and its applicability to both younger and older men.

Regarding age differences, younger males were found to score higher on the MDRS-22 compared to older males, consistent with previous research (Rice, Kealy, et al., 2019). Similarly, age also predicted PHQ-9 scores, with younger males reporting more depressive symptoms than older males. When considering the relationship between specific domains of the MDRS-22 and prototypic symptoms of depression, emotion suppression was found to have a stronger influence on depressive symptoms for the younger group, whilst risk-taking and drug use appeared to have a stronger influence on depressive symptoms in the older group.

In relation to emotion suppression, younger males may be more reluctant to admit to experiencing emotions such as sadness due to higher adherence to masculine norms among this age group (Rice et al., 2011), resulting in increased risk of depression. Regarding risk-taking, whilst it might be expected that this domain would have a greater influence on depressive symptoms in younger males, one of the strengths of the MDRS-22 is that the items are designed to gauge the individual's perception of their own recent behaviour in the context of risk-taking (e.g., "I took unnecessary risks"), rather than listing specific behaviours. Thus, although the actual risk-taking behaviours older men are engaging in might be different to younger men, the wording of the items is broad enough to be applicable for various ages. For example, risk-taking behaviours for older males may include ignoring medical advice or driving with impaired vision (Thompson & Langendoerfer, 2015), whilst younger males may be more likely to engage in risky behaviours such as driving at

high speeds or while under the influence of alcohol or other drugs (Oliffe & Phillips, 2008). Similarly, the items used to assess drug use refer to 'drugs' rather than 'illicit substances' (e.g., "I used drugs to cope"). Whilst younger adults may engage in more illicit substance use compared to older males, this question could also be interpreted in relation to use of regulated medications (Rice, Oliffe, Kelly, et al., 2018).

An important aspect of examining the validity of the MDRS-22 is to establish whether it can identify men experiencing psychological distress. In the current study, the MDRS-22 was associated with moderate depression symptoms, determined based on PHQ-9 scores ≥ 10 and self-reported history of depression. These findings are consistent with previous research using the MDRS-22 (e.g., Rice et al., 2013; Walther et al., 2021; Zajac et al., 2020), demonstrating a positive relationship between the MDRS-22 and prototypic depression symptoms. Thus, the self-reported externalising behaviours of men are highly linked with their internalising experiences and therefore may be important indicators of distress given the expression of those behaviours' places men at significantly increased risk of suicidality (Rice, Ogrodniczuk, et al., 2019; Zajac et al., 2020). This is a particularly interesting finding given that none of the MDRS-22 items are included in the diagnostic criteria for depression and warrants further investigation. Specifically, future research is needed to investigate whether externalising symptoms in men are prodromal for subsequent prototypic depression symptoms (Rice, Kealy, Oliffe, & Ogrodniczuk, 2018) or whether externalising symptoms reflect broader psychopathology.

Of particular importance is our finding that older males with moderate depression scored as high on the MDRS-22 as younger males experiencing moderate depression. Whilst prototypic depression symptoms tended to decrease with age, in those men with moderate depression symptoms, the presence of externalising features did not differ between

younger and older men. This finding supports previous research demonstrating that externalising symptoms are a useful indicator of depression in men across the lifespan (Price et al., 2018) and highlights the importance of assessments that consider externalising depression symptoms in addition to prototypic internalising symptoms in men of all ages.

### *3.7.1 Implications*

The present findings have a number of important implications. Current research on men's symptomatic experience of depression has focused primarily on younger populations and few studies have considered whether older males display externalising depression symptoms or how this presentation may differ across the lifespan. The results from this study highlight the utility of the MDRS-22 to help address this gap and facilitate much needed research on externalising depressive symptomology in older males to inform clinical practice. Given the growing evidence that men may be more likely to present with symptoms that fall outside current diagnostic and screening criteria for depression, sole emphasis on assessing prototypic internalising symptoms may lead to an underdiagnosis of male depression cases (Cavanagh et al., 2016; Martin et al., 2013; Mauvais-Jarvis et al., 2020). Recent research using a nationally representative sample of Australian men revealed that over 80% of males who experienced depression or suicidality in the past 12 months had contact with a General Practitioner. However, less than half had contact with a mental health professional (Australian Institute of Family Studies, 2020). This suggests that when men do present in primary care, their depression may not be detected due to externalising or male-specific presentations. Improved detection of mental health concerns for men across the lifespan using measures that consider male presentations is an important step to facilitating appropriate mental health care.

### *3.7.2 Limitations and Suggestions for Future Research*

While the current study addressed an important gap in the literature by examining the psychometric properties of the MDRS-22 in older men, the following limitations must be considered. There was a slight underrepresentation of younger adult men. In addition, the use of a predominantly online sample of Australian males limits the generalisability of the findings to other populations. Other limitations include the exclusive use of self-report data and the lack of validation of depression by a clinician. This study also did not assess the role of adherence to masculine norms which has been shown to have a stronger influence on symptom presentation than sex alone (Price et al., 2018).

Future research is needed to examine the relationship between externalising symptoms and gender roles across the lifespan. Future research should also examine whether the MDRS-22 detects additional and unique cases of depression in older adults compared to prototypic measures of depression to further demonstrate its clinical utility. Furthermore, whilst the present study supports the psychometric validity of the MDRS-22 in older males, further research is needed to determine its sensitivity to important factors such as suicidality.

## 3.8 Conclusion

With the number of older males living with depression predicted to rise in accordance with the demographic ageing of the population, there is an urgent need to improve the assessment and understanding of the disorder and how its presentation may differ across the lifespan. This study comprehensively demonstrates the suitability of the MDRS-22 as a measure of externalising and male-typical depression symptoms in older males, both in terms of its structural and psychometric properties, as well as its sensitivity to

prototypic depression symptoms. Use of male-specific scales such as the MDRS-22 may help to improve the detection of depression in men across the lifespan and may also identify factors that put men at risk of poor physical and mental health outcomes.

# Chapter 4: Study 3 – Brief Assessment of Male Depression in Clinical Care: Validation of the Male Depression Risk Scale Short Form in a Cross-Sectional Study of Australian Men

## 4.1 Preamble

This chapter consists of a published paper entitled 'Brief Assessment of Male Depression in Clinical Care: Validation of the Male Depression Risk Scale Short Form in a Cross-Sectional Study of Australian Men', which has been published with *BMJ Open*.

The previous chapter demonstrated that the MDRS-22 is a psychometrically valid measure of externalising symptoms associated with depression in men across the lifespan. However, the MDRS-22 is yet to be used widely in clinical practice (especially primary care settings), potentially due to its response format and number of items. Thus, the current study was designed to overcome these shortcomings by developing a short form of the MDRS to facilitate its use in time-limited primary care settings.

The published paper is presented in manuscript format as per journal style guidelines, with the same typeset as the rest of the thesis. Tables and Figures are presented throughout the text. Supplementary material for this paper is provided at the end of the chapter. A complete list of all references for the thesis, including those for this paper, is provided at the end of the thesis.

## 4.2 Statement of Authorship

**Brief Assessment of Male Depression in Clinical Care: Validation of the Male Depression Risk Scale Short Form in a Cross-Sectional Study of Australian Men**

Published in *BMJ Open*, March 2022

Herreen, D., Rice, S., & Zajac, I. T. (2022). Brief assessment of male depression in clinical care: Validation of the Male Depression Risk Scale short form in a cross-sectional study of Australian men. BMJ Open, 12. https://doi.org/10.1136/bmjopen-2021-053650

*Principal Author*

| | | | |
|---|---|---|---|
| Name of Principal Author (Candidate) | Danielle Herreen | | |
| Contribution to the Paper | Developed rationale for the study and devised aims with supervisors. Planned and carried out data collection and performed data analysis. Drafted, wrote, and submitted article, then revised and responded to reviewer comments. Acted as corresponding author. | | |
| Overall Percentage (%) | 85 | | |
| Certification | This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper. | | |
| Signature | | Date | 8 April 2022 |

## *Co-Author Contributions*

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

| | | | |
|---|---|---|---|
| Name of Co-Author | Associate Professor Simon Rice | | |
| Contribution to the Paper | Assisted with development of study aims and design. Supervised development of the work and provided input regarding analysis of data. Provided guidance on the preparation of manuscript and editorial and structural feedback. | | |
| Signature | | Date | 8 April 2022 |

| | | | |
|---|---|---|---|
| Name of Co-Author | Dr Ian Zajac | | |
| Contribution to the Paper | Assisted with development of study aims and design. Supervised development of the work and provided input regarding analysis of data. Supervised the preparation of the manuscript and provided editorial and structural feedback. | | |
| Signature | | Date | 8 April 2022 |

## 4.3 Abstract

*Objectives:* To develop and validate a short form of the Male Depression Risk Scale (MDRS-22) for use in primary care, examining associations with prototypic depression symptoms, psychological distress, and suicidality.

*Design:* Cross-sectional study with 8-month follow-up.

*Setting:* Community-based.

*Participants:* A community sample of younger (*n* = 510; 18-64 years) and older (*n* = 439; 65-93 years) males residing in Australia (*M* age = 58.09 years, *SD* = 17.77) participated in the study. A subset of respondents (*n* = 159 younger males; *n* = 169 older males) provided follow-up data approximately eight months later.

*Primary and secondary outcome measures*: Quantitative data were obtained through a survey comprising a range of validated measures, including the Male Depression Risk Scale (MDRS-22), the Patient Health Questionnaire (PHQ-9), and the Kessler Psychological Distress Scale (K10). The MDRS-22 was refined using exploratory and confirmatory factor analysis in line with best practice guidelines. ANOVAs and generalised linear models were conducted to explore relationships between variables.

*Results:* The short form MDRS-22 consisted of seven items (MDRS-7) and captured all of the domains in the original tool. Participants with mixed symptoms (PHQ-9 ≥ 10 and MDRS-7 > 5) had significantly higher risk of mental illness (K10 ≥ 25) and current suicidality (PHQ-9 item 9 ≥ 1) than those with exclusively prototypic symptoms. Furthermore, the MDRS-7 was shown to be effective at predicting elevated symptoms of depression at follow-up, after controlling for previous depression diagnoses.

*Conclusions:* Findings provide preliminary evidence of the potential utility of the MDRS-7 as a screening tool for externalised and male-type symptoms associated with major

depression in men. Field trials of the MDRS-7 in primary care settings may facilitate identification of men at risk of suicide and psychological distress who do not meet cut-off scores for existing measures of major depression symptoms.

*Keywords:* depression, externalising symptoms, short form, men, lifespan, help-seeking

### *4.3.1 Strengths and Limitations of the Study*

- This is the first study to explore the psychometric properties of the MDRS-7 as a screening tool for externalised and male-type symptoms associated with major depression in men.
- Use of the MDRS-7 in primary care settings may facilitate identification of men at risk of suicide and psychological distress.
- Diagnosis of depression was not verified by clinical interview.
- Field trials of the MDRS-7 are needed to demonstrate the utility of the tool in primary care settings.

## 4.4 Introduction

Major depressive disorder (MDD) is a common psychiatric condition and the leading cause of disability worldwide (Costantini et al., 2021; Friedrich, 2017). MDD is twice as prevalent in women than men (World Health Organization, 2017) and severe depression is known to significantly increase the risk of suicide (Chesney et al., 2014). Although men are less likely to be diagnosed with a depressive disorder (Mauvais-Jarvis et al., 2020), they are three times more likely to die by suicide compared to women (World Health Organization, 2014). Current approaches to the diagnosis of depression (e.g., as per ICD-11 or DSM-5 diagnostic criteria) emphasise symptoms including persistent sadness, loss of interest or pleasure in previously enjoyable activities, as well as changes in affect, cognition, and

neurovegetative functioning (American Psychiatric Association, 2013; World Health Organization, 2019). However, a growing number of studies suggest that a significant proportion of men suffering from depression might experience a distinct phenotype (Cavanagh et al., 2016; Martin et al., 2013; Whittle et al., 2015). Congruent with masculine role norms, this male depression phenotype includes anger, substance misuse, emotion suppression, and risk-taking domains (Cavanagh et al., 2016; Rice, Kealy, Seidler, et al., 2020). However, these putative symptoms are not included in standard diagnostic criteria or screening measures, and it has been suggested that this might account in part for the underdiagnosis of male depression cases, and therefore under-recognition of (and treatment for) men at heightened risk of suicide (Call & Shafer, 2018).

Whilst men are often regarded as being less likely to seek help than women, recent statistics largely do not support this claim. In Australia, around 89% of men attend primary care annually (Australian Bureau of Statistics, 2017b). Among men experiencing mental health difficulties, annual primary care attendance is similarly high with estimates of 80% to 96% of men with symptoms of depression reporting a visit to primary care within the previous 12 months (Australian Institute of Family Studies, 2020; Martin et al., 2021). Similarly, findings from the United Kingdom (UK) demonstrate that whilst males are overall less likely to attend primary care compared to females, attendance rates in men and women with comparable underlying morbidities, including depression, are similar (Wang et al., 2013). Furthermore, findings from a population study of health care contacts among Canadian suicide decedents in Toronto demonstrated that over 60% (*n* = 1,792) of men who died by suicide accessed professional mental health care in the year before their death (Schaffer et al., 2016). These findings highlight the essential role of primary care physicians

in identifying depression and suicide risk in men in order to facilitate effective treatment (Lakkis & Mahmassani, 2015).

Growing interest in gender-sensitive assessment of men's depression has seen the development of male-specific screening tools to identify symptoms that align with men's socialisation and gender norm processes (e.g., Brownhill et al., 2003; Magovcevic & Addis, 2008; Zierau et al., 2002). One recently developed and widely validated measure for assessing externalising and male-type symptoms in men is the Male Depression Risk Scale (MDRS-22) (Rice et al., 2013). The MDRS-22 consists of 22 items assessing six symptom domains including emotion suppression, drug use, alcohol use, anger and aggression, somatic symptoms, and risk-taking (Rice et al., 2013). Recently, Zajac and colleagues demonstrated that this tool, used in conjunction with a measure of prototypic depression symptoms (PHQ-9), was able to stratify men into three distinct risk groups: (i) prototypic symptoms (consistent with current MDD diagnostic criteria), (ii) externalising symptoms consistent with masculine socialisation, and (iii) mixed depressive symptoms, reflecting both internalised and externalised symptomology. Further analyses showed that men in the externalising only group—men who are arguably missed when using measures of internalising symptoms—were at significantly increased risk of suicide compared to non-depressed men. Moreover, those with elevated externalised and prototypic symptomology were at highest risk of mental illness as well as suicide (Zajac et al., 2020), highlighting the potential early identification and intervention benefits of leveraging male-specific tools in primary care settings.

Two-stage screening methods are commonly used in primary care and have been shown to be effective for increasing the recognition of depression (Ferenchick et al., 2019). However, many primary care physicians report that time is a limiting factor in their capacity

to comprehensively assess psychological issues, including depression (Hutton & Gunn, 2007; Lakkis & Mahmassani, 2015), despite management of common mental disorders rating as a top reason for general practice attendance (The Royal Australian College of General Practitioners, 2018). To help address this issue, brief screening tools consisting of 15 items or less are often used, given their completion time is usually just a couple of minutes (Mitchell & Coyne, 2007). Examples include the Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001), the Kessler Psychological Distress Scale (K10; Kessler et al., 2002), and the Beck Depression Inventory for Primary Care (BDI-PC; Beck et al., 1997).

To date, the MDRS-22 has demonstrated excellent psychometric properties as well as the ability to detect different groups of men who may be at increased risk of suicide and mental illness (e.g., Rice, Kealy, et al., 2019; Rice, Ogrodniczuk, et al., 2019; Zajac et al., 2020). However, given time constraints in primary care settings, the length of the current MDRS-22 is arguably impractical (Rice, Kealy, Seidler, et al., 2020). The purpose of the present study was to develop a short form of the MDRS-22 to facilitate its use as a screening tool in busy and time-pressured healthcare settings. We also aimed to establish an initial set of cut-off scores for interpretive purposes. If the MDRS short form is to have clinical utility, it needs to be able to identify broader aspects of psychopathology. Thus, a secondary aim was to explore current and longitudinal risk of suicidality and mental illness by adopting a previously utilised categorisation according to cut-off scores on the MDRS and the widely used PHQ-9, which assesses prototypic depression symptoms (Zajac et al., 2020). Furthermore, as adherence to masculine gender norms has been found to decline as men get older (Herreen et al., 2021), younger and older males were examined separately to examine the utility of the tool across age groups.

## 4.5 Method

### *4.5.1 Participants and Procedure*

This cross-sectional study included baseline data from a community sample of 510 younger males aged 18 to 64 years (*M* = 45.43, *SD* = 14.56) and 439 older males aged 65 to 93 years (*M* = 72.79, *SD* = 5.88). A subset of respondents (*n* = 159 younger males; *n* = 169 older males) participated in the follow-up component. On average, 35 weeks (*M* = 248.56 days, *SD* = 24.59 days) elapsed between the provision of Time 1 and Time 2. The mean age for the overall sample was 58.09 years (*SD* = 17.77). Eligible participants were Australian male residents over the age of 18 years who considered themselves fluent in English. Participants were recruited via paid advertisements displayed to Australian members of the Facebook social networking site (*n* = 601; 63.3%) and through promotion of the study to community organisations (e.g., Rotary, Men's Shed). Time 1 data were collected between August and November 2019 using an online questionnaire. However, participants from local community organisations were provided with the option to complete a paper version of the survey to ensure inclusivity and accessibility of the sample and *n* = 5 participants completed a paper version. Ethics approval was obtained from the University of Adelaide Human Research Ethics Committee and the CSIRO Health and Medical Human Research Ethics Committee (approval number H-2019-109). All participants provided informed consent. Reporting adhered to the STROBE cross-sectional guidelines. Table 1 presents a summary of the characteristics of the study participants at Time 1 and Time 2.

### *4.5.2 Public Involvement*

Participants were not involved in the design or conduct of this research; however, participants could nominate to receive updates on the results of the study.

### *4.5.3 Measures*

**4.5.3.1 Demographics.** Participants reported their age, gender, relationship status, employment status, level of education, and household income. They also reported whether they had previously been diagnosed with depression.

**4.5.3.2 Male Depression Risk Scale (MDRS-22).** Externalising and male-type depression symptoms were assessed by the Male Depression Risk Scale (MDRS-22; Rice et al., 2013). The MDRS-22 contains twenty-two self-report items designed to assess six broad domains of externalising and male-type depression symptoms present in the last month including anger and aggression, drug use, alcohol use, emotion suppression, risk-taking, and somatic symptoms using the response format of 5-point Likert scale ranging from 0 (*none of the time*), 1 (*a little of the time*), 2 (*some of the time*), 3 (*most of the time*), and 4 (*all of the time*). Cronbach's alphas for the MDRS are reported in Table 2 for both age groups and for the overall sample and are considered adequate.

**4.5.3.3 Patient Health Questionnaire (PHQ-9).** The Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001) is a self-report depression screening tool for use in primary care that assesses nine symptoms consistent with the DSM-5 diagnostic criteria for major depressive disorder (American Psychiatric Association, 2013). Participants endorse how often they have experienced each symptom (e.g., "*Feeling down, depressed, or hopeless*") during the preceding two-week period using a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*almost every day*). A score of 10 and above is indicative of clinically significant depressive symptoms (Kroenke et al., 2010). In addition to utilising total PHQ-9 scores, we used item 9 as a measure of suicidality: "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?". We deemed those who scored 1 or more on this item to be currently experiencing

suicidal ideation. Internal consistency of the PHQ-9 in the present study for the overall sample was high ($\alpha$ = .93).

**4.5.3.4 Kessler Psychological Distress Scale (K10).** The Kessler Psychological Distress Scale (K10; Kessler et al., 2002) is a widely used measure in both research and primary care settings (Stolk et al., 2014). It comprises ten questions assessing a person's negative emotional state in the preceding 30 days (e.g., "*About how often did you feel so nervous that nothing could calm you down*"). Responses are based on a 5-point Likert scale ranging from 1 (*none of the time*) to 5 (*all of the time*). In addition to examining K10 total scores, we created a binary variable with scores ≥ 25 indicating probable mental illness, consistent with published cut-off scores for the K10 (Australian Bureau of Statistics, 2019b). Internal consistency of the K10 in this study for the overall sample was high ($\alpha$ = .95).

### *4.5.4 Analytic Sample*

A total of 1114 participants commenced the study. However, 156 participants were not included in the analyses due to substantial missing data. Thus, *N* = 949 participants who provided complete data for the items comprising the MDRS-22 were included in the item reduction process described below. Of this sample, *n* = 29 did not provide complete data for the PHQ-9 or K10 items. Thus, models using these variables comprised *n* = 920 participants.

### *4.5.5 Statistical Analyses*

Data for the present study were analysed using IBM SPSS Statistics (Version 26.0) except for the confirmatory factor analysis (CFA) undertaken in JASP (Version 0.13.1; JASP Team, 2020). Various recommendations exist for the selection of items for short form surveys including both Rasch analysis (Uddin & Islam, 2020) and descriptive approaches (Pather & Uys, 2008; Stanton et al., 2002). Broadly speaking, the focus is on selecting items with maximum variability and which retain the theorised underlying construct—as well as

sub-domains—measured by the long-form scale. Therefore, we calculated descriptive (means, standard deviation (*SD*), and skewness) and relational statistics (correlations) for each item (see Supplementary Table 1). Items were then scored based on each statistic within its corresponding domain (i.e., largest *SD*, strongest correlation etc) and summed across the different descriptive indices to derive a total performance score for each item. Parallel Analysis consisting of 1,000 permutations of the original raw data were used to determine thresholds for retaining factors. Exploratory factor analysis (EFA) of the best performing items was performed with maximum likelihood estimation within each age group, and in the combined sample. Stability of this solution was then established using CFA of Time 2 Data (*n* = 328). Fit indices reported include: comparative fit index (CFI); the Tucker-Lewis index (TLI); the root mean square error of approximation (RMSEA); and the standardised root mean residual (SRMR). Interpretation of these indices were guided by the recommendations of Hu & Bentler (Hu & Bentler, 1999).

In order to investigate the clinical utility of the reduced item scale, cut-off scores were determined for Low (0 – 5), Moderate (6 – 7), Severe (8 – 12) and Extremely severe (13+) symptom severity groups. The corresponding cumulative percentiles ($cum^{\%}$) at the upper boundaries of these categories were: Low ($cum^{\%}$ = 63.5), Moderate ($cum^{\%}$ = 77.5), Severe ($cum^{\%}$ = 95.5), Extremely severe ($cum^{\%}$ = 100.0). These category scores were determined using previously reported cumulative percentiles that represented differing degrees of increased risk of recent suicide attempt for the MDRS-22 (Rice, Ogrodniczuk, et al., 2019). A 2x2 ANOVA was conducted to explore the effect of age group differences and MDRS-7 symptom categories on prototypic depression (PHQ-9) and psychological distress (K10). We classified individuals into depression groups using the MDRS-7 in combination with the PHQ-9 based on previous research (Zajac et al., 2020) with groups referred to as:

not depressed (PHQ-9 < 10 and MDRS-7 ≤ 5), prototypic depression features (PHQ-9 ≥ 10 and MDRS-7 ≤ 5), mixed features (PHQ-9 ≥ 10 and MDRS-7 > 5), and externalising and male-type features (PHQ-9 < 10 and MDRS-7 > 5). In addition, we used the K10 to determine those individuals suffering a moderate mental illness (K10 ≥ 25) from those without a mental illness (K10 < 25), and current suicidality was ascribed based on scores ≥ 1 on PHQ-9 item 9: "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?". Based on these classifications, generalised linear models (GLMs) were used to determine risk of mental illness and suicidality based on depressive symptom groupings whilst controlling for previous diagnosis of depression. An additional GLM examined risk of depression at Time 2 (PHQ-9 ≥ 10) as a function of MDRS-7 categories at Time 1. Assumptions of GLMs were considered through inspection of scatter plots and histograms of residuals and predicted values, with model results reported as standardised betas.

## 4.6 Results

### *4.6.1 Sample Characteristics*

Table 1 presents the characteristics of the participants at Time 1 and Time 2. As expected, there was a higher proportion of older participants who reported themselves as married/de-facto or widowed/divorced/separated, in comparison to younger men. Regarding education, the majority of older participants completed year 11 or below, whilst the proportion of participants completing a Bachelor's degree was higher in the younger sample. In addition, household income appeared to be higher in younger compared to older men, consistent with the majority of the older sample reporting themselves as being retired. Comparisons with 2016 Australian Census data indicate that participants in the current

study were more likely to be married or in a de-facto relationship (63.1% vs 58.1%), more likely to have completed a Bachelor Degree level or above (49.8% vs 22.0%), and less likely to be employed full-time (44.5% vs 57.7%) compared to the Australian population (Australian Bureau of Statistics, 2017a). This likely reflects the trend towards older males in the current study. Sample characteristics at Time 1 and Time 2 were mostly comparable, with a higher proportion of participants at Time 2 retire

**Table 1**

*Sociodemographic Characteristics of Participants*

| Variable | Younger men (< 65) | | Older men (≥ 65) | |
|---|---|---|---|---|
| | Time 1 (*n* = 510) | Time 2 (*n* = 159) | Time 1 (*n* = 439) | Time 2 (*n* = 169) |
| Age range | 18-64 | | 65-93 | |
| Age, *M* (*SD*) | 45.43 (14.56) | | 72.79 (5.88) | |
| Relationship status, *n* (%) | | | | |
| Single (never married) | 118 (23.1) | 27 (17.0) | 12 (2.7) | 6 (3.6) |
| Widowed/divorced/separated | 68 (13.3) | 19 (11.9) | 92 (21.0) | 44 (26.0) |
| Married/de-facto | 322 (63.1) | 113 (71.1) | 332 (75.6) | 119 (70.4) |
| Prefer not to say | 2 (0.4) | 0 (0.0) | 3 (0.7) | 0 (0.0) |
| Employment status, *n* (%) | | | | |
| Employed full-time | 227 (44.5) | 66 (41.5) | 22 (5.0) | 5 (3.0) |
| Employed part-time | 37 (7.3) | 11 (6.9) | 18 (4.1) | 4 (2.4) |
| Employed casually | 67 (13.1) | 19 (11.9) | 14 (3.2) | 5 (3.0) |
| Not employed or unpaid work | 94 (18.4) | 24 (15.1) | 13 (3.0) | 7 (4.1) |
| Retired | 73 (14.3) | 39 (24.5) | 370 (84.3) | 148 (87.6) |
| Prefer not to say | 12 (2.4) | 0 (0.0) | 2 (0.5) | 0 (0.0) |
| Household income, *n* (%) | | | | |
| <$35,000 | 136 (26.7) | 28 (17.6) | 141 (32.1) | 51 (30.2) |
| $35,000-$65,000 | 91 (17.8) | 32 (20.1) | 156 (35.5) | 55 (32.5) |
| $65,000-$105,000 | 100 (19.6) | 44 (27.7) | 80 (18.2) | 29 (17.2) |
| $105,000-$160,000 | 97 (19.0) | 26 (16.4) | 31 (7.1) | 15 (8.9) |
| >$160,000 | 65 (12.7) | 20 (12.6) | 12 (2.7) | 4 (2.4) |
| Prefer not to say | 21 (4.1) | 9 (5.7) | 19 (4.3) | 15 (8.9) |
| Highest level of education, *n* (%) | | | | |
| Year 11 or below | 49 (9.6) | 11 (6.9) | 81 (18.5) | 23 (13.6) |
| Year 12 | 52 (10.2) | 10 (6.3) | 48 (10.9) | 17 (10.1) |
| Certificate/diploma | 154 (30.2) | 55 (34.6) | 133 (30.3) | 50 (29.6) |
| Bachelor's degree | 139 (27.3) | 44 (27.7) | 74 (16.9) | 34 (20.1) |
| Graduate certificate/diploma | 43 (8.4) | 15 (9.4) | 39 (8.9) | 20 (11.8) |
| Postgraduate degree | 72 (14.1) | 23 (14.5) | 56 (12.8) | 22 (13.0) |
| Prefer not to say | 1 (0.2) | 1 (0.6) | 8 (1.8) | 3 (1.8) |

*Note.* % may not equal 100 due to rounding.

### *4.6.2 Item Reduction*

Descriptive and relational statistics for each of the MDRS-22 items across younger and older age groups are displayed in Supplementary Table 1. For the emotion suppression, alcohol use, somatic symptoms, and drug use domains, a single highest scoring item emerged congruent across age groups. For the anger and aggression domain, two different items were retained because of their performance across the age groups. Finally, although two risk-taking items scored equally well in the younger group, only one of these loaded within the older age group, and only this item was retained. This resulted in a total selection of seven items for the short form scale covering all of the original MDRS-22 domains.

Factor analysis of these seven items revealed the presence of a single underlying domain that satisfied criteria determined by the parallel analysis; eigenvalues were required to exceed 1.16. As shown in Table 2, all items demonstrated a moderate-to-strong loading on a single underlying factor except for those measuring alcohol and drug use, which loaded moderately. When modelling these seven items using CFA at Time 2, the initial solution specifying all items loading on a single latent MDRS-7 factor was not quite adequate, $\chi^2(14) = 65.85$, $p < .001$, CFI = 0.96, TLI = 0.94, RMSEA = 0.11 [0.08, 0.13], SRMR = 0.10. However, allowing the errors of the two items assessing anger and physical aggression to covary resulted in acceptable model fit, $\chi^2(13) = 29.04$, $p \leq .01$, CFI = 0.99, TLI = 0.98, RMSEA = 0.06 [0.03, 0.09], SRMR = 0.09. The final scale and response format is presented in Appendix B.

**Table 2**

*MDRS-7 Item Loadings Derived from Exploratory Factor Analysis (Maximum Likelihood Estimation)*

| Domains | Items | 18-64 | 65+ | Overall | Time 2 |
|---|---|---|---|---|---|
| Emotion suppression | I bottled up my negative feelings | 0.67 | 0.72 | 0.71 | 0.68 |
| Alcohol use | I needed alcohol to help me unwind | 0.44 | 0.45 | 0.48 | 0.37 |
| Somatic symptoms | I had unexplained aches and pains | 0.56 | 0.59 | 0.58 | 0.63 |
| Aggression | I overreacted to situations with aggressive behaviour | 0.69 | 0.74 | 0.71 | 0.30 |
| Anger | It was difficult to manage my anger | 0.75 | 0.74 | 0.75 | 0.65 |
| Drug use | Using drugs provided temporary relief | 0.36 | 0.44 | 0.42 | 0.44 |
| Risk-taking | I stopped caring about the consequences of my actions | 0.63 | 0.62 | 0.65 | 0.80 |
| | *Eigenvalue* | 2.52 | 2.74 | 2.72 | |
| | *Variance explained (%)* | 36.04 | 39.08 | 38.82 | |
| | *Cronbach's alpha* | .68 | .71 | .72 | |
| | *Correlation with MDRS-22* | .94 | .94 | .94 | |
| | *Short form re-test reliability* | .72 | .69 | .71 | |
| | *M (SD)* | 5.93 (4.04) | 3.57 (3.39) | 4.84 (3.93) | |

*Note.* MDRS-7 = 7-item Male Depression Risk Scale. Time 2 loadings derived using confirmatory factor analysis (CFA) in the combined sample.

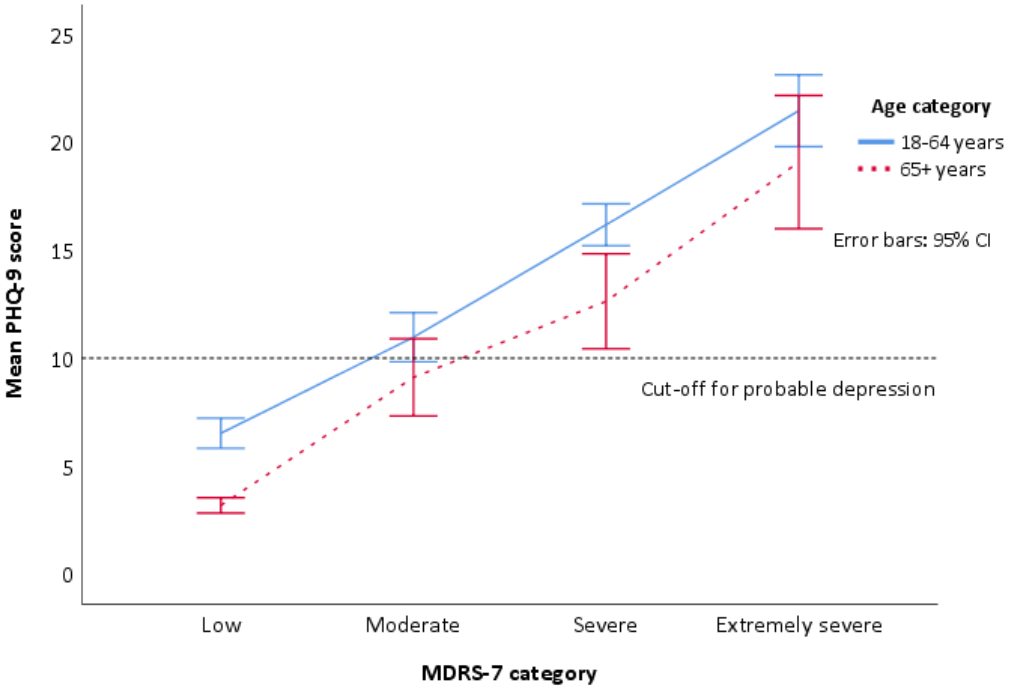
All correlations were significant at $p < .001$.

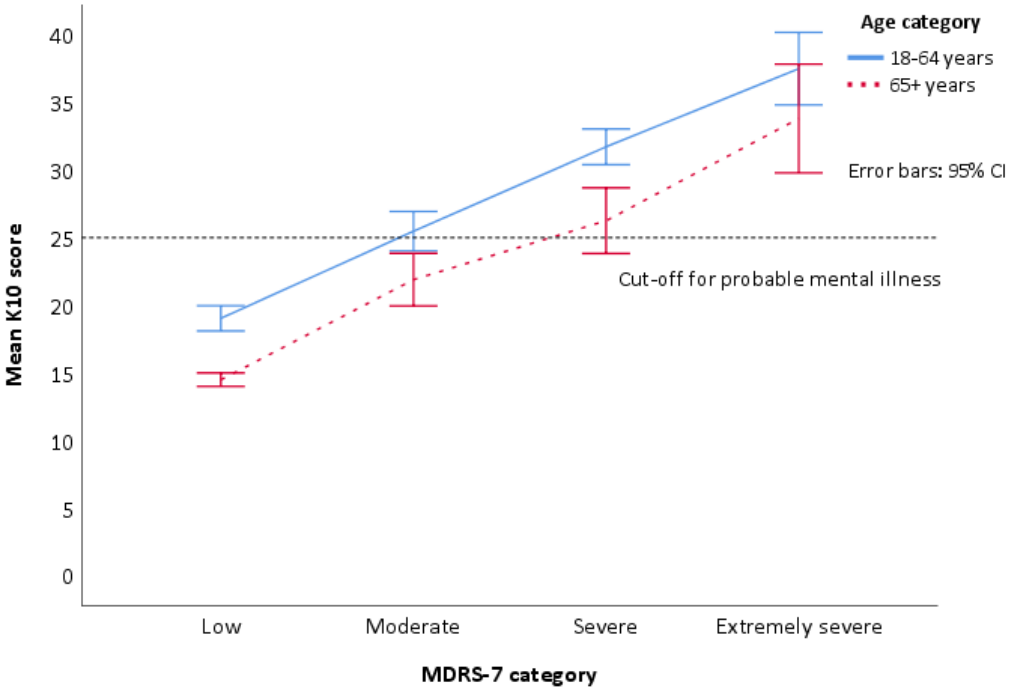
### *4.6.3 Cut-Off Scores for the Short Form Scale*

The proportion of men in each of the different MDRS-7 symptom severity categories are shown in Supplementary Figure 1 for the total sample, and by age group. As can be seen, older men appear more likely to be in the 'low' category of symptoms, and less likely to be in the 'severe' or 'extremely severe' categories compared to younger males. Figure 1 shows the effect of age and MDRS-7 categories on prototypic depression (PHQ-9) and psychological distress (K10). For PHQ-9, there were significant differences between all MDRS-7 groups, $F(3, 912) = 208.05$, $p < .001$, and between age groups, $F(1, 912) = 26.76$, $p < .001$, with no significant interaction between MDRS-7 and age, $F(3, 912) = 0.59$, $p = .625$. For the K10, results were similar: significant differences between all MDRS-7 groups, $F(3, 912) = 188.95$, $p < .001$, and between younger and older men, $F(3, 912) = 33.05$, $p < .001$, but no interaction between MDRS-7 and age, $F(3, 912) = 0.44$, $p = .719$.

**Figure 1**

*Effect of Age and MDRS-7 Category on Prototypic Depression Symptoms (PHQ-9) and Psychological Distress (K10)*



### *4.6.4 Clinical Utility of the MDRS-7*

The proportion of males according to depressive classification type is shown in Supplementary Figure 2. Externalised and male-type depression affected approximately 10% of younger and older males, whilst prototypic and mixed depressive symptoms were more common in younger males. Table 3 shows the risk of mental illness and suicidality compared to non-depressed participants within each age group after controlling for a previous diagnosis of depression. All classifications were associated with both outcome measures. Individuals with mixed symptoms have the highest risk of suicidality and mental illness.

**Table 3**

*Odds of Mental Illness and Current Suicidality Controlling for Previous Diagnosis of Depression*

| | Depressed group, *n* | Moderate mental illness, *n* (%) | Moderate mental illness, AOR [95% CI] | Suicidality, *n* (%) | Suicidality, AOR [95% CI] |
|---|---|---|---|---|---|
| 18-64 | | | | | |
| Not depressed | 189 | 11 (6) | 1 | 13 (7) | 1 |
| Prototypic depression | 69 | 54 (78) | 51.35*** [21.94, 120.18] | 42 (61) | 18.76*** [8.86, 39.72] |
| Externalised depression | 49 | 10 (20) | 4.09** [1.60, 10.47] | 9 (18) | 2.99 * [1.19, 7.50] |
| Mixed depression | 186 | 162 (87) | 91.35*** [43.00, 194.06] | 136 (73) | 31.97*** [16.51, 61.90] |
| 65+ | | | | | |
| Not depressed | 308 | 5 (2) | 1 | 19 (6) | 1 |
| Prototypic depression | 20 | 8 (40) | 29.66*** [8.17, 107.67] | 8 (40) | 8.14*** [2.89, 22.97] |
| Externalised depression | 41 | 4 (10) | 5.37* [1.36, 21.26] | 10 (24) | 4.34*** [1.83, 10.29] |
| Mixed depression | 54 | 36 (67) | 105.05*** [36.48, 302.50] | 41 (76) | 42.69*** [19.47, 93.61] |

*Note.* Total *N* = 916 due to 4 respondents not reporting previous depression diagnosis. AOR = adjusted odds ratio. OR for previous depression diagnosis not shown.

Moderate mental illness defined as K10 ≥ 25. Suicidality defined as ≥ 1 on PHQ-9 item 9. Not depressed = PHQ-9 < 10 and MDRS-7 ≤ 5; Prototypic depression = PHQ-9 ≥ 10 and MDRS-7 ≤ 5; Externalised depression = PHQ-9 < 10 and MDRS-7 > 5; Mixed depression = PHQ-9 ≥ 10 and MDRS-7 > 5.

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

A final GLM considered the likelihood of being classified as depressed at follow-up based on responses to the PHQ-9 at Time 2 (i.e., score ≥ 10). MDRS-7 category was entered as a predictor controlling for PHQ-9 scores at Time 1, previous diagnosis of depression and age. As shown in Table 4, PHQ scores at Time 1 were significantly associated with increased risk of depression at Time 2 although age and prior diagnoses were not significantly associated. Those classified as having moderate MDRS-7 symptoms at Time 1 were significantly more likely than those in the low symptom category to be classified as depressed at Time 2, whilst the severe and extremely severe categories were not associated with increased risk.

**Table 4**

*Odds of Being Classified as Depressed at Follow-Up*

| Outcome: Depressed (PHQ-9 ≥ 10) at Time 2 (*n* = 328) | | |
|---|---|---|
| | OR | 95% CI |
| Age (older) | | |
| | 1.46 | [0.69, 3.09] |
| Previous depression diagnosis (yes) | | |
| | 1.87 | [0.88, 3.99] |
| PHQ-9 (Time 1) | | |
| | 1.24*** | [1.15, 1.34] |
| Moderate (MDRS-7) | | |
| | 3.30** | [1.38, 7.90] |
| Severe (MDRS-7) | | |
| | 2.00 | [0.76, 5.28] |
| Extremely severe (MDRS-7) | | |
| | 1.64 | [0.28, 9.54] |

*Note.* Reference category = low symptoms.

***$p < .001$, ** $p < .01$.

## 4.7 Discussion

Clinical reports and emergent empirical work suggest that men's depression may be under-detected as a result of prototypic screening tools that may be insensitive to men's gender role socialisation (Addis, 2008; Call & Shafer, 2018; Martin et al., 2013). The Male Depression Risk Scale (MDRS-22) assesses externalised and male-type symptoms of depression, such as substance misuse, risk-taking, and anger. However, in its current 22-item form, it is impractical for rapid use in primary care, particularly when used alongside traditional depression screening tools (Rice, Kealy, Seidler, et al., 2020). The present

research aimed to derive a short form of the MDRS-22, examine its psychometric properties and relationships with psychological distress, depression, and suicidal ideation in order to demonstrate its utility as a potential screening tool in primary and other healthcare settings.

The short form derived herein comprises seven items, representing one item for each of the original MDRS domains including emotion suppression, risk-taking, substance use, drug use, somatic symptoms, and two items for the anger and aggression domain, based on criteria including variability within items, the item's relationship to its original MDRS domain but also with the overall MDRS score. Of particular importance is our finding that the correlation between the MDRS-7 and the original MDRS-22 was near perfect ($r$ = .94). Five of the seven items demonstrated moderate-to-strong loadings on a single underlying construct presumed to reflect the male depression phenotype, whilst two items assessing alcohol and drug use loaded moderately. This likely reflects the reduced variability of participant responses on these items, with most participants reporting that these items applied to them none, or a little of the time. However, these loadings still exceeded the minimum recommended factor loading of 0.32 (DeVellis, 2016). In addition, items that tap these behaviours are important to retain given that substance use is an important marker of depression and suicidality in men and particularly those who adhere to masculine norms (Addis, 2008; Coleman, 2015). It is nonetheless important to note that substance use may reflect a comorbidity (Macdonald et al., 2020) or maladaptive coping (Cavanagh et al., 2017). These are important questions for future research to explore.

In the present study, externalising and male-type symptoms, either alone or in combination with prototypic symptoms, were found to be more common than exclusively prototypic symptoms. Approximately 10% of younger and older males were found to present with uniquely externalising and male-type symptoms, whilst 38% of younger males

and 13% of older males presented with mixed symptoms. These findings are consistent with previous research using the MDRS-22 (Zajac et al., 2020) and highlight the potential utility of the MDRS-7 for detecting additional cases of men at risk. Men with exclusively externalised and male-type depression are a subset who score below threshold on traditional prototypic measures but who report a degree of externalised behaviours that might be problematic. Furthermore, both younger and older males in the mixed symptom group had increased risk of a mental illness—after controlling for a previous diagnosis of depression—demonstrating unequivocally that this represents a unique group of psychologically distressed, at-risk men. Similarly, both younger and older males in the mixed symptom group had a significantly elevated risk of suicidality. These findings are consistent with research by Zajac and colleagues and highlight the clinical importance of considering a broad range of potential presentations of depression in men, all of which are associated with increased risk of poor outcomes.

The MDRS-7 was also shown to be effective at predicting depression at a later time point, suggesting a possible prodromal effect. These findings are consistent with those by Kendler and colleagues (Kendler & Gardner, 2014) who demonstrated that externalising and male-type symptoms predicted a future depressive episode in men. Hence, our findings may reflect early symptom expression, or even attempts of men to cope with what has the potential to develop into a threshold depressive disorder. This further highlights the potential value of screening for externalising and male-type symptoms to facilitate early intervention and prevention of further mental health issues (Hetrick et al., 2008). In addition, given the externalised nature of male-type symptoms of depression, it is important to note that these symptoms not only affect men's health and wellbeing but also the health wellbeing of their families, friends, and communities (Call & Shafer, 2018; Rice et al., 2015;

Wilson & Durbin, 2010). Hence the better identification and management of male depression is likely to have substantial public health implications.

### *4.7.1 Clinical Implications*

There is an urgent need for health services and providers to utilise more sensitive diagnostic tools as a means of improving the detection of depression and psychological distress in males and addressing the high rates of male suicide (Call & Shafer, 2018). The use of brief tools such as the MDRS-7 may assist with detecting unique cases of men who would score below threshold on measures such as the PHQ-9. However, an added benefit of using this scale alongside prototypic measures, is the ability to detect men presenting with mixed symptomology whose risk of suicide and poor mental health outcomes is significantly elevated. Therefore, the clinical utility of this measure may extend beyond screening and detection and into the therapy setting where it is necessary to determine, monitor, and manage differing degrees of suicidality.

### *4.7.2 Limitations and Suggestions for Future Research*

The methodology adopted in this study is not without limitations. The majority of participants were recruited online, which may limit the generalisability of the findings to other populations (Choi et al., 2017). Future research should examine measurement invariance according to factors such as education level, income, and cultural background. There was also a trend towards older males in the current sample. However, items retained in the MDRS-7 were those that performed best in both younger and older males to ensure the measure was appropriate across the lifespan. Future research should examine the psychometric properties of the MDRS-7 with additional populations, including clinical samples of men across the lifespan presenting to primary care. In addition, as data were obtained through self-report, diagnosis of depression could not be verified at clinical

interview. The results of this study would be strengthened by a more rigorous assessment of psychopathology and comorbidity. It is also important to acknowledge that this study used a single item from the PHQ-9 to examine current suicidal ideation. Therefore, there is a need for additional research to examine the relationship between the MDRS-7 and other measures of suicidality, including recent suicide attempt.

## 4.8 Conclusion

The present study provides important preliminary information on the development and validation of the MDRS-7. Specifically, this study provides emerging support for the validity and reliability of the MDRS-7 as a measure of externalising and male-type depression symptoms in both younger and older men in terms of its psychometric properties as well as its relationship to prototypic depression symptoms, psychological distress, and suicidality. Use of male-specific measures of depression such as the MDRS-7 may improve the detection of depression and suicide risk in men, and adjunctive use (alongside established prototypic scales such as the PHQ-9) may contribute to improved public health outcomes.

**Supplementary Table 1**

*Descriptive and Relational Statistics for Male Depression Risk Scale (MDRS-22) Items Across Younger and Older Age Groups*

| Domain | Item | Younger males | | | | | | | Older males | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | Skew | Total (*r*) | Domain (*r*) | Other domains (*r*) | Item score[a] | *M* | *SD* | Skew | Total (*r*) | Domain (*r*) | Other domains (*r*) | Item score[a] |
| Emotion suppression | I tried to ignore feeling down | 1.77 | 1.12 | 0.08 | .62 | .77 | .46 | 1 | 1.34 | 1.26 | 0.51 | .57 | .77 | .35 | 0 |
| | I bottled up my negative feelings | 1.93 | 1.16 | 0.01 | .64 | .86 | .45 | 3 | 1.28 | 1.15 | 0.58 | .73 | .86 | .52 | 3 |
| | I covered up my difficulties | 1.90 | 1.18 | -0.04 | .64 | .85 | .45 | 2 | 1.21 | 1.21 | 0.63 | .72 | .84 | .51 | 0 |
| | I had to work things out by myself | 2.38 | 1.18 | -0.31 | .46 | .68 | .29 | 2 | 1.95 | 1.36 | -0.04 | .58 | .72 | .39 | 3 |
| Alcohol use | I drank more alcohol than usual | 0.80 | 1.09 | 1.24 | .60 | .89 | .34 | 2 | 0.47 | 0.89 | 2.11 | .59 | .91 | .33 | 0 |
| | I stopped feeling so bad while drinking | 0.80 | 1.14 | 1.22 | .57 | .86 | .32 | 0 | 0.38 | 0.92 | 2.51 | .58 | .88 | .33 | 0 |
| | I needed alcohol to help me unwind | 0.92 | 1.16 | 1.10 | .60 | .94 | .32 | 5 | 0.52 | 0.94 | 2.02 | .61 | .94 | .34 | 6 |
| | I needed to have easy access to alcohol | 0.53 | 0.98 | 1.93 | .58 | .87 | .34 | 1 | 0.44 | 0.91 | 2.17 | .59 | .91 | .33 | 0 |
| Somatic symptoms | I had more heartburn than usual | 0.60 | 0.91 | 1.48 | .39 | .65 | .26 | 0 | 0.38 | 0.71 | 1.87 | .50 | .70 | .38 | 0 |
| | I had regular headaches | 0.89 | 1.04 | 1.07 | .49 | .74 | .35 | 0 | 0.41 | 0.79 | 2.23 | .54 | .77 | .42 | 0 |
| | I had stomach pains | 0.72 | 0.90 | 1.06 | .53 | .74 | .40 | 2 | 0.38 | 0.76 | 2.33 | .57 | .77 | .45 | 2 |
| | I had unexplained aches and pains | 1.05 | 1.13 | 0.80 | .52 | .78 | .37 | 4 | 0.74 | 0.93 | 1.19 | .57 | .78 | .44 | 5 |

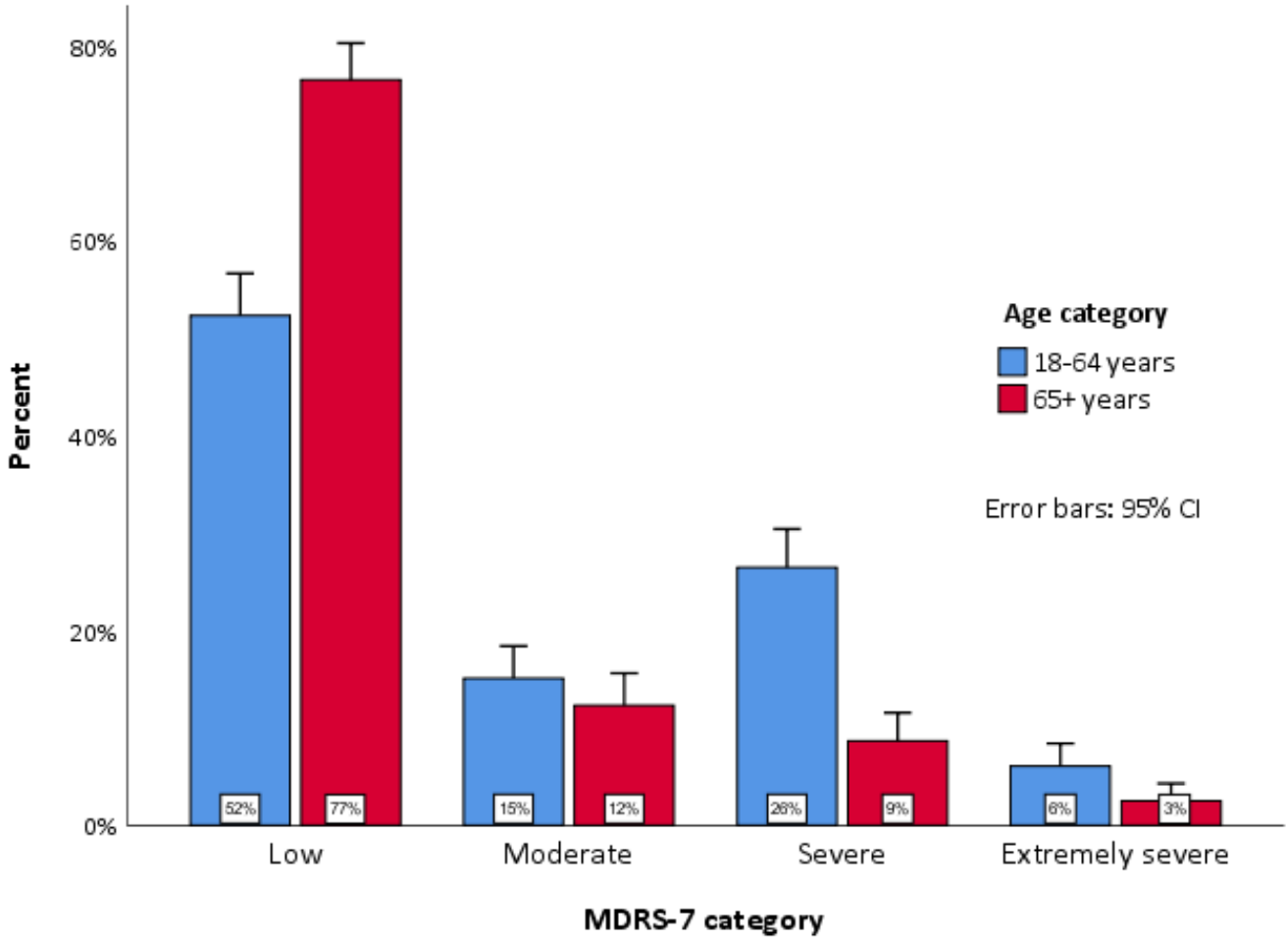
Supplementary Table 1 continued

| Domain | Item | Younger males | | | | | | | Older males | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *M* | *SD* | Skew | Total (*r*) | Domain (*r*) | Other domains (*r*) | Item score[a] | *M* | *SD* | Skew | Total (*r*) | Domain (*r*) | Other domains (*r*) | Item score |
| Anger & aggression | I overreacted to situations with aggressive behaviour | 0.59 | 0.83 | 1.41 | .52 | .83 | .38 | 2 | 0.41 | 0.70 | 1.80 | .56 | .85 | .45 | 4 |
| | I verbally lashed out at others without being provoked | 0.28 | 0.61 | 2.54 | .42 | .77 | .28 | 0 | 0.15 | 0.45 | 3.44 | .45 | .75 | .34 | 0 |
| | I was verbally aggressive to others | 0.34 | 0.65 | 2.13 | .46 | .83 | .31 | 0 | 0.20 | 0.49 | 2.85 | .41 | .80 | .28 | 0 |
| | It was difficult to manage my anger | 0.58 | 0.84 | 1.48 | .56 | .84 | .42 | 4 | 0.31 | 0.64 | 2.35 | .58 | .81 | .47 | 2 |
| Drug use | I sought out drugs | 0.32 | 0.79 | 2.64 | .47 | .94 | .30 | 3 | 0.11 | 0.43 | 4.82 | .33 | .90 | .23 | 4 |
| | I used drugs to cope | 0.32 | 0.81 | 2.79 | .47 | .94 | .30 | 2 | 0.07 | 0.36 | 5.55 | .31 | .83 | .23 | 0 |
| | Using drugs provided temporary relief | 0.33 | 0.84 | 2.73 | .47 | .95 | .29 | 4 | 0.10 | 0.43 | 4.89 | .40 | .90 | .31 | 4 |
| Risk-taking | I drove dangerously or aggressively | 0.33 | 0.66 | 2.04 | .33 | .67 | .24 | 0 | 0.12 | 0.37 | 3.14 | .32 | .60 | .27 | 1 |
| | I stopped caring about the consequences of my actions | 0.54 | 0.87 | 1.69 | .55 | .82 | .46 | 4 | 0.21 | 0.59 | 3.26 | .54 | .83 | .47 | 5 |
| | I took unnecessary risks | 0.39 | 0.70 | 1.93 | .56 | .84 | .46 | 3 | 0.15 | 0.46 | 3.21 | .47 | .82 | .40 | 0 |

*Note.*[a] Items received a score of 0 or 1 (which was summed) for each statistic within its corresponding domain as follows: highest mean; largest SD; skew closest to zero; strongest correlation with total score; strongest correlation with domain score; and strongest correlation with other domains.

**Supplementary Figure 1**

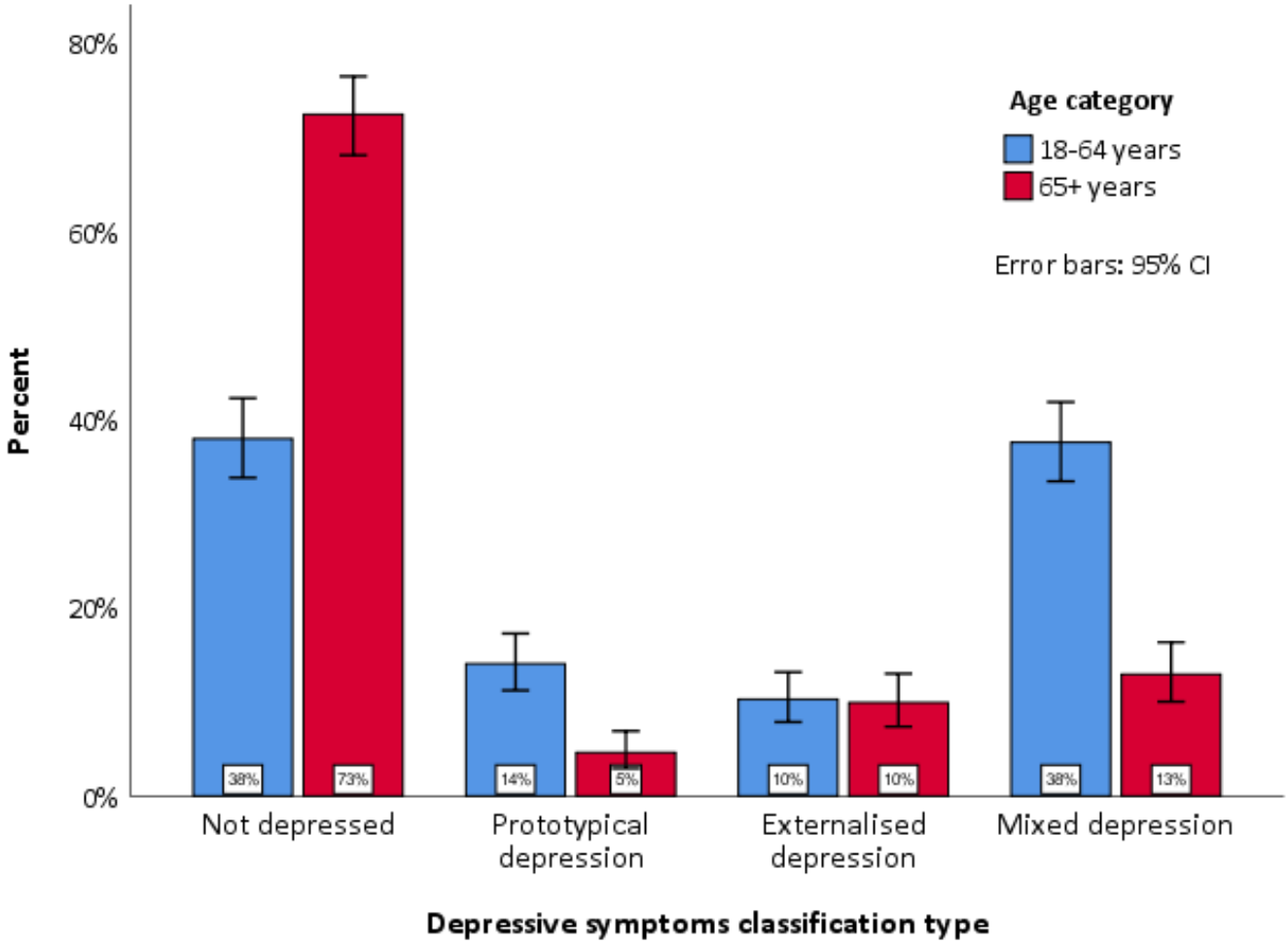
*Proportion of Participants Within MDRS-7 Categories*




*Note.* Low (0 – 5), Moderate (6 – 7), Severe (8 – 12), Extremely severe (13+).

**Supplementary Figure 2**

*Proportion of Participants According to Depressive Symptoms Classification Type*



# Chapter 5: Study 4 – Psychological Inflexibility Mediates the Relationship Between Conformity to Masculine Norms and Depression: Preliminary Support for a Transdiagnostic Approach to Working Therapeutically with Men

## 5.1 Preamble

This chapter consists of the final study and associated manuscript entitled 'Psychological Inflexibility Mediates the Relationship Between Conformity to Masculine Norms and Depression: Preliminary Support for a Transdiagnostic Approach to Working Therapeutically with Men', currently in submission with the *Journal of Contextual Behavioral Science*.

Previous research reviewed in Chapter 1, as well as results presented within Chapter 2, suggest that the relationship between masculine norms and depression in men is relatively weak, and that it appears to be specific masculine characteristics, particularly self-reliance, that are detrimental to men's mental health. Emerging research suggests that the relationship between strict adherence to masculine norms and men's mental health may operate through a learned rigidity in coping styles and a reduced repertoire of coping behaviours (Spendelow & Seidler, 2020). Importantly, viewing masculinities through a coping styles framework provides important opportunities to help elucidate specific mechanisms through which adherence to masculine norms impacts men's mental health.

Psychological inflexibility shares many similarities with the concept of rigid adherence to masculine norms, including emotional restraint and an inflexible approach to intrapersonal experiences (Bardeen & Fergus, 2016). However, limited empirical research has explored the relationship between psychological inflexibility, conformity to masculine norms, and depression in men. Thus, the current study aimed to examine whether

psychological inflexibility may function as a mediator in the relationship between masculine norms (and self-reliance specifically) and prototypic and externalising symptoms of depression in men. In addition, this study considered whether this mediating effect varies as a function of age.

This paper is presented in manuscript format as per journal style guidelines, with the same typeset as the rest of the thesis. Tables and Figures are presented throughout the text. Supplementary material for this paper is provided at the end of the chapter. A complete list of all references for the thesis, including those for this paper, is provided at the end of the thesis.

## 5.2 Statement of Authorship

**Psychological Inflexibility Mediates the Relationship Between Conformity to Masculine Norms and Depression: Preliminary Support for a Transdiagnostic Approach to Working Therapeutically with Men**

Submitted and under review in *Journal of Contextual Behavioral Science*

*Principal Author*

| | | | |
|---|---|---|---|
| Name of Principal Author (Candidate) | Danielle Herreen | | |
| Contribution to the Paper | Developed rationale for the study and devised aims with supervisors. Performed data analysis and interpretation. Drafted, wrote, and submitted article, then revised and responded to reviewer comments. Acted as corresponding author. | | |
| Overall Percentage (%) | 85 | | |
| Certification | This paper reports on original research I conducted during the period of my Higher Degree by Research candidature and is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in this thesis. I am the primary author of this paper. | | |
| Signature | | Date | 8 April 2022 |

## *Co-Author Contributions*

By signing the Statement of Authorship, each author certifies that:

i. the candidate's stated contribution to the publication is accurate (as detailed above);

ii. permission is granted for the candidate in include the publication in the thesis; and

iii. the sum of all co-author contributions is equal to 100% less the candidate's stated contribution.

| | | | |
|---|---|---|---|
| Name of Co-Author | Associate Professor Simon Rice | | |
| Contribution to the Paper | Assisted with development of study aims and design. Supervised development of the work and provided input regarding analysis of data. Provided guidance on the preparation of manuscript and editorial and structural feedback. | | |
| Signature | | Date | 8 April 2022 |

| | | | |
|---|---|---|---|
| Name of Co-Author | Dr Ian Zajac | | |
| Contribution to the Paper | Assisted with development of study aims and design. Assisted in analysis of data. Supervised the preparation of manuscript and provided editorial and structural feedback. | | |
| Signature | | Date | 8 April 2022 |

## 5.3 Abstract

*Background:* Research suggests that rigid adherence to masculine norms is associated with negative mental health outcomes in men. However, contributing pathways between masculine norms and men's mental health are not yet well understood. It has been proposed that psychological inflexibility may function as a mediator in the relationship between masculine norms and psychopathology in men.

*Aims:* This cross-sectional study investigated whether psychological inflexibility mediated the relationship between conformity to masculine norms and depression.

*Method:* A community-based sample of 326 men (*M* age = 62.33, *SD* age = 15.33 years) completed an online questionnaire using a range of validated scales, including the Conformity to Masculine Norms Inventory (CMNI-22), the Acceptance and Action Questionnaire (AAQ-II), the Cognitive Fusion Questionnaire (CFQ-7), the Patient Health Questionnaire (PHQ-9), and the Male Depression Risk Scale (MDRS-22). Mediation analyses and two-way ANOVAs were used to explore relationships between variables.

*Results:* Results indicated that psychological inflexibility significantly mediated the relationship between conformity to masculine norms and depression (both prototypic and externalising symptomology). Findings also revealed that psychological inflexibility is more strongly linked with poor mental health than conformity to masculine norms.

*Conclusions:* The results suggest that psychological inflexibility may be a possible pathway through which conformity to masculine norms is associated with depressive symptoms in men, providing important insights into possible therapeutic targets for psychological intervention.

*Keywords:* psychological inflexibility, depression, masculinity, psychotherapy

## 5.4 Introduction

Men have a lower prevalence of major depressive disorder compared to women (Mauvais-Jarvis et al., 2020), yet experience disproportionately high rates of substance misuse (Harris et al., 2015) and death by suicide (World Health Organization, 2017). It has been proposed that strict adherence to masculine norms, defined as the socially prescribed rules and expectations about what a man 'should be' (Mahalik et al., 2003), may contribute to poor health outcomes and potential underdiagnosis of depression in men (Rice et al., 2021; Seidler et al., 2016). Traditional masculine norms demand avoidance of emotional vulnerability and enactments of stoicism (Addis et al., 2010). Therefore, a default coping mechanism for men with strict adherence to these norms may include suppressing their emotions and avoiding seeking help when experiencing psychological distress (Gerdes & Levant, 2018; McAteer & Gillanders, 2019). It has been suggested that some men may also externalise their distress through substance use or by directing anger at those around them (Call & Shafer, 2018; Rice et al., 2013).

Currently, there are no evidence-based interventions regarding how to specifically address the impact of rigid gender norm conformity in mental health settings, although community-based trials designed to break the 'normative man code' are emerging (King et al., 2021; Rice et al., 2021). In addition, although meta-analytic data supports a significant relationship between rigid gender norm conformity and mental health-related outcomes, the absolute size of this effect is small. For example, a weak relationship of $r \leq .19$ or less was reported between masculinity and poor mental health (Wong et al., 2017). Framed in other terms, these constructs appear to share less than 5% of variance. Furthermore, it appears to be specific aspects of masculinity, most notably self-reliance (i.e., not seeking

help), that are particularly detrimental to men's mental health (Gerdes & Levant, 2018; Iwamoto et al., 2018; Wong et al., 2017).

Psychological inflexibility has emerged as an important mental health construct (Lucas & Moore, 2020; McAteer & Gillanders, 2019). Psychological inflexibility—a key treatment target for approaches within the acceptance and commitment therapy (ACT) framework—is a transdiagnostic process that reflects the tendency to seek to control one's thoughts, feelings, and other internal experiences, or attempts to avoid them altogether (Hayes et al., 2012; Levin et al., 2014). Various interrelated processes underlie psychological inflexibility, with the two most common being experiential avoidance and cognitive fusion (Faustino et al., 2021). Experiential avoidance refers to attempts to avoid and suppress unwanted internal experiences, including emotions, bodily sensations, memories, or thoughts (Hayes et al., 2004). Cognitive fusion, on the other hand, represents excessive regulation of behaviour by cognitions, whereby thoughts are perceived as absolute truths (Gillanders et al., 2014). In conjunction, the tendency to become entangled with difficult thoughts, coupled with pervasive attempts to avoid internal experiences, contributes to the development, maintenance, and exacerbation of a wide range of mental health issues including depression (Bardeen & Fergus, 2016; Cookson et al., 2020; Faustino et al., 2021; Levin et al., 2014).

Conformity to masculine norms shares many similarities with the concept of psychological inflexibility, including emotional restraint, reduced openness, and a rigid approach to intrapersonal experiences (McAteer & Gillanders, 2019). It has been suggested that psychological inflexibility may be the result of maladaptive coping behaviours that are theorised to be fostered by rigid adherence to masculine norms (Spendelow & Joubert, 2018), thereby representing a possible pathway through which masculinity leads to poor

mental health. To date, limited research has examined the relationship between adherence to masculine norms and psychological flexibility. However, recent research by Spendelow and Joubert (2018) demonstrated that experiential avoidance significantly mediated the relationship between gender role conflict and psychological distress. Although the study by Spendelow and Joubert (2018) provides important preliminary evidence regarding possible pathways between masculinity-related constructs and psychological distress in men, the study was limited by a small sample (*N* = 120) of young to middle-aged men, requiring further replication and extension with a more diverse sample. In addition, gender role conflict, as measured by the Gender Role Conflict Scale (GRCS; O'Neil et al., 1986), is a direct measure of the distress that men experience behaviourally when they conform to masculine norms, compared to men's identification with traditional conceptions of what a man 'should be' (Thompson & Bennett, 2015). Thus, further research is needed to examine possible pathways between conformity to masculine norms, as well as specific aspects of masculinity, and men's mental health.

Increased research attention is also being directed towards better understanding men's preferences for psychotherapy in an attempt to improve engagement with mental health treatment. Findings suggest that men may have a preference for individualised psychotherapy where the aim is to develop the client's insight and understanding of their own problematic patterns to promote more adaptive coping skills (Kealy et al., 2021; Seidler et al., 2018). In addition, men have described wanting help in accessing their emotional experiences, including emotions that are unpleasant, or vulnerabilities deemed challenging to discuss (Seidler et al., 2018). These treatment preferences are consistent with approaches that aim to build psychological flexibility and would arguably upskill men to

cope more adaptively and flexibly, potentially decreasing rigid conformity to masculine coping styles.

Identifying mechanisms by which adherence to masculine role norms results in psychopathology is of critical importance. Such studies could assist with addressing men's mental health concerns and help improve existing approaches to working therapeutically with men. The present study aimed to extend existing literature by investigating the relationship between psychological inflexibility and depressive symptomology in men. Research suggests that men with strict conformity to masculine norms can exhibit their depression in ways that are more congruent with these norms (Martin et al., 2013; Rice et al., 2013). Therefore, this study included a male-specific measure of depression—the Male Depression Risk Scale (MDRS-22; Rice et al., 2013)—in addition to a prototypic depression measure, to provide a more inclusive assessment of depression among men. Specifically, this study tested mediation models examining the extent to which the relationship between conformity to masculine norms and depressive symptomology (both prototypic and externalising presentations) is explained by psychological inflexibility. In addition, given self-reliance is a component of masculinity that appears to be particularly associated with adverse mental health outcomes in men (e.g., Gerdes & Levant, 2018; Herreen et al., 2021; Pirkis et al., 2017; Wong et al., 2017), the present study also considered the specific influence of self-reliance on depressive symptomology.

## 5.5 Method

### *5.5.1 Participants and Procedure*

The sample comprised 326 males aged 18 to 94 years (*M* age = 62.33, *SD* age = 15.33 years) who participated in a study on men's mental health and who nominated to

participate in a follow-up study involving an online questionnaire. Participants were Australian male residents over the age of 18 years who considered themselves fluent in English. Conformity to masculine norms was assessed at Time 1. All other data reported herein was collected at follow-up (approximately eight months later). Recruitment and study design details for the baseline wave have been reported elsewhere (see *citation removed for masked review*). All participants provided informed consent. Ethics approval was obtained from *details removed for masked review* (approval number *removed for masked review*).

### *5.5.2 Measures*

**5.5.2.1 Demographics.** Participants reported their gender, age, relationship status, employment status, level of education, and household income.

**5.5.2.2 Male Depression Risk Scale (MDRS-22).** Externalising and male-type symptoms of depression were assessed by the Male Depression Risk Scale (MDRS-22; Rice et al., 2013). The MDRS-22 is a self-report measure comprising 22 externalising and male-type depression symptoms present in the past month (e.g., *"I bottled up my negative feelings"*). The MDRS-22 has six subscales, including risk-taking, anger and aggression, drug use, alcohol use, emotion suppression, and somatic symptoms. This study utilised a condensed response format using a 5-point Likert scale ranging from 0 (*none of the time*) to 4 (*all of the time*). Total scores ranged from 0 to 88, with higher scores reflecting increased severity of symptoms. Internal consistency of the MDRS-22 in the present study was high ($\alpha$ = .87).

**5.5.2.3 Patient Health Questionnaire (PHQ-9).** Prototypic symptoms of depression were assessed using the 9-item Patient Health Questionnaire (PHQ-9; Kroenke et al., 2001). The PHQ-9 is a widely used self-report screening tool that assesses nine symptoms

consistent with diagnostic criteria for major depressive disorder as per the DSM-5 (American Psychiatric Association, 2013). Participants endorse how often they have experienced each symptom (e.g., "*Feeling down, depressed, or hopeless*") during the past two weeks using a 4-point Likert scale ranging from 0 (*not at all*) to 3 (*almost every day*). Total scores ranged from 0 to 27, with higher scores reflecting greater severity of symptoms. Internal consistency of the PHQ-9 in the current study was high ($\alpha$ = .90).

**5.5.2.4 Conformity to Masculine Norms Inventory (CMNI-22).** Adherence to masculine norms was assessed by the short form of the Conformity to Masculine Norms Inventory (CMNI-22; Hamilton & Mahalik, 2009; Mahalik et al., 2003). The CMNI-22 is a widely used measured designed to assess aspects of adhering to traditional norms dominant in Western culture (e.g., *"I never ask for help"*). Participants are asked to rate the extent to which they agree with each of 22 statements using a 4-point Likert scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*).

The CMNI-22 consists of 11 subscales, as well as a total masculinity score. Total scores range from 0 to 66, with higher scores indicating greater adherence to masculine norms. The 11 subscales include self-reliance, dominance, work, emotional control, playboy, risk-taking, winning, power over women, violence, pursuit of status, and heterosexual presentation. In the present study, Cronbach's alpha for the total score was low ($\alpha$ = .35). Cronbach's alphas for the subscales ranged from .35 (status), to .83 (playboy and heterosexual presentation). For the self-reliance subscale, internal consistency was acceptable ($\alpha$ = .76).

**5.5.2.5 Acceptance and Action Questionnaire (AAQ-II).** Experiential avoidance was measured using the Acceptance and Action Questionnaire-II (AAQ-II; Bond et al., 2011). The AAQ-II is a self-report instrument comprising seven items designed to assess an individual's

ability to remain in contact with unpleasant experiences (e.g., *"I'm afraid of my feelings"*). Items are rated using a 7-point Likert scale with response options ranging from 1 (*never true*) to 7 (*always true*). Total scores range from 0 to 49, with higher scores reflecting greater levels of experiential avoidance. Internal consistency of the AAQ-II in the current study was high ($\alpha$ = .95).

**5.5.2.6. Cognitive Fusion Questionnaire (CFQ-7).** Cognitive fusion was measured using the Cognitive Fusion Questionnaire (CFQ; Gillanders et al., 2014). The CFQ-7 is a self-report instrument comprising seven items that assess general cognitive fusion (e.g., *"I tend to get very entangled in my thoughts"*). Items are rated using a 7-point Likert scale with response options ranging from 1 (*never true*) to 7 (*always true*). Total scores range from 0 to 49, where higher scores representing increased levels of cognitive fusion. Internal consistency of the CFQ-7 in the present study was high ($\alpha$ = .96).

### *5.5.3 Statistical Analyses*

Data for the present study were analysed using IBM SPSS Statistics (Version 26.0). Total scores for the AAQ-II and CFQ-7 were summed to produce a total psychological inflexibility score (total possible score of 98). Descriptive statistics and zero-order correlations were calculated for study variables. The mediation analyses were undertaken in SPSS using the PROCESS macro, model 4 (Version 2.15; Hayes, 2014) to test for the presence of a mediating effect of psychological inflexibility on the relationship between conformity to masculine norms and depressive symptomology. Bootstrapped 95% confidence intervals were estimated using 5,000 resamples. Significant effects were determined by the absence of zero within the confidence intervals. The $P_M$ effect size was used in the present study as per recommendations by Wen and Fan (2015). In addition, two-way between groups analysis of variance (ANOVAs) were conducted to test for interactions between

psychological inflexibility and conformity to masculine norms, and psychological inflexibility and self-reliance in relation to depressive symptoms. Groups for these models were generated by applying median splits to psychological inflexibility, conformity to masculine norms, and self-reliance scores. The assumption of homogeneity of variance was violated in all ANOVA models as indicated by the Levene's test. However, difference between groups in the degree of variance on the dependent variable (depressive symptoms) is theoretically expected and the median splits result in reasonably comparable group sizes. Therefore, we proceeded with the models despite this violation.

## 5.6 Results

Table 1 displays the demographic characteristics of the study participants. Overall, most participants reported themselves as married or in a de-facto relationship. More than half of the participants were retired, consistent with the higher mean age of participants. In addition, the majority of the sample had completed further education beyond high school.

**Table 1**

*Sociodemographic Characteristics of Participants*

| Variable | |
|---|---|
| *n* | 326 |
| Age range | 18-94 |
| Age, *M (SD)* | 62.33 (15.33) |
| Relationship status, *n* (%) | |
| Single (never married) | 33 (10.1) |
| Widowed/divorced/separated | 63 (19.3) |
| Married/de-facto | 230 (70.6) |
| Prefer not to say | 0 (0.0) |
| Employment status, *n* (%) | |
| Employed full-time | 70 (21.5) |
| Employed part-time | 15 (4.6) |
| Employed casually | 24 (7.4) |
| Not employed or unpaid work | 31 (9.5) |
| Retired | 186 (57.1) |
| Prefer not to say | 0 (0.0) |
| Highest level of education, *n* (%) | |
| Year 11 or below | 33 (10.1) |
| Year 12 | 27 (8.3) |
| Certificate/diploma | 104 (31.9) |
| Bachelor's degree | 78 (23.9) |
| Graduate certificate/diploma | 35 (10.7) |
| Postgraduate degree | 45 (13.8) |
| Prefer not to say | 4 (1.2) |
| Household income, *n* (%) | |
| <$35,000 | 79 (24.2) |
| $35,000-$65,000 | 87 (26.7) |
| $65,000-$105,000 | 73 (22.4) |
| $105,000-$160,000 | 41 (12.6) |
| >$160,000 | 23 (7.1) |
| Prefer not to say | 23 (7.1) |

Table 2 displays means and correlations between study variables. Significant associations were observed between all variables and effects were in the expected directions. Psychological inflexibility evidenced strong positive associations with both prototypic and externalising depressive symptoms as measured by the PHQ-9 and MDRS-22, respectively. There was a small-to-moderate association between psychological inflexibility and CMNI-22 total scores. However, this relationship was stronger when focusing on the self-reliance subscale of the CMNI-22. Similarly, there was a small-to-moderate association between CMNI-22 total scores and the PHQ-9 and MDRS-22. Again, this relationship was stronger when looking at the self-reliance subscale of the CMNI-22.

**Table 2**

*Means, Standard Deviations, and Correlations Among Study Variables*

| Variable | *M* | *SD* | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|---|
| 1. Age | 62.33 | 15.33 | | | | | |
| 2. Psychological inflexibility total | 36.40 | 19.83 | -.40*** | | | | |
| 3. PHQ-9 total | 6.43 | 5.71 | -.25*** | .76*** | | | |
| 4. CMNI-22 total | 24.13 | 6.24 | -.13* | .20*** | .26*** | | |
| 5. CMNI-22 self-reliance | 2.76 | 1.36 | -.21*** | .39*** | .40*** | .41*** | |
| 6. MDRS-22 total | 13.73 | 9.23 | -.27*** | .70*** | .73*** | .28*** | .39*** |

*Note.* Psychological inflexibility total = Acceptance and Action Questionnaire II and Cognitive Fusion Questionnaire combined total score; PHQ-9 total score = Patient Health Questionnaire 9 total score; CMNI-22 total = Conformity to Masculine Norms Inventory 22 total score; CMNI-22 self-reliance = CMNI-22 self-reliance subscale; MDRS-22 total = Male Depression Risk Scale 22 total score.

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

The results of the mediation analyses are summarised in Table 3. Psychological inflexibility significantly mediated the relationship between conformity to masculine norms and depressive symptoms (both prototypic and externalising). Psychological inflexibility also partially and significantly mediated the relationship between the self-reliance subscale of the CMNI-22 and depressive symptoms (both prototypic and externalising). Examination of effect size estimates demonstrated that the mediation effect was largest for the self-reliance subscale of the CMNI-22. Models also tested for potential confounds of age on the relationship between psychological inflexibility and depressive symptoms and no significant interactions with age were found. Results for these models are presented in Supplementary Table 1.

**Table 3**

*Psychological Inflexibility as a Mediator in the Relationship Between Conformity to Masculine Norms and Depression Symptoms*

| Predictor variable | Path c (*SE*) | Path a (*SE*) | Path b (*SE*) | Path c' (*SE*) | Path a x b (*SE*) | 95% CI of path a x b | $P_{M\ (ab/c)}$ |
|---|---|---|---|---|---|---|---|
| DV: Prototypic depression symptoms | | | | | | | |
| CMNI-22 total | 0.24*** | 0.65** | 0.21*** | 0.10** | 0.14 | [0.07, 0.20] | .57 |
| | (0.05) | (0.17) | (0.01) | (0.03) | (0.04) | | |
| CMNI-22 self-reliance | 1.66*** | 5.66*** | 0.20*** | 0.51* | 1.15 | [0.84, 1.49] | .69 |
| | (0.21) | (0.75) | (0.01) | (0.16) | (0.17) | | |
| DV: Externalising depression symptoms | | | | | | | |
| CMNI-22 total | 0.41*** | 0.65** | 0.31*** | 0.21** | 0.20 | [0.10, 0.31] | .49 |
| | (0.08) | (0.17) | (0.02) | (0.06) | (0.05) | | |
| CMNI-22 self-reliance | 2.64*** | 5.66*** | 0.30*** | 0.95** | 1.69 | [1.24, 2.17] | .64 |
| | (0.35) | (0.75) | (0.02) | (0.29) | (0.24) | | |

*Note.* CIs (95%) calculated with 5,000 bootstrap samples. DV = dependent variable; SE = standard error; Prototypic depression symptoms = PHQ-9 total score; Externalising depression symptoms = MDRS-22 total score; CMNI-22 total = Conformity to Masculine Norms Inventory 22 total score; CMNI-22 self-reliance = CMNI-22 self-reliance subscale; Path c = total effect of masculinity on dependent variable; Path a = effect of masculinity on psychological inflexibility; Path b = effect of psychological inflexibility on the dependent variable; Path c' = direct effect of masculinity on dependent variable; Path a x b = mediated effect of masculinity (via psychological inflexibility) on the dependent variable; $P_M$ = proportion of the total effect explained by the mediator.

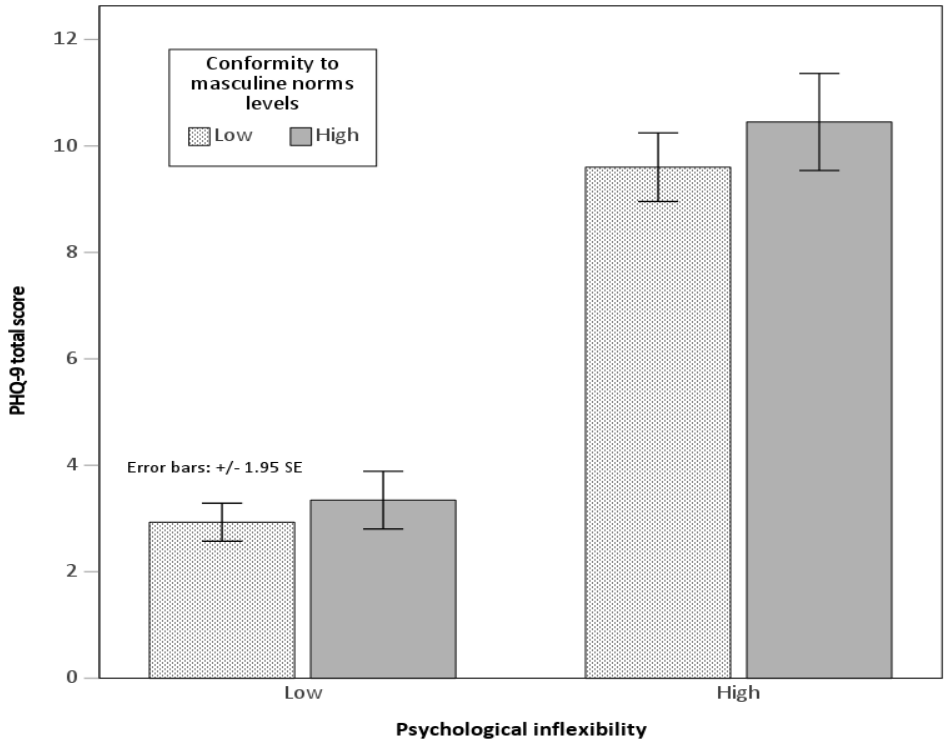
*** $p < .001$, ** $p < .01$, * $p < .05$.

In addition to considering the mediating role of psychological inflexibility, a two-way between groups ANOVA was conducted to examine the effect of psychological inflexibility and conformity to masculine norms on depressive symptoms. For prototypic depressive symptoms (as measured by PHQ-9 total scores), a main effect was observed for psychological inflexibility, $F(1, 322) = 208.59$, $p < .001$, with higher scores associated with increased prototypic depressive symptoms (partial $\eta^2 = .39$). The main effect for conformity to masculine norms did not reach statistical significance ($p = .259$) and there was no significant interaction between adherence to masculine norms and psychological inflexibility ($p = .882$). For the self-reliance model, there were statistically significant main effects for self-reliance, $F(1, 322) = 9.57$, $p = .002$, partial $\eta^2 = .03$, and psychological inflexibility, $F(1, 322) = 171.331$, $p < .001$, partial $\eta^2 = .35$. However, there was no significant interaction ($p = .213$). Results are shown in Figure 1.

Regarding externalising depressive symptoms (as measured by MDRS-22 total scores), there was a statistically significant main effect for psychological inflexibility, $F(1, 322) = 180.93$, $p < .001$, partial $\eta^2 = .36$ (see Figure 2). However, the main effect for CMNI-22 was not significant ($p = .193$) and there was no interaction effect between CMNI and psychological inflexibility ($p = .672$). For the self-reliance model, there were statistically significant main effects for psychological inflexibility, $F(1, 322) = 147.91$, $p < .001$, partial $\eta^2 = .32$, and for self-reliance, $F(1, 322) = 8.90$, $p = .003$, partial $\eta^2 = .03$. However, the interaction effect between self-reliance and psychological inflexibility was not statistically significant ($p = .366$). Descriptive statistics for ANOVA models are shown in Supplementary Table 2.

**Figure 1**

*The Effect of Psychological Inflexibility and Conformity to Masculine Norms Levels on Prototypic Depressive Symptomology*



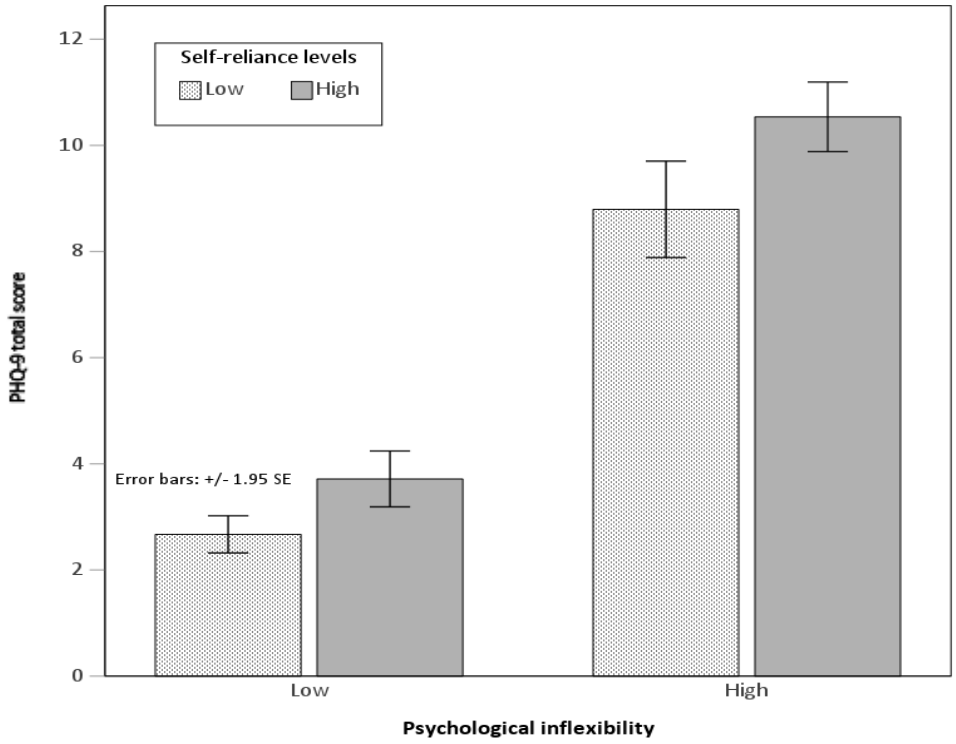
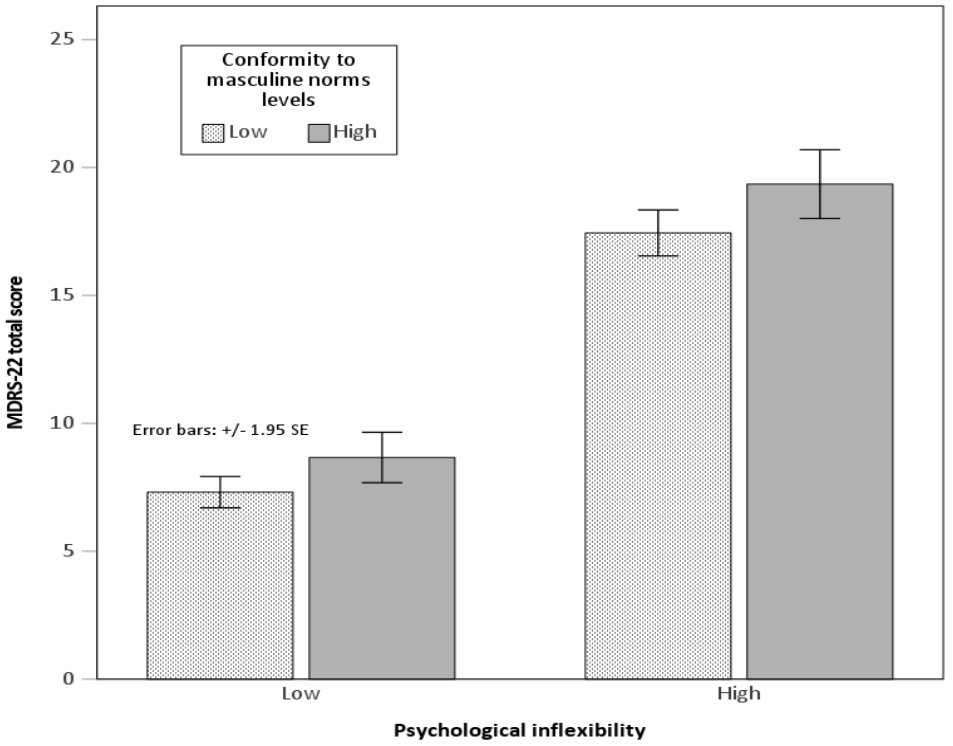
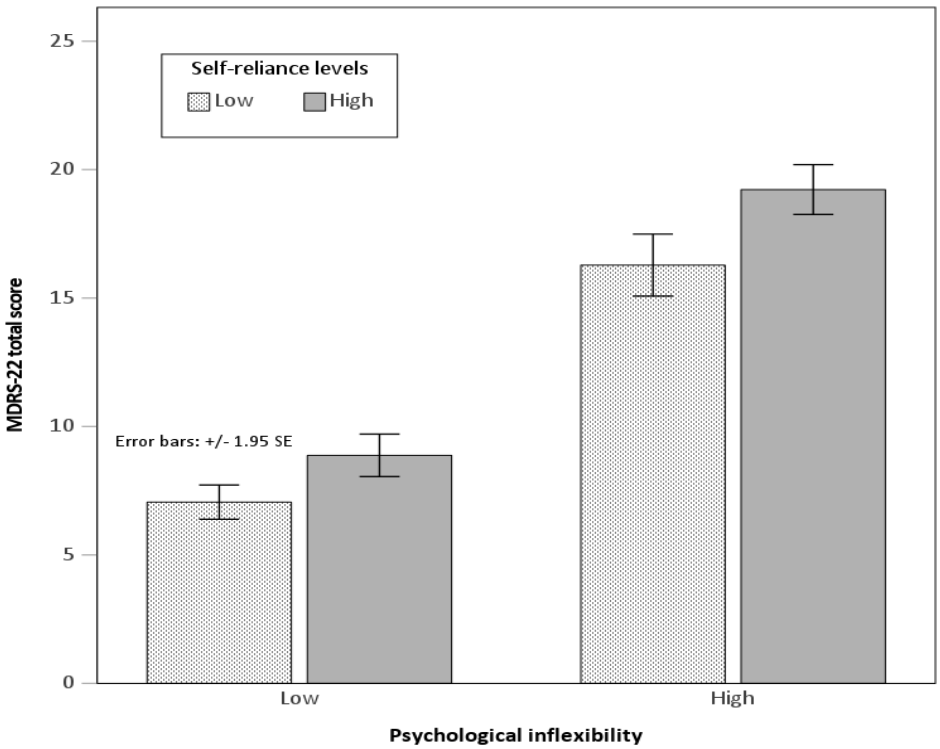



**Figure 2**

*The Effect of Psychological Inflexibility and Conformity to Masculine Norms Levels on Externalising Depressive Symptomology*



## 5.7 Discussion

The current study investigated psychological inflexibility as a potential pathway through which conformity to masculine norms relates to depressive symptomology in men. The results supported the hypotheses that psychological inflexibility mediates the relationship between conformity to masculine norms and both prototypic (i.e., PHQ-9 total scores) and externalising (i.e., MDRS-22 total scores) symptoms of depression in men. These findings add to the emerging body of literature exploring possible mechanisms through which masculinity-related constructs relate to poor mental health in men (McAteer & Gillanders, 2019; Spendelow & Joubert, 2018) and provide important insights into possible therapeutic targets for psychological intervention.

Effect sizes indicated psychological inflexibility consistently explained approximately 50% of more of the effect of conformity to masculine norms on depressive symptoms for all models. The mediation effect was largest for models focusing on self-reliance, a subscale of the CMNI-22 that has been consistently linked to poor mental health in men (Gerdes & Levant, 2018; Pirkis et al., 2017; Wong et al., 2017). It could be argued that psychological inflexibility is conceptually closer to self-reliance than other domains of conformity to masculine norms. For example, males who strongly adhere to self-reliance norms may be less likely to seek help for mental health concerns, and avoidance of therapy may also function as a means for suppressing or avoiding difficult emotions (i.e., experiential avoidance) (Brenner et al., 2020). Thus, psychological interventions aimed at decreasing experiential avoidance (through increasing psychological flexibility), may help to reduce problematic impacts of self-reliance on men's mental health.

Findings also demonstrated that men with high psychological inflexibility had significantly higher prototypic and externalising depression scores compared to men with

low psychological inflexibility. This is in contrast to overall conformity to masculine norms scores, whereby high and low conforming men reported no statistically significant differences in prototypic or externalising depression symptoms. It is possible that variation in CMNI-22 scores was restricted in our sample due to the higher mean age of participants, with studies demonstrating a negative association between CMNI-22 scores and age (e.g., Herreen et al., 2021; Rice et al., 2011). Nonetheless, the magnitude of the relationship between CMNI-22 scores and these outcomes in our study (see Table 2) is commensurate with effect sizes reported previously (e.g., Herreen et al., 2021; Rice et al., 2013; Wong et al., 2017). When focusing on self-reliance, there were significant differences in both prototypic and externalising depressive symptomology for high and low scoring men on this domain of masculinity. This further highlights the importance of considering the impact of distinct aspects of masculine styles of coping on mental health (Gerdes & Levant, 2018) and suggests that clinicians should avoid assuming that conformity to masculine norms in general is intrinsically problematic (Iwamoto et al., 2018).

### *5.7.1 Clinical Implications*

The current findings have a range of important implications for future research and clinical practice. Redefining the socialisation of boys and men has the potential to promote better mental health for them and those around them but is likely to be a long-term intergenerational undertaking (Rice et al., 2021), and there are currently no evidence-based interventions for addressing the impact of rigid adherence to masculine norms in mental health settings. In the present study, the significant mediation effect of psychological inflexibility on the relationship between adherence to masculine norms and depression (both prototypic and externalising symptomology) suggests that psychological interventions aimed at increasing psychological flexibility may be useful for males experiencing

psychological distress. For example, the use of ACT-based strategies to improve psychological flexibility could support men in addressing emotional concerns that are typically sanctioned and suppressed by traditional masculine beliefs. In addition, the current findings suggest that a particularly important focus of psychological interventions with men may involve exploring the role of self-reliance and how it may lead to psychological inflexibility. Importantly, these potential therapeutic targets complement professional suggestions on how to work psychotherapeutically with men, as well as men's preferences for mental health treatment (Kealy et al., 2021; Seidler et al., 2018).

### *5.7.2 Limitations and Suggestions for Future Research*

The present study has several limitations that must be noted. Although the sample size in the current study was notably larger than previous research (e.g., Spendelow & Joubert, 2018), these findings may not generalise to other populations. In addition, the mean age of the sample was 62 years and given that conformity to masculine norms has been shown to decrease across the lifespan (e.g., Herreen et al., 2021), participants in the current study may be less rigid in terms of adherence to masculine norms compared to younger men. Similarly, the current sample reported low levels of depression, potentially impeding a more in-depth investigation of the relationships between the study variables. Future research should examine clinical samples of men. The study did also not collect information regarding other differences, including gender identity, ethnicity, and sexual orientation that could influence the findings.

In addition, internal consistency for the CMNI-22 total score in the present study was low. Levant, McDermott, et al. (2020) recently developed a 30-item version of the CMNI, with preliminary findings demonstrating improved psychometric properties compared to earlier versions. Unfortunately, the CMNI-30 was not available at the time of data collection,

thus future studies should consider the use of this scale to validate these findings. Furthermore, future research should prioritise clinical assessments of psychopathology rather than solely relying on self-report measures to strengthen the validity of the results. Moreover, it is possible that the CMNI-22 used herein may not adequately reflect adherence to masculine norms relevant to older men (Levant, Webster, et al., 2020).

## 5.8 Conclusion

This is the first study to examine psychological inflexibility as a potential pathway between conformity to masculine norms and both prototypic and externalising symptoms of depression in men. Overall, the findings in the current study suggest that psychological inflexibility is more strongly linked with poor mental health than conformity to masculine norms. Moreover, therapeutic approaches that focus on decreasing inflexibility—such as acceptance and commitment therapy (ACT)—are transdiagnostic and are therefore applicable to a wide range of mental health concerns in men. Psychological flexibility has repeatedly been shown to improve through training and therapy, and thus represents an important target for psychological intervention (Faustino et al., 2021; Levin et al., 2014). Future research is needed to gain a more comprehensive understanding of the impact of psychological inflexibility on the relationship between adherence to masculine norms and psychopathology in men.

**Supplementary Table 1**

*Age as a Moderator in the Relationship Between Conformity to Masculine Norms and Depression Symptoms*

| Predictor variable | Path a (*SE*) | Path b (*SE*) | Age (*SE*) | Path c' (*SE*) | Interaction Age x PI (*SE*) |
|---|---|---|---|---|---|
| DV: Prototypic depression symptoms | | | | | |
| CMNI-22 total | 0.65** (0.17) | 0.21*** (0.04) | 0.02 (0.03) | 0.11** (0.03) | 0.00 (0.00) |
| CMNI-22 self-reliance | 5.66*** (0.75) | 0.20*** (0.04) | 0.02 (0.03) | 0.52** (0.17) | 0.00 (0.00) |
| DV: Externalising depression symptoms | | | | | |
| CMNI-22 total | 0.65** (0.17) | 0.11 (0.07) | -0.14* (0.06) | 0.20** (0.06) | 0.00 (0.00) |
| CMNI-22 self-reliance | 5.66*** (0.75) | 0.11 (0.07) | -0.13 (0.06) | 0.87** (0.29) | 0.00 (0.00) |

*Note.* CIs (95%) calculated with 5,000 bootstrap samples. PI = psychological inflexibility; DV = dependent variable; Prototypic depression symptoms = PHQ-9 total score; Externalising depression symptoms = MDRS-22 total scores.

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

**Supplementary Table 2**

*Descriptive Statistics for Two-Way Between Groups ANOVAs Exploring the Relationships Between Psychological Inflexibility and Conformity to Masculine Norms on Depression Symptoms*

| | Low psychological inflexibility | | | High psychological inflexibility | | |
|---|---|---|---|---|---|---|
| Prototypic depression symptoms | *M* | *SD* | *N* | *M* | *SD* | *N* |
| Low CMNI-22 total | 2.48 | 2.41 | 90 | 9.72 | 5.54 | 67 |
| High CMNI-22 total | 3.11 | 3.08 | 71 | 10.20 | 5.64 | 98 |
| Low self-reliance | 2.41 | 2.67 | 102 | 8.47 | 5.50 | 51 |
| High self-reliance | 3.36 | 2.77 | 59 | 10.69 | 5.52 | 114 |
| | | | | | | |
| Externalising depression symptoms | *M* | *SD* | *N* | *M* | *SD* | *N* |
| Low CMNI-22 total | 7.42 | 4.99 | 90 | 18.84 | 8.15 | 67 |
| High CMNI-22 total | 8.85 | 5.87 | 71 | 19.56 | 9.25 | 98 |
| Low self-reliance | 7.40 | 5.42 | 102 | 16.98 | 8.0 | 51 |
| High self-reliance | 9.17 | 5.29 | 59 | 20.29 | 8.99 | 114 |

*Note.* Prototypic depression symptoms = PHQ-9 total score; Externalising depression symptoms = MDRS-22 total score; CMNI-22 total = Conformity to Masculine Norms Inventory 22 total score; self-reliance = CMNI-22 self-reliance subscale.

# Chapter 6: Discussion

## 6.1 Overview

The overarching aim of this thesis was to extend research on men's symptoms of depression to older males. Specifically, this research program aimed to examine age group differences in adherence to masculine norms and prototypic symptoms of depression, validate the MDRS-22 for use in older populations, as well as derive a short form measure of men's externalising and male-type symptoms of depression to facilitate its use in time-limited primary care settings, and to investigate possible mechanisms (i.e., psychological inflexibility) underlying the relationship between conformity to masculine norms and depression. Four studies were completed to address these aims: one secondary analysis, and three cross-sectional studies. The following chapter summarises the findings from the four studies and their contribution to the broader literature on depression in men. The significance of the research and its implications are discussed, and the strengths and limitations of the thesis and suggestions for future research are also provided.

## 6.2 Summary of Findings

### *6.2.1 Study 1: Conformity to Masculine Norms, Depression, and Age*

The first study (Chapter 2) involved secondary analysis of the largest all-male, national cohort study to be conducted internationally to date, to examine age group differences in conformity to masculine norms and prototypic symptoms of depression and 12-month depression history. As expected, conformity to masculine norms decreased across the lifespan, with males in the oldest age group (i.e., those aged 51-55 years) less likely to be in the higher conformity categories compared to younger males. However, extreme

conformity to masculine norms was associated with an increased risk of clinically significant prototypic symptoms of depression in those aged 36-55 years relative to younger age groups.

In contrast, extreme conformity to masculine norms generally decreased the likelihood of men reporting that they had received treatment for, or experienced symptoms of, depression in the preceding twelve months. This suggests that rigid adherence to masculine norms may increase some men's risk for depression, although simultaneously decreases their likelihood of seeking help. Interestingly, the inverse association between extreme conformity to masculine norms and 12-month depression history was not evident in those aged 51-55 years. In addition, this study demonstrates that only some aspects of masculine norms, particularly self-reliance, appear to be problematic in the context of men's depression in a robust multivariable model. Moreover, findings indicate that the impact of specific masculine norms on men's mental health appear to have differential influence across the lifespan, with self-reliance more strongly linked with depressive symptoms in men in the oldest age group.

### *6.2.2 Study 2: Psychometric Properties of the MDRS-22 in Older Men*

The second study (Chapter 3) examined the psychometric properties of the MDRS-22 in a large community sample of younger and older men. Due to limited research on externalising symptoms of depression in older men to date, this study considered whether the MDRS-22 is an appropriate measure of externalising and male-type depression symptoms in older men in its current form, or whether a different item set is indicated. Thus, this study examined the original pool of 82 items from which the MDRS-22 was derived. Exploratory factor analysis (EFA) resulted in a seven-factor solution with 33 items. This solution included the six domains captured in the original MDRS-22, however, items

measuring aggression and anger loaded separately. Examination of item overlap indicated that both the EFA-derived MDRS and MDRS-22 were almost identical with regards to their measurement of symptoms, and that the original MDRS-22 was actually a superior fit to the data. In addition, findings revealed that the MDRS-22 was significantly associated with prototypic depression symptoms in younger and older adults. Overall, this study demonstrates that the MDRS-22 in its current form performs well in older adults, highlighting its robustness and applicability to both younger and older men.

### *6.2.3 Study 3: Development of the MDRS-7*

Although Study 2 demonstrated that the MDRS-22 is a psychometrically valid measure of externalising and male-type depression symptoms in older men, and indeed across the lifespan, the length of the MDRS-22 is problematic for wide-scale use in primary care screening. This likely prohibits its use in time-limited, clinical settings, particularly if used alongside prototypic measures where opportunity exists to detect additional men at risk of depression and other poor mental health outcomes. Thus, the third study (Chapter 4) focused on developing a short form of the MDRS to make it more useful and accessible in primary care settings. The MDRS-22 was refined to a brief seven item measure (MDRS-7) which captured all domains in the original tool, with near perfect correlations between the MDRS-7 and MDRS-22 ($r$ = .94). Findings also revealed that externalising symptoms as measured by the MDRS-7, either alone or in combination with prototypic depression symptoms (i.e., PHQ-9), were more common than exclusively prototypic symptoms. In addition, both younger and older men who scored high on externalising and prototypic symptoms of depression had increased risk of psychological distress and current suicidality. Moreover, the MDRS-7 was also shown to be effective at predicting elevated prototypic

symptoms of depression at follow-up, suggesting that externalised symptoms may be prodromal to a later onset of prototypic symptoms considered indicative of depression.

### *6.2.4 Study 4: Psychological Inflexibility, Masculine Norms, and Depression*

The final study (Chapter 5) built on the findings from Studies 1, 2, and 3 by exploring possible mechanisms underlying the relationship between masculine norms and depression in men. Specifically, this study considered the mediating role of psychological inflexibility in the relationship between conformity to masculine norms and both prototypic and externalising symptoms of depression in men. Findings demonstrated that psychological inflexibility significantly mediated the relationship between conformity to masculine norms and depression (both prototypic and externalising symptomology), as well as the specific influence of self-reliance on prototypic and externalising depressive symptomology. Analyses indicated that psychological inflexibility consistently explained approximately 50% or more of the effect of conformity to masculine norms (and adherence to self-reliance, specifically) on depressive symptoms. In addition, findings revealed that men with high psychological inflexibility had significantly higher prototypic and externalising depression scores compared to men with low psychological inflexibility. This was in contrast to overall conformity to masculine norms, whereby high and low conforming men reported no statistically significant difference in prototypic or externalising symptoms of depression. These findings suggest that poor mental health is more strongly linked to psychological inflexibility than conformity to masculine norms.

## 6.3 Synthesis and Significance of Thesis Findings

The findings presented in Chapters 2-5 and outlined again above, while separate and unique, contribute broadly to the literature on conformity to masculine norms and

depression in men. As such, the following section synthesises the major findings across the four studies. When considered together, findings presented within this thesis demonstrate the complex and nuanced ways in which adherence to masculine norms is associated with men's experience of depression across the lifespan and provide evidence for the utility of assessing externalising and male-type symptoms of depression in older men.

### *6.3.1 Ageing, Masculine Norms, and Prototypic Symptoms of Depression*

Adherence to masculine norms is argued to negatively impact men's mental health, both in terms of conferring risk for prototypic symptoms of depression and increasing the likelihood of men expressing their distress through externalising and male-type symptoms that are more congruent with masculine gender role socialisation (Addis, 2008; Rice et al., 2021). The findings from this thesis highlight the complex and multi-faceted role of masculinity in men's mental health and provide important insights into the differential influence of this relationship across age groups. Despite adherence to masculine norms decreasing with age, findings from the large population-based sample of men indicated that extreme conformity to masculine norms was more strongly linked to prototypic symptoms of depression in older age groups (Study 1). These findings are consistent with those by Rice et al. (2011), demonstrating that the relationship between conformity to masculine norms and depression increases with age.

Similarly, consideration of the impact of specific masculine norms revealed that self-reliance—over and above other masculine characteristics—has the strongest impact on prototypic symptoms of depression across all age groups, but particularly amongst men aged 51-55 years. These findings provide support for existing research demonstrating the detrimental role of strict adherence to self-reliance on men's mental health (Wong et al., 2017) and risk of suicidality (Pirkis et al., 2017).

The differential impact of self-reliance on depressive symptomology across age groups may be understood through a gender role conflict framework, whereby ageing-related changes (e.g., increased physical health issues) might lead to gender role conflict with regards to self-reliance (e.g., by seeking help), presenting challenges for men who are highly self-reliant (King, Dow, et al., 2020; O'Neil, 2008). Alternatively, as men age, they may attempt to conserve their masculinity through increased exertion of self-reliance and independence by avoiding seeking help in the face of adversity, thus increasing their risk of elevated symptoms of depression (Oliffe et al., 2011; Springer & Mouzon, 2011). It is also plausible that as younger men endorsed higher conformity to masculine norms, they may be more likely to express their distress through externalising behaviours, leading to a stronger relationship between adherence to masculine norms and prototypic symptoms of depression in older men (Rice et al., 2011; Rice, Kealy, et al., 2019). Future research is needed to elucidate possible explanations for these findings, including whether similar findings hold true in chronologically older men.

The detrimental impact of strict adherence to masculine norms on men's mental health could be posited to reflect a restriction in coping styles. Indeed, results herein (Study 4) demonstrate that psychological inflexibility consistently explained 50% or more of the effect of conformity to masculine norms on both prototypic and externalising symptoms of depression. Moreover, men with high psychological inflexibility (i.e., low flexibility) reported increased prototypic and externalising depression symptoms compared to men with low inflexibility (i.e., high psychological flexibility). This was in contrast to overall conformity to masculine norms scores, whereby low and high conforming men reported no statistically significant difference in prototypic or externalising depressive symptoms. It is possible that variation in conformity to masculine norms scores in the community sample (Study 4) was

constrained due to the higher mean age of participants, leading to an absence of a relationship between masculinity and mental health in this study. It is also plausible that many high conforming men chose not to participate in the study, especially given that this study involved a subset of participants who completed a follow-up component, in comparison to the large, population sample of men in Study 1 who were selected from the Australian population using a clustered random sampling design. Regardless, rigidity in coping styles (represented by psychological inflexibility) appear to offer an alternate framework through which to view the influence of masculine norms on depression.

Consistent with findings from Study 1 indicating that self-reliance has the strongest impact on prototypic symptoms of depression, Study 4 revealed significant differences in both prototypic and externalising symptoms of depression for high and low scoring men. This is a particularly novel finding. As discussed above, it is plausible that men who are heavily self-reliant are less likely to leverage external support networks, such as reaching out to friends, family, or health professionals when feeling down (Pirkis et al., 2017). Similarly, endorsement of externalising symptomology may reflect men's attempts to cope with underlying distress independently, for example, by engaging in numbing behaviours (e.g., drug and alcohol use) which may eventually lead to prototypic depression (Whittle et al., 2015). Together, these findings suggest that rigid and restrictive applications of masculine coping styles is more problematic for men's mental health than the constituent traits themselves (Spendelow & Seidler, 2020). Moreover, these findings further challenge common assumptions that masculine norms are inherently dysfunctional and offers opportunities for clinical intervention as discussed in section 6.4.4 below.

### *6.3.2 Externalising Symptoms of Depression in Older Versus Younger Men*

Extant research on men's symptomatic experience of depression has focused primarily on younger populations, and few studies have considered whether the expression of externalising symptoms of depression varies across the lifespan. The body of research presented herein addresses this significant gap in the literature, providing important evidence for the presence of externalising symptoms of depression in older men and the psychometric validity of the MDRS-22 for use with this population. Examination of age differences revealed that younger men endorsed externalising symptomology at a higher frequency than older men on all domains of the MDRS-22. This is consistent with research by Rice, Kealy, et al. (2019), whereby men aged 18-65 years generally scored higher on MDRS-22 domains compared to men aged 66 years and above. Findings by Price et al. (2018) also reported increased externalising symptoms (as measured by the MDS) in younger men, relative to older men. These findings may reflect a general reduction in conformity to masculine norms in older males leading to reduced expressions of externalising symptomology. However, it is also evident that a subset of older men continue to express high conformity to masculine norms which appears to be particularly problematic in the context of ageing.

Similarly, when considering symptom severity categories of the MDRS-7, older men were more likely to be in the low severity category and less likely to be in the moderate, severe, or extremely severe categories compared to younger males. However, proportions of younger and older men with uniquely externalising symptom profiles (i.e., high externalising symptoms but below threshold on prototypic symptoms) were equal (both 10%). This is a noteworthy finding, highlighting the value of assessing a broader range of symptoms linked with depression in younger *and* older men who shared equal risk of their

depression being unrecognised when focusing exclusively on prototypic depressive symptomology. It is possible that these men are presenting to primary care, but their depression is missed due to externalising symptom presentation, leading to increased risk of poor outcomes including suicide. Use of measures such as the MDRS-22 and MDRS-7 may help to improve the detection of depression in men and facilitate appropriate mental health care.

The studies presented in this thesis have also shown that MDRS-22 symptoms are highly linked with prototypic symptoms of depression in both younger and older men. Interestingly, older males with clinically significant prototypic symptoms of depression scored as high on the MDRS-22 as younger males. Thus, although prototypic depression symptoms tended to decrease with age, in those men with clinically significant symptoms, the presence of externalising features did not differ between younger and older men. This is an important finding, suggesting that externalising symptomology might be salient indicators of underlying psychological distress in both younger *and* older men.

## 6.4 Clinical Implications

In this section, the clinical implications of the thesis are discussed. Specifically, this section focuses on the ability of the MDRS-7 to detect unique cases of men, the potential benefit of adjunctive use of the MDRS-7 and prototypic measures of depression in primary care, the possibility that externalising symptoms may be prodromal to prototypic depression, and the potential benefit of increasing psychological flexibility as a therapeutic target for high conforming men.

### *6.4.1 Ability of the MDRS-7 to Detect Unique Cases of Men*

Given the disjuncture between low diagnoses of depression and high rates of suicide amongst men—and in particular—older men, an important goal of using male-specific depression screening tools is identifying unique cases of men who may be at risk of underdiagnosis (Addis, 2008; Zierau et al., 2002). These individuals may score below threshold on prototypic screening tools but experience high levels of externalising symptoms that place them at increased risk of poor outcomes (Rice, Ogrodniczuk, et al., 2019; Zajac et al., 2020). The findings presented herein demonstrate that the MDRS-7 might be useful for detecting unique cases of men who are missed by prototypic tools yet are at significant risk of poor mental health outcomes. In the current study, 10% of younger and 10% of older men reported a uniquely externalising profile (i.e., only high MDRS scores). These men were at significantly increased risk of psychological distress and current suicidality compared to asymptomatic men, yet whose symptoms are missed by use of prototypic measures such as the PHQ-9.

### *6.4.2 Need for Adjunctive Use of the MDRS-7 and Prototypic Measures*

Findings demonstrating moderate-to-strong correlations between prototypic measures of depression and externalising measures suggest that men tend to score high (or low) on both. The results presented herein replicate and extend previous research indicating that many men's depression is characterised by both internalising (i.e., prototypic) and externalising symptoms (Magovcevic & Addis, 2008; Martin et al., 2013; Rice et al., 2013; Zajac et al., 2020; Zierau et al., 2002). Study 2 found that approximately 38% of younger males and 13% of older males presented with co-occurring internalising and externalising symptoms of depression (i.e., high on PHQ-9 and MDRS-22). Results revealed that both younger and older men in the mixed symptom group have increased odds of

mental illness and current suicidality after controlling for a previous diagnosis of depression. In fact, although the proportion of older men in the mixed symptom group was less than younger males, this risk was higher for older relative to younger men. Findings indicating that men with a mixed symptom profile of depression have increased odds of poor outcomes is consistent with previous work demonstrating that men with co-occurring symptoms are at elevated risk of suicidality relative to men with prototypic but few externalising symptoms (Rice, Oliffe, Kealy, et al., 2018; Zajac et al., 2020).

These findings, however, also raise some conceptual questions regarding the male depression phenotype and the relationship between externalising and prototypic symptoms of depression. It is possible that externalising symptomology that co-occurs with internalising symptoms of depression may reflect men's attempts to cope with psychological distress (Whittle et al., 2015) or broader psychopathology, such as co-morbid substance misuse disorders (Cavanagh et al., 2017). It is also plausible that externalising symptoms may interact with underlying impulsivity, escalating suicide risk, and confer other risks relative to health and interpersonal relationships (Rice et al., 2015).

An important finding to note, both within this thesis and the literature more broadly, is that many men do present with prototypic symptoms of depression. Moreover, there appears to be a distinct group of men who report prototypic symptoms of depression but not externalising depressive symptomology. Findings from Study 3 demonstrated that 14% of younger and 5% of older men reported exclusively prototypic symptoms of depression and that these men were at increased risk of psychological distress and suicidality. These findings are consistent with research by Rice, Kealy, et al. (2019) who found that a proportion of cases unidentified by the MDRS-22 were identified by the PHQ-9. In terms of age differences, younger men with prototypic symptoms of depression were 18 times more

likely to experience current suicidality, compared to older men with prototypic symptoms, who were eight times more likely to experience current suicidality relative to non-depressed men.

Together, the findings discussed above provide a compelling argument for adjunctive use of brief measures of externalising and prototypic symptoms of depression. Given the simplicity, brevity, and clarity of administration and scoring, the MDRS-7 is well-placed to help address this need. In addition, the clinical utility of this scale may extend beyond screening and detection and into therapy as a means of examining, monitoring, and managing risk of suicidality. To facilitate large-scale use of this measure, the MDRS-7 has been disseminated through the publication of an open access peer-reviewed academic journal article (i.e., Chapter 3) and is presented in Appendix B.

### *6.4.3 Externalising Symptoms may be Prodromal to Depression*

It has previously been questioned whether externalising symptoms occur prior to prototypic symptoms and may even precipitate the development of threshold prototypic symptoms (Rice, Kealy, Seidler, et al., 2020; Zajac et al., 2020). However, to date, limited studies have purposefully explored this. Study 3 addressed this gap by considering whether externalising symptoms are prodromal for prototypic depression. After controlling for prototypic symptoms of depression and previous diagnosis of depression at Time 1, individuals classified as having moderate severity of MDRS-7 symptoms at Time 1 were significantly more likely than those in the low severity category to report clinically significant prototypic symptoms of depression at Time 2, approximately eight months later. Interestingly, this was not the case for those in the severe and extremely severe MDRS-7 symptom severity categories, who may have also scored above threshold on prototypic measures due to experiencing elevated levels of distress. This is a particularly novel and

important finding, suggesting that men experiencing a unique externalising profile may be at risk in the longer term of prototypic symptoms that meet diagnostic criteria. These men may potentially be more likely to experience mixed symptomology (i.e., high prototypic and externalising symptoms of depression), which the current results (and others) show significantly increases risk of poor outcomes. These findings are consistent with research by Kendler and Gardner (2014), who demonstrated that externalising symptoms (e.g., substance misuse) predicted a depressive episode in men twelve months later. Importantly, these findings further highlight the potential value of screening for externalising symptoms to facilitate early intervention. However, future research is needed to corroborate these findings, exploring temporal relationships in externalising and prototypic symptoms of depression in men, including the role of adherence to masculine norms on this relationship.

### *6.4.4 The Relationship Between Psychological Inflexibility and Conformity to Masculine Norms*

As highlighted within this thesis, adherence to masculine norms is at least conceptually linked to the application of a rigid set of coping behaviours. Indeed, some masculine norms can be adaptive and result in social and economic benefits for men (Brooks, 2010; Mahalik et al., 2003). However, other masculine norms, such as those that encourage violence, power over women, and disdain for homosexuals, are fundamentally problematic and would benefit from being challenged and redefined (Rice et al., 2021). In the context of men's mental health, however, the results presented within this thesis suggest that psychological flexibility may potentially be a more useful target for psychologists aiming to build wellbeing in male clients. In other words, the present findings suggest that the treatment of men's mental health does not necessarily need to involve the

relinquishment of all masculine norms but instead should encourage a more flexible array of coping behaviours. More specifically, the current results demonstrate that men with strict adherence to masculine norms, who were also high on psychological flexibility (i.e., those who accept their thoughts and emotions and act on long-term values rather than short-term impulses) had fewer and less severe symptoms of depression (both prototypic and externalising symptomology) compared to high conforming men who demonstrate greater inflexibility (see Study 4). For example, a man might believe that strength and independence is best demonstrated through denying distress and avoiding seeking help, while another may believe that these qualities are best expressed through independently taking the initiative to seek help (Spendelow, 2015). Thus, an important clinical implication of these findings is the potential benefit of teaching flexibility when working therapeutically with men experiencing depression.

In the current study, psychological inflexibility is conceptualised through an acceptance and commitment therapy (ACT) lens, focusing on two of the six core processes of ACT including experiential avoidance (i.e., attempts to avoid and suppress unwanted internal experiences) and cognitive fusion (i.e., the tendency to become entangled with thoughts that are perceived as absolute truths). However, increasing coping flexibility, defined as the ability to effectively modify one's coping strategies according to the demands of different stressful situations (Kato, 2012), underlies most third wave behavioural and cognitive therapeutic models (Hayes, 2004). Thus, interventions which aim to identify and develop more flexible coping mechanisms to manage distress (e.g., seeking help), while reducing problematic coping mechanisms (e.g., supressing emotions) may prove particularly useful for high conforming men (Spendelow & Joubert, 2018). This may be an especially important undertaking for older men, who may have relied on a specific set of coping styles

throughout their life but are now struggling to adapt to significant life changes such as retirement and increased physical health challenges (Robbins et al., 2016). Future research is needed with broader conceptualisations of psychological flexibility, including studies that examine the effectiveness of these approaches for working with high conforming men.

Ultimately, the results described within this thesis highlight the need for clinicians to develop gender competency when working with men through embedding knowledge of multiple masculinities in a clinical conceptualisation of men's depression, including case formulation, therapy planning, and assessment of symptomology (Beel et al., 2019; Beel et al., 2018; Seidler et al., 2018; Seidler et al., 2021). However, the findings also highlight the potential to assist men to develop broader coping behaviours through a focus on psychological flexibility, without the need to challenge masculinities per se. Moreover, clinicians should be cognisant of the influences of gender norms and masculinities on men's lives and how this may change over the lifespan (King, Dow, et al., 2020). For example, the *Men in Mind* training program, supported by global men's health charity Movember, aims to upskill mental health practitioners working with men with promising preliminary findings and a RCT currently underway (Seidler et al., 2022).

## 6.5 Strengths

With the number and proportion of older adults in the population increasing dramatically in Australia and many other countries around the world, coupled with the increased risk of death by suicide in older males (Australian Bureau of Statistics, 2020), improving our understanding of older men's experiences of depression is fundamental. This thesis addresses a significant gap in the literature regarding the relationship between masculinities and depression in older men, as well as the assessment of externalising and

male-type symptoms of depression in men across the lifespan. A key strength of the included studies is the size of the samples and application of robust multivariate statistics. To the best of my knowledge, Study 1 is the first to systematically examine the relationship between conformity to masculine norms and prototypic depression in a representative population sample of males. Similarly, the subsequent studies drew from a large community sample of males recruited across Australia, increasing the power of the analyses and building on existing studies which have typically involved small samples of men. Another important strength is that three of the four studies reported in this thesis are published in academic journals and have thus been subject to peer review and feedback. In addition, although this thesis did not set out to test specific theories or frameworks, this work is derived from a strong theoretical framework of masculine gender role socialisation.

An additional key strength of the current research relates to the MDRS. This study improved the MDRS-22 by simplifying the response format and examining the psychometric properties of the MDRS-22 in older men. This is an important undertaking, highlighting the utility of the MDRS-22 to facilitate future research on externalising symptoms of depression in older men to inform clinical practice. Similarly, the development of the MDRS-7 was methodologically robust and has the potential to increase the clinical utility of the MDRS in primary care settings. Furthermore, the studies presented within this thesis respond to calls from professional bodies regarding the need for gender-sensitive practice in men's mental health assessment across the lifespan (American Psychological Association, 2018; Australian Psychological Society, 2017). This work is especially topical and timely given the recent text revision of the DSM-5 (5th Edition., Text Revision.; DSM-5-TR; American Psychiatric Association, 2022) published in March 2022, which now acknowledges that men with depression report greater frequencies of maladaptive self-coping, including alcohol or other

drug misuse, risk-taking, and poor impulse control in the sex and gender-related diagnostic features section. Although there have been no changes to the diagnostic criteria for depression, this is a significant step toward improving awareness of men's symptom expression.

### 6.6 Limitations and Future Directions

Limitations that are specific to each study are presented in each respective chapter. The following section reviews some of the broader limitations across this body of work and the literature more broadly, providing suggestions for future research directions.

With the exception of Study 1 which involved the largest, all-male national cohort study on male health conducted internationally to date, data presented within this thesis were collected primarily from a large single community sample of men (cross-sectional and longitudinal). The decision to sample from the community was intentional due to the higher likelihood of recruiting males experiencing externalising depressive symptomology, relative to clinical samples whereby individual's symptoms are consistent with diagnostic classifications. In addition, individuals with sub-threshold depression (i.e., those who fail to demonstrate the required number, or duration of typical symptoms) can experience significant distress as a result of their depressive symptomology (Cuijpers & Smit, 2008). However, this recruitment approach has some limitations.

Recruitment to the survey relied heavily on paid and unpaid advertisements on social media and through community organisations (e.g., Rotary, Men's Shed). Although this method strengthened participant response, it also introduces a level of bias, as many respondents were already engaged with, and thus at least somewhat proactive, about their wellbeing. It is therefore possible that many males who strongly adhere to masculine norms,

as well as those experiencing heightened psychological distress and depressive symptomology, did not participate in the study. In addition, this study did not consider the presentation of depression in men across different cultural backgrounds or those with diverse gender identities (e.g., transgender males). Thus, future studies are needed with more diverse samples. Similarly, future studies should consider additional covariates (e.g., education) that may impact on results.

Another limitation relating to the recruitment approach is that it relied on self-report data without validation of prototypic depression or suicidality by clinical interview or diagnosis. Thus, self-reported depression can only be considered as a proxy for prevalence of actual depressive disorders in the sample. Future studies with validation of depression by clinical interview are needed. Similarly, future research is needed to examine the relationship between externalising symptomology and broader psychopathology. It is possible that symptomology captured by the MDRS-22 (or MDRS-7), at least in isolation, may be more strongly associated with other disorders (e.g., substance use disorders, ADHD), rather than depression. Thus, future research drawing on a range of clinical and non-clinical groups is essential to further explore relationships between externalising symptomology and other mental health disorders.

The studies presented within this thesis focus on men's depressive symptomology, rather than comparing the experience of depression in men and women which has been suggested to severely limit our understanding of depression in men (Addis, 2008). However, the focus on men could be seen to imply that these problems are specific to males. Indeed, previous research has shown that some women also report elevated externalising and male-type symptoms (e.g., Cui, 2020; Price et al., 2018). Thus, future research exploring the

extent to which females endorse such symptoms across the lifespan and the corresponding risk of psychological distress and suicidality is warranted.

The cross-sectional design of several of the reported studies in this thesis constrains conclusions regarding the effect of age on adherence to masculine norms and expressions of symptoms of depression over time. For example, Studies 1 and 4 assume that conformity to masculine norms at the time of data collection reflects participant's general adherence to masculine norms, failing to consider the situational or context specific nature of masculinities. It will be important for future research to replicate and extend the results of the studies presented herein using longitudinal data. Similarly, this study conceptualised masculinity using the CMNI framework. However, there are many measures of masculinities, and it will be important for future studies to replicate these findings using other measures. Indeed, some researchers have questioned whether existing measures, validated primarily in samples of young men, sufficiently capture masculinities relevant to the lives of older men (Levant, Webster, et al., 2020). Accordingly, Levant, Webster, et al. (2020) recently developed the Aging Men's Masculinity Ideologies Inventory (AMMII) designed to measure masculinity ideologies relevant ageing men's lives. Future research should consider the relationship between age-specific measures of masculinities and men's symptoms of depression.

There is also a need for longitudinal studies to provide greater understanding of the role of externalising symptoms in the development of prototypic depression to further consider whether externalising symptoms reflect the prodromal phase of a major depressive episode. Future studies would also benefit from exploring differences in externalising symptoms of depression in men across the lifespan in terms of the actual behaviours that men are engaging in. As discussed in Study 2, a strength of the MDRS-22 is

that items are designed to gauge the individual's perception of their own recent behaviour (e.g., "I took unnecessary risks") rather than listing specific behaviours. Thus, the actual behaviours that men are engaging in may look different in younger versus older men, despite both endorsing this item. Examination of differences in the expression of these symptoms across age groups would allow for a better understanding of potential markers of depression and suicide risk in men across the lifespan.

Comparison of 'younger' vs 'older' males fails to acknowledge the significant heterogeneity of those aged 65 years and under. Future research would benefit from considering alternate age groups. Similarly, given that men aged 85 years and above have the highest age-specific suicide rates in Australia and many other countries, future studies should explore the utility of the MDRS-7 in older men aged 65-75 years versus those aged 85 years or more who may differ in their expression of depressive symptomology and suicide risk (King, Schlichthorst, et al., 2020). It may be that suicide in men aged 85 years and above is more closely linked to factors other than depression, such as physical health issues (Almeida et al., 2016). In addition, studies should also explore the relationship between masculine norms and depressive symptomology in specific groups of at-risk men, such as those living in residential aged-care facilities, where rates of depression are especially high (Murphy et al., 2018). This may highlight the need for a modified version of the MDRS-7 to accommodate increased cognitive impairment amongst this cohort.

Furthermore, future research is also needed to assess the clinical utility of the MDRS-7 in assisting in screening for depression in men across the lifespan. Prospective studies of the MDRS-7 in primary care settings to ascertain whether more men are identified and engage with mental health professionals is a necessary piece of work. Similarly, cut-off scores for the MDRS-22 (and MDRS-7) were determined based on self-

reported suicidality, as opposed to diagnostically confirmed depression. This will be an important aim for future studies to consider. Moreover, future research is needed to consider the efficacy of interventions aimed at increasing coping flexibility in high conforming men experiencing depression, as well as further consideration of other mechanisms through which adherence to masculine norms is associated with psychopathology in men.

## 6.7 Conclusion

The current research program provides new and valuable insights into depression in men across the lifespan. Specifically, this thesis has demonstrated the importance of assessing externalising and male-type symptoms of depression in older men, both in terms of the ability to detect unique cases of men who are at risk of being missed using prototypic measures of depression, and the increased risk of suicidality and psychological distress in those who score high on such measures. It has also robustly demonstrated the applicability of an existing measure—namely the MDRS—in older males for this purpose. In addition, this thesis further highlights the complexity of the role of masculine norms in men's mental health and provides preliminary evidence for the potential benefit of focusing on psychological flexibility more generally, as opposed to tackling masculinities themselves, in the context of men's depression. Use of scales such as the MDRS-22 and MDRS-7 may facilitate progresses towards a more comprehensive understanding of depression in men across the lifespan. Furthermore, adjunctive use of the MDRS-7 developed as part of this body of research with prototypic screening tools may improve identification of males at risk of depression—and by extension—suicide, who might otherwise go undetected.

**Appendix A: The Male Depression Risk Scale (MDRS-82)**

Please think back over the last four weeks and indicate how often each item applied to you. Please circle the answer that best applies to you where 0 = none of the time; 4 = all of the time.

| | None of the time | A little of the time | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|---|
| Any existing pains felt much worse | 0 | 1 | 2 | 3 | 4 |
| Everyone seemed to bother me | 0 | 1 | 2 | 3 | 4 |
| I tried to ignore feeling down | 0 | 1 | 2 | 3 | 4 |
| I was more interested in thinking about sex than most other people | 0 | 1 | 2 | 3 | 4 |
| I avoided going home | 0 | 1 | 2 | 3 | 4 |
| I avoided talking to others | 0 | 1 | 2 | 3 | 4 |
| I bottled up my negative feelings | 0 | 1 | 2 | 3 | 4 |
| I covered up my difficulties | 0 | 1 | 2 | 3 | 4 |
| I craved drugs | 0 | 1 | 2 | 3 | 4 |
| I distracted myself from negative thoughts though sports | 0 | 1 | 2 | 3 | 4 |
| I drank more alcohol than usual | 0 | 1 | 2 | 3 | 4 |
| I drove dangerously or aggressively | 0 | 1 | 2 | 3 | 4 |
| I engaged in sex to distract me from negative thoughts or feelings | 0 | 1 | 2 | 3 | 4 |
| I exercised more than is good for my body | 0 | 1 | 2 | 3 | 4 |
| I experienced problems relating to people close to me | 0 | 1 | 2 | 3 | 4 |

| | None of the time | A little of the time | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|---|
| I experienced worsening physical health | 0 | 1 | 2 | 3 | 4 |
| I felt more tense than usual | 0 | 1 | 2 | 3 | 4 |
| I felt out of control | 0 | 1 | 2 | 3 | 4 |
| I felt under more pressure than usual | 0 | 1 | 2 | 3 | 4 |
| I found it difficult to mix with others | 0 | 1 | 2 | 3 | 4 |
| I got annoyed easily | 0 | 1 | 2 | 3 | 4 |
| I got so mad I started a fight | 0 | 1 | 2 | 3 | 4 |
| I had a hard time putting my negative feelings into words | 0 | 1 | 2 | 3 | 4 |
| I had aggressive thoughts about others | 0 | 1 | 2 | 3 | 4 |
| I had arguments with people I am close to | 0 | 1 | 2 | 3 | 4 |
| I had more heartburn than usual | 0 | 1 | 2 | 3 | 4 |
| I had regular headaches | 0 | 1 | 2 | 3 | 4 |
| I had riskier sexual contacts | 0 | 1 | 2 | 3 | 4 |
| I had stomach pains | 0 | 1 | 2 | 3 | 4 |
| I had to work things out by myself | 0 | 1 | 2 | 3 | 4 |
| I had unexplained aches and pains | 0 | 1 | 2 | 3 | 4 |
| I hit someone in anger | 0 | 1 | 2 | 3 | 4 |
| I injured myself deliberately (e.g., burned or cut myself) | 0 | 1 | 2 | 3 | 4 |
| I let work take over my life | 0 | 1 | 2 | 3 | 4 |

| | None of the time | A little of the time | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|---|
| I lost interest in how others were doing | 0 | 1 | 2 | 3 | 4 |
| I needed alcohol to help me unwind | 0 | 1 | 2 | 3 | 4 |
| I needed to gamble more than normal | 0 | 1 | 2 | 3 | 4 |
| I needed to have easy access to alcohol | 0 | 1 | 2 | 3 | 4 |
| I needed to stay in control and be strong | 0 | 1 | 2 | 3 | 4 |
| I overreacted to situations with aggressive behaviour | 0 | 1 | 2 | 3 | 4 |
| I physically attacked someone | 0 | 1 | 2 | 3 | 4 |
| I physically lashed out at others without being provoked | 0 | 1 | 2 | 3 | 4 |
| I preferred to keep quiet about feeling bad | 0 | 1 | 2 | 3 | 4 |
| I refused help for my problems | 0 | 1 | 2 | 3 | 4 |
| I shouted at others | 0 | 1 | 2 | 3 | 4 |
| I sought out drugs | 0 | 1 | 2 | 3 | 4 |
| I spent more time on my computer than usual | 0 | 1 | 2 | 3 | 4 |
| I spent my spare time alone | 0 | 1 | 2 | 3 | 4 |
| I stayed at work longer than I needed to | 0 | 1 | 2 | 3 | 4 |
| I stopped feeling so bad while drinking | 0 | 1 | 2 | 3 | 4 |
| I swore at others | 0 | 1 | 2 | 3 | 4 |
| I thought about drinking alcohol frequently | 0 | 1 | 2 | 3 | 4 |
| I thought about using drugs frequently | 0 | 1 | 2 | 3 | 4 |

| | None of the time | A little of the time | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|---|
| I took my anger out on other people without due cause | 0 | 1 | 2 | 3 | 4 |
| I took risks that might result in injury to myself or others | 0 | 1 | 2 | 3 | 4 |
| I tried my hardest to ignore my feelings | 0 | 1 | 2 | 3 | 4 |
| I tried my hardest to stay in control of my emotions | 0 | 1 | 2 | 3 | 4 |
| I used drugs to cope | 0 | 1 | 2 | 3 | 4 |
| I verbally lashed out at others without being provoked | 0 | 1 | 2 | 3 | 4 |
| I verbally threatened someone | 0 | 1 | 2 | 3 | 4 |
| I wanted to smash things | 0 | 1 | 2 | 3 | 4 |
| I was moody and irritable | 0 | 1 | 2 | 3 | 4 |
| I was more impatient than usual | 0 | 1 | 2 | 3 | 4 |
| I was more reckless | 0 | 1 | 2 | 3 | 4 |
| I was nervous | 0 | 1 | 2 | 3 | 4 |
| I was verbally aggressive to others | 0 | 1 | 2 | 3 | 4 |
| I was worried | 0 | 1 | 2 | 3 | 4 |
| I watched more TV or movies than usual | 0 | 1 | 2 | 3 | 4 |
| I withdrew from responsibilities at home | 0 | 1 | 2 | 3 | 4 |
| I worked to stop myself from crying | 0 | 1 | 2 | 3 | 4 |
| I would become angry very quickly | 0 | 1 | 2 | 3 | 4 |
| I yelled at others | 0 | 1 | 2 | 3 | 4 |

| | None of the time | A little of the time | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|---|
| It helped when I hurt others | 0 | 1 | 2 | 3 | 4 |
| It took more effort than usual to control my temper | 0 | 1 | 2 | 3 | 4 |
| It was difficult to manage my anger | 0 | 1 | 2 | 3 | 4 |
| It was hard to relax | 0 | 1 | 2 | 3 | 4 |
| Others expressed concern about my drinking | 0 | 1 | 2 | 3 | 4 |
| Others expressed concern about my drug use | 0 | 1 | 2 | 3 | 4 |
| People called me a workaholic | 0 | 1 | 2 | 3 | 4 |
| Using drugs provided temporary relief | 0 | 1 | 2 | 3 | 4 |
| I stopped caring about the consequences of my actions | 0 | 1 | 2 | 3 | 4 |
| I took unnecessary risks | 0 | 1 | 2 | 3 | 4 |

**Appendix B: The Male Depression Risk Scale (MDRS-7)**

Instructions for completion: Please think back over the last four weeks and respond to each item considering how often it applied to you. Please respond where 0 = none of the time; 4 = all of the time.

| | None of the time | A little of the time | Some of the time | Most of the time | All of the time |
|---|---|---|---|---|---|
| 1. I bottled up my negative feelings | 0 | 1 | 2 | 3 | 4 |
| 2. I needed alcohol to help me unwind | 0 | 1 | 2 | 3 | 4 |
| 3. I had unexplained aches and pains | 0 | 1 | 2 | 3 | 4 |
| 4. I overreacted to situations with aggressive behaviour | 0 | 1 | 2 | 3 | 4 |
| 5. It was difficult to manage my anger | 0 | 1 | 2 | 3 | 4 |
| 6. Using drugs provided temporary relief | 0 | 1 | 2 | 3 | 4 |
| 7. I stopped caring about the consequences of my actions | 0 | 1 | 2 | 3 | 4 |

Scoring: The MDRS-7 provides a Total Score (sum of all seven items):

| MDRS-7 Range | MDRS-7 Cut-off Scores |
|---|---|
| *Low* | 0 – 5 |
| *Moderate* | 6 – 7 |
| *Severe* | 8 – 12 |
| *Extremely Severe* | 13+ |

Citation: Herreen, D., Rice, S. M., & Zajac, I. T. (2022). Brief assessment of male depression in clinical care: Validation of the Male Depression Risk Scale short form in a cross-sectional study of Australian men. *BMJ Open, 12*. https://doi.org/10.1136/bmjopen-2021-053650

## References


Abdoli, N., Salari, N., Darvishi, N., Jafarpour, S., Solaymani, M., Mohammadi, M., & Shohaimi, S. (2021). The global prevalence of major depressive disorder (MDD) among the elderly: A systematic review and meta-analysis. Neuroscience & Biobehavioral Reviews, 132, 1067-1073. https://doi.org/10.1016/j.neubiorev.2021.10.041

Addis, M. E. (2008). Gender and depression in men. Clinical Psychology: Science and Practice, 15(3), 153-168. https://doi.org/10.1111/j.1468-2850.2008.00125.x

Addis, M. E., & Mahalik, J. R. (2003). Men, masculinity, and the contexts of help seeking. American Psychologist, 58(1), 5-14. https://doi.org/10.1037/0003-066X.58.1.5

Addis, M. E., Mansfield, A., & Syzdek, M. (2010). Is “masculinity" a problem?: Framing the effects of gendered social learning in men. Psychology of Men & Masculinity, 11(2), 77-90. https://doi.org/10.1037/a0018602

Addis, M. E., Reigeluth, C. S., & Schwab, J. R. (2016). Social norms, social construction, and the psychology of men and masculinity. In Y. J. Wong & S. R. Wester (Eds.), APA handbook of men and masculinities (pp. 81-104). American Psychological Association. https://doi.org/http://dx.doi.org/10.1037/14594-004

Albert, P. R. (2015). Why is depression more prevalent in women? Journal of Psychiatry & Neuroscience, 40(4), 219-221. https://doi.org/10.1503/jpn.150205

Allan, C. E., Valkanova, V., & Ebmeier, K. P. (2014). Depression in older people is underdiagnosed. Practitioner, 258(1771), 19-22.

Almeida, O. P., Draper, B., Snowdon, J., Lautenschlager, N. T., Pirkis, J., Byrne, G., Sim, M., Stocks, N., Flicker, L., & Pfaff, J. J. (2012). Factors associated with suicidal thoughts in

a large community study of older adults. British Journal of Psychiatry, 201(6), 466-472. https://doi.org/10.1192/bjp.bp.112.110130

Almeida, O. P., McCaul, K., Hankey, G. J., Yeap, B. B., Golledge, J., & Flicker, L. (2016). Suicide in older men: The health in men cohort study (HIMS). Preventive Medicine, 93, 33-38. https://doi.org/10.1016/j.ypmed.2016.09.022

Amare, A. T., Caughey, G. E., Whitehead, C., Lang, C. E., Bray, S. C. E., Corlis, M., Visvanathan, R., Wesselingh, S., & Inacio, M. C. (2020). The prevalence, trends and determinants of mental health disorders in older Australians living in permanent residential aged care: Implications for policy and quality of aged care services. Australian & New Zealand Journal of Psychiatry, 54(12), 1200-1211. https://doi.org/10.1177/0004867420945367

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). American Psychiatric Association. https://doi.org/10.1176/appi.books.9780890425596

American Psychiatric Association. (2022). Diagnostic and statistical manual of mental disorders (5th ed., text rev.). American Psychiatric Association. https://doi.org/10.1176/appi.books.9780890425787

American Psychological Association. (2018). APA guidelines for psychological practice with boys and men. http://www.apa.org/about/policy/psychological-practice-boys-men-guidelines.pdf

Apesoa-Varano, E. C., Barker, J. C., & Hinton, L. (2015). Shards of sorrow: Older men's accounts of their depression experience. Social Science & Medicine, 124, 1-8. https://doi.org/10.1016/j.socscimed.2014.10.054

Apesoa-Varano, E. C., Barker, J. C., & Hinton, L. (2018). “If you were like me, you would consider it too”: Suicide, older men, and masculinity. Society and Mental Health, 8(2), 157-173. https://doi.org/10.1177/2156869317725890

Arnett, J. J. (2007). Emerging adulthood: What is it, and what is it good for? Child Development Perspectives, 1(2), 68-73. https://doi.org/10.1111/j.1750-8606.2007.00016.x

Australian Bureau of Statistics. (2009). National survey of mental health and wellbeing: Summary of results, 2007 (Cat. No. 4326.0). https://www.abs.gov.au/statistics/health/mental-health/national-survey-mental-health-and-wellbeing-summary-results/latest-release

Australian Bureau of Statistics. (2013a). Australian health survey: Users' guide 2011-2013 (Cat. No. 4363.0.55.001). https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/4363.0.55.001main+features12011-13

Australian Bureau of Statistics. (2013b). Census of population and housing: Socio-economic indexes for areas (SEIFA), Australia, 2011 (Cat. No. 2033.0.55.01). https://www.abs.gov.au/ausstats/abs@.nsf/DetailsPage/2033.0.55.0012011

Australian Bureau of Statistics. (2016). Australian statistical geography standard (ASGS): Volume 5 - remoteness structure, 2016 (Cat. No. 1270.0.55.005). https://www.abs.gov.au/ausstats/abs@.nsf/mf/1270.0.55.005

Australian Bureau of Statistics. (2017a). Census of population and housing - Quickstats, community profiles and datapacks user guide, Australia, 2016 (Cat. No. 2916.0). https://www.abs.gov.au/ausstats/abs@.nsf/Lookup/2916.0main+features102016

Australian Bureau of Statistics. (2017b). Health service usage and health related actions, Australia, 2014-15 (Cat. No. 4364.0.55.002). https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4364.0.55.002Main+Features12014-15

Australian Bureau of Statistics. (2018). Mental health. https://www.abs.gov.au/statistics/health/mental-health/mental-health/2017-18

Australian Bureau of Statistics. (2019a). Causes of death, Australia (3303.0). https://www.abs.gov.au/statistics/health/causes-death/causes-death-australia/2019

Australian Bureau of Statistics. (2019b). National health survey: Users' guide 2014-2015 (Cat. No. 4363.0). https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4363.0Main+Features12014-15?OpenDocument

Australian Bureau of Statistics. (2020). Causes of death, Australia. https://www.abs.gov.au/statistics/health/causes-death/causes-death-australia/latest-release#intentional-self-harm-suicides-key-characteristics

Australian Institute of Family Studies. (2020). Mental health of Australian males: Depression, suicidality and loneliness. https://aifs.gov.au/media-releases/depression-suicidality-and-loneliness-mental-health-and-australian-men

Australian Institute of Health and Welfare. (2015). Mental health of older Australians. https://www.aihw.gov.au/getmedia/c2ff6c58-e05e-49ed-afd7-43bd21eef4e2/AW15-6-4-Mental-health-of-older-Australians.pdf.aspx

Australian Institute of Health and Welfare. (2017). Older Australia at a glance. https://www.aihw.gov.au/reports-statistics/population-groups/older-people/overview

Australian Institute of Health and Welfare. (2021). Mental health services in Australia. https://www.aihw.gov.au/reports/mental-health-services/mental-health-services-in-australia/report-contents/summary-of-mental-health-services-in-australia

Australian Psychological Society. (2017). Ethical guidelines for psychological practice with men and boys.

Balsamo, M., Cataldi, F., Carlucci, L., Padulo, C., & Fairfield, B. (2018). Assessment of late-life depression via self-report measures: A review. Clinical Interventions in Aging, 13, 2021-2044. https://doi.org/https://doi.org/10.2147/CIA.S178943

Bardeen, J. R., & Fergus, T. A. (2016). The interactive effect of cognitive fusion and experiential avoidance on anxiety, depression, stress and posttraumatic stress symptoms. Journal of Contextual Behavioral Science, 5(1), 1-6. https://doi.org/https://doi.org/10.1016/j.jcbs.2016.02.002

Barry, J. A., & Owens, R. (2019). From fetuses to boys to men: The impact of testosterone on male lifespan development. In The palgrave handbook of male psychology and mental health (pp. 3-24). https://doi.org/10.1007/978-3-030-04384-1_1

Beck, A. T., Guth, D., Steer, R. A., & Ball, R. (1997). Screening for major depression disorders in medical inpatients with the Beck Depression Inventory for Primary Care. Behaviour Research and Therapy, 35(8), 785-791. https://doi.org/10.1016/S0005-7967(97)00025-9

Beel, N., Brownlow, C., Jeffries, C., & du Preez, J. (2019). Counseling men: Treatment recommendations from Australian men's therapists. The Journal of Men's Studies, 28(1), 101-121. https://doi.org/10.1177/1060826519861969

Beel, N., Jeffries, C., Brownlow, C., Winterbotham, S., & Du Preez, J. (2018). Recommendations for male-friendly individual counseling with men: A qualitative

systematic literature review for the period 1995-2016. Psychology of Men & Masculinity, 19(4), 600-611. https://doi.org/10.1037/men0000137

Beyond Blue. (2022). Statistics. Retrieved March 2022 from https://www.beyondblue.org.au/media/statistics

Bond, F. W., Hayes, S. C., Baer, R. A., Carpenter, K. M., Guenole, N., Orcutt, H. K., Waltz, T., & Zettle, R. D. (2011). Preliminary psychometric properties of the Acceptance and Action Questionnaire–II: A revised measure of psychological inflexibility and experiential avoidance. Behavior Therapy, 42(4), 676-688. https://doi.org/10.1016/j.beth.2011.03.007

Brenner, R. E., Cornish, M. A., Heath, P. J., Lannin, D. G., & Losby, M. M. (2020). Seeking help despite the stigma: Experiential avoidance as a moderated mediator. Journal of Counseling Psychology, 67(1), 132-140. https://doi.org/10.1037/cou0000365

Brooks, G. (2010). Despite problems, “masculinity" is a vital construct. Psychology of Men & Masculinity, 11(2), 107-108. https://doi.org/10.1037/a0019180

Brownhill, S., Wilhelm, K., Barclay, L., & Schmied, V. (2005). ‘Big build’: Hidden depression in men. Australian & New Zealand Journal of Psychiatry, 39(10), 921-931. https://doi.org/10.1080/j.1440-1614.2005.01665.x

Brownhill, S., Wilhelm, K., Eliovson, G., & Waterhouse, M. (2003). 'For men only'. A mental health prompt list in primary care. Australian Family Physician, 32(6), 443-450.

Bueno-Notivol, J., Gracia-García, P., Olaya, B., Lasheras, I., López-Antón, R., & Santabárbara, J. (2021). Prevalence of depression during the COVID-19 outbreak: A meta-analysis of community-based studies. International Journal of Clinical and Health Psychology, 21(1), 100196-100207. https://doi.org/10.1016/j.ijchp.2020.07.007

Cai, H., Xie, X.-M., Zhang, Q., Cui, X., Lin, J.-X., Sim, K., Ungvari, G. S., Zhang, L., & Xiang, Y.-T. (2021). Prevalence of suicidality in major depressive disorder: A systematic review and meta-analysis of comparative studies. Frontiers in Psychiatry, 12, 690130-690130. https://doi.org/10.3389/fpsyt.2021.690130

Call, J. B., & Shafer, K. (2018). Gendered manifestations of depression and help seeking among men. American Journal of Men's Health, 12(1), 41-51. https://doi.org/10.1177/1557988315623993

Canetto, S. S. (2017). Suicide: Why are older men so vulnerable? Men and Masculinities, 20(1), 49-70. https://doi.org/10.1177/1097184X15613832

Cavanagh, A., Wilson, C., J., Caputi, P., & Kavanagh, D., J. (2016). Symptom endorsement in men versus women with a diagnosis of depression: A differential item functioning approach. International Journal of Social Psychiatry, 62(6), 549-559. https://doi.org/10.1177/0020764016653980

Cavanagh, A., Wilson, C., J., Kavanagh, D., J., & Caputi, P. (2017). Differences in the expression of symptoms in men versus women with depression: A systematic review and meta-analysis. Harvard Review of Psychiatry, 25(1), 29-38. https://doi.org/10.1097/hrp.0000000000000128

Cheng, C. (2005). Processes underlying gender-role flexibility: Do androgynous individuals know more or know how to cope? Journal of Personality, 73(3), 645-674. https://doi.org/10.1111/j.1467-6494.2005.00324.x

Chesney, E., Goodwin, G. M., & Fazel, S. (2014). Risks of all-cause and suicide mortality in mental disorders: A meta-review. World Psychiatry, 13(2), 153-160. https://doi.org/10.1002/wps.20128

Chew-Graham, C. A., & Ray, M. (2016). Mental health and older people: A guide for primary care practitioners (1st ed.). Springer International Publishing. https://doi.org/doi.org/10.1007/978-3-319-29492-6

Choi, I., Milne, D. N., Glozier, N., Peters, D., Harvey, S. B., & Calvo, R. A. (2017). Using different Facebook advertisements to recruit men for an online mental health study: Engagement and selection bias. Internet Interventions, 8, 27-34. https://doi.org/10.1016/j.invent.2017.02.002

Christensen, K. P., Doblhammer, G. P., Rau, R. P., & Vaupel, J. W. P. (2009). Ageing populations: The challenges ahead. The Lancet, 374(9696), 1196-1208. https://doi.org/10.1016/S0140-6736(09)61460-4

Cole, B., & Davidson, M. (2018). Exploring men's perceptions about male depression. Psychology of Men & Masculinities, 20(4), 459-466. https://doi.org/10.1037/men0000176

Coleman, D. (2015). Traditional masculinity as a risk factor for suicidal ideation: Cross-sectional and prospective evidence from a study of young adults. Archives of Suicide Research, 19(3), 366-384. https://doi.org/10.1080/13811118.2014.957453

Conejero, I., Olié, E., Courtet, P., & Calati, R. (2018). Suicide in older adults: Current perspectives. Clinical Interventions in Aging, 13, 691-699. https://doi.org/10.2147/CIA.S130670

Connell, R. W. (1995). Masculinities. Allen & Unwin.

Cookson, C., Luzon, O., Newland, J., & Kingston, J. (2020). Examining the role of cognitive fusion and experiential avoidance in predicting anxiety and depression. Psychology and Psychotherapy, 93(3), 456-473. https://doi.org/10.1111/papt.12233

Costantini, L., Pasquarella, C., Odone, A., Colucci, M. E., Costanza, A., Serafini, G., Aguglia, A., Belvederi Murri, M., Brakoulias, V., Amore, M., Ghaemi, S. N., & Amerio, A. (2021). Screening for depression in primary care with Patient Health Questionnaire-9 (PHQ-9): A systematic review. Journal of Affective Disorders, 279, 473-483. https://doi.org/10.1016/j.jad.2020.09.131

Cournoyer, R., & Mahalik, J. (1995). Cross-sectional study of gender role conflict examining college-aged and middle-aged men. Journal of Counseling Psychology, 42(1), 11-19. https://doi.org/10.1037/0022-0167.42.1.11

Courtenay, W. H. (2003). Key determinants of the health and well-being of men and boys. International Journal of Men's Health, 2(1), 1-30. https://doi.org/10.3149/jmh.0201.1

COVID-19 Mental Disorders Collaborators. (2021). Global prevalence and burden of depressive and anxiety disorders in 204 countries and territories in 2020 due to the COVID-19 pandemic. The Lancet, 398(10312), 1700-1712. https://doi.org/10.1016/S0140-6736(21)02143-7

Cui, R. (2020). Relation between depression symptoms and suicide risk in adults and older adults [Doctoral Dissertation, West Virginia University]. https://researchrepository.wvu.edu/etd/7774

Cui, R., & Fiske, A. (2020). New research on older adult suicide: A reason for hope. Clinical Gerontologist, 43(1), 1-3. https://doi.org/10.1080/07317115.2020.1690299

Cui, R., & Fiske, A. (2021). Gender differences in male depression and suicide risk. Violence and Gender, 8(2), 80-84. https://doi.org/10.1089/vio.2020.0087

Cuijpers, P., & Smit, F. (2008). Subclinical depression: A clinically relevant condition? European Psychiatry, 50(8), 519-528. https://doi.org/10.1016/S0924-9338(10)70153-X

Cuijpers, P., Vogelzangs, N., Twisk, J., Kleiboer, A., Li, J., & Penninx, B. W. (2014). Comprehensive meta-analysis of excess mortality in depression in the general community versus patients with specific illnesses. American Journal of Psychiatry, 171(4), 453-462. https://doi.org/10.1176/appi.ajp.2013.13030325

Currier, D., Pirkis, J., Carlin, J., Degenhardt, L., Dharmage, S. C., Giles-Corti, B., Gordon, I., Gurrin, L., Hocking, J., Kavanagh, A., Keogh, L. A., Koelmeyer, R., LaMontagne, A. D., Schlichthorst, M., Patton, G., Sanci, L., Spittal, M. J., Studdert, D. M., Williams, J., & English, D. R. (2016). The Australian Longitudinal Study on Male Health - methods. BMC Public Health, 16(3), 1030-1043. https://doi.org/10.1186/s12889-016-3698-1

Cyranowski, J. M., Frank, E., Young, E., & Shear, M. K. (2000). Adolescent onset of the gender gifference in lifetime rates of major depression: A theoretical model. Archives of General Psychiatry, 57(1), 21-27. https://doi.org/10.1001/archpsyc.57.1.21

DeVellis, R. F. (2016). Scale development: Theory and applications (4th ed., Vol. 26). Sage Publications.

Djernes, J. K. (2006). Prevalence and predictors of depression in populations of elderly: A review. Acta Psychiatrica Scandinavica, 113(5), 372-387. https://doi.org/10.1111/j.1600-0447.2006.00770.x

Faustino, B., Vasco, A. B., Farinha-Fernandes, A., & Delgado, J. (2021). Psychological inflexibility as a transdiagnostic construct: Relationships between cognitive fusion,

psychological well-being and symptomatology. Current Psychology https://doi.org/10.1007/s12144-021-01943-w

Ferenchick, E. K., Ramanuj, P., & Pincus, H. A. (2019). Depression in primary care: Part 1—screening and diagnosis. BMJ, 365, l794-1804. https://doi.org/10.1136/bmj.l794

Fiske, A., Wetherell, J. L., & Gatz, M. (2009). Depression in older adults. Annual Review of Clinical Psychology, 5(1), 363-389. https://doi.org/10.1146/annurev.clinpsy.032408.153621

Friedrich, M. J. (2017). Depression is the leading cause of disability around the world. JAMA, 317(15), 1517-1517. https://doi.org/10.1001/jama.2017.3826

Galambos, N. L. (2013). Gender and gender role development in adolescence. In R. M. Lerner & L. Steinberg (Eds.), Handbook of adolescent psychology (pp. 233-262). John Wiley & Sons. https://doi.org/10.1002/9780471726746.ch8

Genuchi, M. C. (2015). Anger and hostility as primary externalizing features of depression in college men. International Journal of Men's Health, 14(2), 113-128.

Genuchi, M. C., & Mitsunaga, L. K. (2015). Sex differences in masculine depression: Externalizing symptoms as a primary feature of depression in men. The Journal of Men's Studies, 23. https://doi.org/10.1177/1060826514561986

Genuchi, M. C., & Valdez, J. N. (2015). The role of anger as a component of a masculine variation of depression. Psychology of Men & Masculinity, 16(2), 149-159. https://doi.org/10.1037/a0036155

Gerdes, Z. T., & Levant, R. F. (2018). Complex relationships among masculine norms and health/well-being outcomes: Correlation patterns of the Conformity to Masculine Norms Inventory subscales. American Journal of Men's Health, 12(2), 229-240. https://doi.org/10.1177/1557988317745910

Gillanders, D. T., Bolderston, H., Bond, F. W., Dempster, M., Flaxman, P. E., Campbell, L., Kerr, S., Tansey, L., Noel, P., Ferenbach, C., Masley, S., Roach, L., Lloyd, J., May, L., Clarke, S., & Remington, B. (2014). The development and initial validation of the Cognitive Fusion Questionnaire. Behavior Therapy, 45(1), 83-101. https://doi.org/10.1016/j.beth.2013.09.001

Goldberg, D. (2011). The heterogeneity of "major depression". World Psychiatry, 10(3), 226-228. https://doi.org/10.1002/j.2051-5545.2011.tb00061.x

Hamilton, C., & Mahalik, J. (2009). Minority stress, masculinity, and social norms predicting gay men's health risk behaviors. Journal of Counseling Psychology, 56(1), 132-141. https://doi.org/10.1037/a0014440

Harris, M. G., Diminic, S., Reavley, N., Baxter, A., Pirkis, J., & Whiteford, H. A. (2015). Males' mental health disadvantage: An estimation of gender-specific changes in service utilisation for mental and substance use disorders in Australia. Australian & New Zealand Journal of Psychiatry, 49(9), 821-832. https://doi.org/10.1177/0004867415577434

Harvey, S. B., Deady, M., Wang, M. J., Mykletun, A., Butterworth, P., Christensen, H., & Mitchell, P. B. (2017). Is the prevalence of mental illness increasing in Australia? Evidence from national health surveys and administrative data, 2001–2014. Medical Journal of Australia, 206(11), 490-493. https://doi.org/10.5694/mja16.00295

Hayes, A. F. (2014). Introduction to mediation, moderation, and conditional process analysis: A regression-based approach. Guilford Press.

Hayes, S. C. (2004). Acceptance and commitment therapy, relational frame theory, and the third wave of behavioral and cognitive therapies. Behavior Therapy, 35(4), 639-665. https://doi.org/10.1016/S0005-7894(04)80013-3

Hayes, S. C., Strosahl, K., & Wilson, K. G. (2012). Acceptance and commitment therapy: The process and practice of mindful change (2nd ed.). Guilford Press.

Hayes, S. C., Strosahl, K., Wilson, K. G., Bissett, R. T., Pistorello, J., Toarmino, D., Polusny, M. A., Dykstra, T. A., Batten, S. V., Bergan, J., Stewart, S. H., Zvolensky, M. J., Eifert, G. H., Bond, F. W., Forsyth, J. P., Karekla, M., & McCurry, S. M. (2004). Measuring experiential avoidance: A preliminary test of a working model. The Psychological Record, 54(4), 553-578. https://doi.org/10.1007/BF03395492

Herreen, D., Rice, S. M., Currier, D., Schlichthorst, M., & Zajac, I. T. (2021). Associations between conformity to masculine norms and depression: Age effects from a population study of Australian men. BMC Psychology, 9(1), 32-42. https://doi.org/10.1186/s40359-021-00533-6

Herrman, H., Kieling, C., McGorry, P., Horton, R., Sargent, J., & Patel, V. (2019). Reducing the global burden of depression: A Lancet–World Psychiatric Association Commission. The Lancet, 393(10189), e42-e43. https://doi.org/10.1016/S0140-6736(18)32408-5

Hetrick, S. E., Parker, A. G., Hickie, I. B., Purcell, R., Yung, A. R., & McGorry, P. D. (2008). Early identification and intervention in depressive disorders: Towards a clinical staging model. Psychotherapy and Psychosomatics, 77(5), 263-270. https://doi.org/10.1159/000140085

Hinton, L., Zweifach, M., Tang, L., Unützer, J., & Oishi, S. (2006). Gender disparities in the treatment of late-life depression: Qualitative and quantitative findings from the IMPACT trial. The American Journal of Geriatric Psychiatry, 14(10), 884-892. https://doi.org/10.1097/01.JGP.0000219282.32915.a4

Hu, L. t., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural Equation Modeling, 6(1), 1-55. https://doi.org/10.1080/10705519909540118

Hurd Clarke, L., & Lefkowich, M. (2018). 'I don't really have any issue with masculinity': Older Canadian men's perceptions and experiences of embodied masculinity. Journal of Aging Studies, 45, 18-24. https://doi.org/10.1016/j.jaging.2018.01.003

Hutton, C., & Gunn, J. (2007). Do longer consultations improve the management of psychological problems in general practice? A systematic literature review. BMC Health Services Research, 7(1), 71-86. https://doi.org/10.1186/1472-6963-7-71

Iwamoto, D. K., Brady, J., Kaya, A., & Park, A. (2018). Masculinity and depression: A longitudinal investigation of multidimensional masculine norms among college men. American Journal of Men's Health, 12(6), 1873-1881. https://doi.org/10.1177/1557988318785549

Iwamoto, D. K., Liao, L., & Liu, W. M. (2010). Masculine norms, avoidant coping, Asian values and depression among Asian American men. Psychology of Men & Masculinity, 11(1), 15-24. https://doi.org/10.1037/a0017874

JASP Team. (2020). JASP (Version 0.13.1) [Computer software].

Jensen, H. V., Munk, K. P., & Madsen, S. A. (2010). Gendering late-life depression? The coping process in a group of elderly men. Nordic Psychology, 62(2), 56-80. https://doi.org/10.1027/1901-2276/a000011

Johnson, J. G., Harris, E. S., Spitzer, R. L., & Williams, J. B. W. (2002). The patient health questionnaire for adolescents: Validation of an instrument for the assessment of mental disorders among adolescent primary care patients. Journal of Adolescent Health, 30(3), 196-204. https://doi.org/10.1016/S1054-139X(01)00333-0

Johnson, J. L., Oliffe, J. L., Kelly, M. T., Galdas, P., & Ogrodniczuk, J. S. (2012). Men's discourses of help-seeking in the context of depression. Sociology of Health & Illness, 34(3), 345-361. https://doi.org/10.1111/j.1467-9566.2011.01372.x

Kagesten, A., Gibbs, S., Blum, R. W., Moreau, C., Chandra-Mouli, V., Herbert, A., & Amin, A. (2016). Understanding factors that shape gender attitudes in early adolescence globally: A mixed-methods systematic review. PLOS ONE, 11(6). https://doi.org/10.1371/journal.pone.0157805

Kato, T. (2012). Development of the coping flexibility scale: Evidence for the coping flexibility hypothesis. Journal of Counseling Psychology, 59(2), 262-273. https://doi.org/10.1037/a0027770

Kealy, D., Seidler, Z. E., Rice, S. M., Oliffe, J. L., Ogrodniczuk, J. S., & Kim, D. (2021). Challenging assumptions about what men want: Examining preferences for psychotherapy among men attending outpatient mental health clinics. Professional Psychology, Research and Practice, 52(1), 28-33. https://doi.org/10.1037/pro0000321

Kendler, K. S., & Gardner, C. O. (2014). Sex differences in the pathways to major depression: A study of opposite-sex twin pairs. American Journal of Psychiatry, 171(4), 426-435. https://doi.org/10.1176/appi.ajp.2013.13101375

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. T., Walters, E. E., & Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. Psychological Medicine, 32(6), 959-976. https://doi.org/10.1017/S0033291702006074

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., Rush, A. J., Walters, E. E., & Wang, P. S. (2003). The epidemiology of major depressive disorder:

Results from the National Comorbidity Survey Replication (NCS-R). JAMA, 289(23), 3095-3105. https://doi.org/10.1001/jama.289.23.3095

Kessler, R. C., & Bromet, E. J. (2013). The epidemiology of depression across cultures. Annual Review of Public Health, 34(1), 119-138. https://doi.org/10.1146/annurev-publhealth-031912-114409

King, K., Dow, B., Keogh, L., Feldman, P., Milner, A., Pierce, D., Chenhall, R., & Schlichthorst, M. (2020). “Is life worth living?”: The role of masculinity in the way men aged over 80 talk about living, dying, and suicide. American Journal of Men's Health, 14(5). https://doi.org/10.1177/1557988320966540

King, K., Rice, S. M., Schlichthorst, M., Chondros, P., & Pirkis, J. (2021). Gender norms and the wellbeing of girls and boys. The Lancet Global Health, 9(4), e398. https://doi.org/10.1016/S2214-109X(20)30551-9

King, K., Schlichthorst, M., Millar, C., Sutherland, G., & Too, L. S. (2020). Understanding the context of suicides by older men compared with younger old men and women: An exploration of coronial data in Victoria, Australia. Crisis, 43(1), 67-71. https://doi.org/10.1027/0227-5910/a000747

Kok, R. M., & Reynolds, C. F., III. (2017). Management of depression in older adults: A review. JAMA, 317(20), 2114-2122. https://doi.org/10.1001/jama.2017.5706

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a brief depression severity measure. Journal of General Internal Medicine, 16(9), 606-613. https://doi.org/10.1046/j.1525-1497.2001.016009606.x

Kroenke, K., Spitzer, R. L., Williams, J. B. W., & Löwe, B. (2010). The Patient Health Questionnaire somatic, anxiety, and depressive symptom scales: A systematic

review. General Hospital Psychiatry, 32(4), 345-359. https://doi.org/10.1016/j.genhosppsych.2010.03.006

Kuehner, C. (2014). Is it all depression? JAMA Psychiatry, 71(3), 337-337. https://doi.org/10.1001/jamapsychiatry.2013.4334

Kuehner, C. (2017). Why is depression more common among women than among men? The Lancet Psychiatry, 4(2), 146-158. https://doi.org/10.1016/s2215-0366(16)30263-2

Kunst, L. E., de Groot, J., & van der Does, A. J. W. (2019). Ambivalence over expression of anger and sadness mediates Gender differences in depressive symptoms. Cognitive Therapy and Research, 43(2), 365-373. https://doi.org/10.1007/s10608-018-9937-2

Kuring, J. K., Mathias, J. L., & Ward, L. (2020). Risk of dementia in persons who have previously experienced clinically-significant depression, anxiety, or PTSD: A systematic review and meta-analysis. Journal of Affective Disorders, 274, 247-261. https://doi.org/10.1016/j.jad.2020.05.020

Laidlaw, K., & Pachana, N. (2009). Aging, mental health, and demographic change: Challenges for psychotherapists. Professional Psychology: Research and Practice, 40(6), 601-608. https://doi.org/10.1037/a0017215

Lakkis, N. A., & Mahmassani, D. M. (2015). Screening instruments for depression in primary care: A concise review for clinicians. Postgraduate Medicine, 127(1), 99-106. https://doi.org/10.1080/00325481.2015.992721

Levant, R. F. (2011). Research in the psychology of men and masculinity using the gender role strain paradigm as a framework. American Psychologist, 66(8), 765-776. https://doi.org/10.1037/a0025034

Levant, R. F., McDermott, R., Parent, M., Alshabani, N., Mahalik, J., & Hammer, J. (2020). Development and evaluation of a new short form of the Conformity to Masculine

Norms Inventory (CMNI-30). Journal of Counseling Psychology, 67(5), 622-636. https://doi.org/10.1037/cou0000414

Levant, R. F., Webster, B. A., Stanley, J. T., & Thompson, E. H. (2020). The Aging Men's Masculinity Ideologies Inventory (AMMII): Dimensionality, variance composition, measurement invariance by gender, and validity. Psychology of Men & Masculinities, 21(1), 46-57. https://doi.org/10.1037/men0000208

Levant, R. F., Wimer, D. J., Williams, C. M., Smalley, K. B., & Noronha, D. (2009). The relationships between masculinity variables, health risk behaviors and attitudes toward seeking psychological help. International Journal of Men's Health, 8(1), 3-21. https://doi.org/10.3149/jmh.0801.3

Levin, M. E., MacLane, C., Daflos, S., Seeley, J. R., Hayes, S. C., Biglan, A., & Pistorello, J. (2014). Examining psychological inflexibility as a transdiagnostic process across psychological disorders. Journal of Contextual Behavioral Science, 3(3), 155-163. https://doi.org/10.1016/j.jcbs.2014.06.003

Levis, B., Yan, X. W., He, C., Sun, Y., Benedetti, A., & Thombs, B. D. (2019). Comparison of depression prevalence estimates in meta-analyses based on screening tools and rating scales versus diagnostic interviews: A meta-research review. BMC Medicine, 17(1), 65-75. https://doi.org/10.1186/s12916-019-1297-6

Lieblich, S. M., Castle, D. J., Pantelis, C., Hopwood, M., Young, A. H., & Everall, I. P. (2015). High heterogeneity and low reliability in the diagnosis of major depression will impair the development of new drugs. BJPsych Open, 1(2), e5-e7. https://doi.org/10.1192/bjpo.bp.115.000786

Lin, J., Zou, L., Lin, W., Becker, B., Yeung, A., Cuijpers, P., & Li, H. (2021). Does gender role explain a high risk of depression? A meta-analytic review of 40 years of evidence.

Journal of Affective Disorders, 294, 261-278. https://doi.org/10.1016/j.jad.2021.07.018

Linde, K., Rücker, G., Sigterman, K., Jamil, S., Meissner, K., Schneider, A., & Kriston, L. (2015). Comparative effectiveness of psychological treatments for depressive disorders in primary care: Network meta-analysis. BMC Family Practice, 16(1), 103-117. https://doi.org/10.1186/s12875-015-0314-x

Liu, W. M., & Iwamoto, D. K. (2007). Conformity to masculine norms, asian values, coping strategies, peer group influences and substance use among Asian American men. Psychology of Men & Masculinity, 8(1), 25-39. https://doi.org/10.1037/1524-9220.8.1.25

Lotfaliany, M., Bowe, S. J., Kowal, P., Orellana, L., Berk, M., & Mohebbi, M. (2018, 2018/12/01/). Depression and chronic diseases: Co-occurrence and communality of risk factors. Journal of Affective Disorders, 241, 461-468. https://doi.org/10.1016/j.jad.2018.08.011

Lucas, J. J., & Moore, K. A. (2020). Psychological flexibility: Positive implications for mental health and life satisfaction. Health Promotion International, 35(2), 312-320. https://doi.org/10.1093/heapro/daz036

Macdonald, J. A., Greenwood, C. J., Francis, L. M., Harrison, T. R., Graeme, L. G., Youssef, G. J., Di Manno, L., Skouteris, H., Fletcher, R., Knight, T., Williams, J., Milgrom, J., & Olsson, C. A. (2020). Profiles of depressive symptoms and anger in men: Associations with postpartum family functioning. Frontiers in Psychiatry, 11, 578114-578128. https://doi.org/10.3389/fpsyt.2020.578114

Magovcevic, M., & Addis, M. (2008). The Masculine Depression Scale: Development and psychometric evaluation. Psychology of Men & Masculinity, 9(3), 117-132. https://doi.org/10.1037/1524-9220.9.3.117

Mahalik, J. R., Levi-Minzi, M., & Walker, G. (2007). Masculinity and health behaviors in Australian men. Psychology of Men & Masculinity, 8(4), 240-249. https://doi.org/10.1037/1524-9220.8.4.240

Mahalik, J. R., Locke, B., Ludlow, L., Diemer, M., Scott, R., Gottfried, M., & Freitas, G. (2003). Development of the Conformity to Masculine Norms Inventory. Psychology of Men & Masculinity, 4(1), 3-25. https://doi.org/10.1037/a0015481

Mahalik, J. R., & Rochlen, A. B. (2006). Men's likely responses to clinical depression: What are they and do masculinity norms predict them? Sex Roles, 55(9), 659-667. https://doi.org/10.1007/s11199-006-9121-0

Mahalik, J. R., Talmadge, W. T., Locke, B. D., & Scott, R. P. J. (2005). Using the Conformity to Masculine Norms Inventory to work with men in a clinical setting. Journal of Clinical Psychology, 61(6), 661-674. https://doi.org/10.1002/jclp.20101

Malhi, G. S., & Mann, J. J. (2018). Depression. The Lancet, 392(10161), 2299-2312. https://doi.org/10.1016/S0140-6736(18)31948-2

Mankowski, E. S., & Smith, R. M. (2016). Men's mental health and masculinities. In H. S. Friedman (Ed.), Encyclopedia of mental health (2nd ed., pp. 66-74). Academic Press. https://doi.org/10.1016/B978-0-12-397045-9.00182-8

Martin, L. A., Neighbors, H. W., & Griffith, D. M. (2013). The experience of symptoms of depression in men vs women: Analysis of the National Comorbidity Survey Replication. JAMA Psychiatry, 70(10), 1100-1106. https://doi.org/10.1001/jamapsychiatry.2013.1985

Martin, S., Zajac, I. T., Vincent, A., Adams, R. J., Appleton, S., & Wittert, G. A. (2021). Effect of depression on health service utilisation in men: A prospective cohort study of Australian men aged 35 to 80 years. BMJ Open, 11(3), e044893. https://doi.org/10.1136/bmjopen-2020-044893

Mauvais-Jarvis, F., Bairey Merz, N., Barnes, P. J., Brinton, R. D., Carrero, J.-J., DeMeo, D. L., De Vries, G. J., Epperson, C. N., Govindan, R., Klein, S. L., Lonardo, A., Maki, P. M., McCullough, L. D., Regitz-Zagrosek, V., Regensteiner, J. G., Rubin, J. B., Sandberg, K., & Suzuki, A. (2020). Sex and gender: Modifiers of health, disease, and medicine. The Lancet, 396(10250), 565-582. https://doi.org/10.1016/S0140-6736(20)31561-0

McAteer, G., & Gillanders, D. (2019). Investigating the role of psychological flexibility, masculine self-esteem and stoicism as predictors of psychological distress and quality of life in men living with prostate cancer. European Journal of Cancer Care, 28(4), e13097. https://doi.org/10.1111/ecc.13097

McDermott, R., Levant, R., Hammer, J., Borgogna, N., & McKelvey, D. (2018). Development and validation of a five-item Male Role Norms Inventory using bifactor modeling. Psychology of Men & Masculinities, 20(4), 467-477. https://doi.org/10.1037/men0000178

McDermott, R., Smith, P., Borgogna, N., Booth, N., Granato, S., & Sevig, T. (2018). College students' conformity to masculine role norms and help-seeking intentions for suicidal thoughts. Psychology of Men & Masculinity, 19(3), 340-351. https://doi.org/10.1037/men0000107

McLaughlin, K. A. (2011). The public health impact of major depression: A call for interdisciplinary prevention efforts. Prevention Science 12(4), 361-371. https://doi.org/10.1007/s11121-011-0231-8

Milner, A., Kavanagh, A., King, T., & Currier, D. (2018). The influence of masculine norms and occupational factors on mental health: Evidence from the baseline of the Australian Longitudinal Study on Male Health. American Journal of Men's Health, 12(4), 696-705. https://doi.org/10.1177/1557988317752607

Milner, A., Shields, M., & King, T. (2019). The influence of masculine norms and mental health on health literacy among men: Evidence from the Ten to Men study. American Journal of Men's Health, 13(5), 1-9. https://doi.org/10.1177/1557988319873532

Mitchell, A. J., & Coyne, J. C. (2007). Do ultra-short screening instruments accurately detect depression in primary care? A pooled analysis and meta-analysis of 22 studies. British Journal of General Practice, 57(535), 144-151.

Mitchell, A. J., Rao, S., & Vaze, A. (2010). Do primary care physicians have particular difficulty identifying late-life depression? A meta-analysis stratified by age. Psychotherapy and Psychosomatics, 79(5), 285-294. https://doi.org/10.1159/000318295

Möller-Leimkühler, A. M. (2003). The gender gap in suicide and premature death or: why are men so vulnerable? European Archives of Psychiatry and Clinical Neuroscience, 253(1), 1-8. https://doi.org/10.1007/s00406-003-0397-6

Möller-Leimkühler, A. M., & Yücel, M. (2010). Male depression in females? Journal of Affective Disorders, 121(1), 22-29. https://doi.org/10.1016/j.jad.2009.05.007

Muir-Cochrane, E., O'Kane, D., Barkway, P., Oster, C., & Fuller, J. (2014). Service provision for older people with mental health problems in a rural area of Australia. Aging & Mental Health, 18(6), 759-766. https://doi.org/10.1080/13607863.2013.878307

Murphy, B. J., Bugeja, L. C., Pilgrim, J. L., & Ibrahim, J. E. (2018). Suicide among nursing home residents in Australia: A national population-based retrospective analysis of medico-legal death investigation information. International Journal of Geriatric Psychiatry, 33(5), 786-796. https://doi.org/10.1002/gps.4862

Nolen-Hoeksema, S. (2012). Emotion regulation and psychopathology: The role of gender. Annual Review of Clinical Psychology, 8(1), 161-187. https://doi.org/10.1146/annurev-clinpsy-032511-143109

Nordentoft, M., Mortensen, P. B., & Pedersen, C. B. (2011). Absolute risk of suicide after first hospital contact in mental disorder. Archives of General Psychiatry, 68(10), 1058-1064. https://doi.org/10.1001/archgenpsychiatry.2011.113

O'Neil, J. M. (2008). Summarizing 25 years of research on men's gender role conflict using the gender role conflict scale: New research paradigms and clinical implications. The Counseling Psychologist, 36(3), 358-445. https://doi.org/10.1177/0011000008317057

O'Neil, J. M., Helms, B. J., Gable, R. K., David, L., & Wrightsman, L. S. (1986). Gender-role conflict scale: College men's fear of femininity. Sex Roles, 14(5), 335-350. https://doi.org/10.1007/BF00287583

Oliffe, J. L., Han, C. S. E., Ogrodniczuk, J. S., Phillips, J. C., & Roy, P. (2011). Suicide from the perspectives of older men who experience depression: A gender analysis. American Journal of Men's Health, 5(5), 444-454. https://doi.org/10.1177/1557988311408410

Oliffe, J. L., & Phillips, M. J. (2008, 2008/09/01). Men, depression and masculinities: A review and recommendations. Journal of Men's Health, 5(3), 194-202. https://doi.org/10.1016/j.jomh.2008.03.016

Oliffe, J. L., Rasmussen, B., Bottorff, J. L., Kelly, M. T., Galdas, P. M., Phinney, A., & Ogrodniczuk, J. S. (2013). Masculinities, work, and retirement among older men who experience depression. Qualitative Health Research, 23(12), 1626-1637. https://doi.org/10.1177/1049732313509408

Oliffe, J. L., Rossnagel, E., Seidler, Z. E., Kealy, D., Ogrodniczuk, J. S., & Rice, S. M. (2019). Men's depression and suicide. Current Psychiatry Reports, 21(10), 1-6. https://doi.org/10.1007/s11920-019-1088-y

Owen, J. (2010). Assessing the factor structures of the 55- and 22-item versions of the Conformity to Masculine Norms Inventory. American Journal of Men's Health, 5(2), 118-128. https://doi.org/10.1177/1557988310363817

Pachana, N. (2014). Ageing and psychological disorders. In E. Rieger (Ed.), Abnormal psychology (3rd ed., pp. 447-491). McGraw Hill.

Pather, S., & Uys, C. S. (2008). Using scale reduction techniques for improved quality of survey information. South African Journal of Information Management, 10(3). https://doi.org/10.4102/sajim.v10i3.322

Peak, T., & Gast, J. A. (2014). Aging men's health-related behaviors. SAGE Open, 4(4), 1-10. https://doi.org/10.1177/2158244014558044

Pirkis, J., Currier, D., Carlin, J., Degenhardt, L., Dharmage, S. C., Giles-Corti, B., Gordon, I. R., Gurrin, L. C., Hocking, J. S., Kavanagh, A., Keogh, L., Koelmeyer, R., LaMontagne, A. D., Patton, G., Sanci, L., Spittal, M. J., Schlichthorst, M., Studdert, D., Williams, J., & English, D. R. (2016). Cohort profile: Ten to Men (the Australian Longitudinal Study on Male Health). International Journal of Epidemiology, 46(3), 793-804. https://doi.org/10.1093/ije/dyw055

Pirkis, J., Macdonald, J., & English, D. R. (2016). Introducing Ten to Men, the Australian Longitudinal Study on Male Health. BMC Public Health, 16(3), 1044-1048. https://doi.org/10.1186/s12889-016-3697-2

Pirkis, J., Pfaff, J., Williamson, M., Tyson, O., Stocks, N., Goldney, R., Draper, B., Snowdon, J., Lautenschlager, N., & Almeida, O. P. (2009). The community prevalence of depression in older Australians. Journal of Affective Disorders, 115(1), 54-61. https://doi.org/10.1016/j.jad.2008.08.014

Pirkis, J., Spittal, M. J., Keogh, L., Mousaferiadis, T., & Currier, D. (2017). Masculinity and suicidal thinking. Social Psychiatry and Psychiatric Epidemiology, 52(3), 319-327. https://doi.org/10.1007/s00127-016-1324-2

Pleck, J. H. (1995). The gender role strain paradigm: An update. In R. F. Levant & W. Pollack (Eds.), A new psychology of men (pp. 11-32). Basic Books.

Pompper, D. (2010). Masculinities, the metrosexual, and media images: Across dimensions of age and ethnicity. Sex Roles, 63(9), 682-696. https://doi.org/10.1007/s11199-010-9870-7

Price, E. C., Gregg, J. J., Smith, M. D., & Fiske, A. (2018). Masculine traits and depressive symptoms in older and younger men and women. American Journal of Men's Health, 12(1), 19-29. https://doi.org/10.1177/1557988315619676

Rabinowitz, F. E., & Cochran, S. V. (2008). Men and therapy: A case of masked male depression. Clinical Case Studies, 7(6), 575-591. https://doi.org/10.1177/1534650108319917

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. Applied Psychological Measurement, 1(3), 385-401. https://doi.org/10.1177/014662167700100306

Revilla, M. A., Saris, W. E., & Krosnick, J. A. (2013). Choosing the number of categories in agree–disagree scales. Sociological Methods & Research, 43(1), 73-97. https://doi.org/10.1177/0049124113509605

Ribeiro, J. D., Huang, X., Fox, K. R., & Franklin, J. C. (2018). Depression and hopelessness as risk factors for suicide ideation, attempts and death: Meta-analysis of longitudinal studies. British Journal of Psychiatry, 212(5), 279-286. https://doi.org/10.1192/bjp.2018.27

Rice, S. M. (2011). Depression in men: Development of the Male Depression Risk Scale [Doctoral dissertation, Australian Catholic University]. https://doi.org/10.4226/66/5a96219dc6874

Rice, S. M., Aucote, H., Mariamöller-Leimkühler, A., Parker, A., Kaplan, R., Seidler, Z., Dhillon, H., & Amminger, G. (2016). Conformity to masculine norms and the mediating role of internalised shame on men's depression: Findings from an Australian community sample. International Journal of Men's Health, 15(2), 157-164. https://doi.org/10.3149/jmh.1502.157

Rice, S. M., Aucote, H., Moller-Leimkuhler, A., & Amminger, G. (2017). Confirmatory factor analysis of the Gotland Male Depression Scale in an Australian community sample. European Journal of Psychological Assessment, 33(3), 190-195. https://doi.org/10.1027/1015-5759/a000287

Rice, S. M., Fallon, B., & Bambling, M. (2011). Men and depression: The impact of masculine role norms throughout the lifespan. The Australian Educational and Developmental Psychologist, 28(2), 133-144. https://doi.org/10.1375/aedp.28.2.133

Rice, S. M., Fallon, B. J., Aucote, H. M., Möller-Leimkühler, A., Treeby, M. S., & Amminger, G. P. (2015). Longitudinal sex differences of externalising and internalising depression

symptom trajectories: Implications for assessment of depression in men from an online study. International Journal of Social Psychiatry, 61(3), 236-240. https://doi.org/10.1177/0020764014540149

Rice, S. M., Fallon, B. J., Aucote, H. M., & Möller-Leimkühler, A. M. (2013). Development and preliminary validation of the Male Depression Risk Scale: Furthering the assessment of depression in men. Journal of Affective Disorders, 151(3), 950-958. https://doi.org/10.1016/j.jad.2013.08.013

Rice, S. M., Kealy, D., Ogrodniczuk, J. S., Seidler, Z. E., Denehy, L., & Oliffe, J. L. (2020). The cost of bottling it up: Emotion suppression as a mediator in the relationship between anger and depression among men with prostate cancer. Cancer Management and Research, 12, 1039-1046. https://doi.org/10.2147/CMAR.S237770

Rice, S. M., Kealy, D., Oliffe, J. L., & Ogrodniczuk, J. S. (2018). Male-type depression symptoms linked to broader psychopathology. Journal of Affective Disorders, 235, 523-524. https://doi.org/10.1016/j.jad.2018.04.062

Rice, S. M., Kealy, D., Oliffe, J. L., & Ogrodniczuk, J. S. (2019). Externalizing depression symptoms among Canadian males with recent suicidal ideation: A focus on young men. Early Intervention in Psychiatry, 13(2), 308-313. https://doi.org/10.1111/eip.12667

Rice, S. M., Kealy, D., Oliffe, J. L., Seidler, Z. E., & Ogrodniczuk, J. S. (2018). Affective-somatic symptoms of depression, suicide risk and exposure to childhood maltreatment: Data from emerging adults to older-age males. International Journal of Mental Health and Addiction, 17(6), 1301-1311. https://doi.org/10.1007/s11469-018-0045-z

Rice, S. M., Kealy, D., Seidler, Z. E., Oliffe, J. L., Levant, R. F., & Ogrodniczuk, J. S. (2020). Male-type and prototypal depression trajectories for men experiencing mental

health problems. International Journal of Environmental Research and Public Health, 17(19), 7322-7337. https://doi.org/10.3390/ijerph17197322

Rice, S. M., Ogrodniczuk, J. S., Kealy, D., Seidler, Z. E., Dhillon, H. M., & Oliffe, J. L. (2019). Validity of the Male Depression Risk Scale in a representative Canadian sample: Sensitivity and specificity in identifying men with recent suicide attempt. Journal of Mental Health, 28(2), 132-140. https://doi.org/10.1080/09638237.2017.1417565

Rice, S. M., Oliffe, J. L., Kealy, D., & Ogrodniczuk, J. S. (2018). Male depression subtypes and suicidality: Latent profile analysis of internalizing and externalizing symptoms in a representative Canadian sample. The Journal of Nervous and Mental Disease, 206(3), 169-172. https://doi.org/10.1097/NMD.0000000000000739

Rice, S. M., Oliffe, J. L., Kelly, M. T., Cormie, P., Chambers, S., Ogrodniczuk, J. S., & Kealy, D. (2018). Depression and prostate cancer: Examining comorbidity and male-specific symptoms. American Journal of Men's Health, 12(6), 1864–1872. https://doi.org/10.1177/1557988318784395

Rice, S. M., Oliffe, J. L., Seidler, Z. E., Borschmann, R., Pirkis, J., Reavley, N., & Patton, G. (2021). Gender norms and the mental health of boys and young men. The Lancet Public Health, 6(8), e541-e542. https://doi.org/10.1016/S2468-2667(21)00138-9

Robbins, M. J., Wester, S. R., & McKean, N. B. (2016). Masculinity across the life span: Implications for older men. In Y. J. Wong & S. R. Wester (Eds.), APA handbook of men and masculinities (pp. 389-409). American Psychological Association. https://doi.org/10.1037/14594-018

Rochelle, T. (2015). Masculinity, health behavior, and age: An examination of Hong Kong Chinese men. Psychology of Men & Masculinity, 16(3), 294-303. https://doi.org/10.1037/a0038203

Rodda, J., Walker, Z., & Carter, J. (2011). Depression in older adults. BMJ, 343(7825), 683-687. https://doi.org/10.1136/bmj.d5219

Rutz, W., von Knorring, L., Pihlgren, H., Rihmer, Z., & Wålinder, J. (1995). Prevention of male suicides: Lessons from Gotland study. The Lancet 345(8948), 524-524. https://doi.org/10.1016/S0140-6736(95)90622-3

Rutz, W., Wålinder, J., Von Knorring, L., Rihmer, Z., & Pihlgren, H. (1997). Prevention of depression and suicide by education and medication: impact on male suicidality. An update from the Gotland study. International Journal of Psychiatry in Clinical Practice, 1(1), 39-46. https://doi.org/10.3109/13651509709069204

Salk, R., Hyde, J., & Abramson, L. (2017). Gender differences in depression in representative national samples: Meta-analyses of diagnoses and symptoms. Psychological Bulletin, 143(8), 783-822. https://doi.org/10.1037/bul0000102

Schaakxs, R., Comijs, H. C., Lamers, F., Kok, R. M., Beekman, A. T. F., & Penninx, B. W. J. H. (2018). Associations between age and the course of major depressive disorder: A 2-year longitudinal cohort study. The Lancet Psychiatry, 5(7), 581-590. https://doi.org/10.1016/S2215-0366(18)30166-4

Schaffer, A., Sinyor, M., Kurdyak, P., Vigod, S., Sareen, J., Reis, C., Green, D., Bolton, J., Rhodes, A., Grigoriadis, S., Cairney, J., & Cheung, A. (2016). Population-based analysis of health care contacts among suicide decedents: Identifying opportunities for more targeted suicide prevention strategies. World Psychiatry, 15(2), 135-145. https://doi.org/10.1002/wps.20321

Schofield, D., Cunich, M., Shrestha, R., Tanton, R., Veerman, L., Kelly, S., & Passey, M. (2019). Indirect costs of depression and other mental and behavioural disorders for Australia

from 2015 to 2030. BJPsych Open, 5(3), e40-e47. https://doi.org/10.1192/bjo.2019.26

Seidler, Z. E., Dawes, A. J., Rice, S. M., Oliffe, J. L., & Dhillon, H. M. (2016, 2016/11/01/). The role of masculinity in men's help-seeking for depression: A systematic review. Clinical Psychology Review, 49, 106-118. https://doi.org/https://doi.org/10.1016/j.cpr.2016.09.002

Seidler, Z. E., Rice, S. M., Ogrodniczuk, J. S., Oliffe, J. L., Shaw, J. M., & Dhillon, H. M. (2019). Men, masculinities, depression: Implications for mental health services from a delphi expert consensus study. Professional Psychology: Research and Practice, 50(1), 51-61. https://doi.org/10.1037/pro0000220

Seidler, Z. E., Rice, S. M., River, J., Oliffe, J. L., & Dhillon, H. M. (2018). Men's mental health services: The case for a masculinities model. The Journal of Men's Studies, 26(1), 92-104. https://doi.org/10.1177/1060826517729406

Seidler, Z. E., Wilson, M. J., Owen, J., Oliffe, J. L., Ogrodniczuk, J. S., Kealy, D., & Rice, S. M. (2021). Teaching gender competency with men in mind: Foundations of an online training program for mental health practitioners. The Journal of Men's Studies, 30(1), 111-131. https://doi.org/10.1177/10608265211035941

Seidler, Z. E., Wilson, M. J., Toogood, N., Oliffe, J. L., Kealy, D., Ogrodniczuk, J. S., Owen, J., Lee, G., & Rice, S. (2022). Pilot evaluation of the men in mind training program for mental health practitioners. Psychology of Men & Masculinities. Advance online publication. https://doi.org/10.1037/men0000383

Sileo, K. M., & Kershaw, T. S. (2020). Dimensions of masculine norms, depression, and mental health service utilization: Results from a prospective cohort study among

emerging adult men in the United States. American Journal of Men's Health, 14(1), 1-16. https://doi.org/10.1177/1557988320906980

Simms, L., Zelazny, K., Williams, T., & Bernstein, L. (2019). Does the number of response options matter? Psychometric perspectives using personality questionnaire data. Psychological Assessment, 31(4), 557-566. https://doi.org/10.1037/pas0000648

Smiler, A. P. (2006). Conforming to masculine norms: Evidence for validity among adult men and women. Sex Roles, 54(11), 767-775. https://doi.org/10.1007/s11199-006-9045-8

Smith, D. T., Mouzon, D. M., & Elliott, M. (2018). Reviewing the assumptions about men's mental health: An exploration of the gender binary. American Journal of Men's Health, 12(1), 78-89. https://doi.org/10.1177/1557988316630953

Smith, J. A., Braunack-Mayer, A., Wittert, G., & Warin, M. (2007). “I've been independent for so damn long!”: Independence, masculinity and aging in a help seeking context. Journal of Aging Studies, 21(4), 325-335. https://doi.org/10.1016/j.jaging.2007.05.004

Spendelow, J. S. (2015). Men's self-reported coping strategies for depression: A systematic review of qualitative studies. Psychology of Men & Masculinity, 16(4), 439-447. https://doi.org/10.1037/a0038626

Spendelow, J. S., & Joubert, H. E. (2018). Does experiential avoidance mediate the relationship between gender role conflict and psychological distress? American Journal of Men’s Health, 12(4), 688-695. https://doi.org/10.1177/1557988317748123

Spendelow, J. S., & Seidler, Z. E. (2020). Men's self-initiated coping strategies across medical, psychological, and psychosocial issues: A systematic review. Psychology of Men & Masculinities, 21(1), 106-123. https://doi.org/10.1037/men0000216

Spittal, M. J., Carlin, J. B., Currier, D., Downes, M., English, D. R., Gordon, I., Pirkis, J., & Gurrin, L. (2016). The Australian Longitudinal Study on Male Health sampling design and survey weighting: implications for analysis and interpretation of clustered data. BMC Public Health, 16, 1062-1062. https://doi.org/10.1186/s12889-016-3699-0

Springer, K. W., & Mouzon, D. M. (2011). "Macho Men" and preventive health care: Implications for older men in different social classes. Journal of Health and Social Behavior, 52(2), 212-227. https://doi.org/10.1177/0022146510393972

Stanton, J. M., Sinar, E. F., Balzer, W. K., & Smith, P. C. (2002). Issues and strategies for reducing the length of self-report scales. Personnel Psychology, 55(1), 167-194. https://doi.org/10.1111/j.1744-6570.2002.tb00108.x

Stewart, R. A. (2020). Men's externalising depression: Invariance of the Male Depression Risk Scale and latent symptom profiles among African American and European American Men [Doctoral dissertation, Georgia State University]. https://scholarworks.gsu.edu/cps_diss/138

Stolk, Y., Kaplan, I., & Szwarc, J. (2014). Clinical use of the Kessler psychological distress scales with culturally diverse groups. International Journal of Methods in Psychiatric Research, 23(2), 161-183. https://doi.org/10.1002/mpr.1426

Streb, J., Ruppel, E., Möller-Leimkühler, A.-M., Büsselmann, M., Franke, I., & Dudeck, M. (2021). Gender-specific differences in depressive behavior among forensic psychiatric patients. Frontiers in Psychology, 12, 1. https://doi.org/10.3389/fpsyg.2021.639191

Strough, J., Leszczynski, J. P., Neely, T. L., Flinn, J. A., & Margrett, J. (2007). From adolescence to later adulthood: Femininity, masculinity, and androgyny in six age groups. Sex Roles, 57(5), 385-396. https://doi.org/10.1007/s11199-007-9282-5

Taber, K. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. Research in Science Education, 48(6), 1273-1296. https://doi.org/10.1007/s11165-016-9602-2

Tannenbaum, C., & Frank, B. (2011). Masculinity and health in late life men. American Journal of Men's Health, 5(3), 243-254. https://doi.org/10.1177/1557988310384609

The Royal Australian College of General Practitioners. (2018). General practice: Health of the nation 2018. RACGP.

Thompson, E., & Bennett, K. (2015). Measurement of masculinity ideologies: A (critical) review. Psychology of Men & Masculinity, 16(2), 115-133. https://doi.org/10.1037/a0038609

Thompson, E., & Langendoerfer, K. B. (2015). Older men's blueprint for "being a man". Men and Masculinities, 19(2), 119-147. https://doi.org/10.1177/1097184X15606949

Uddin, M. N., & Islam, F. M. A. (2020). Psychometric evaluation of the modified Kessler seven-item version (K7) for measuring psychological distress using Rasch analysis: A cross-sectional study in a rural district of Bangladesh. BMJ Open, 10(2), e034523. https://doi.org/10.1136/bmjopen-2019-034523

Uher, R., Payne, J. L., Pavlova, B., & Perlis, R. H. (2014). Major depressive disorder in DSM-5: Implications for clinical practice and research of changes from DSM-IV. Depression and Anxiety, 31(6), 459-471. https://doi.org/10.1002/da.22217

Vafaei, A., Ahmed, T., Freire, A. d. N. F., Zunzunegui, M. V., & Guerra, R. O. (2016). Depression, sex and gender roles in older adult populations: The International Mobility in Aging Study (IMIAS). PLOS ONE, 11(1), e0146867. https://doi.org/10.1371/journal.pone.0146867

Van de Velde, S., Bracke, P., & Levecque, K. (2010). Gender differences in depression in 23 European countries. Cross-national variation in the gender gap in depression. Social Science & Medicine, 71(2), 305-313. https://doi.org/10.1016/j.socscimed.2010.03.035

Walther, A., Grub, J., Ehlert, U., Wehrli, S., Rice, S., Seidler, Z. E., & Debelak, R. (2021). Male depression risk, psychological distress, and psychotherapy uptake: Validation of the German version of the Male Depression Risk Scale. Journal of Affective Disorders Reports, 4, 100107-100115. https://doi.org/10.1016/j.jadr.2021.100107

Wang, Y., Hunt, K., Nazareth, I., Freemantle, N., & Petersen, I. (2013). Do men consult less than women? An analysis of routinely collected UK general practice data. BMJ Open, 3(8), e003320. https://doi.org/10.1136/bmjopen-2013-003320

Wen, Z., & Fan, X. (2015). Monotonicity of effect sizes: Questioning Kappa-squared as mediation effect size measure. Psychological Methods, 20(2), 193-203. https://doi.org/10.1037/met0000029

Whittle, E. L., Fogarty, A. S., Tugendrajch, S., Player, M. J., Christensen, H., Wilhelm, K., Hadzi-Pavlovic, D., & Proudfoot, J. (2015). Men, depression, and coping: Are we on the right path? Psychology of Men & Masculinity, 16(4), 426-438. https://doi.org/10.1037/a0039024

Wide, J., Mok, H., McKenna, M., & Ogrodniczuk, J. S. (2011). Effect of gender socialization on the presentation of depression among men: A pilot study. Canadian Family Physician, 57(2), 74-78.

Wiktorsson, S., Runeson, B., Skoog, I., Östling, S., & Waern, M. (2010). Attempted suicide in the elderly: Characteristics of suicide attempters 70 years and older and a general

population comparison group. The American Journal of Geriatric Psychiatry, 18(1), 57-67. https://doi.org/10.1097/JGP.0b013e3181bd1c13

Wilkinson, P., Ruane, C., & Tempest, K. (2018). Depression in older adults. BMJ, 363. https://doi.org/10.1136/bmj.k4922

Wilson, S., & Durbin, C. E. (2010). Effects of paternal depression on fathers' parenting behaviors: A meta-analytic review. Clinical Psychology Review, 30(2), 167-180. https://doi.org/10.1016/j.cpr.2009.10.007

Wong, Y., Ho, M.-H., Wang, S.-Y., & Miller, I. (2017). Meta-analyses of the relationship between conformity to masculine norms and mental health-related outcomes. Journal of Counseling Psychology, 64(1), 80-93. https://doi.org/10.1037/cou0000176

World Health Organization. (2014). Preventing suicide: A global imperative. https://apps.who.int/iris/handle/10665/131056

World Health Organization. (2017). Depression and other common mental disorders: Global health estimates. https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf

World Health Organization. (2019). International statistical classification of diseases and related health problems (11th ed.) https://icd.who.int/

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & Leirer, V. O. (1982). Development and validation of a geriatric depression screening scale: A preliminary report. Journal of Psychiatric Research, 17(1), 37-49. https://doi.org/10.1016/0022-3956(82)90033-4

Yousaf, O., Popat, A., & Hunter, M. (2015). An investigation of masculinity attitudes, gender, and attitudes toward psychological help-seeking. Psychology of Men & Masculinity, 16(2), 234-237. https://doi.org/10.1037/a0036241

Zajac, I. T., Rice, S., Proeve, M., Kealy, D., Oliffe, J. L., & Ogrodniczuk, J. S. (2020). Suicide risk, psychological distress and treatment preferences in men presenting with prototypical, externalising and mixed depressive symptomology. Journal of Mental Health, 1-8. https://doi.org/10.1080/09638237.2020.1755026

Zierau, F., Bille, A., Rutz, W., & Bech, P. (2002). The Gotland Male Depression Scale: A validity study in patients with alcohol use disorder. Nordic Journal of Psychiatry, 56(4), 265-271. https://doi.org/10.1080/08039480260242750

Zunzunegui, M. V., Minicuci, N., Blumstein, T., Noale, M., Deeg, D., Jylhä, M., & Pedersen, N. L. (2007). Gender differences in depressive symptoms among older adults: A cross-national comparison. Social Psychiatry and Psychiatric Epidemiology, 42(3), 198-207. https://doi.org/10.1007/s00127-007-0158-3