ASSIGNMENT COVERSHEET

MASTER OF PSYCHOLOGY (CLINICAL)

RESEARCH PROJECT IN CLINICAL PSYCHOLOGY

PART 1 – LITERATURE REVIEW

"Depression, Suicide and the Male Depressive Phenotype"

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Abstract

Worldwide, women are diagnosed with depression at a rate of approximately 2-to-1 compared to males. Depression is a significant risk factor for suicide and is implicated in around 50% of cases. In contrast to the differential in depression diagnoses between men and women, men are at significantly increased risk of suicide and account for 80% of all completed suicided in Australia. As a result of this finding, increased interest has been devoted to understanding the presentation of depression in men in order to better identify at risk individuals. The present review considers this phenomenon, the male depressive phenotype, and recent attempts to develop clinical tools to detect men at risk.

Mental Health and Depression: A Brief Overview

Mental health disorders present a significant public health challenge throughout both developing and developed nations. Globally, these conditions account for around a quarter of all health related disability, with a recent study showing 22.9% of years lived with a disability (YLDs) were due to these disorders (Whiteford et al., 2013). In stark contrast to this, cardiovascular disease and cancer accounted for only 2.8% and 0.6% of YLDs, respectively (Whiteford et al., 2013). In Australia, the prevalence of mental health disorders is high. Analysis of the 2007 Australian National Survey of Mental Health and Wellbeing indicated that almost half of the population will experience one of these disorders (lifetime prevalence of 45.5%), with 1/5th of the population impacted annually (12-month prevalence of 20%; Slade, Johnston, Browne, Andrews, & Whiteford, 2009). This estimate of prevalence is consistent with a national survey conducted 10 years earlier (Henderson, Andrews, & Hall, 2000), highlighting the chronicity of these conditions in Australia.

Anxiety and Depression are well-known terms used to describe mental disorders. However, they both reflect a range of specific conditions possessing common symptoms. In the case of depression, common diagnoses include major depressive disorder, dysthymia, and bipolar disorder, all of which share symptoms of uncharacteristically low mood and loss of interest and pleasure, amongst others (American Psychiatric Association, 2013). Anxiety disorders include generalised anxiety disorder, social anxiety disorder and panic disorder, all of which encompass symptoms such as fear and worry, with physiological impacts being increased heart and breathing rates (American Psychiatric Association, 2013).

Notable differences exist in the prevalence and impact of each of these broad conditions. Anxiety disorders appear more prevalent, with global estimates suggesting 12.9% lifetime incidence (Steel et al., 2014). Figures in Australia are notably higher than this, with 26.3% of the population experiencing an anxiety disorder during their lifetime (Slade et al., 2009), and an apparent increase in 12-month prevalence rates from 1997 (9.7%, Henderson et al., 2000) to 2007 (14.4%, Slade et al.,

2009). Depressive disorders are reported to have a lower global lifetime prevalence of 9.6% (Steel et al., 2014), with estimates of 15.0% lifetime prevalence in Australia (Slade et al., 2009), and from 5.8% to 6.2% annually (Henderson et al., 2000; Slade et al., 2009).

Despite the higher prevalence of anxiety disorders, depression is argued to have greater impact on a range of important outcomes. For example, international research has documented that depressive disorders account for 42.5% of all years lived with a mental health disorder, and 40.5% of all disability adjusted life years (Whiteford et al., 2013). Australian data show that depression has a greater impact on daily function, with 6/30 days significantly impacted (e.g., absence from work), compared to 4/30 for anxiety, and 1.5/30 in people without a mental health disorder (Slade et al., 2009). Similarly, when comparing severity, individuals with depression are more likely to have moderate-to-severe symptoms compared to anxiety, which is often considered mild-to-moderate (Slade et al., 2009).

Beyond these impacts, depressive disorders are co-morbid with a range of physical conditions. It often co-occurs with chronic diseases such as angina, arthritis, asthma and diabetes and most importantly, incrementally worsens these (Moussavi et al., 2007). This impact is generally reflected in the significantly increased all-cause mortality rate of people suffering depression compared to those without (Cuijpers & Smit, 2002; Dew et al., 2016; Schulz et al., 2000; Seymour & Benning, 2018) . Furthermore, the independence of depression as a risk factor for mortality is demonstrated in studies comparing individuals with the same chronic conditions such as cardiovascular disease, or following organ transplant, which show increased mortality in depressed patients compared to non-depressed counterparts (Dew et al., 2016; Seymour & Benning, 2018). Although the direction of the relationship between depression and poor health outcomes remains inconclusive, it is likely to reflect a complex system of behavioural, societal and physical factors and thus requires continued research (Seymour & Benning, 2018).

Gender differences in Depression

Internationally, there has been a trend toward common mental disorders replacing chronic diseases in terms of personal burden. In Australia, the cost of treating depression alone has grown to around $12.6 billion (Harvey et al., 2017). Despite this widespread impact, there is a stark difference in the incidence of depressive disorders amongst men and women. Depression rates in men are consistently found to be nearly half those of women (Kessler, Berglund, Demler, Jin, & Walters, 2005) and it has been reported that this difference is evident in almost every setting including Western and non-Western countries (Martin, Neighbors, & Griffith, 2013). This gender discrepancy also holds across diagnostic subtypes including major depression, dysthymia, atypical depression and even seasonal winter depression (Piccinelli & Wilkinson, 2000).

Research has shown that this discrepancy is pervasive, emerging during adolescence and persisting through adult life (Girgus & Yang, 2015; Piccinelli & Wilkinson, 2000). A recent meta-analysis considered both depression diagnosis and depressive symptoms across gender and age groups (Salk, Hyde, & Abramson, 2017). At age 12, the odds of a depression diagnosis were 3 times higher in females than males. Although this difference decreased somewhat during adulthood, depression was diagnosed at an almost consistent 2:1 female-to-male ratio from early adulthood. Regarding self-reported symptoms, analysis of differences showed they were more prevalent in females than men. However, when the difference in diagnosis rates and symptom levels are expressed in standardized effect sizes, as shown in Figure 1, it becomes apparent that the difference in symptoms *is less* than that for depression diagnoses. In other words, more men are potentially experiencing depressive symptoms than are diagnosed with this disorder. Plausible explanations for this include: 1) typical depressive symptoms in males are not considered extensive enough to warrant a diagnosis (Martin et al., 2013); 2) that men display a reluctance to interact with the health system thus precluding a diagnosis (Brownhill, Wilhelm, Eliovson, & Waterhouse, 2003; Johnson, Oliffe, Kelly, Galdas, & Ogrodniczuk, 2012; Rice, Aucote, et al., 2017); or 3) there is something

qualitatively different about depression in men compared to women precluding its identification (Rice et al., 2015).

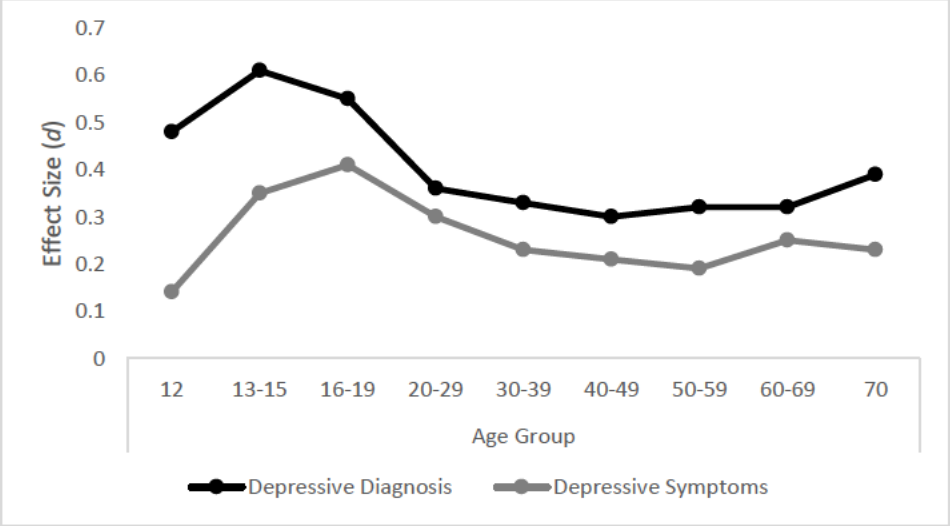


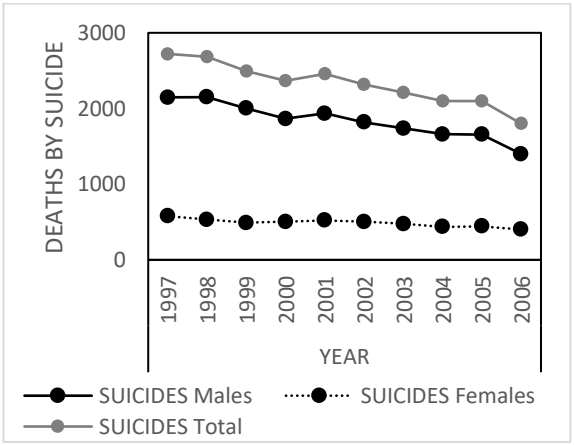
Figure 1. Standardised differences in depression diagnosis and depressive symptom levels in women compared to men across the lifespan. Figure adapted from (Salk et al., 2017)

Gender differences in Suicide incidence

One of the most concerning realities of depressive disorders is their relationship with increased suicide risk. Depression, and particularly major depressive disorder, is one of the strongest predictors of suicide (Yoshimasu, Kiyohara, & Miyashita, 2008), suicide attempts (Chen & Dilsaver, 1996), and non-suicidal self-harm (Jacobson & Gould, 2007). A meta-analysis of the link between depression and suicide noted odds as high as 66-to-1 for completed suicides in depressed persons compared to non-depressed, with the overall mean odds indicating completed suicides were 13 times more common as a result of depression. In fact, depression is regarded as one of the top three risk factors for suicide (Kaplan & Sadock, 1998).

Like the phenomenon of persistent gender differences in depression and associated symptoms, there is a clear and ongoing discrepancy in suicide rates. However, the difference is opposite to that for depression in that risk is significantly higher for males. Suicide is the leading

cause of death for men aged under 44 years, with similar rates evident in males aged >75 years (Harrison, Pointer, & Elnour, 2009). Overall, it accounts for around one-quarter of all male deaths across age groups (Beaton & Forster, 2012), and men account for around three-quarters of all suicides in Australia (Harrison et al., 2009).



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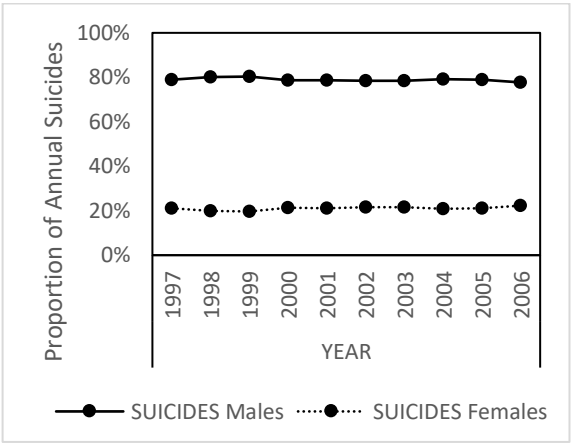

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Figure 1. Deaths by suicide (1997 to 2006) in Australia (1*a*), and the proportion of completed suicides attributable to males and females (1*b*).

Figures 1*a* and 1*b* provide an overview of trends in suicide in Australia from 1997 to 2006; adapted from Harrison et al (2009). Although the total number of deaths by suicide decreased significantly across these years, the relative proportion attributed to males remained constant; around 80%. Whilst the decrease in suicides is through to be the result of increased gun control in Australia, there have been corresponding increases by other means including the combination hanging/strangulation/suffocation, which increased from 46% of suicides in 1997 to 67% in 2006 (Harrison et al., 2009). More detailed analyses of completed suicides in Australia since 1986 suggests that current levels are not too dissimilar to historical averages (Qi, Hu, Page, & Tong, 2014). In fact, the decline since 1997 is likely the result of uncharacteristically high completed suicides around that period, particularly in males aged 15 to 34 years (Qi et al., 2014). The average rate of

death by suicide between 1986 and 2005 is estimated at 20.3 for males compared to 5.17 for females (per 100 000). Results also demonstrate that compared to men in urban areas, suicide rates increased in regional and rural males whereas this pattern was reversed for females (higher rates in urban areas).

Whilst the incidence of completed suicides is consistently higher in males, the gender discrepancy reverses for suicidal ideation and non-fatal attempts and is referred to as the 'gender paradox of suicidal behaviour' (Canetto & Sakinofsky, 1998). In Australia, the lifetime cumulative incidence of suicidal ideation has been estimated at 18.2% for females and 13.2% for males, with a near two-fold increase (4.5% compared to 2.5%) in suicide attempts in females (Pirkis, Burgess, & Dunt, 2000). Researchers have argued that links between ideation, attempts and eventual completed suicide indicate a 'suicidal process' which is argued to be shorter in males than females (Neeleman, de Graaf, & Vollebergh, 2004). Overall, these findings highlight the need for the development of clinical tools to identify men at increased risk of depression and ultimately, suicide (Schrijvers, Bollen, & Sabbe, 2012).

Is there evidence for a male depressive syndrome?

The link between suicide and depression is undeniable and the disparity between suicide rates and the incidence of depression in men is of clinical importance (Brownhill, Wilhelm, Barclay, & Schmied, 2005). Academics have considered whether the difference in depression prevalence between sexes is absolute and indicative of a distinct phenotype, or instead reflects the unique depression experiences of men in terms of how they cope with it (Fields & Cochran, 2011). A number of studies have considered these possibilities with results providing mixed evidence. Winkler, Pjrek and Kasper (2005b) reviewed the literature and noted mixed findings regarding differences in the presentation of depression in men and women concluding that when they are present, the magnitude is generally weak. In a more recent meta-analysis (Cavanagh, Wilson, Kavanagh, & Caputi, 2017) males were found to report greater alcohol and drug misuse, and higher risk taking due to

poor impulse control. The same analysis showed significantly lower levels in males for typical depressive symptoms such as depressed mood, appetite disturbance and sleep disturbance (Cavanagh et al., 2017). All effects, regardless of gender-direction, were generally small in magnitude.

One of the more widely researched differences between men and women in relation to depression concerns the manifestation of externalising symptoms including anger and irritability. In a sample of adolescents, males with depression were found to score significantly higher on externalising problems than non-depressed controls (Imbach, Aebi, Metzke, Bessler, & Steinhausen, 2013). However, other research showed that whilst boys scored higher on expressive anger this did not translate to increased depression risk (Cox, Stabb, & Hulgus, 2000). In adults, anger attacks were increased two-fold in depressed men compared to women, although there was no difference in underlying irritability (Winkler, Pjrek, & Kasper, 2005a). The presence of anger was also found to be significantly related to depression levels in men with a variety of common mental disorders (i.e., not exclusively depression) but the same was found for women, suggesting a link between these regardless of gender (Newman, Fuqua, Gray, & Simpson, 2006).

It has been suggested that externalising symptoms in depressed men are linked with poor impulse control and risk taking (Addis, 2008). This has been found to manifest as increased substance abuse, including alcohol. For example, Angst et al. (2002) explored symptoms in a large sample of men and women who had been treated for depression. Analyses of results showed that almost twice as many men reported a need to consume alcohol to cope during a depressive episode than women (19% compared to 11%). Similarly, Martin et al. (2013) reported that endorsement of alcohol and other substance abuse, as well as risk taking, was significantly higher in depressed males compared to females.

Whether the pattern of male depression itself is different—i.e., the disorder manifests as aggression, risk taking and substance abuse—or whether these symptoms appear as a result of an

attempt to cope with the more traditional feelings encapsulated by this disorder (loneliness, loss of pleasure and sleep difficulties) remains unresolved. What appears most consistent, however, is that masculinity and its expression play a key role (Addis, 2008). Attempts to adhere to masculine norms (e.g., stoicism) leads to developmental and intrapsychic strain in men, which is associated with a higher incidence of depression (Mahalik & Cournoyer, 2000). Under this framework, it is the result of attempting to *conform* to norms that leads to increased distressed and psychopathology. An alternative understanding is that masculine norms dictate how to cope with depression and negative affect more broadly (Addis, 2008). In other words, although the same symptoms underlying depression might be present in men and women, the expression of these in terms of psychosocial functioning is qualitatively different. Supporting these theories is research which shows that conformity to masculine norms is linked with alcohol abuse (McCreary, Newcomb, & Sadava, 1999), emotional suppression (Wong, Pituch, & Rochlen, 2006), and a reluctance to seek help (Addis & Mahalik, 2003). All of these factors are considered potentially unique to the male experiences of depression (Rice, Fallon, Aucote, & Moller-Leimkuhler, 2013). Regardless of the validity or otherwise of a unique male depressive phenotype, the disconnect between low depression diagnoses in men despite a significant increased risk for suicide indicates the need for improved understanding of men's experiences of this disorder in order to better identify those in need of appropriate care.

Male Depression Screening Tools

Numerous studies have attempted to unpack depression in men and women in terms of their experiences of depression, with mixed results regarding differences in a range of atypical symptoms discussed above. However, a critical problem with such studies regards the clinical tools used to classify depression itself. Addis (Addis, 2008) has described that such research inadvertently misses those individuals it seeks to identify because of the potential absence of traditional symptoms—or at least the extent or reporting them—in some males, thus precluding high scores on traditional measures. There is therefore a dire need to identify these individuals by developing tools to screen for atypical depressive symptoms in order to enable diagnosis and appropriate treatment.

The first scale purporting to measure a unique male depressive phenotype was the Gotland Male Depression Scale (GMDS: Zierau, Bille, Rutz, & Bech, 2002). Recognising the need to improve the detection of depression in men, the GMDS was formulated to include measures of atypical markers including irritability, aggression, impulsiveness and alcohol use, as well as prototypical symptoms (low mood, hopelessness, fatigue and sleep disturbance). Initial investigations appeared promising and showed the GMDS was successful at detecting additional cases of depression classified per diagnostic criteria (Zierau et al., 2002). Subsequent investigations (Sigurdsson, Palsson, Aevarsson, Olafsdottir, & Johannsson, 2015) suggested that it performed equally-or-better than the gold standard Beck Depression Inventory (BDI) in a community sample of males. Moreover, of fifteen potential cases missed by the traditional BDI but detected by the GMDS, nine were confirmed (60%) through psychiatric interview to be suffering from a depressive disorder (Sigurdsson et al., 2015). These individuals had increased irritability and stress intolerance, key symptoms missed by the BDI but present in some cases of male depression.

Despite results suggesting that the GMDS might be a useful screening tool for men, it has been criticised for various reasons (Rice et al., 2013). First, a number of studies have not been able to validate the *a priori* two-factor structure of the GMDS (Innamorati et al., 2011; Moller-Leimkuhler, Bottlender, Strauss, & Rutz, 2004; Moller-Leimkuhler & Yucel, 2010). One such study suggested that twelve of the thirteen items comprising the scale measured a single depression construct (Innamorati et al., 2011), with other studies suggesting from three (Moller-Leimkuhler & Yucel, 2010) to five factor solutions being appropriate (Moller-Leimkuhler et al., 2004). The most recent investigation of its factor structure indicated two underlying factors but the loadings of items across them differed from the original model and between different cultural groups (Sharpley, Bitsika, Christie, & Hunter, 2017). Second, the supposed masculine underpinnings of the GMDS are compromised by the reported absence of a difference between mean ratings of men and women. Innamorati et al.(Innamorati et al., 2011) showed that whilst the GMDS was sensitive to recent suicide attempts, scores were not significantly different between males and females with a

diagnosed psychiatric disorder. Moller-Leimkuhler & Yucel (Moller-Leimkuhler & Yucel, 2010) reported that in their sample of university students, females endorsed all but two items (emptiness, and excessive alcohol consumption) of the GMDS to a greater extent resulting in significantly higher scores for females compared to males. Moreover, their results indicated that high adherence to masculine norms in both males and females was significantly *inversely* related to depression (Moller-Leimkuhler & Yucel, 2010).

The GMDS has received the most attention from academics but in light of its inherent limitations, other scales have been attempted. Although not technically a screening instrument, Brownhill et al. (2003) developed a 'prompt list' to facilitate discussion regarding mental health between men and their primary care physicians and although it was successful in achieving this, it has not been researched subsequently. Magovcevic & Addis (2008) reported on the development of their Masculine Depression Scale (MDS) which included internalising and externalising factors. Their results demonstrated that men who conformed to hegemonic masculine norms scored significantly higher on the externalising factor, and the scale overall related strongly to traditional depression measures including the BDI (Magovcevic & Addis, 2008). The MDS has been used in some subsequent publications (Genuchi & Mitsunaga, 2015; Price, Gregg, Smith, & Fiske, 2018), but the necessary evaluation of its psychometric properties and structural stability in diverse samples remains to be assessed. Finally, Martin et al. (2013) developed an alternative Male Symptoms Scale (MSS) and also a Gender Inclusive Depression Scale (GIDS). They demonstrated greater depression prevalence in males when using the MSS, and equivalent rates with women when using the GIDS. Neither of these scales appears to have been used again in published studies.

Recently, Rice and colleagues have directed considerable effort towards development of the Male Depression Risk Scale (MDRS: see Rice et al., 2015; Rice et al., 2013; Rice, Kealy, Oliff, & Ogrodniczuk, 2018; Rice, Kealy, Oliffe, & Ogrodniczuk, 2018; Rice, Ogrodniczuk, et al., 2017). They have argued that limitations of current tools including the unreliable factor structure and

inconsistent results across genders of the GMDS, and the limited two dimensional structure of the MDS, warranted the design of a new psychometrically sound and *multidimensional* screening tool for men. Initial development (Rice et al., 2013) of the MDRS involved reducing, through a variety of exploratory and confirmatory factor analyses, an initial set of 82 potential items down to a 22-item screening tool measuring six symptoms: Emotional suppression, drug use, alcohol use, anger & aggression, somatic symptoms and risk taking. The items comprising the MDRS and their respective domains are shown in Findings to date regarding the MDRS have been promising and align with theory regarding the role of masculinity and externalizing symptoms in men's experience of depression. More specifically, it has been shown to retain structural stability across males and females (Rice et al., 2013), longitudinally within individuals (Rice et al., 2015), and across different cultural groups (Rice, Ogrodniczuk, et al., 2017). Results have also shown that scores on the MDRS are significantly correlated with traditional measures of depression (the Patient Health Questionnaire, PHQ), and that it is sensitive over time to negative life events (Rice et al., 2015). Conformity to masculine norms has been shown to result in high MDRS scores in both males and females, and a trend towards greater sex differentiation within MDRS subscales as conformity to masculine norms increased in men was also observed (Rice et al., 2013).

Table 1. As can be seen, these items have little overlap with typical depression symptoms such as feelings of worthlessness, poor appetite, loss of pleasure and sleeping too much.

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Table 1. Items and respective domains comprising the Male Depression Risk Scale (Rice, Ogrodniczuk, et al., 2017)

EMOTIONAL SUPPRESSION	**DRUG USE**	**ALCOHOL USE**	**SOMATIC COMPLAINTS**	**AGGRESSION**	**RISK TAKING**
I bottled up my negative feelings	I used drugs to cope	I needed alcohol to help me unwind	I had unexplained aches and pains	I was verbally aggressive to others	I drove dangerously or aggressively

I tried to ignore feeling down	Using drugs provided temporary relief	I needed to have easy access to alcohol	I had stomach pains	I verbally lashed out at others without being provoked	I stopped caring about the consequences of my actions
I covered up my difficulties	I sought out drugs	I drank more alcohol than usual	I had regular headaches	It was difficult to manage my anger	I took unnecessary risks
I had to work things out by myself		I stopped feeling so bad while drinking	I had more heartburn than usual	I overreacted to situations with aggressive behaviour	

In light of the stark contrast in suicide rates between males and females, the motivation behind the development of scales to detect male depression is to improve the identification of individuals at risk of suicidal behaviour. The MDRS has performed well in this regard, too. In terms of recent suicide attempts in men, the MDRS identified significantly more (85%) cases than the traditional PHQ depression measure (54%; Rice, Ogrodniczuk, et al., 2017). Moreover, after accounting for internalizing symptoms, higher externalizing of depression symptoms in young men indicated recent suicidal ideation (Rice, Kealy, Oliffe, et al., 2018). Taken overall, the MDRS has proved effective with regard to detecting depression in men by measuring atypical depressive symptoms, and for detecting men at increased risk of self harm.

Future directions for male depression research

The last fifteen years has seen burgeoning interest in the concept of a male depressive phenotype with research focussing on differences in depressive symptomology between males and females but also the development of unique clinical tools to better detect this disorder in men. As

discussed by Addis (2008), the development of these tools provides an opportunity to identify a unique but theoretically important subset of individuals. Such individuals are arguably those experiencing a manifestation of depression most aligned with the notion of a male depressive phenotype characterised by high levels of atypical symptoms such as aggression and risk taking (including substance use), and correspondingly low or at least subthreshold traditional symptoms.

To date, studies of male depression measures have focussed more broadly on the relation of these to traditional measures, as well as to psychological constructs thought to be implicated in this phenotype. The GMDS was found to have significant overlap with the major depression inventory (r=.77, Zierau et al., 2002), the MDS correlated strongly with the BDI (*r*=~.80, Magovcevic & Addis, 2008) and the MDRS related to the PHQ-9 (*r*=.70 Rice et al., 2013). The presence of notably strong correlations between these indicates that individuals who score high on a traditional measure also score high on male-specific measures. This ultimately raises doubts about the clinical utility of these tools in terms of their ability to detect additional cases of depression in men. Despite tools such as the MDRS and MDS relating to constructs theoretically important in the manifestation of male depression, such as masculinity (Magovcevic & Addis, 2008; Rice et al., 2013), it remains to be demonstrated that these measures identify a *unique subset* of depressed men.

A recent analysis of young males reported that the MDRS did appear sensitive to detecting this subgroup (Rice, Kealy, Oliffe, et al., 2018). Around 27% of cases in males aged 18 to 25 years and 31% of cases in those aged 26 to 35 years were missed by a traditional depression measure (PHQ-9) yet had significantly elevated MDRS scores. No further information was provided about this group regarding the extent to which these individuals displayed unique psychopathology. As previously suggested by Addis (2008), an important goal for future research is to better utilise male depression measures in order to elucidate the nature of individuals who are unidentified by traditional depression measures yet display elevated atypical symptoms. Such research is critical in terms of answering a range of questions important both to better understanding this phenotype and

informing clinical practice. As discussed by Fields and Cochran (2011), symptoms often evident to clinicians including anger and interpersonal conflict, gender role conflict, work difficulties, threats to self-esteem, difficulties identifying and describing emotions, and increased substance may well be indicative of depression in men. Studies that seek to focus on such individuals might ultimately promote the increased utilisation of such tools in clinical practice as a means of screening for depression and better identifying males at risk of poor outcomes including suicide.

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PART 2 – RESEARCH REPORT

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Typical, Atypical and Mixed Depression Presentations in Men; Underlying Psychopathology and Suicidal Risk

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Abstract

Despite the higher prevalence of depression in women, men are at significantly increased risk of completed suicide. In light of this paradox, research has sought to improve the identification of this disorder in men. A male-depressive phenotype has been proposed to include a broad range of externalising behaviours such as irritability, aggression and substance misuse. Studies have typically shown, however, that the presence of these symptoms are strongly linked with internalised depressive symptomology. No studies have considered the presence or otherwise of a unique atypical presentation consisting solely of externalising symptoms. Therefore, the current study considered the prevalence of typical, mixed and atypical depressive presentations in a sample of *N*=1000 Canadian males. The proportions classified into distinct depressive profiles was: typical (8%), mixed (12%) and atypical (11%). All groups had significantly elevated psychopathology (alexithymia, grandiose and vulnerable narcissism, and general psychological distress) relative to not-depressed participants. Furthermore, risk of mental illness and suicidal behaviour was significantly elevated in all depressed groups, with an atypical presentation being 20-times (OR=20.64) more likely to be suffering a moderate mental illness, and almost 5-times (OR=4.80) more likely to exhibit current suicidal behaviour relative to not depressed. These results highlight the clinical importance of considering a range of presentations of depression in men, all of which have increased risk, and demonstrate that men with comorbid externalising symptoms have the highest risk of poor outcomes.

Keywords: externalizing symptoms, masculine depression, masked depression, suicidal behaviour, mental illness

Mental health disorders account for around a quarter of all health related disability and are a significant public health challenge (Whiteford et al., 2013). In Australia, the prevalence of mental health disorders is high with half of the population expected to experience one of these disorders during their lifetime (Slade, Johnston, Browne, Andrews, & Whiteford, 2009). Anxiety and depressive disorders are the most common and notable differences exist in terms of the prevalence and impact of each of these broad conditions, with anxiety disorders showing consistently higher lifetime prevalence (12.9%) than depressive disorders (9.6%: Steel et al., 2014). Despite this, depression is argued to have greater impact on a range of important outcomes including more years lived with a disability (Whiteford et al., 2013), greater impact on daily functioning and workforce participation (Slade et al., 2009), and leads to early mortality when comorbid with physical disease (Cuijpers & Smit, 2002; Dew et al., 2016; Schulz et al., 2000; Seymour & Benning, 2018). Moreover, a higher proportion of individuals suffering depression present with severe and chronic symptoms (Slade et al., 2009).

Despite its widespread impact, depression rates in men are consistently found to be nearly half those of women (Kessler, Berglund, Demler, Jin, & Walters, 2005). This difference is evident in almost every setting including Western and non-Western countries (Martin, Neighbors, & Griffith, 2013), and the difference holds across diagnostic subtypes including major depression, dysthymia, atypical depression and even seasonal winter depression (Piccinelli & Wilkinson, 2000). Moreover, this difference is pervasive, emerging during adolescence and persisting through adult life (Girgus & Yang, 2015; Piccinelli & Wilkinson, 2000). One of the most concerning realities of depressive disorders is their relationship with increased suicide risk. Depression, and particularly major depressive disorder, is one of the strongest predictors of suicide (Yoshimasu, Kiyohara, & Miyashita,

2008), suicide attempts (Chen & Dilsaver, 1996), and non-suicidal self-harm (Jacobson & Gould, 2007). However, contrary to the sex differences evident for depression, men account for around three-quarters of all completed suicides (Harrison, Pointer, & Elnour, 2009). This is the leading cause of death for men aged under 44 years (Harrison et al., 2009) and accounts for around one-quarter of male deaths across all age groups (Beaton & Forster, 2012). Although the incidence of completed suicides is consistently higher in males, ideation and non-fatal attempts are higher in females, which highlights what has been referred to as the 'gender paradox of suicidal behaviour' (Canetto & Sakinofsky, 1998).

The presence of higher rates of depression in females juxtaposed with higher male suicides has piqued increased interest in this discrepancy over the last decade-or-so. A range of reasons have been proposed for this including that typical depressive symptoms in males are often not considered significant enough to warrant a diagnosis (Martin et al., 2013), or that men's reluctance to interact with the health system precludes diagnosis (Brownhill, Wilhelm, Eliovson, & Waterhouse, 2003; Johnson, Oliffe, Kelly, Galdas, & Ogrodniczuk, 2012; Rice, Aucote, et al., 2017). An alternative explanation is that there may be something qualitatively different about depression in men compared to women (Rice et al., 2015). Thus, academics have considered whether sex differences in depression reflect a unique experience of this disorder in men in terms of how they cope with it (Fields & Cochran, 2011).

One of the more widely explored theories is that externalising symptoms are more prevalent in depressed males. Research has shown that adolescent males with depression score significantly higher on externalising problems than non-depressed controls (Imbach, Aebi, Metzke, Bessler, & Steinhausen, 2013), and that males generally score higher on measures of expressive anger than females (Cox, Stabb, & Hulgus, 2000). In adults, anger attacks are increased two-fold in depressed men compared to women (Winkler, Pjrek, &

Kasper, 2005) and anger has been found to be significantly related to depression levels (Newman, Fuqua, Gray, & Simpson, 2006). Other externalising symptoms including poor impulse control and risk taking may also be implicated (Addis, 2008). This generally manifests as increased substance abuse (including alcohol) and studies demonstrate that endorsement of alcohol and other substance abuse, as well as risk taking, is significantly higher in depressed males than females (Martin et al., 2013). The literature has shown twice as many men (19%) report a need to consume alcohol to cope during a depressive episode than do women (11%) (Angst et al., 2002).

Whether male depression itself is unique—i.e., the disorder manifests as aggression, risk taking and substance abuse—or whether these symptoms appear as a result of an attempt to cope with the more traditional internalized feelings encapsulated by this disorder (loneliness, loss of pleasure and sleep difficulties) remains unresolved. What appears more consistent, however, is that masculinity and its expression play an important role (Addis, 2008), as do men's difficulties with identifying and describing emotions; otherwise termed alexithymia (Sullivan, Camic, & Brown, 2015). In terms of masculinity, such norms dictate how men should cope with depression and whilst the same underlying symptoms might be present in men and women, their expression in terms of psychosocial functioning is qualitatively different (Addis, 2008). Supporting this notion is research showing that conformity to masculine norms is linked with alcohol abuse (McCreary, Newcomb, & Sadava, 1999), emotional suppression (Wong, Pituch, & Rochlen, 2006), and a reluctance to seek help (Addis & Mahalik, 2003), all of which are considered potentially unique to the male experiences of depression (Rice, Fallon, Aucote, & Moller-Leimkuhler, 2013). Alexithymia, on the other hand, describes a phenomena characterized by significant difficulty identifying and communicating feelings, fear of intimacy or impaired social attachment, and

externally oriented thinking (Bamonti et al., 2010). In such individuals, maladaptive behaviours are due to compromised emotional insight and diminished interpersonal skills as opposed to being gender-appropriate expressions of otherwise identifiable emotions. Indeed, research has shown that the prevalence of alexithymia is twice as high in men (~17%) than women (Salminen, Saarijarvi, Aarela, Toikka, & Kauhanen, 1999). Moreover, it has been linked with so-called externalised depressive symptoms including aggression and impulsivity (Velotti et al., 2016). Consistent with the notion that alexithymic men should experience difficulty with identifying and naming traditional depressive symptoms, published data suggest a potential decline in the prevalence of alexithymia as depression severity increases in men (Honkalampi, Hintikka J Fau - Tanskanen, Tanskanen A Fau - Lehtonen, Lehtonen J Fau - Viinamaki, & Viinamaki, 2000).

Numerous studies have attempted to unpack depression in men and women in terms of their experiences of depression with mixed results regarding differences in a range of atypical symptoms highlighted above. However, a critical problem with such studies regards the clinical tools used to classify depression. Addis (2008) has described that such research inadvertently misses those individuals it seeks to identify because of the potential absence of traditional symptoms—or at least their extent or reporting of them—in some males, thus precluding high scores on traditional measures. There is therefore a dire need to identify these individuals using tools designed to screen for atypical depressive symptoms. A number of scales have been proposed for this purpose, however their use to date has been generally limited. The Gotland Male Depression Scale (GMDS: Zierau, Bille, Rutz, & Bech, 2002) has been shown to detect additional cases of depression but different studies have reported remarkably different factor structures suggesting inadequate psychometric properties (Innamorati et al., 2011; Moller-Leimkuhler, Bottlender, Strauss, & Rutz, 2004; Moller-

Leimkuhler & Yucel, 2010). The Male Depression Scale (Magovcevic & Addis, 2008) is another tool and although used in a limited number of publications (Genuchi & Mitsunaga, 2015; Price, Gregg, Smith, & Fiske, 2018), necessary evaluation of its psychometric properties and structural stability in diverse samples remains to be assessed.

At present, one of the more widely published tools used for detecting atypical depression is the Male Depression Risk Scale (MDRS: see Rice et al., 2015; Rice et al., 2013; Rice, Kealy, Oliff, & Ogrodniczuk, 2018; Rice, Kealy, Oliffe, & Ogrodniczuk, 2018; Rice, Ogrodniczuk, et al., 2017; Rice, Oliffe, et al., 2018). The MDRS measures a wide range of symptoms including emotional suppression, drug use, alcohol use, anger & aggression, somatic symptoms and risk taking, and it's factor structure and reliability has been demonstrated in a variety of different samples (see e.g., Rice et al., 2013; Rice, Ogrodniczuk, et al., 2017). Findings to date have linked MDRS scores with masculinity and the presence of externalizing symptoms in men (Rice et al., 2013), and it appears sensitive over time to negative life events (Rice et al., 2015). Moreover, not inconsistent with other male-specific scales, there is a strong correlation present between the MDRS and the Patient Health Questionnaire, a measure of traditional symptoms. Finally, the MDRS appears more sensitive to suicide attempts (54%; Rice, Ogrodniczuk, et al., 2017) and suicidal ideation than traditional depression measures (Rice, Kealy, Oliffe, et al., 2018).

As discussed by Addis (2008), the development of such tools provides an opportunity to identify a unique but theoretically important subset of individuals consisting of those experiencing a unique manifestation of depression most aligned with the male depressive phenotype. This group would be characterised by high levels of atypical symptoms such as aggression and risk taking (including substance use), and correspondingly lower traditional symptoms. However, to date, strong correlations have been reported between such tools and

traditional depression measures indicating that, on average, individuals score high (or low) on both. Ultimately, this raises doubts about the clinical utility of these tools in terms of their ability to detect additional *and unique* cases of depression in men that might otherwise be missed.

The purpose of the present study was to further consider the existence and prevalence of a unique male depressive phenotype through secondary data analysis. To achieve this, the MDRS and the PHQ are combined to explore the frequency of distinct subsets of individuals experiencing typical (high PHQ, low MDRS), mixed depression (high PHQ and high MDRS) or a uniquely atypical depression (low PHQ but high MDRS). Furthermore, the underlying psychopathology of all three groups relative to non-depressed males was considered to understand the clinical significance of these classifications. These measures included suicidal behaviour, alexithymia, general psychological distress and narcissism.

Methods

Participants & Procedure

Data for the present study were collected in Canada in April 2016 as part of a men's mental health project. A Canadian online survey provider was used to source respondents and to assess survey eligibility requirements: aged ≥19 years, have internet access and be able to read English. Potential respondents known to the survey provider were emailed an invitation to complete the study questionnaire. Interested persons clicked a link to access the study information sheet and provide consent. Of those (N=1488) who accessed the survey landing page, 6.4% (N=95) answered ''no'' to providing consent to participate. The remaining respondents (N=1,393) were further reduced to N=1000 by post opt-in screening and stratification quotas: This guided the sampling to ensure the composition reflected the

distribution of the Canadian male population with regards to age and province (determined by 2011 Census data). Participants were also turned away if specific quotas for their corresponding age and province were already filled. On completion of the survey, participants received proprietary panel points eligible for exchange for various rewards. In addition to the measures described below, information regarding participant demographics was collected (see Table 1).

Measures

Male Depression Risk Scale (MDRS-22). The MDRS-22 (Rice et al., 2013) is a 22-item self-report rating scale designed to assess atypical externalising depression symptoms. Six domains of atypical symptoms assessed include: emotion suppression (i.e. ‘‘I bottled up my negative feelings’’), anger and aggression (i.e. ‘‘I overreacted to situations with aggressive behaviours’’), somatic symptoms (i.e. ‘‘I had regular headaches’’), risk-taking (i.e. ‘‘I took unnecessary risks’’), drug use (i.e. ‘‘I used drugs to cope’’), and alcohol use (i.e. ‘‘I needed to have easy access to alcohol’’). Each item is rated relative to the preceding month using a 7-point Likert scale (from 0 = ‘‘not at all’’, to 7 = ‘‘almost always’’). Internal consistency of the MDRS in the present study was high (α=.95).

Patient Health Questionnaire-9 (PHQ-9). The PHQ-9 (Kroenke et al., 2001) assesses major depressive symptoms specified in DSM-5 (American Psychiatric Association, 2013) using a self-report format. Each item address one of nine symptoms with a mix of affective (e.g., “feeling down, depressed, or hopeless”) and somatic complaints (“moving or speaking slowly”) , and it is rated relative to the preceding two week period on a 3-point scale (from 0=‘‘not at all’’ to 3=‘‘almost every day’’). The PHQ-9 is a well validated measure of depression severity and is used in both research and clinical practice. Internal consistency of the PHQ-9 in the present study was high (α=.92).

Kessler Psychological Distress Scale (K6). The K6 provides an overall measure of severity of mental illness by having respondents consider the preceding 30-days and to self-report the frequency of six symptoms: felt nervous, hopeless, restless or fidgety, worthless, depressed, and felt that everything was an effort (Prochaska, Sung, Max, Shi, & Ong, 2012). For each question, responses were scored from 0=never, to 4=continuously. Internal consistency of the K6 in this study was high (α=.92).

Toronto Alexithymia Scale (TAS-20). Alexithymia was measured using the TAS-20 (Bagby, Parker, & Taylor, 1994) which assesses three broad domains: Difficulty Identifying Feelings (e.g., "I am often confused about what emotion I am feeling"); Difficulty Describing Feelings (i.e., "It is difficult for me to find the right words for my feelings"); and Externally Oriented Thinking ("I prefer to just let things happen rather than to understand why they turned out that way"). Participants responded to each item using a 5-point likert scale (1=strongly disagree and 5=strongly agree) capturing the extent to which the item described them. Internal consistency of the TAS-20 in this study was high (α=.86).

Super-Brief Pathological Narcissism Inventory (SB-PNI). This12-item measure is a very brief but validated measure of Pathological Narcissism (Schoenleber, Roche, Wetzel, Pincus, & Roberts, 2015). SB-PNI assesses domains of grandiose and vulnerable narcissism. Responses to items are provided on a 6-point likert scale ranging from 0="not at all like me" to 5="very much like me". Grandiosity is reflected in six items such as "I often fantasize about performing heroic deeds," whereas vulnerability is captured by items including "It's hard to feel good about myself unless I know other people admire me". Internal consistency of the SB-PNI in this study was high (α=0.92).

The Suicidal Behaviours Questionnaire-Revised (SBQ-R). This brief measure taps into different dimension of suicidality. Four items are used to assess lifetime suicide ideation and attempt, frequency of suicidal ideation during the preceding twelve months, threat of suicide behaviour and self-reported likelihood of suicidal behaviour. Response formats vary across items but are designed to measure the extent of such behaviour for that individual. In the present study, the SBQ-R displayed appropriate internal consistency (α=0.77).

Depression treatment preference. An item to gauge preferences for varying approaches to treating depression was developed for the study using a forced choice question. All participants were required to indicate from one of the four following options which approach they would prefer most in the event they required treatment: (1) "Medication, daily for at least 6 months, possible side effects", (2) "Individual psychotherapy, one-on-one with a therapist, 1 hour duration", (3) "Group psychotherapy, with other people who are also dealing with depression", or (4) "Wait and see (no treatment), 40% chance of depression resolving on its own".

Statistical Analysis

Individuals were classified into depression groups using the MDRS-22 and PHQ-9. The literate suggests a cut-off score of ≥10 on the PHQ-9 for detecting at least moderate depression in individuals (Manea, Gilbody, & McMillan, 2012). Cut-off scores for the MDRS-22 have been determined thus far based on suicidal behaviour (Rice, Ogrodniczuk, et al., 2017) and a threshold of ≥51, corresponding to the "high risk" category, was selected for the present study. Thus, the combination of scores for assigning individuals to mutually exclusive depression groups was as follows: Not depressed (PHQ-9 <10 & MDRS-22 <51),

typical depression (PHQ-9 ≥10 & MDRS-22 <51), mixed depression (PHQ-9 ≥10 & MDRS-22 ≥51), and atypical depression (PHQ-9 <10 & MDRS-22 ≥51).

The factorial structure of psychopathology scales was assessed using Confirmatory Factor Analysis with Weighted Least Squares estimation for ordinal data in the software package MPlus. Given the impact of large sample size on fit statistics, multiple fit indices were considered and interpretation of adequacy was based on combinations of these as recommended by Hu and Bentler (1999). For the MDRS-22, the theorised six factor structure fit the data well [$\chi2(194)=985.42$, $p<.001$, CFI=0.99, TLI=.99, RMSEA=0.06]. Similarly, fit statistics were strong for the K6 [$\chi2(9)=105.36$, $p<.001$, CFI=0.99, TLI=.99, RMSEA=0.10]. Regarding the PHQ-9, we examined a two-factor solution consisting of affective and somatic domains consistent with existing literature (Guo et al., 2017) and model fit was acceptable [$\chi2(26)=126.39$, $p<.001$, CFI=0.99, TLI=.98, RMSEA=0.06]. The theorised two-factor structure of the SB-PNI was also acceptable [$\chi2(53)=582.34$, $p<.001$, CFI=0.98, TLI=.97, RMSEA=0.10]. Fit statistics for the TAS-20 theoretical three-factor structure were *fair* [$\chi2(167)=1950.24$, $p<.001$, CFI=0.88, TLI=.87, RMSEA=0.10]. Marginal improvement was obtained by excluding one item that loaded weakly on Externally Oriented Thinking [$\chi2(167)=1760.80$, $p<.001$, CFI=0.89, TLI=.88, RMSEA=0.10]. Further modifications did not improve fit and the correlation between TAS-20 factors were all very high ($r>.90$).

Group comparisons were based on either summed scales or mean-of-items scores as appropriate. In light of limitations with the TAS-20 structure in this sample, and given the high correlations between factors together with strong internal reliability across the scale, only the total score was used for analysis. Where appropriate, univariate and/or multivariate analysis of variance was used to model group differences with Bonferroni post-hoc comparisons used to interpret group differences. To determine differences in suicidal

behaviour, individuals were classified as displaying lifetime suicidal ideation (item 1 score ≥2) or current suicidal behaviour (total SBQ-R ≥7) in line with published scoring methods (Osman et al., 2001). Similarly, the probable presence and severity of a mental health disorder was estimated using K6 cut-off scores of ≥5 = moderate and ≥13 = severe (Prochaska et al., 2012). Categorical data such as these were modelled using multinomial logistic regressions, with odds ratios used to determine group differences. For other categorical data, chi-square tests were used to compare observed frequencies to expected frequencies across groups. In the event of a significant model, adjusted standardised residuals were used to guide interpretation of results as follows: AR ≥1.96 p<.05; AR ≥2.58 p<.01; and AR ≥3.31 p<.001.

Results

Participant demographics

The prevalence of any depressive presentation in the current sample was 31%. The proportions in each subset were: typical (8%, N=80), mixed (12%, N=120), and atypical (11%, N=110). A comparison of proportions across depression groups was significant ($\chi^2(2)=8.39$, p=.02), indicating that men in this sample were more likely than hypothesised to present with either mixed or atypical symptoms. Demographic characteristics of the whole sample as well as for each of the depression sub-groups is provided in Table 1. Overall, participants tended to be employed, with the majority of the sample having undertaken further education beyond formal schooling. Chi-square analysis of demographics across sub-groups showed significant differences for age ($\chi^2(12)=111.21$, p<.001), showing significantly more people aged 60+ years in the non-depressed group (p<.001) than expected. On the contrary, there were significantly more 18-29 year olds in all depression groups than expected

(p<.05), and more people aged 30-39 in the mixed depression group than expected (p<.001). For employment status, significant differences were evident for studying ($\chi^2(3)=24.12$, p<.001), employment ($\chi^2(3)=8.47$, p=.04), unemployment ($\chi^2(3)=65.56$, p<.001) and retired groupings ($\chi^2(3)=46.29$, p<.001). Significantly more individuals in the mixed and typical depression groups were studying than expected by chance (both p<.01), whilst there were fewer than expected in the typical depression group who were employed (p<.05). Unemployment was more prevalent in the mixed and typical depression groups (both p<.001), whilst there were fewer individuals retired for all depression groups than expected by chance (all p<.05). There were no differences between the groups regarding level of education ($\chi^2(18)=22.28$, p=.22).

Depressive Symptoms

Means and standard deviations for the PHQ-9 and MDRS-22 total scores and for subscale scores are presented for each depression group in Table 2. Consistent with the methodology used to classify groups, significant differences emerged for the PHQ-9 total ($F(3,996)=912.48$, p<.001, η^2=.73) and subscale affective ($F(3,996)=722.74$, p<.001, η^2=.69) and somatic scores ($F(3,996)=650.62$, p<.001, η^2=.66). For PHQ-9 total scores, all Bonferroni pairwise comparisons were statistically significant (all p<.001) indicating that individuals with atypical presentations had elevated PHQ-9 scores relative to non-depressed participants, but their scores were significantly lower than for typical and mixed presentations, who were highest. Interpretation of the models for affective and somatic scores mirrored this pattern.

MDRS-22 total scores differed significantly across groups, as expected ($F(3,996)=833.22$, p<.001, η^2=.72). A multivariate model inclusive of all subscales showed a

significant overall multivariate difference between groups (Roy's Largest Root=2.65, $F(6,993)=438.31$, $p<.001$, $\eta^2=.73$), and univariate testing demonstrated significant differences for all subscales: emotion suppression ($F(3,989)=210.98$, $p<.001$, $\eta^2=.39$); drug use ($F(3,996)=194.59$, $p<.001$, $\eta^2=.37$); alcohol use ($F(3,996)=262.77$, $p<.001$, $\eta^2=.44$); anger and aggression ($F(3,996)=358.10$, $p<.001$, $\eta^2=.52$); somatic symptoms ($F(3,996)=300.30$, $p<.001$, $\eta^2=.48$); and risk taking ($F(3,996)=449.07$, $p<.001$, $\eta^2=.58$). Pairwise comparisons indicated that although externalising symptoms tended to be significantly elevated in the typical depression group relative to non-depressed, they were also significantly lower than mixed and atypical groups. However, in the case of drug use, the typical depression group was not statistically significantly different from non-depressed ($p=.48$). Further, whilst the mixed group generally displayed the highest scores, they were in fact statistically significantly lower on alcohol use compared to the atypical group ($p=.02$).

Alexithymia, Narcissism and Psychological Distress

Means and standard deviations for total alexithymia scores, psychological distress and narcissism subscales are provided in Table 3. Regarding alexithymia, ANOVA showed significant overall differences between depression groups ($F(3,996)=129.13$, $p<.001$, $\eta^2=.28$). Comparisons indicated that all three depression groups scored significantly higher on alexithymia than non-depressed participants (all $p<.001$). Furthermore, those in the typical depression group scored significantly lower ($p<.01$) on this than atypical and mixed groups which were not different from one another ($p=.06$). Psychological distress also differed significantly between groups ($F(3,996)=314.47$, $p<.001$, $\eta^2=.49$). Typical and mixed groups had the highest psychological distress scores relative to non-depressed and atypical groups (all $p<.03$), yet the latter was still significantly elevated for this measure relative to non-depressed ($p<.001$).

Regarding narcissism scores, significant overall differences were apparent for grandiose ($F(3,996)=59.66$, $p<.001$, $\eta^2=.15$) and vulnerable measures ($F(3,996)=156.01$, $p<.001$, $\eta^2=.32$). For grandiose narcissism, all depression groups were elevated relative to non-depressed (all $p<.001$), and although the typical group scored lower than those with mixed symptoms ($p=.03$), there was no difference between atypical and mixed presentations ($p=.63$). For vulnerable narcissism, all comparisons were significant (all $p<.001$) except for that between typical and atypical presentations which were not different ($p=.99$).

Severity of mental illness, suicidal behaviour and treatment preferences

The proportions of individuals having a high probability of a mild or severe mental illness based on K6 cut-off scores (Prochaska et al., 2012), and those indicating lifetime or current suicidal behaviour are provided in Table 4, together with odds-ratios derived from multinomial logistic regressions. All depression groups were at significantly greater risk of a mild mental illness compared to not depressed, and the mixed group had higher odds than typical depressed. Similarly, all groups exhibited significantly higher risk of having a severe mental illness compared to not depressed, and the mixed group had higher odds of this compared to typical depression which was significantly higher than atypical depression. Regarding lifetime suicidal behaviour, all groups displayed significantly higher risk than the not depressed group and this was also the case for current suicidal behaviour. When compared to typical depression, only the mixed group exhibited higher odds for both lifetime and current suicidal behaviour and the atypical group did not differ from typical depression in terms of their risk.

Treatment preferences of the four groups are displayed in Table 4. Chi-square analysis indicated a significant difference in terms of preferred modality ($\chi^2(9)=23.72$,

p<.01). Adjusted residuals indicated significantly more of those (~49%) in the atypical group preferred to "*wait and see"* than expected by chance (*p*<.01), and significantly more (~35%, *p*<.001) of those in the mixed group preferred to *"initiate medication daily for ≥6-months"* than expected by chance. Significantly fewer (~28%, *p*<.05) of those in the mixed group preferred to wait and see, and those in the not depressed group expressed a significantly lower preference (~18%, *p*<.05) for daily medication than expected by chance but a higher than expected (~36%) preference for individual psychotherapy than expected by chance (*p*<.05).

Discussion

The present study appears to be one of the first that attempts to delineate a unique presentation of depression in men characterised primarily by externalising symptomology. As highlighted elsewhere (Addis, 2008), this approach is necessary to demonstrate: 1) that a unique presentation of externalising symptoms may exist for some men in the absence of correspondingly elevated internalising symptoms; and 2) that those experiencing an atypical depression demonstrate significant underlying psychopathology and are at risk for poor outcomes.

In the present study, externalising symptoms, either alone or in combination with typical symptoms, were found to be significantly more prevalent in men than wholly prototypical symptoms. Eleven-percent of this sample were found to present with uniquely externalising symptoms and a further 12% presented with mixed symptoms; only 8% presented with an exclusively internalising phenotype. Whilst analyses showed that internalising symptoms were significantly elevated in atypical individuals compared to non-

depressed participants, the mean for this group was far below established PHQ-9 criteria (scores ≥10) indicative of an underlying depressive disorder (Manea et al., 2012). Despite the general absence of internalising symptoms, psychological distress in the atypical group was significantly elevated relative to non-depressed and only mildly lower than those with typical depressive symptomology (Cohen's d = 0.36). Moreover, when classified according to severity, the atypical group were twenty-times more at risk of a moderate mental illness compared to non-depressed, and twelve-times more likely to have a severe mental illness. Suicidal behaviour in this group was also significantly elevated and comparable to the typical depression group with ~67% indicating lifetime suicidal behaviour, and ~37% at risk of current suicidal behaviour. Analyses of underlying psychopathology further supports the presence of increased risk in atypical individuals. They scored significantly higher than non-depressed for grandiose and vulnerable narcissism, and significantly higher than non-depressed and typical depressed groups on alexithymia. This latter result is consistent with the broader literature linking externalising behaviours such as aggression and impulsivity to alexithymia (Velotti et al., 2016), and highlights a tenuous relationship between this construct and internalising symptomology.

Whilst the present analyses established that an atypical presentation is associated with psychopathology and increased risk, results regards those individuals presenting with mixed symptoms furthers our understanding of male depression. This group was consistently significantly higher than other depressed and non-depressed groups on all outcome measures. In brief, these individuals are extremely alexithymic, narcissistic and also psychologically distressed. Approximately 99% of this group were classified as having a moderate mental illness and ~73% meet criteria for a severe mental illness (Prochaska et al., 2012). Moreover, 82% displayed lifetime suicidal behaviour and 72% were currently at risk of suicide. Further,

the fact that risk of mental illness and suicidal behaviour was significantly higher than for typically depressed individuals suggests that particular attention should be allocated to monitoring and managing risk in individuals presenting with mixed symptomology.

The relevance of the current findings to clinical practice requires some attention. Placing emphasis on the presence of internalising symptoms for the diagnosis of depression is likely to miss cases of this disorder in men who are otherwise at risk of poor outcomes (see e.g., Magovcevic & Addis, 2008). In the current study, consideration of a uniquely atypical presentation (i.e., only high MDRS scores) identified a large number of individuals (*n*=32, see Table 4) who appear to be suffering a severe mental illness yet who are missed by the PHQ-9. Whilst trained clinicians might be able to identify depression that is masked or manifesting as externalising symptoms during an assessment, the present results at least demonstrate potential benefits from utilising male-specific screening tools in some settings such as primary care to aid in identification of at-risk males.

Incorporating new methods of screening in an attempt to increase the identification of men with mental health conditions is particularly important from the perspective of engaging men in treatment. Externalising psychopathology (i.e. history of aggression, substance use) has been identified as an aetiological factor in the course of male depression and one which likely inhibits help-seeking behaviour (Rice, Aucote, et al., 2017). Results herein support this hypothesis given that atypical depression was associated with a preference to *wait and see* whilst those with a mixed presentation demonstrated a preference for *medication*. In either case, these preferences should be considered suboptimal. Whilst medication is effective for alleviating depressive symptoms (Cipriani et al., 2018), meta-analyses show that medication combined with psychotherapy results in significantly improved outcomes (Cuijpers et al., 2014). The preferences reported herein are worrying in light of significant underlying

psychopathology and suicidal risk—which is arguably not improved by medication alone (Healy & Whitaker, 2003)—and highlights the difficulty of providing optimal treatment for these men.

Whether a purely externalised symptom profile is prodromal or potentially indicative of alternative mental disorders remains unanswered. The work of Kendler and Gardner (2014) demonstrated that externalising psychopathology including conduct problems and substance abuse was more strongly predictive of subsequent depression in men than women. The heightened risk for those with mixed symptoms in this study showed some interplay between external and internal symptoms in male depression but the chronological ordering of symptom development cannot be deduced from these data. However, if the atypical group in this study are prodromal, then subsequent development of prototypical symptoms, thus resulting in a mixed presentation, places them at increased risk relative to those with typical depression. Alternative disorders that might account for a purely externalised profile seen in the atypical group include conduct, personality and substance use disorders. The nature of items within the MDRS-22 do not permit investigation of this issue but future studies should consider incorporating screening tools for other disorders in order to rule out their influence in this subgroup.

In terms of limitations, the validity of the MDRS as a screening tool for depression has not been prospectively validated despite its sound psychometric properties (see e.g., Rice et al., 2013; Rice, Ogrodniczuk, et al., 2017). As such, the cut-off scores have been determined based on suicidality as opposed to diagnostically confirmed depression and this is an important aim for future studies. Furthermore, the reliance in the present study on cross-sectional data collection using an online sample compromises generalisability of results to clinical and other populations. This also precludes longitudinal follow up with regards to

potential transitioning from atypical to mixed presentations over time. Given that suicidality was based on self-report data and not subsequently verified at clinical interview must also be considered in relation to prevalence and risk of this behaviour described herein. Moreover, whilst narcissism was measured as a proxy for masculinity, future studies should seek to incorporate more appropriate measures of this construct. Finally, data regarding personality factors, relationship status, prior diagnosis of depression or likely presence of other disorders as described above was lacking.

In summary, the present study highlights the importance of considering a range of varying presentations of depression men, including a uniquely atypical profile with subthreshold internalising symptoms. At the very least, these results demonstrate increasing risk of mental illness and suicidal behaviour in men with externalising symptoms, and notably increased risk in males that present with a mixed profile. Given the risk of poor outcomes in these men, there is dire need to incorporate assessment tools that are sensitive to a range of depressive presentations to improve identification of mental illness in men, thus enabling the provision of suitable care.

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Table 1. Descriptive statistics for the overall sample, and depressed groups

		Total Sample (*n*=1000)		Not Depressed (*n*=690)		Typical (*n*=80)		Mixed (*n*=120)		Atypical (*n*=110)	
		n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Age	18-29	86	8.6	30	4.3	13	16.3	27	22.5	16	14.5
	30-39	185	18.5	107	15.5	14	17.5	39	32.5	25	22.7
	40-49	260	26.0	177	25.7	19	23.8	29	24.2	35	31.8
	50-59	183	18.3	134	19.4	17	21.3	11	9.2	21	19.1
	60+	286	28.6	242	35.1	17	21.3	14	11.7	13	11.8
Employ-ment	Studying	49	4.9	21	3.0	10	12.5	13	10.8	5	4.5
	Employed	597	59.7	408	59.1	38	47.5	78	65.0	73	66.4
	Self-Employed	89	8.9	66	9.6	5	6.3	6	5.0	12	10.9
	Unemployed/Other	103	10.3	38	5.5	23	28.7	26	21.7	16	14.5
	Retired	226	22.6	197	28.6	11	13.8	10	8.3	8	7.3
Education	Some high school	34	3.4	23	3.3	5	6.3	5	4.2	1	0.9
	High school graduate	115	11.5	73	10.6	9	11.3	19	15.8	14	12.7
	Some college/trade school	116	11.6	67	9.7	11	13.8	19	15.8	19	17.3
	Graduated college/trade school	205	20.5	140	20.3	14	17.5	29	24.2	22	20.0
	Some university	89	8.9	63	9.1	7	8.8	10	8.3	9	8.2
	University undergraduate degree	250	25.0	180	26.1	22	27.5	22	18.3	26	23.6
	University graduate degree	191	19.1	144	20.9	12	15.0	16	13.3	19	17.3

Table 2. Descriptive statistics for internalising and externalising depressive symptoms

	Not Depressed (*n*=690)		**Typical (*n*=80)**		**Mixed (*n*=120)**		**Atypical (*n*=110)**	
	Mean	***SD***	**Mean**	***SD***	**Mean**	***SD***	**Mean**	***SD***
PHQ-9 Total	2.69	*2.55*	13.86	*3.32*	16.28	*5.09*	5.75	*2.42*
Affective	0.32	*0.33*	1.58	*0.46*	1.86	*0.62*	0.68	*0.30*
Somatic	0.27	*0.31*	1.49	*0.48*	1.75	*0.66*	0.59	*0.34*
MDRS-22 Total	17.13	*13.62*	33.69	*11.74*	79.72	*20.97*	70.15	*19.77*
Emotion Suppression	1.96	*1.50*	3.67	*1.66*	4.99	*1.28*	4.33	*1.36*
Drug Use	0.11	*0.48*	0.36	*0.83*	2.54	*2.39*	2.01	*2.23*
Alcohol Use	0.48	*0.89*	0.67	*1.21*	2.96	*2.28*	3.46	*1.83*
Anger & Aggression	0.68	*0.95*	1.33	*1.31*	3.86	*1.74*	3.24	*1.48*
Somatic Symptoms	0.80	*0.98*	1.94	*1.49*	3.81	*1.53*	2.98	*1.52*
Risk Taking	0.37	*0.63*	0.72	*0.74*	3.19	*1.63*	2.70	*1.47*

Table 3. Descriptive statistics for measures of psychopathology

MEASURE	Not Depressed (*n*=690)		Typical (*n*=80)		Mixed (*n*=120)		Atypical (*n*=110)	
	M	**SD**	**M**	**SD**	**M**	**SD**	**M**	**SD**
Alexithymia	27.15	10.92	36.06	12.10	45.05	11.57	41.29	10.44
Psychological Distress	5.11	3.65	12.23	5.17	15.29	4.45	10.64	3.36
Grandiose Narcissism	10.52	6.84	15.03	7.37	17.81	6.89	16.39	5.86
Vulnerable Narcissism	5.30	5.51	11.13	6.97	16.07	6.42	12.29	5.67

Table 4. Descriptive statistics and odds ratios for mood disorders and suicidal behaviour, and preferences for treating depression

Measure	Level	Not Depressed (*n*=690)		Typical (*n*=80)		Mixed (*n*=120)		Atypical (*n*=110)	
Psychological Distress	Moderate Mental Illness (*n*)	50.4%	(348)	92.5%	(74)	99.2%	(119)	95.5%	(105)
	OR1 (95% CI)	*1.00*		*12.12****	*(5.2-28.2)*	*116.95****	*(16.3-841.8)*	*20.64****	*(8.3-51.2)*
	OR2 (95% CI)	-		*1.00*		*9.65**	*(1.1-81.8)*	*1.7*	*(0.5-5.8)*
	Severe Mental Illness (*n*)	3.3%	(23)	45.0%	(36)	73.3%	(88)	29.1%	(32)
	OR1 (95% CI)	*1.00*		*23.73****	*(12.9-43.5)*	*79.75****	*(44.7-142.5)*	*11.9****	*(6.6-21.3)*
	OR2 (95% CI)	-		*1.00*		*3.36****	*(1.9-6.1)*	*0.5**	*(.27-.92)*
Suicide Behavior Questionnaire – Revised	Lifetime Ideation (*n*)	36.4%	(251)	68.8%	(55)	81.7%	(98)	67.3%	(74)
	OR1 (95% CI)	*1.00*		*3.85****	*(2.3-6.3)*	*7.79****	*(4.8-12.7)*	*3.59****	*(2.4-5.5)*
	OR2 (95% CI)	-		*1.00*		*2.03****	*(1.0-3.9)*	*0.93*	*(0.5-1.7)*
	Currently Suicidal (*n*)	11.0%	(76)	45.0%	(36)	71.7%	(86)	37.3%	(41)
	OR1 (95% CI)	*1.00*		*6.61****	*(4.0-10.9)*	*20.44****	*(12.9-32.5)*	*4.80****	*(3.1-7.6)*
	OR2 (95% CI)	-		*1.00*		*3.09****	*(1.7-5.6)*	*0.73*	*(0.4-1.3)*
Treatment Preferences (*n*)	Medication daily for <6 months	18.3%	(126)	22.5%	(18)	35.0%	(42)	17.3%	(19)
	Individual Psychotherapy	35.7%	(246)	31.3%	(25)	29.2%	(35)	27.3%	(30)
	Group Psychotherapy	9.4%	(65)	8.8%	(7)	7.5%	(9)	6.4%	(7)
	Wait & See	36.7%	(253)	37.1%	(30)	28.3%	(34)	49.1%	(54)

*** $p < 001$; * $p < 05$

OR1 = Multinomial Logistic Regression with Not Depressed as the reference group; OR2 = Typical depression as the reference group

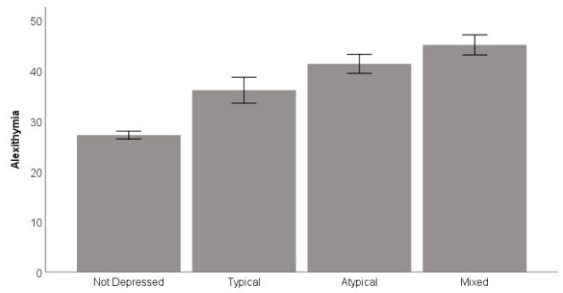

Fig 1*a*

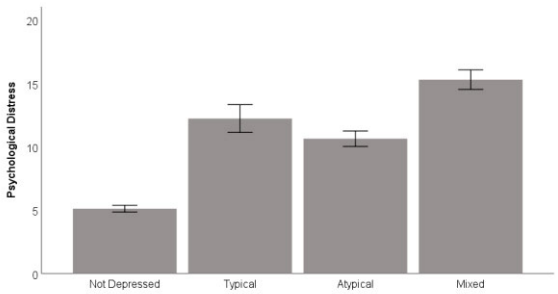

Fig 1*b*

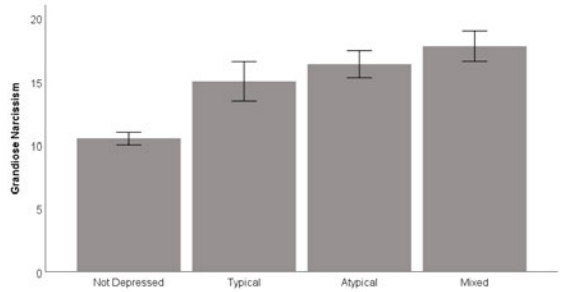

Fig 1*c*

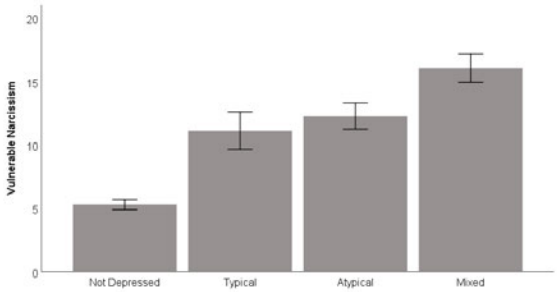

Fig 1*d*

Figure 1. Group means (showing 95% CIs) for alexithymia (Fig 1*a*), psychological distress (Fig 1*b*), grandiose (Fig 1*c*) and vulnerable narcissism (Fig 1*d*).

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