

**DEPRESSION IN MEN:
DEVELOPMENT OF THE MALE DEPRESSION RISK SCALE**

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Statement of Authorship & Sources

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded in another degree or diploma. No other person's work has been used without due acknowledgement in the main text of the thesis. This thesis has not been submitted for the award of any degree or diploma in any other tertiary institution. All research procedures reported are in accordance with ethical approval of the Australian Catholic University Human Research Ethics Committee

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Abstract

Within the last decade a number of male specific depression rating scales have been developed. Unfortunately each of these scales encompasses significant psychometric issues, thus comprising their validity. The present dissertation reports five quantitative studies based on data from community samples with the aim of developing a psychometrically valid male specific depression rating scale. As defined by DSM-IV, Major Depressive Disorder comprises a range of internalising symptoms (e.g., sadness, worthlessness, guilt, fatigue). These internalising symptoms contravene traditional masculine role norms such as emotional stoicism, self-reliance and aggression. Given this, the masculine depression framework theorises that when depressed, some men may experience atypical depression symptoms that are more congruent with masculine role norms (e.g., substance abuse, anger, emotional suppression, risk-taking). However, as these masculine type symptoms fall outside present diagnostic criteria, it is possible that males experiencing such symptoms may not be identified as depressed in primary care settings.

Study 1 reported online data from 663 participants (males = 318). Confirmatory factor analysis indicated that the most widely used measure of male depression symptoms, the Gotland Male Depression Scale (GMDS; Zierau, Bille, Rutz, & Bech, 2002), reported poor model fit indices and questionable factor structure validity. Study 1 also indicated that in comparison to a widely used gender neutral measure of depression, the GMDS identified fewer males at risk of depression. Taken together, findings of Study 1 suggest that the GMDS lacks factor structure stability and clinical utility in comparison to an established measure of depression. Study 2 reported data from 91 male truck drivers on prototypic (e.g., DSM-IV) and atypical (e.g., substance abuse, anger, emotional suppression, risk-taking) depression symptoms. Results indicated a high degree of prototypic and atypical depression symptom overlap, with those participants meeting retrospective clinical criteria for depression reporting three times the number of concurrent atypical depression symptoms in comparison to those in the normal range. In contrast, older males participating in a Men's Shed program ($n = 13$) endorsed comparatively few atypical depression symptoms suggesting that age plays a salient role in the presentation of atypical symptoms. Study 3 indicated that amongst this group, the most frequently endorsed atypical symptoms related to irritability and lowered stress threshold.

In combination with related research, Study 4 utilised the above findings to generate an item pool for the Male Depression Risk Scale (MDRS). Items were subject to expert review, and subsequently analysed using principal components analysis based on data from an online sample of 967 respondents (males = 386). Seven subscales were initially identified. As predicted, higher MDRS scores were associated with greater conformity to masculine norms. Building on these findings, Study 5a undertook confirmatory factor analysis on the MDRS using data from an online sample of 790 respondents (males = 499). Separate calibration and validation analyses validated a condensed version of the scale – the MDRS-22. Six subscales were identified; emotional suppression, drug use, alcohol use, anger and aggression, somatic symptoms, and risk taking. Replicating findings from Study 4, both males and females who reported greater conformity to masculine norms reported higher scores for both prototypic and atypical depression symptoms. Finally, Study 5b reported longitudinal data for 233 respondents (males = 126). When appraised against comparable females, males who had experienced concurrent negative life events at Time 1 reported particularly high Time 2 MDRS-22 scores. Results also indicated high test re-test reliability for the MDRS subscales.

Findings are consistent with the masculine depression framework and suggest that those adhering to masculine role norms are at greater risk of both prototypic and atypical depression symptoms. Given that males who adhere to masculine role norms may be reluctant to disclose prototypic depression symptoms to health professionals, the MDRS-22 may serve as a promising screening tool in clinical practice. Furthermore, by differentiating atypical depression symptoms into six validated domains, future use of the MDRS-22 may progress research into men's experience of depression.

Publications

The following publications have been generated from the findings of this dissertation.

Journal Articles & Conference Proceedings Papers

Rice, S. M., Fallon, B. J., & Bambling, M. (In press). Men and depression: The impact of masculine role norms throughout the lifespan. *Australian Educational and Developmental Psychologist*.

Rice, S. M., & Fallon, B. J. (2011). *Shame and help seeking as mediators of masculinity and depression: Effects of serious financial stress*. Manuscript submitted for publication (Psychology of Men and Masculinity).

Rice, S. M., & Fallon, B. J. (2011). The indirect relationship between rumination, shame and depression: A mediation analysis for those experiencing relationship difficulties. *Journal of Relationships Research*, 2, 43–52.

Moore, D., **Rice, S. M.,** & Fallon, B. J. (2010). Falling apart after a broken heart: Associations between gender, relationship status, recency of separation, and depression. In T. Djokic (Ed.), *Building resilience through personal, family and community relationships. Conference proceedings of the 10th Annual Australian Psychological Society, Psychology of Relationships Interest Group Conference* (pp. 22–27). Brisbane, Australia.

Rice, S. M., & Fallon, B. J. (2010). The wheels keep turning: Associations between relationship status and male depression in truck drivers. In T. Djokic (Ed.), *Building resilience through personal, family and community relationships. Conference proceedings of the 10th Annual Australian Psychological Society, Psychology of Relationships Interest Group Conference* (pp. 34–39). Brisbane, Australia.

Rice, S. M., & Fallon, B. J. (2009). Male depression: The impact of masculine role norms. In N. Voudouris, & V. Mrowinski (Eds.), *Proceedings of the 44th Annual Conference of the Australian Psychological Society* (pp. 146–149). Darwin, Australia.

Rice, S. M., & Fallon, B. J. (2008). Investigating gender differences in depression ratings according to relationship status. In Z. Pearce (Ed.), *Appreciating Relationships: Continuity and Change. Conference Proceedings of the 8th Annual Conference of the Australian Psychological Society's Psychology of Relationships Interest Group* (pp. 33–39). Melbourne, Australia.

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Conference Presentations

- Fallon, B. J., & **Rice, S. M.** (2011, November). *Severe marital problems: Sex differences in correlates of alcohol use, anger, and risk-taking*. Paper presented at the 11th Annual Australian Psychological Society, Psychology of Relationships Interest Group Conference, Adelaide, Australia.
- Wakelin, R., Thoms, A., Bradley, V., **Rice, S. M.**, & Fallon, B. J. (2011, October). *Men's Shed attendance: Maintenance of shed participation and barriers to involvement*. Poster presented at the 2011 Gippsland Health Promotion Conference, Traralgon, Australia.
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- Rice, S. M.**, Fallon, B. J., & Bambling, M. (2011, April). *Male gender role expectations and depression across the lifespan*. Paper presented at the 41st Australasian Society of Social Psychologists Conference, Sydney, Australia.
- Rice, S. M.**, & Fallon, B. J. (2010, July). When the wheels fall off: Atypical depressive symptom presentation in male truck drivers. In K. Cronan (Chair), *Men and vulnerability: Cultural and societal expectation about weakness and strength*. Symposium conducted at the 27th International Congress of Applied Psychology, Melbourne, Australia.
- Rice, S. M.**, & Fallon, B. J. (2009, October). *Reassessing depression in men: Factorial validity of the expanded Gotland Male Depression Scale*. Poster presented at the 44th Annual Conference of the Australian Psychological Society, Darwin, Australia.
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- Rice, S. M.**, & Fallon, B. J. (2009, April). *Factorial validity of a short form of the Australian Sex Role Scale*. Paper presented at the 39th Australasian Society of Social Psychologists Conference, Melbourne, Australia.

Opinion Piece

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Chapter 1: Sex Differences in Depression – Are These Fact or Artefact?

Well, oh, you keep it to yourself...you just keep it to yourself. Like when I decided to run off the road into a tree I decided the, ah, I didn't tell anyone I did that. I survived it. What's the point of telling anyone that?

– Ethan, 46 year old Australian male (Shirt, 2008, pg. 26).

By the year 2020, depressive disorders are expected to become the second biggest cause of disease burden worldwide (Brown, 2001; Murray & Lopez, 1996). Depressive disorders engender significant personal, societal, and economic costs (Luppa, Heirich, Angermeyer, König, & Riedel-Heller, 2007; Thomas & Morris, 2003), and there is evidence that significant numbers of individuals live with undiagnosed, or untreated depression (Anderson, Nutt, & Deakin, 2000; Parslow, Lewis, & Marsh, 2011). The most common depressive disorder is major depression, and the most serious consequence of major depression is suicide attempt or completion (American Psychiatric Association, 2000). Major depression is thought to underlie more than half of suicides (Möller-Leimkühler, 2003), and the estimated lifetime risk of suicide for those experiencing depressive disorders may be as high as 6% (Inskip, Harris, & Barraclough, 1998). Given the lower incidence rates for men in comparison to women, depression has routinely been positioned as a woman's disease (Riska, 2009). However, many have argued that depression in men is ignored and misunderstood (e.g., Nolen-Hoeksema, 2008). As a result, depression awareness campaigns now specifically focus on the different ways in which depression may present in men (e.g., BeyondBlue, 2011; National Institute of Mental Health [NIMH], 2005; Royal College of Psychiatrists, 2006).

Diagnosis of Depression

Major Depressive Disorder, as defined by the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV; American Psychiatric Association [APA], 2000), is characterised in adults by either persistent depressed mood (e.g., sadness, tearfulness), and/or loss of interest or pleasure (e.g., anhedonia) during the same two-week period. A diagnosis is contingent on the presence of at least five of the nine diagnostic criteria that also includes appetite/weight change, sleep disturbance, psychomotor agitation/retardation, fatigue, feelings of worthlessness or guilt, concentration difficulties,

and/or recurrent thoughts of death. Other depression related diagnostic categories include Dysthymic Disorder, applied in instances where symptoms are predominantly chronic (e.g., present for at least 2 years) but less severe than Major Depressive Disorder, and Bipolar Disorders (where depressed mood is accompanied by periods of significantly elevated mood). Unless otherwise specified, throughout this dissertation the term depression will be applied in reference to unipolar depression.

The DSM-IV also outlines diagnostic criteria for additional features (e.g., catatonic, atypical, melancholic, postpartum onset) that may accompany Major Depressive Disorder. Catatonic features include the presence of involuntary motor activity (catalepsy, inappropriate or bizarre postures). Atypical features include mood reactivity (capability to be cheered up when presented with positive events), and the presence of at least two of: increased appetite or weight gain, hypersomnia, leaden paralysis, and a long-standing pattern of extreme sensitivity to perceived interpersonal rejection. Melancholic features involve a lack of reactivity to pleasurable stimuli with associated symptoms including early morning waking. Postpartum onset is used if the episode occurs within four weeks postpartum. Catatonic, atypical, melancholic, and postpartum features can only be added to a diagnosis if the full diagnostic criteria are met for Major Depressive Disorder.

In instances where individuals report depressive features that do not meet criteria for a specific depressive disorder, the diagnosis of Depressive Disorder Not Otherwise Specified may be given (APA, 2000). However, despite relatively high functional impairment resulting from a diagnosis of Depressive Disorder Not Otherwise Specified (Clark, Watson, & Reynolds, 1995), this category is often viewed as a diagnostic ‘wastebasket’, and is viewed by many as either not worthy of further systematic study (e.g., Hickie, 1999) or impossible to empirically validate (e.g., Franklin, 2010). The DSM-IV also provides a suggested research criteria for Minor Depressive Disorder (episodes of at least two weeks of depressive symptoms but with fewer than the five required symptoms). Despite Minor Depressive Disorder also resulting in significant functional impairment (Rapaport & Judd, 1998), it has been the target of few published studies (Judd et al., 2004).

It is widely acknowledged that modern DSM psychiatric classification for depressive disorders has improved the reliability of diagnosis (Rutter, 2011). However,

improvement in diagnostic reliability may have come at the cost of diagnostic validity (e.g., Hyman, 2010, 2011), with some arguing that DSM-defined major depression lacks clinical meaning and treatment utility altogether (Parker, 2005). Further, diagnostic thresholds that are based on the current DSM categorical diagnostic system potentially serve to deny clinical care to individuals who fail to demonstrate the required number, or duration of, typical symptoms (Hyman, 2011; Widiger, 1992, 2000).

It is known that persistent sub-threshold depression symptoms often herald the onset of severe mood disorder (McGorry, Hickie, Yung, Pantelis, & Jackson, 2006). In seeking to improve early detection of such cases, researchers and clinicians have proposed dimensional diagnostic models that assess symptomology on a linear continuum of graded severity (Clark, Watson, & Reynolds, 1995). For example, the clinical staging model (e.g., McGorry, 2007) defines the extent of progression of illness at a particular point in time, and recommends differential levels of specific intervention that correspond to decline or improvement in psychosocial functioning. A dimensional approach to depression diagnosis would likely identify at-risk cases prior to the presentation of full threshold symptomology, serving to prevent ongoing illness and reduce overall severity of symptoms (Hetrick et al., 2008), particularly for cases that fail to meet threshold criteria. This has particular salience for men, as research indicates males report fewer symptoms per depressive episode than do females (Hildebrandt, Steyerberg, & Stage, 2003; Sprock & Yoder, 1997; Wilhelm, Parker, & Asghari, 1998). However, despite decades of efficacious use of dimensional diagnostic models in areas such as oncology (Fischer et al., 2010), mental health practice continues to rely on the DSM categorical diagnostic system (Poznyak, Reed, & Clark, 2011).

Theoretical Frameworks Used to Interpret Sex Differences in Depression

As noted above, the most serious consequence of major depression is suicide attempt or completion. However, in comparison to women, a disjuncture exists for men between rates of depression diagnosis and completed suicide. Epidemiological studies consistently report that in comparison to males, females are twice as likely to be diagnosed with depression (Munce & Stewart, 2007). This finding has been referred to as the most robust in all psychiatric epidemiology (Cyranowski, Frank, Yung, & Shear, 2000), and holds true across a variety of cultural settings (Kuehner, 2003). Even prevalence studies that utilise cold-calling stratified sample methodologies (which are not biased by sex

differences in help-seeking rates for depression) still report a 2:1 female to male ratio (Kessler et al., 1994, 2005). Nonetheless, despite females being twice as likely to be diagnosed with depression, in most countries males are four times more likely to commit suicide than are females (Houle, Mishara, & Chagnon, 2008). There is evidence to suggest that this sex ratio in suicide rates is increasing (Hawton & Van Heeringen, 2009; World Health Organisation, 2002).

While most individuals who carry out suicide have consulted with a General Practitioner (GP) in the preceding weeks prior to their suicide attempt (Gunnell, Bennewith, Peters, Stocks, & Sharp, 2002; Ladouceur, 2011), research indicates that few, if any of these individuals disclose their current suicidal ideation to their GP (Houston, Townsend, & Hawton, 2003; Wide, Mok, McKenna, & Ogrodniczuk, 2011). This is especially the case for males, who are much less likely than females to engage in emotional disclosures during primary care consultations (Brownhill, Wilhelm, Eliovson, & Waterhouse, 2003).

There has been sustained research interest into sex differences in depression incidence rates (e.g., Schwab, Brown, & Holzer, 1968). However, many of these studies have narrowly focused on understanding the social, historical, economic and psychological processes that shape women's experience of depression (Addis, 2008). To date, depression in males has generated relatively little research (Harald & Parker, 2011; Wilhelm, 2009). Consequently, this had led to assumptions that females embody an inherent vulnerability to depressive disorders while men are supposedly comparatively healthy (Brownhill, Wilhelm, Barclay, & Schmied, 2005). These assumptions have evolved despite population based studies indicating that significant numbers of men report depressive episodes (Kessler et al., 1994, 2005).

One explanation for sex differences in incidence rates of depression is that DSM diagnostic criteria incorporates a range of masculine biased assumptions about disordered behaviour. These assumptions may result in an over diagnosis of depression in females (Kaplan, 1983a). For example, Kaplan (1983b) argues that diagnostic criteria for some disorders correspond to stereotypes of femininity which may result in healthy individuals (particularly women) being diagnosed as disordered. While stereotypically feminine traits may be pathologised in this way (e.g., emotionality), corresponding masculine traits (e.g.,

emotional restriction) may be presented as the epitome of appropriate psychological functioning (Safford, 2008). In defence of DSM diagnostic criteria Williams and Spitzer (1983) argue that a range of clinical syndromes (other than depression) are more frequently diagnosed in men (e.g., alcohol dependence). Further, Williams and Spitzer argue that alcoholism may reflect a masked form of affective disorder in males, a notion that still remains current within the research literature (e.g., Magovcevic & Addis, 2008, Primack, Addis, & Miller, 2010). This differing diagnostic classification between males (e.g., alcoholism) and females (e.g., depression) may be purely academic so long as the differing diagnostic pathways lead to appropriate treatment. Unfortunately however, treatment rates of those diagnosed with alcohol use disorder are well below those diagnosed with major depression (Compton, Thomas, Stinson, & Grant, 2007; Hasin, Stinson, Ogburn, & Grant, 2007; Weich, Nazareth, Morgan, & King, 2007). Hence, comparatively high numbers of males who have comorbid mood and alcohol problems may fail to receive adequate treatment.

Failure to adequately research men's experience of depression has also stymied progress on the development of male specific treatments for affective disorders (Addis, 2008). Similarly, at present, there is no unifying conceptual framework guiding clinical research or practice in relation to men's depression (Addis, 2005).

While a definitive explanation as to why males experience lower incidence rates of depression and depressive symptoms is yet to be established (Bebbington, 1996; Kessler, 2003, Kuehner, 2003; Levin & Sanacora, 2007; Piccinelli & Wilkinson, 2000), suicide statistics indicate that men's lower rates of depression are not explained by their superior mental health (Wihelm, 2009). Goldberg (2006) proposed three possible explanations for sex differences in depression incidence rates; genetic, hormonal and social.

In recent years the ability of genetic and hormonal theories to account for sex differences in depression have become increasingly disputed (Magrocevic & Addis, 2008). Although genetic factors retain an influential role in determining one's likelihood of experiencing depression, they do not appear to directly contribute to the increased risk to females (Piccinelli & Wilkinson, 2000). For example, studies have shown that the degree of genetic liability for depression is actually similar for males and females (Kendler & Prescott, 1999; Beirut et al., 1999). Indeed, the failure of genetic factors to account for the

sex difference in depression rates is a major setback for explanations that hinge on biological factors (Bebbington, 1998; Sullivan, Neale, & Kendler, 2000). If sex differences in rates of depression were due solely to a universal biological vulnerability, the sex ratio should be unaffected by sociodemographic factors (Accortt, Freemman, & Allen, 2008). However, this is not the case as research indicates that marital discord (a life event known to precipitate episodes of depression) is a risk factor for depression in women (Aseltine & Kessler, 1993; Bebbington; Bruce & Kim, 1992), while in contrast, men tend to experience depression at a higher rate only when marital discord results in divorce or separation (Smith, Mercy, & Conn, 1988; Rotterman, 2007; Williams & Umberson, 2004; Wyder, Ward, & De Leo, 2009). Further, there are higher rates of psychiatric hospitalisations for divorced males when compared to divorced females (Kilmartin, 2007), indicating a differential (e.g., non-genetic) pathway to depression for males and females.

The evidence for hormonal fluctuations accounting for sex differences in depression rates is also inconclusive. While some studies suggest that affective syndromes can be linked to hormone fluctuation, prevalence rates for such a link remain very low (e.g., 1%; Ramcharan, Love, Fick, & Goldfien, 1992). From an epidemiological perspective, such findings fail to explain the magnitude of the sex differences in depression in the general population (Kuehner, 2003). While biological factors such as genetics and hormones may be involved in the emergence of depressive disorders, it is difficult to argue that genetic and hormonal factors are the cause of the sex differences per se (Hankin & Abramson, 1999).

In seeking to understand the disjuncture between the comparably low rates of men's depression incidence but high rates of completed suicide, researchers are increasingly taking a broader view of etiological factors. Such factors include gender related concepts of gender socialisation (Magovcevic & Addis, 2008), gender roles (Möller-Leimkühler & Yucel, 2010), masculinity (OliFFE, Ogrodniczuk, Bottorff, Johnson, & Hoyak, in press), and gendered behaviour such as anger and aggression (e.g., Winkler, Pjrek, & Kasper, 2006; Zierau, Bille, Rutz, Bech, 2002). While such recent contributions offer new insights related to men's experience of depression, many of the assumptions underlying these frameworks are yet to be outlined in detail (Addis, 2008).

Addis (2008) recently critiqued four theoretical frameworks that have been used to conceptualise the relationship between gender related constructs and men's experiences of depression. Each of these four theoretical frameworks suggests different mechanisms by which males are less likely than females to meet DSM-IV diagnostic criteria for depression. The first of these, referred to as the sex differences framework, suggests that depression exists as the same illness in men and women, but with minor phenotypic variations in the expression of typical symptoms. For example, clinical literature suggests that in comparison to women, men may be less likely to experience sadness (e.g., Pollack, 1998; Real, 1997). As sadness is one of the two mandatory criteria for a diagnosis of Major Depressive Disorder, then it follows that males would be less likely to be diagnosed as depressed. However, with the exception of crying (discussed further below), studies focussing on sex differences in depression symptom presentation are inconclusive at best (e.g., Coryell, Endicott, & Keller, 1992; Simpson, Nee, & Endicott, 1997; Young, Scheftner, Fawcett, & Klerman, 1990), with many of these findings unable to be replicated (Addis).

The remaining three conceptual frameworks identified by Addis (2008) draw on the interaction of both social experience and psychological attributes (e.g., gender roles and coping strategies). These explanations suggest that men either filter depression symptoms through expectations of masculinity which thus alters symptom presentation, or that men respond to depressed mood in ways that minimises the likelihood of experiencing psychological disorder.

The masked depression framework (e.g., Rabinowitz & Cochran, 2008) argues that socialisation practices influence the ways by which men express and respond to depression. Accordingly, men may experience depressed mood, but may fail to show any of the prototypic diagnostic signs or symptoms of depression. At the same time men may exhibit additional symptoms that do not comprise a DSM-IV depression diagnosis, or may result in diagnoses other than depression (e.g., alcoholism; Williams & Spitzer, 1983). Symptoms theorised to 'mask' depression include somatic pain, alcohol and drug abuse, violence, and failures in intimacy (Real, 1997). One of the key assumptions of the masked depression framework is that depression is made 'invisible' due to proscriptions against men experiencing or expressing sadness, grief, or vulnerability (Addis, 2008). To date there is no direct evidence supporting the masked depression framework. However indirect

evidence suggests that men are more likely than women to express symptoms of various externalising disorders such as substance abuse and anger (e.g., Cochran & Rabinowitz, 2000; Rabinowitz & Cochran, 2008) which may reflect maladaptive attempts to cope with, and/or mask underlying low mood.

The masculine depression framework (e.g., Magovcevic & Addis, 2008; Zierau, Bille, Rutz, & Bech, 2002) is similar to masked depression in that it argues that masculine gender norms encourage the expression of a range of externalising symptoms. However, the masculine depression framework suggests that these externalising symptoms occur in conjunction with depressed mood and result in a phenotypic variant of prototypic depression. Hence, men may experience depression through symptoms that are congruent with DSM-IV diagnostic criteria, but may tend to avoid or deny depressive experiences given that the internalising aspects of depression (e.g., symptoms related to sadness, vulnerability, and weakness) are incongruent with male role expectations (Magovcevic & Addis). As the literature regarding the masculine depression framework is relatively new, the patterns of prototypic and masculine type symptoms that may contribute to 'masculine depression' are yet to be clearly outlined. Nevertheless, a number of studies have attempted to validate the construct of masculine depression through the development of measures that assess male depressive symptomology (these studies are reviewed in detail in Chapter 4).

The most recently developed theoretical framework related to men and depression is the gendered responding framework (Addis, 2008). The gendered responding framework argues that in comparison to females, males are less likely to ruminate when they experience depressed mood (thus exacerbating depressed states), but are more likely to engage in distraction routines (which lessen the likelihood of developing an episode of depression). To date, the gendered responding framework has not been directly tested empirically. However, indirect evidence suggests that distressed women are more likely to ruminate, turn to a higher power, and binge eat while in contrast distressed men are more likely to suppress their feelings, use alcohol, smoke, swear, or engage in sport (Nolen-Hoeksema, 2008). Hence, while distraction responses to distress may result in lower rates of depression for men, such behaviours may simultaneously contribute to men's higher rates of substance abuse and emotional suppression. This may in turn prevent males from accessing adaptive coping strategies such as social support (Addis & Mahalik, 2003).

The three psychosocial explanations reviewed above (e.g., the masked depression, masculine depression, and gendered responding frameworks) have only recently evolved from focussed study of men's experiences of depression (e.g., Rutz, Walinder, Von Knorring, Rihmer, & Philgren, 1997). Consequently these theories may require refinement and re-specification as new evidence emerges. More detailed analysis of evidence for and against these frameworks will be evaluated throughout the following chapters. Nonetheless in support of explanations that draw on gender role variables, the World Health Organisation multicentre primary care study found that the depression sex ratio rate decreased by 50% when gender role inequities (including marital status, children, and occupational status) were taken into account (Maier et al., 1999).

It remains an open question as to whether the current classification and assessment of depression is responsible for sex differences in incidence rates (Boughton & Street, 2007). If it is the case that the experience of depression is categorically different for males in comparison to females, then it is likely that the current categorical DSM diagnostic approach may cause depression to be overlooked in men. Furthermore, undetected and untreated depression may contribute to men's comparatively high levels of substance abuse (e.g., Williams & Spitzer, 1983) and suicide (Heifner, 1997). Research indicates that a large proportion of men who commit suicide receive inadequate mental health care (Isometsa, et al., 1994b). Consequently, some researchers have called for a lowering of the diagnostic threshold when assessing depression in men, particularly in instances of substance abuse (Blair-West, Cantor, Mellsop, & Eyseon-Annan, 1999).

Psychiatric diagnostic classifications systems are subject to revisions based on the synthesis of available research. Over time, revisions of the DSM have resulted in significant changes to diagnostic criteria and the addition of a range of new disorders. Any changes to diagnostic criteria (e.g., lowering of symptom thresholds) need to be made judiciously to ensure that community rates of disorder do not soar to unmanageable levels. That said however, the DSM-V Mood Disorders Work Group has recently considered data on sub-threshold depression (e.g., Minor Depressive Disorder), characterised by two or three depression symptoms that has been found to correlate with significant disability and suicidal behaviour (Fawcett, 2009).

Assessing Depression – Depression Rating Scales

While the application of diagnostic criteria in conjunction with clinical judgement is required to provide a diagnosis of depression, much clinical research within the field is undertaken via self-report rating scales. Self-report rating scales require individuals to endorse symptoms or behaviours that map on to diagnostic criteria. Indeed, much of the evidence used in evaluating the sex differences framework has been gathered using such scales. However, all self-report rating scales have both strengths and limitations. Thus, the methodological issues associated with the use of such scales must be carefully considered when interpreting research findings related to sex differences in depression (Cusin, Yang, Yeung, & Fava, 2010).

While standardised measuring instruments have assisted in providing efficiency and precision to the process of clinical diagnosis, such scales typically do so by increasing psychometric reliability at the expense of individual experience (Wilhelm, Parker, Geerlings, & Wedgwood, 2008). The emphasis on psychometric reliability can result in scales that assess homogenous symptom components that have little resemblance to real-world clinical syndromes and lack sensitivity to changes in symptoms (Fava, Ruini, & Rafanelli, 2004). The implications of this are significant. For example, diagnostic decisions regarding depression are frequently made in primary care by GPs. GPs are constrained in this regard as they often have insufficient time to complete a thorough psychological assessment (Ogden et al., 2004; Richards, Ryan, McCabe, Groom, & Hickie, 2004). In such instances, rating scales are often used as efficient means of determining clinical status (Sharp & Lipsky, 2002). However, short GP consultations can lead to focussed, task orientated enquiry (Brownhill, Wilhelm, Eliovson, & Waterhouse, 2003). Given very few self-report depression rating scales are designed to assess externalising depression symptoms (c.f., the masculine depression framework), the use of depression rating scales that focus solely on DSM-IV symptomology may prohibit GPs from identifying depressed or distressed men. While self-report rating scales assist in efficient decision making and accountability in clinical practice, potential users of these scales should not blindly assume that a well-known scale will meet the measurement needs for any given particular application (Myers & Winters, 2002).

There are now well over 100 self-report depression rating scales published in the research literature (Demyttenarere & De Fruyt, 2003). While there is significant choice of

depression rating scales available to clinicians, in practice depression has come to be defined by what is measured by the two most commonly used and cited measures of depression (Boughton & Street, 2007), that is, the Beck Depression Inventory (BDI-II; Beck, Steer, & Brown, 1996), and the Hamilton Depression Rating Scale (HDRS; Hamilton, 1960). In fact, despite Hamilton (1960) initially acknowledging that the HDRS had “room for improvement” (p. 56), it has become the most widely used depression severity rating scale (Williams, 2001), and has long been considered the ‘gold standard’ (Bagby, Ryder, Schuller, & Marshall, 2004). However, treating scales such as the BDI-II and HDRS as ‘gold standards’ severely limits conceptual and diagnostic progress, and ignores the fact that these measures are highly selective in what they assess (Demyttenarere & De Fruyt, 2003).

Further complicating the use of depression rating scales when screening for at-risk individuals, research indicates that women are more likely to report depressive symptoms than are men, even in instances when men and women are judged as equally depressed (Sprock & Yoder, 1997). Furthermore, in comparison to women, men are less aware of the consequences and chronicity of depression symptoms (Edwards, Tinning, Brown, Boardman, & Weinman, 2007). This may increase the likelihood of men dismissing the significance of depressive episodes (e.g., under reporting symptoms) and may consequently contribute to self-report rating scales underestimating depression symptoms in men (Boughton & Street, 2007).

Psychosocial influences can also have a differential impact on responses to depression rating scale items for males and females. For example, experimental studies indicate that when the Beck Depression Inventory was introduced to undergraduate men as a measure of either ‘daily hassles’ or ‘depression’, those men in the ‘daily hassles’ group scored significantly higher than those in the ‘depression’ group (Page & Bennesch, 1993). Corresponding findings for women were reported in a related study indicating that undergraduate women scored higher when the Beck Depression Inventory was introduced as a measure of depression in comparison to when it was introduced as a measure of hassles (Page, 1999). The results of these studies suggest that responses to self-report rating scales may be influenced by whether respondents perceive the context of their use as being gender role appropriate (e.g., experiencing depression as being more appropriate for females, and experiencing daily hassles as being more appropriate for males).

Given the multitude of depression rating scales available to researchers, it is not surprising that different screening instruments provide different results regarding the prevalence of Major Depressive Disorder (Salokangas, Vaahetra, Pacriev, Sohlman, & Lehtinen, 2002). For example, comparison of scores on the Beck Depression Inventory (BDI) and the Depression Scale (DEPS; Salokangas, Poutanen, & Stengard, 1995) indicated that females endorsed higher mean scores than males on the BDI items assessing crying, and loss of interest in sex. However, there were no sex differences for any of the DEPS items as the DEPS omits questions regarding crying and libido (Salokangas et al., 2002). Consistent with the sex differences framework, in comparison to depressed men, studies indicate that depressed women report significantly more weight gain, appetite increase, emotionality (Carter et al., 2000), and fatigue (Wenzel et al., 2005). In contrast, other studies using different measures fail to indicate sex differences of depression items (e.g., Leach, Christensen, & Mackinnon, 2008; Zuroff, Quinlan, & Blatt, 1990). As indicated above however, with the exception of crying, studies focussing on sex differences in depression symptom presentation tend to be inconclusive with many of these findings unable to be replicated (Addis, 2008).

Crying (e.g., tearfulness) is specifically referenced within the DSM-IV diagnostic criteria for a Major Depressive Episode. However, crying is known to be a gendered activity, with women reporting a greater propensity to cry, a greater actual crying frequency, and more intense crying than do men (Vingerhoets & Scheirs, 2000). Canadian data from a representative national epidemiological survey reported that depressed women reported significant increases in tearfulness (Romans, Tyas, Cohen, & Silverstone, 2007), a finding replicated in large scale American epidemiological research (Cole, Kawachi, Maller, & Berkman, 2000) and a range of similar Australian studies (e.g., Wilhelm, Parker, Asghari, 1998; Wilhelm, Roy, Mitchell, Brownhill, & Parker, 2002). That said, however, there is surprisingly little evidence for the widespread claim that depression leads to more frequent and/or easier crying (Vingerhoets, Rottenberg, Cevaal, & Nelson, 2007). In fact, while depressed women seem to cry more readily than depressed men, depressed men are more likely to suffer from the inability to cry (Vingerhoets et al.). This has prompted some researchers to argue for the removal of crying (e.g., tearfulness) from the diagnostic criteria for depression (Romans & Clarkson, 2008).

While research suggests few differences in actual depression symptom presentation (apart from crying), there do appear to be sex differences in the overall number of symptoms reported. In comparison to depressed women, depressed men endorse fewer diagnostic symptoms of depression, particularly in community based samples (Hildebrandt, Steyerberg, & Stage, 2003). Consistent with this, in comparison to males, females on average experience a greater number of depressive episodes, and longer lasting depressive episodes throughout adolescence and adulthood (Essau, Lewinsohn, Seeley, & Sasagawam 2010). Further, for individuals presenting with only three or four of the required five diagnostic symptoms of depression, the female-to-male sex ratio was 1.18:1 (this difference was non-significant) (Chen, Eaton, Gallo, & Nestadt, 2000). For individuals presenting with five or six symptoms, the gender ratio increased marginally to 1.47:1 (*ns*), but when individuals presented with seven or more symptoms, women were 9.34 times more likely to be represented than were men ($p = .01$). Similar findings have also been reported in other studies (e.g., Kessler, McGonagle, Swartz, Blazer, & Nelson, 1993; Angst et al., 2002). An exception to this has been work undertaken by Kockler and Heun (2002) and Girling and colleagues (1995) who found that similar numbers of depression symptoms were reported by women and men. However, the studies undertaken by Kockler and Heun, and Girling and colleagues were somewhat unique as they focussed on samples of either elderly or very elderly participants. Consistent with research previously cited above, Kockler and Heun did report that elderly depressed women were more likely to experience appetite disturbance, while elderly depressed men were more likely to experience agitation.

A further psychometric issue relates to the validity of self-report rating scales over time. Due to changes in everyday language and diagnostic criteria it is known that rating scales become obsolete (Kaplan & Sacuzzo, 2003). However, many depression rating scales have remained relatively unaltered during the past twenty five years (Demyttenarere & De Fruyt, 2003). As indicated above, despite the HRDS being developed over 50 years ago, it remains among the most widely used depression severity rating scales (Williams, 2001). Given its age, it is therefore unsurprising that critical review of the HDRS items and psychometric properties indicate poor design, unstable factor structure and an outdated conceptualisation of depression that is only partly related to the operationalisation of depression in DMS-IV (Bagby, Ryder, Schuller, & Marhall, 2004).

Snaitch (1993) recommends that modern screening tools for depression should be developed to map on to DSM-IV criteria, allowing for closer alignment between symptoms endorsed and diagnostic status. Such scales include the Patient Health Questionnaire – Depression Module (PHQ-9; Kroenke, Spitzer, & Williams, 2001) and the Major Depression Inventory (MDI; Bech, Rasmussen, Olsen, Noerholm, & Abildgaard, 2001). Similarly, modification of the Beck Depression Inventory (the BDI-II) has been made so that it better reflects DSM-IV criteria (Steer, Clark, Beck, & Ranieri, 1998). However, while these changes to depression rating scales permit a closer alignment with DSM criteria, this trend also serves to stymie scientific progress as it limits psychometric investigation to pre-existing disorders defined within the DSM. This promotes a monolithic view of what depression is, hampering conceptual progress (Demyttenarere & De Fruyt, 2003). Indeed further development, validation, and refinement of diagnostic categories and subtypes for depressive disorders depends on the genesis of new scales (Angst & Merikangas, 1997).

In addition to the above criticism of depression rating scales, most currently used self-report rating scales ignore differences in symptom presentation that may occur as a result of psychosocial factors (e.g., incorporating items assessing symptoms associated with anger, hostility, and irritable mood), consistent with the masculine depression framework (Demyttenarere & De Fruyt, 2003). While the mechanism of action and etiology remains unclear, there is growing evidence that some men engage in aggressive externalising behaviours when depressed (e.g., Brownhill, 2003; Chuick et al., 2009; Clarke & Van Ameron, 2008; Heifner, 1997). Similarly, other research indicates that depression may present atypically in later life, where feelings of sadness may be denied but unexplained somatic complaints may be present (Gallo & Rabins, 1999). Consequently, some researchers and clinicians argue that depression in men may need to be reconceptualised to include an expressed anger component (e.g., Magovcevic & Addis, 2008; Rutz et al., 1995). In doing so, the use of multiple rating scales may circumvent the limitations of any single scale in assessing depression, and may provide a better assessment of men's psychological distress associated with depression (e.g., Myers & Winters, 2002). This may be particularly important when working with men who may not show or endorse typical symptoms of depression as frequently as women.

It is known that many individuals in primary care experience depressive syndromes that have important prognostic significance, but fail to surpass the contemporary diagnostic threshold (Ormel, Oldehinkel, Brilman, & vanden Brink, 1993). Accordingly, the large magnitude of sub-threshold depressive syndromes suggests a need for a specific sub-threshold category in the diagnostic nomenclature (beyond that of Depression Not Otherwise Specified), and a systematic testing of such diagnostic criteria in establishing subtypes of depression categories (Angst & Merikangas, 1997). Such sub-threshold depression categories may have particular significance for men who are less likely to meet diagnostic threshold. This is particularly salient as in comparison to females, males are more likely to conceal psychological distress (O'Brien, Hart, & Hunt, 2007), and are less likely to recognise symptoms of depression (Cotton, Wright, Harris, Jorm & McGorry, 2006). In addition, consistent with the response styles framework, women are more likely to report a greater number of symptoms per depressive episode (Wilhelm, Parker, & Asghari, 1998), while men are more likely to forget depressive episodes (Wilhelm & Parker, 1994).

Summary

Projections indicate that Major Depressive Disorder will continue as a major health issue well into the future. Progress on this issue will depend on targeted research focussing on the effective assessment, diagnosis, and treatment of depression. Historically, reporting of sex differences in relation to depression has led to assumptions that females embody an inherent vulnerability to depressive disorders (Brownhill, Wilhelm, Barclay, & Schmied, 2005). A broader view indicates that this may not be case. For men, a disjuncture exists between depression diagnosis and completed suicide. While the reasons for this are unclear, psychosocial explanations may offer new and important insights.

Psychiatric classification and assessment systems shape and constrain understandings of mental disorder. Depression, it seems, has largely become what depression rating scales assess (Demyttenaere & DeFruyt, 2003). A move toward a broader conceptualisation of the etiological factors precipitating depression symptoms, including the ways in which psychosocial processes contribute toward the expression of the disorder (e.g., gender role expectations), may assist in better identifying depressed men who may be at risk of suicide. Hence, there may be great value in shifting the focus of

depression assessment from the individual per se, to include the broader social context within which men and women are located (Boughton & Street, 2007).

Current diagnostic criteria for Major Depressive Disorder emphasise internalising symptoms such as depressed mood, anhedonia, fatigue, worthlessness or guilt, and concentration difficulties. However, research suggests that men are less likely than women to endorse items assessing such symptoms. Genetic or hormonal factors fail to adequately account for such sex differences. Similarly, demographic factors such as economic status, ethnicity, and access to health care do not explain the sex differences observed. It has been proposed that attitudes related to gendered behaviour, masculinity, and societal expectations exert a strong effect on sex differences in depression and suicide rates. Recent awareness campaigns appear to have adopted this notion, stating that depression may present differently in men. However, while such campaigns emphasise that anger, irritability and substance use may be prominent indicators of depression in males (e.g., BeyondBlue, 2011; NIMH, 2005; Royal College of Psychiatrists, 2006) at present, these symptoms (e.g., anger, irritability and substance use) all fall outside the present diagnostic criteria for depression.

It is known that masculinity and gender role expectations play a salient role in men's help-seeking attitudes and symptom presentation (Addis & Mahalik, 2003). Furthermore, evidence indicates significant variation between men in both the patterns of depression symptoms experienced, and the ways in which men respond to these symptoms (Addis, 2008). The following chapter reviews these lines of evidence in detail.

Chapter 2: The Influence of Psychosocial Factors on Help Seeking & Depression

Sex Differences in Behaviour – The Product of Biology or Socialisation?

While sex differences in human behaviour are well documented, the etiology of these differences remains a matter of debate (Webster & Rashotte, 2009). Studies from a range of decades, reporting data from different age cohorts, indicate that men typically endorse personality characteristics broadly categorised as masculine (e.g., agentic, assertive, and competitive), while women typically endorse personality characteristics broadly categorised as feminine, (e.g., communal, responsive, and expressive) (Bem, 1974, 1975, 1979; Maccoby, 1990; Martin, 1995; Schrock & Schwalbe, 2009). Despite the consistency of these sex differences in personality, it is unclear whether they are the consequence of biology (e.g., sex), socialisation (e.g., gender), or an interaction of the two. A sound understanding of the arguments supporting each explanation is required to fully appreciate the proposed explanations for sex differences in depression rates (e.g., the sex differences, masked depression, masculine depression, and gendered responding frameworks).

Although often referred to interchangeably in the literature, sex and gender refer to different concepts (Bem, 1993). Sex refers to one's biological designation as either male or female, based on the inheritance of sex chromosomes from birth parents. Hence, the term 'sex difference' is used when researchers differentiate and compare specific attributes between males and females on this basis (Wood & Eagly, 2002). In contrast, gender refers to the cultural and social meaning attached to being a man or a woman (Deaux, 1984) and incorporates cognitions, and attitudes associated with these meanings (Cohen, 1994). While one's sex is a characteristic ascribed at birth, gender involves the process of learning from one's environment about how maleness and femaleness are enacted. Maintaining this distinction between the concepts of sex and gender is important in reinforcing the multiple determinants of human behaviour (Unger & Crawford, 1993).

For decades it has been argued that biological differences between male and female brain structure account for sex differentiated behaviour, including sensitivity to facial expressions, displays of empathy and aggression, and occupational choice (e.g., Baron-Cohen, 2005). If such sex differences in behaviour are biologically programmed, then it follows that these differences should be present from birth. However, to date, only one

published study has examined sex differences in relevant gendered behaviour in newborns. Social perception research using a sample of neonates (average age = 36.7 hrs) found that male neonates demonstrated a stronger interest in physical-mechanical shapes, while female neonates preferred to focus their attention at the image of a face (Connellan, Baron-Cohen, Wheelwright, Batki, & Ahluwalia, 2000). Based on the findings of this study, Baron-Cohen (2005, 2007) has since argued that females have an innate motivation to orient toward people, displaying warmth and empathy, while males have an innate orientation towards objects. According to Baron-Cohen, individuals with low empathy and high orientation towards objects represent the 'extreme male brain', a biological condition likened to Autism Spectrum Disorder, characterised by impairment in social interaction and communication (Baron-Cohen, Knickmeyer, & Belmonte, 2005). Should Baron-Cohen's argument hold true, it would assist to explain sex differences in depression prevalence rates – an orientation towards people and empathy places one at greater risk of episodes of depression (e.g., Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008).

Over the last decade the neonate social perception study (e.g., Connellan, Baron-Cohen, Wheelwright, Batki, & Ahluwalia, 2000) has received extraordinary attention in discussion of the origins and nature of sex differences (Spelke, 2005), becoming a cornerstone in the argument for innate sex differences (Nash & Grossi, 2007). However, Baron-Cohen's (2005, 2007) position, and the original neonate study (Connellan et al.) have been widely criticised on the grounds of validity, experimental confounds, experimenter expectancy, operationalisation of the dependant variable, and statistical analysis (e.g., Fine, 2010a, 2010b; Nash & Grossi, 2007; Spelke). Further, in contrast to the findings of the neonate study undertaken by Connellan and colleagues, prior research suggests that male and female infants are equally interested in people and objects (e.g., Maccoby & Jacklin, 1974). In the absence of replication of the neonate study alternate explanations for sex differences in behaviour must be considered (Fine, 2010a; 2010b). The opposing view to Baron-Cohen is that the psychological attributes of males and females are the product of developmental and social experiences (e.g., Wood & Eagly, 2002). This view argues that differences between male and female behaviour is the product of learned socialisation practices that prescribe adherence to gender normalised behaviours (Courtenay, 2000, 2009; Pleck, 1981, 1995).

From an early age, boys and girls experience marked differences in socialisation. Illustrating this, adults have been found to interact differently with the same infant as a function of the sex label used for the infant (Seavey, Katz, & Zalk, 1975). Seavey and colleagues reported that when an infant was introduced as female, both male and female adults utilised dolls more frequently when playing with the infant. When the infant was not ascribed a sex, male carers tended to respond to the 'genderless' infant by using a gender neutral toy (e.g., a teething ring), and handled the child less than female carers. Similar findings were reported by Sidorowicz and Lunney (1980) who replicated Seavey and colleagues study using the same three toys (a football, a doll, and a teething ring). Sidorowicz and Lunney concluded that sex-linked variations in infant behaviour, if present at all, are less important in determining the expectancies of adults than are the presence of a label as either male or female.

Other infant studies provide further evidence of gender socialisation related to displays of distress. Adult participants who viewed footage of an infant labelled as female, who observed a jack-in-the-box, were more likely to attribute fear (a stereotypically feminine response) as the emotion experienced by the infant, while in contrast, if the infant was labelled male, then anger – a stereotypically masculine response, was likely to be the attributed emotion (Condry & Condry, 1976). Furthermore, research indicates that in comparison to girls, boys are handled more roughly from two months of age (Lewis & Weinraub, 1979), and receive less verbal stimulation than do girls (Cherry & Lewis, 1976). From an early age, these types of interactions may prime later behavioural responses and expectancies – for example, anger and physical aggression for males, and emotionally expressive behaviours for females.

Maccoby (1990, 1991) argued that rough and tumble play amongst boys is a central element in the spontaneous segregation of children into same-sex playgroups. Such play may reinforce notions of competition and dominance that are internalised and enacted by males throughout the life course. Other theorists argue that socialisation processes promote emotional distancing for men, where males are expected to 'toughen up' in instances of fear or vulnerability (Silverstein & Rashbaum, 1994). Such emotional distancing may limit avenues of meaningful social support in times of distress. Illustrating this, research indicates that depressed men typically report a lack of connection and integration with same-sex friends such that they often feel as though they have no one with which they can

share vulnerabilities or fears (Heifner, 1993). Consistent with this, in comparison to women, men are less likely to seek out social support in instances of distress (Nolen-Hoeksema, 2008), and in comparison to girls, boys are less likely to ask for help across a range of domains (Fagot, 1974; Smith & DGLISH, 1977).

Social behaviour is never a function of the individual alone, and in comparison to female peer groups, male peer groups demonstrate greater concern with issues of competition, dominance, and disagreement (Maccoby & Jacklin, 1974). Maccoby (1990) argues that the childhood peer group is the setting where children learn and internalise behavioural norms linked to gender, and that this is where males first learn the requirements of maintaining one's status in the male hierarchy. As children grow older their notions of gender stereotypes become increasingly elaborate (Martin, Wood, & Little, 1990) and early learning experiences may have a powerful effect on how males respond to negative affect in later life.

Gendered behaviour is also reinforced in children's literature. Research indicates that while the prevalence of gender stereotypes in popular children's literature has decreased, male characters are more frequently depicted alone (Gooden & Gooden, 2001), and fathers are typically portrayed as withdrawn and unaffectionate, and are less likely than mothers to touch, hug, kiss, talk to, or feed children (Anderson & Hamilton, 2005). Furthermore, while non-sexist children's books have succeeded in portraying female characters as adopting characteristics associated with a masculine gender role, they have generally failed to portray male characters as demonstrating characteristics of a feminine gender role (Diekman & Murnen, 2004). Research examining the content of textbooks also highlights strong themes of gender differentiated behaviour. Male characters portrayed in educational psychology textbooks used in the training of primary school teachers are characterised as depicting more stereotypically negative masculine behaviours compared to female characters (Yanowitz & Weathers, 2004). Such portrayal may reinforce the notion that boys are more likely than girls to be identified as problem students and display disruptive responses characterised by aggression. Similarly, content analysis of the portrayal of masculinity in first, third and fifth grade textbooks indicates male characters are primarily portrayed to be aggressive, argumentative, and competitive, despite non-sexist guidelines espoused by publishers (Evans & Davies, 2000).

The bulk of the above research suggests that, from a young age, males and females are differentially socialised. This socialisation is broadly consistent with gender roles emphasising masculine type behaviours for men and feminine type behaviours for women.

Gender Role Theory

Gender socialisation paradigms assert that males and females learn gendered attitudes and behaviours from cultural values, norms, and ideologies that inform gender roles (Addis & Mahalik, 2003). Gender role theory refers to the ways by which men and women enact culturally desirable traits (Hoffman, 2001). Within the Western world, these traits incorporate characteristics such as emotional expression, gentleness, empathy, and warmth within women (Antill, Cunningham, Russell, & Thompson, 1981) and the contrasting traits of stoicism, independence, avoidance of emotional expression, and suppression of emotional pain within men (Garfield, Isacco, & Rogers, 2008; Wilhelm et al., 2006). Such idealised images guide sex-appropriate activities and behavioural repertoires (Bem, 1981b). According to Bem (1981a), a stereotypically gender role-typed person is motivated to keep their behaviour consistent with an idealised image of masculinity (if male) or femininity (if female). Of course, stereotypes that suggest women invariably find it easy to express emotional distress and men invariably find emotional expression difficult will not always hold true (Emslie, Ridge, Ziebland, & Hunt, 2007).

Until the mid seventies, masculinity-femininity was conceptualised and assessed as a bipolar and uni-factorial construct (Hoffman, 2001). Individuals were believed to possess either masculine traits *or* feminine traits, but not both. In contrast, Bem (1974, 1975, 1979) argued that healthy men and women could possess similar characteristics, conceptualised as psychological androgyny (e.g., high in both masculine *and* feminine traits). As androgyny was theorised to facilitate situational flexibility, individuals could draw on both masculine and feminine traits as required, resulting in more adaptive coping responses (Lam & McBride-Change, 2007). However, for an individual to adopt an androgynous gender role they must in part violate certain gender norms of their own sex. For example, an androgynous male may be either emotionally expressive (consistent with the feminine gender role), or emotionally retrained (consistent with the masculine gender role), depending on the situational context.

Pleck (1981) theorised that males face more severe consequences than do females when they violate gender norms. In comparison to females, males experience more ridicule and are punished more severely for engaging in non-traditional or non-stereotypical masculine behaviour such as showing emotions, seeking help, or expressing hurts (Courtney, 2003). Harsher psychological consequences tend to follow for adolescent boys who endorse non-traditional gender-related interests and personality traits compared to adolescent girls who endorse corresponding non-traditional traits (Aube & Koestner, 1992). Similarly, males studying social sciences such as psychology and sociology are perceived more negatively than are females studying natural sciences such as mathematics and engineering (Sakalh-Ugurlu, 2010). Further, males who undertake occupations typically reserved for women (e.g., nursing) frequently experience negative sanctions such as being questioned about their sexuality (Bush, 1979) and prohibited from working in specific clinical areas (Meadus, 2000). Hence, in comparison to females, males are less likely to experience behavioural flexibility in the enactment of non-traditional gender role behaviours (Hughes & Seta, 2003).

Meta-analytic data of changes in masculine and feminine traits over time indicates a trend whereby women tended to adopt more masculine traits, while at the same time men were prohibited from taking on feminine roles (Twenge, 1997). McCreary (1994) suggests that the asymmetry in responses to male and female gender role deviations are motivated in part through implicit assumptions that male gender role transgressions are symptomatic of a homosexual orientation. Fear of being perceived as gay continues to dominate cultural definitions of manhood (Kimmel, 2007). Kimmel argues that heterosexual men afraid of being perceived as homosexual (and therefore perceived as not being a 'real man'), have a strong motivation to ensure their behaviour is within the parameters of traditional male gender-role expectations. Similarly, homophobia is often cited as a key factor preventing emotional expression amongst men (Brooks, 2010).

Supporting the salience of gendered behaviours, a number of studies indicate that simply priming gender role stereotypes significantly influences behaviour (Wheeler & Petty, 2001). Women who endorse the stereotype that men are naturally more talented and interested in science and mathematics report less interest in maths and science, and are less likely to peruse maths and sciences as careers (Schmader, Johns, & Barquissau, 2004). Further, when such stereotypes are activated in women, be it overtly (e.g., math = male) or

simply by priming sex as a variable of experimental interest (e.g., a demographic question at the beginning of a questionnaire inquiring about participant sex), women experience weakened performance on a subsequent mathematics or engineering examination compared with controls (Fine, 2010a; Inzlicht & Ben-Zeev, 2000; Shih, Pittinsky, & Ambady, 1999). Similar research has demonstrated that when men are primed with a negative stereotype (e.g., women have better verbal skills than men) they become highly vigilant of avoiding failure and demonstrate slower verbal task performance (Seibt & Forster, 2004). The experience of stereotype threat (e.g., when fear of confirming a stereotype poses some degree of threat to self) creates a psychological burden within the individual (Croizet et al., 2004). The generation of such threat is theorised to activate negative affect, which in turn impacts on behaviour (Wheeler & Petty, 2001). Individuals differ in their level of adherence to stereotypes related to gender roles, and the consequences of stereotype activation likely depend on the self-relevance of a particular domain (Seibt & Forster). In instances where failure to meet a stereotype occur, individuals may experience stigma, which is also known to impair ability to control and regulate one's actions (Inzlicht, McKay, & Aronson, 2006).

For men, the experience of failing to measure up to the stereotype of the masculine ideal, which has been labelled as an 'unachievable myth' (Pleck, 1981, 1995), may first generate feelings of anxiety and stereotype threat, which may in turn promote ridicule from others (Aube & Koestner, 1992; Courtney, 2003; McCreary, 1994; Sakalh-Ugurlu, 2010). For example, young males may be denied a masculine identity from peers in response to tearfulness (Branney & White, 2008), which may in part explain the robust finding that males are significantly less likely to cry when distressed (Cole, Kawachi, Maller, & Berkman, 2000; Romans, Tyas, Cohen, & Silverstone, 2007; Vingerhoets & Scheirs, 2000; Wilhelm, Parker, & Asghari, 1998; Wilhelm, Roy, Mitchell, Brownhill, & Parker, 2002). Rather than display gender role incongruent behaviour when distressed (which risks experiencing ridicule and stigma), men may instead display the signs of distress filtered through a masculine congruent lens. As such, when distressed, males may engage in behaviours associated with aggression, substance use, suppression of emotion, and risk taking.

Historically, studies that assess psychological androgyny have typically used the Bem Sex Role Inventory (BSRI; Bem, 1974), or similar measures (e.g., the Personal

Attributes Questionnaire; PAQ; Spence, Helmreich, & Stapp, 1975, or the Australian Sex Role Scale; ASRS; Antill, Cunningham, Russell, & Thompson, 1981). The BSRI is a self-report measure where individuals endorse the degree of accuracy with which a list of masculine, feminine or neutral adjectives represents them. In scoring the BSRI, individuals are classified into one of four categories based on a median split of total scores collected within the sample on the masculine and feminine items. This subsequently results in individuals being classified as either masculine (high scores on masculine traits and low scores on feminine traits), feminine (high scores on feminine traits and low scores on masculine traits), androgynous (high scores on both masculine and feminine traits) or undifferentiated (low scores for both masculine and androgynous traits). Both the PAQ and the ASRS use similar scoring methods.

In recent decades however, the conceptualisation and assessment of psychological androgyny has been widely criticised (Hoffman, 2001; Hoffman & Borders, 2001). In particular, the median split scoring method for the classification of gender roles (e.g., masculine, feminine, androgynous, undifferentiated) is based on the data provided by sample recruited rather than standardised values. As such, the abundance of androgyny-related research has reported inconsistent results, and repeated failures of replication (Cook, 1987). Researchers interested in assessing masculinity related constructs now typically utilise the Conformity to Masculine Norms Inventory (CMNI; Mahalik et al., 2003). The CMNI is a self-report rating scale assessing conformity to 11 distinct factors reflecting actions, thoughts, and feelings of dominant Western masculine norms. Research indicates that higher scores on a range of CMNI subscales (e.g., violence, power over women, dominance, playboy attitudes, disdain for homosexuals, and pursuit of status) correspond to higher alcohol use, and the lower likelihood of adaptive help seeking for depression (Mahalik & Rochlen, 2006).

One of the most important conceptual advances in understanding the ways in which gender related constructs influence men's mental health has been Pleck's (1981; 1995) gender role strain paradigm. The gender role strain paradigm explains the psychological strain that men experience when they attempt to live up to the expected standards of the male role, and the way in which restrictive gender roles may be detrimental to the psychological health and wellbeing of males. Pleck argued that certain prescribed male gender roles (such as aggression and emphasis on emotional suppression) are often

psychologically dysfunctional and promote unhealthy behaviour. According to Pleck, such gender role stereotypes are at times contradictory and inconsistent, and are violated by many males. However, the violation of such gender role stereotypes for men can lead to significant condemnation and negative evaluations from others (O'Neil, 2008).

Pleck (1995) outlined specific types of male gender role strain. Two of these, discrepancy strain, and dysfunction strain, have particular reference to men's depression. Discrepancy strain suggests that as nonconformity to gender role stereotypes often results in negative evaluation from others, men may attempt to compensate for such discrepancies through hypermasculine behaviours. In terms of depression, given the long held perception that depression is a women's disease (e.g., Addis, 2008; Riska, 2009; Safford, 2008) men may be motivated to suppress the expression of symptoms of depression (e.g., consistent with the masked depression framework) or they may engage in maladaptive externalising responses in response to depressed mood (e.g., consistent with the masked depression, masculine depression, or gendered responding frameworks). Dysfunction strain implies that the fulfilment of gender role standards exerts negative consequences on behaviour as prescribed male standards can be inherently dysfunctional. As indicated above, male role stereotypes emphasise an avoidance of emotional disclosure, vulnerability or caring type behaviours, all of which are viewed within the feminine domain. However evidence indicates that fathers who spend less time contributing to housework and child care (thus fulfilling traditional gender role standards) report lower levels of wellbeing (Pleck, 1985). Studies also indicate that conformity to male gender role stereotypes correlate with drug use, aggressiveness, drink driving and antisocial behaviour (Mosher & Sirkin, 1984) and that men who restrict their expression of emotions and restrict their affections toward others report significantly higher depression than men who do not engage in these behaviours (O'Neil, 2008).

Consistent with socialisation processes, research indicates that depression rates amongst boys and girls are roughly equal, or may even be higher in boys in comparison to girls (e.g., Hankin & Abramson, 1999; Kessler, Avenevoli, & Merikangas, 2001; Nolen-Hoeksema, 1990). This may occur as boys are not yet fully socialised into the world of male gender role expectations, where expression of emotion and vulnerability are largely proscribed. Furthermore, in comparison to adult men, boys have a restricted behavioural repertoire such that negative affect cannot be demonstrated through risk-taking behaviours

(e.g., dangerous driving) or substance use, as these behaviours typically require access to stimuli that are only made readily available to adults. Hence, boys do not have the same opportunity to engage in behaviours that may mask, or alter the expression of depression symptoms. At the onset of adolescence however, greater numbers of girls become depressed relative to boys (Hankin & Abramson; Nolen-Hoeksema). As indicated, this sex difference remains throughout adult life (Piccinelli & Wilkinson, 2000). Hence, the onset of adolescence may herald the beginning of sex differentiated depression symptom trajectories – predominately internalising symptoms for females, and predominantly externalising symptoms for males.

While males and females are both subject to gender role expectations, in comparison to females, males tend to experience less behavioural flexibility when it comes to engaging in non-stereotypical gendered behaviour. Consequently, compared to females, males may be less inclined to overtly display negative affect or sadness. Furthermore, gender role expectations regarding stoicism may also influence men's attitudes towards seeking help for emotional problems, resulting in impeded or deferred help seeking.

Masculinity and Help Seeking Behaviours

As indicated, conformity to masculine norms is associated with less willingness for men to get help for psychological concerns (Mahalik & Rochlen, 2006). Given that research indicates that health behaviours contribute as much as 50% of the variance in mortality and morbidity statistics (Mokdad, Marks, Stroup, & Gerberding, 2004), the link between masculinity and health promotion raises important implications for clinical practice. Men are more likely than women to suppress or distract themselves from negative emotions (Butler & Nolen-Hoeksema, 1994; Nolen-Hoeksema & Jackson, 2001; Ziegart & Kistner, 2002), and are far less likely to make use of health care services (Mahalik, Walker, & Levi-Minzi, 2007), often deferring seeking help until symptoms become undeniable (Tudiver & Talbot, 1999). Further, in response to likely action that would be taken if depressed, in comparison to women, men are more likely to go out and socialise, or turn to substances (e.g., alcohol, or cannabis) (Highet, Hickie, & Davenport, 2002). Further, men are more likely than women to hold the belief that depression should be dealt with alone, and are also more likely to use substances to cope with low mood (Jorm et al., 2006).

Given the pervasiveness of male role norms, cases of depression may go underreported in the context of face-to-face interviews, where men may be unlikely to disclose depressive symptoms (Lai, Tang, Lee, Yip, & Chung, 2010). Within Australia, general practitioners (GPs) are typically the first point of contact for individuals experiencing depression (Highet, Hickie, & Davenport, 2002). Research indicates that men will rarely mention any emotional or behavioural difficulties to their GP (Ogrodniczuk & Oliffe, 2011), even in instances where psychological distress is so severe it prompts suicidal ideation (Wide, Mok, McKenna, & Ogrodniczuk, 2011). Research also indicates that men tend to prefer medical consultations with male GPs (Fennema, Meyer, & Owen, 1990). However, in comparison to female GPs, male GPs provide shorter consultation times (Britt, Valenti, & Miller, 2002), particularly to men (Courtenay, 2000), engage in less communication during consultations (Roter, Hall, & Aoki, 2002), are less likely to manage problems of a psychosocial nature (Harrison, Britt, & Charles, 2011), and are less positive in their attitudes towards the assessment and treatment of depression (Richards, Ryan, McCabe, Groom, & Hickie, 2004). In comparison to women, men are more passive when they visit their GP, offering less information and asking fewer questions – in fact research indicates that men who see male doctors give half as much information to their GP as men who saw female doctors (Pleck, 1995). Recent research also indicates that male GPs may have ambivalent attitudes towards some male patients. For example, qualitative research suggests male GPs view men who attend consultations as frequently as women as less masculine (Hale, Gorgan, & Willott, 2010). These research findings indicate significant barriers for men who may be experiencing depression to access appropriate treatment and support.

Research also indicates that men who demonstrate rigid adherence to traditional masculine norms are likely to perceive a greater number of barriers to accessing health care (Boman & Walker, 2010). Barriers to men seeking help for depression include feelings of weakness and vulnerability, fear, denial, and personal beliefs related to a sense of immortality or difficulty relinquishing personal control (Wilhelm, 2009). Other barriers may be physical. As men frequent the waiting rooms of health professionals less frequently than women, waiting rooms are less geared towards their needs. Malcher (2009) refers to men experiencing the ‘waiting room discomfort syndrome’, characterised by a dislike of excessive waiting, the ubiquitous presence of women’s magazines in waiting rooms (and often noteworthy absence of men’s reading material), and fear of a health

system with which they are not familiar. In moving to male friendly services, simple strategies can address these factors including the encouragement of male friendly reading material in the waiting room, out of hours practice, on the day appointments, and reception staff and areas that are more engaging (e.g., gender neutral) for men (Holden, Allen, & McLachlan, 2010).

Within Australia, men not only access health services at lower rates than women, but they do so later in the course of their illness (Royal Australian College of General Practitioners, 2006). Accordingly, men's health practices have been theorised as a demonstration of masculine identity (Courtenay, 2001). Courtenay argues that when a man brags to others that he has not been to see a doctor in years, he is situating himself in the masculine arena, demonstrating his invulnerable status. Illustrating this, qualitative research indicates that younger males are reluctant to attend medical appointments unless seriously injured or suffering intense physical pain for fear that they would be considered weak, or perceived as time wasters (O'Brien, Hunt, & Hart, 2005).

As indicated, men are typically socialised into a world where issues of power and competition are particularly salient (Clark & Ayers, 1992; Schwalbe & Staples, 1991). Given that health professionals occupy a position of power within the medical sphere (Boman & Walker, 2010), seeking help for health complaints may violate internalised beliefs about masculinity and enduring hardships alone (Brooks, 2010). Unfortunately however, in the case of depression, deferring help seeking can have disastrous consequences, especially where depressive episodes are accompanied by suicidal ideation.

Masculinity, Suicide, and Depression

There is little doubt that research on gender differences in depression, completed suicides, and help-seeking for emotional difficulty suggest a particularly troubling pattern for males (Mahalik & Rochlen, 2006). Completed suicide has been traditionally associated with masculinity (Canetto, 1997), and men who commit suicide tend to use violent methods (Isometsa, Henriksson, Heekkinen, Aro, & Lonnqvist, 1994). In contrast, non-fatal suicidal behaviour has traditionally been associated with femininity, and in comparison to males, females are more likely to attempt suicide (Moscicki, 1997). In fact, non-fatal suicidal behaviours have been theorised to be associated with unmanly connotations (Möller-Leimkühler, 2003). Males who commit suicide may be more

cogniscent of social expectations related to male gender role norms, and may be more concerned about living up to the male gender-role than males who make non-fatal suicide attempts. Consistent with this, gender role nonconformity in childhood has been found to be associated with later nonfatal suicidal behaviour in males, but not females (Harry, 1993).

Houle, Mishara, and Chagnon (2008) investigated two groups of men who had experienced comparably severe stressful depressogenic life events during the preceding 12 months. They reported that adherence to a traditional masculine gender role differentiated men who attempted suicide from those who had no history of suicide. Thus, adherence to a traditional masculine gender role may increase psychological distress by undermining an individual's mental state, and inhibiting the protective influence of help seeking and social support. Similarly, Alston and Kent (2008) reported on the impact of traditional masculinity on rural Australian men in drought affected farming communities. Arguing that the stoicism typical of rural hegemonic masculinity is inherently unhealthy, they reported that rural men's reluctance to seek help (despite encouragement from their female partners), lead to an increasing prevalence of mental health problems and suicide risk for male farmers. Research also suggests that male suicide occurs in the context of extreme shame and dishonour for not living up to masculine norms. For example, research from Ghana indicates that male suicidal behaviour was frequently precipitated by shame associated with a range of events from challenges to physical health (e.g., being diagnosed with HIV/AIDS), job loss, or academic failure (Adinkrah, 2011). Research also indicates that the association between feelings of shame and suicidality exists for males, but not for females (Lester, 1998).

Vulnerability and emotionality are central aspects to the experience of major depression. As indicated, vulnerability and emotionality are largely forbidden for males by Western cultural norms. In contrast to this however, males in some cultures report a more tolerant attitude toward depression. For example, research indicates that Jewish men may actually be more likely than women to seek help for, and discuss their experiences of depression (Loewenthal, Macleod, Lee, Cook, & Goldblatt, 2002). Furthermore, differences in depression rates disappear in specific cultures where alcohol abuse is prohibited. Depression incidence rates have been found to be equivalent amongst males and females in orthodox Jewish (Loewenthal et al., 1995) and Amish communities

(Egeland & Hostetter, 1983). Amongst Jewish and Amish men, where violence and alcohol consumption are less normative, admitting to symptoms of depression may be more culturally appropriate than it is amongst other groups (Loewenthal et al.).

Summary

While sex differences in behaviour are well documented, the etiology of these differences remains unclear. Growing evidence suggests that such differences may be explained by psychosocial explanations. Socialisation processes teach males to behave in dominant, aggressive, and agentic ways, while females are socialised to act in accord with norms related to communal, expressive, and nurturing behaviours. However, in contrast to females, males can expect greater social pressure and punishment when they fail to adhere to gender role norms. Males are often acutely aware of such social norms related to masculine behaviour, and will typically seek to minimise the psychological strain that may occur in instances where masculine norms are breached. Following this, males who adhere to such stereotypical gender-role norms are unlikely to consider behaving in ways that could possibly be interpreted as feminine. As the diagnostic criteria for depression comprises a range of internalising symptoms that imply vulnerability, many males may be motivated to conceal such symptoms. Further, gender role norms may also result in men deferring help for such problems, placing men at greater risk of suicide.

Chapter 3: Qualitative Findings & the Male Depressive Syndrome

Theorised Subtypes of Male Depression

Within the last decade, a range of books aimed towards the popular market have been published on the topic of men's experience of depression. As Martin (2010) summarises, these books emphasise the hidden nature of men's depression, reinforcing themes of irritability and anger. For example, titles such as *The Pain Behind The Mask: Overcoming Masculine Depression* (Lynch & Kilmartin, 1999), *Unmasking Male Depression – Recognizing the Root Causes To Many Problem Behaviors, Such As Anger, Resentment, Abusiveness, Silence, Addictions, and Sexual Compulsions* (Hart, 2001), *The Irritable Male Syndrome – Understanding and Managing the Key Causes of Depression and Aggression* (Diamond, 2005), and Kantor's (2007) *Lifting The Weight – Understanding Depression in Men, Its Causes and Solutions*. The authors of these books are all primarily clinicians, and the legitimacy of their arguments rests on clinical experience and case study examples (Martin).

Qualitative Findings Related to Men's Depression

The first published qualitative study focussing on men's experience of depression was undertaken by Heifner (1997). Heifner interviewed 14 men who had been diagnosed with, and treated for depression. All but one participant reported adhering to stereotypical gender role identities involving stoicism, success, and reluctance to show emotions (other than anger), epitomised by one participant who stated: 'Killing myself was more acceptable, easier than having others see me as being weak' (p. 12). Participants in Heifner's study typically described a lack of connectedness and integration with other men, stating that they did not feel as though they had anyone with which they could share their fears or vulnerabilities. This aligns with the argument made by theorists that male socialisation promotes emotional distancing between men, that in turn precipitates a cascade of problematic outcomes for mental health (e.g., Pleck, 1981, 1985; Silverstein & Rashbaum, 1994). Of note, 11 of the 14 participants discussed substance use (especially alcohol) as a means of managing their depression, and almost all the men interviewed by Heifner considered suicide as a way of regaining control. Consistent with the notion of discrepancy and dysfunction strain (Pleck, 1995), suicide was initially viewed as preferable to treatment, especially psychotherapy. Nevertheless, all of the men interviewed experienced relief, acceptance, and support as they engaged in the therapy process.

Complementing Heifner's (1997) findings, a large Australian qualitative study examined men's experiences of depression across 10 focus groups with men, and four focus groups with women (Brownhill, 2003; Brownhill, Wilhelm, Barclay, & Schmied, 2005). This study drew on a community (e.g., non-depressed) sample. Male participants indicated that their past experiences of low mood and depression involved an escalating trajectory of emotional distress characterised by avoidant, numbing, and escape behaviours, which in some cases precipitated acts of aggression, violence, and suicide. Once responses to emotional distress became ineffective, many of the male respondents indicated employing risk-taking coping behaviours, characterised by anger, aggression, and violence – all of which were related to the suppression of negative emotion. Brownhill and colleagues referred to this as the 'big build' model of hidden depression in men, an interaction between internalised feelings and externalised behaviours. The big build model of depression shares conceptual similarities with both the masculine depression framework and the gendered responding framework. It proposes that responses to depression progress in an escalating fashion from avoidance behaviours (e.g., distraction, overwork), to numbing behaviours (e.g., drugs and alcohol), to escape behaviours (e.g., risk-taking such as excessive alcohol or gambling). The subsequent phase, named 'hating me, hurting you' involves violence, aggression, and crime, and the final phase of the big build model, referred to as 'stepping over the line' involves cognitions of self-harm or suicide.

Brownhill's (2003) study was unique in that it enabled comparison of data collected from men and women. From this, Brownhill found that sex differences were evident in the management of depressive symptoms. The categories generated from the men's data (e.g., the big build model) were the referent point for content analysis where women participants were asked to comment on differences between the ways in which men and women experience and manage depression. Consistent with gender role norm expectations (e.g., Pleck, 1981; 1995) and findings on crying reported in Chapter 1 (e.g., Cole, Kawachi, Maller, & Berkman, 2000; Romans, Tyas, Cohen, & Silverstone, 2007; Wilhelm, Parker, Asghari, 1998, Wilhelm, Roy, Mitchell, Brownhill, & Parker, 2002), women reported being able to cry in response to painful emotions, especially amongst groups of fellow women, while in contrast, men were much less likely to cry amongst fellow males. The female participants also reported that they were able to talk about their difficulties with friends, and admit to needing help. They believed that men were more likely to socially withdraw, stop verbalising their distress, and refuse help. Of note, the

focus group data indicated that some of the women interviewed also experienced the full range of big build symptoms, though to a less severe degree than for men.

Other in-depth interviews conducted with men experiencing depression have indicated that recovery processes are influenced by attitudes towards masculinity, and a need to re-establish control and responsibility (Emslie, Ridge, Ziebland, & Hunt, 2006). However, several of the men interviewed by Emslie and colleagues viewed suicide as means of re-establishing control. Further, Emslie and colleagues found that internalisation of masculine norms could also precipitate suicidal acts, with one participant recounting that he forced himself to jump off a multi-story car park by deriding himself as a coward. More recently, Shirt (2008) explored the experiences of eight Australian men who had sought help for depression and found an overlap of typical DSM-IV symptoms (e.g., worthlessness and guilt, anhedonia, concentration difficulties, fatigue) and atypical symptoms such as frustration, aggression, overwork, irritability, alcohol use, and risk-taking behaviours. Shirt reported that the men interviewed were more likely to report or experience atypical symptoms that align with their gender role identity. Furthermore, all but one participant reported that shame and embarrassment caused them to hide their depression from others. All eight participants disclosed difficulties with issues of emotional control, and seven of the eight men initially resisted taking antidepressant medication for fear medication would cause a loss of control. For many, help seeking was contingent on a momentous or life-changing event such as attempted suicide. Consistent with the findings of Heifner (1997), the men interviewed reported that they experienced varying support from their families, but little emotional support from outside the family, especially from other men.

Highlighting the recent trend towards a focus on men's experiences of depression, the last 18 months have witnessed a burgeoning of related qualitative research in this area. This research reports data from focus groups (Rochlen et al., 2010), individual interviews (Chuick et al., 2009; Emslie, Ridge, Ziebland, & Hunt, 2007; Jensen, Munk, & Madsen, 2010; Oliffe, Robertson, Kelly, Roy, & Oghrodniczuk, 2010; Oliffe, Kelly, Johnson, Bottorff, Gray, Ogrodnizzuk, & Galdas, 2010; Oliffe, Kelly, Bottorff, Johnson, & Wong, 2011; Oliffe, Han, Ogronczuk, Phillips, & Roy, in press; Oliffe, Ogronczuk, Bottorff, Johnson, & Hoyak, in press), case studies (Rabinowitz & Cochran, 2008; Rhodes & Smith, 2010), blog postings (Clarke & van Ameron, 2008), and a gender-sensitive treatment

program for depressed men (Primack, Addis, & Miller, 2010). Broadly speaking, each of these studies corroborates the findings of Brownhill (2003), Emslie, Ridge, Ziebland, and Hunt (2006), Heifner (1997), and Shirt (2008).

Rochlen and colleagues (2010) conducted six focus groups (45 men in total) related to help seeking for depression. While some participants were uncertain of whether symptoms of depression differed between men and women, others articulated qualitative sex differences in symptoms, and indicated that the current diagnostic criteria for depression may not capture some men's depressive experiences. The men holding this view stated that it was imperative that they maintain the illusion of control and looking good at all costs – no matter what degree of emotional pain they may be experiencing. Findings also indicated that men tended to cover up depressed feelings with substance use (typically alcohol), or distraction activities (typically working longer hours). Chuick and colleagues (2009) interviewed 15 men who had received treatment for depression within the last five years and found that men experienced an array of atypical depression symptoms not included within current diagnostic criteria (e.g., alcohol or substance abuse, escalating interpersonal conflict, and anger management problems). In a similar manner to the big build model reported by Brownhill and colleagues (2005), these atypical symptoms were reported as being escalating in nature, often reflecting ineffective strategies for coping with their depression. Following the theme of gender role expectations impeding men's help seeking for depression, participants in Chuick's study stated that masculinity imposed help seeking restrictions and that this expectation forced men to hide their negative emotions. When the participants were asked how they would recognise depression in other men, several endorsed substance abuse or binge drinking as key indicators.

Sex comparisons of internet blog postings of 45 men and 45 women who self-identified as depressed indicated that unlike women, men tended to emphasise violence (including suicidal ideation and cutting) and a tendency to suppress emotion in their management of depression (Clarke & van Ameron, 2008). Furthermore, in comparison to female bloggers, male bloggers were more likely to discuss pharmaceutical interventions and were more likely to accept the medical view that depression is biologically based. In contrast, female bloggers were more likely to express scepticism of the medicalisation of depression, and were more likely to discuss psychotherapy or self-help in their postings.

A Canadian qualitative study of 38 men experiencing depression elucidated similar themes of risk taking, and unspoken thoughts or actions related to self-harm and suicide (Olliffe, Ogrodniczuk, Bottorff, Johnson, & Hoyak, in press). Corroborating the findings of the studies reported above, self-medication with alcohol or drugs was common practice among the male participants seeking to escape their feelings of depression. In a separate study of older men, results indicated that depression symptoms and thoughts of suicide were related to cumulative losses (including loss of work, friends, and health) and failed attempts to build a career and wealth (Olliffe, Han, Ogrodniczuk, Phillips, & Roy, in press). These participants also indicated that their deliberations about suicide involved consideration of how they might be able to take their own life without attracting stigma to their family, or to make suicide look like an accident so that their family would still be eligible for life insurance payouts. Similarly, a further qualitative study interviewed a cohort of 38 men identified as depressed and distinguished two distinct depression related pathways; reconciling despair (which was associated with activation of social support and corresponding decreased risk of suicide attempt), and contemplating escape (which rendered men socially isolated, and prone to drug and alcohol use) (Olliffe, Ogrodniczuk, Bottorff, Johnson, & Hoyak, in press). Those men on the escape pathway embodied masculine ideals related to solitary and risk-taking identities. Consistent with theorising that failed suicide attempt is associated with femininity (Canetto, 1997; Moller-Leimkuhler, 2003), many of the participants felt disempowered, marginalised, and embarrassed by their suicidal thoughts (Olliffe, Ogrodniczuk, Bottorff, Johnson, & Hoyak, in press).

Further qualitative studies have examined experiences of depression and associated coping responses in other age cohorts. Amongst university aged men, many interviewees indicated that they attempted to pass as untroubled and self-assured in public, especially when in the company of male peers, and that they utilised substances to manage mood difficulties (Olliffe, Kelly, Johnson, Bottorff, Gray, Ogrodnizzuk, & Galdas, 2010). A further study on university aged men found that participants tended to identify that depression was a woman's illness, and men were expected to remain strong, silent and action oriented, regardless of the degree of duress experienced (Olliffe, Robertson, Kelly, Roy, & Oghrodniczuk, 2010). This study also found that ineffective self-management strategies led to escalating anger, self-loathing and in some cases self-harm. Reporting on data from men diagnosed with depression aged 66-85, Jensen, Munk, and Madsen (2010)

found that men's coping behaviours in response to depression may distort depression symptoms and put health professionals on the wrong diagnostic track. For these older men, sadness was hidden to ensure a keeping up of appearances, and the emotional implications of losses were typically suppressed. When the avoided emotions of these men were accessed, highly relevant clinical information was presented, despite the men's initial behaviour contradicting traditional depressive behaviour.

Qualitative research has also evaluated the way in which men's experiences of depression impacts on the relationship functioning of heterosexual couples (Olliffe, Kelly, Bottorff, Johnson, & Wong, 2011). Women partners were identified as key to providing health advice and care giving. In many instances female partners were identified as the men's only confidant – enabling men to be emotionally expressive without risk of eroding public personas built on strength and control. In some instances men reported that while substance use (e.g., alcohol, cannabis) eased their emotional pain, it also resulted in extremes of behaviour that prevented men from taking up offers of help and support from female partners.

Case study evidence also shows that men's experience of depression may not align with DSM-IV diagnostic criteria. Rabinowitz and Cochran (2008) report on the case of a 53 year old member of an ongoing men's psychotherapy group who disclosed an adherence to masculine role norms such as emotional stoicism, avoidance of close interpersonal relationships, and tendency towards anger. This individual failed to report any of the typical symptoms of depression and regularly avoided emotional disclosures, downplaying his struggles whilst emphasising his strengths. However, during a scheduled break in the group psychotherapy program (e.g., when the support of the men's group was not available to him) this individual was hospitalised in response to a serious suicide attempt. Rabinowitz and Cochran concluded that despite how 'normal' this individual appeared, he typified the profile of a man experiencing a masculine variant of depression (e.g., denial of sadness, emotional stoicism, preoccupation with work, and adherence to masculine norms) which would not be identified through the use of DSM-IV diagnostic criteria. In a further case study, Rhodes and Smith (2010) report on a 46 year old male diagnosed with depression whose experiences of vulnerability and weakness directly contrasted with his attitudes towards conventional masculinity. This episode of depression was precipitated by financial difficulty, overwork, and excessive alcohol consumption.

Expectations for the need to live up to the masculine ‘strong man’ stereotype prevented this individual from initially seeking help. The desire to be seen as strong was coupled with a need to be seen as fearless – both of which were violated through the experience of expression.

Other qualitative research suggests that while depressed women particularly value the listening skills of health professionals, depressed men value the ability of health professionals to enable them to talk (Emslie, Ridge, Ziebland, & Hunt, 2007). Hence, some males may need to be provided with the language with which to express emotions that may have been long suppressed or unacknowledged. Emslie and colleagues also found that the male participants valued the skills-based, and solution focused practical aspects of cognitive behavioural therapy. In a similar note, Clark and van Ameron (2008) concluded that differences in the emotional cultures of men and women indicated the need for specifically targeted interventions for depressed males and females. Recently, Primack, Addis and Miller (2010) piloted a gender-sensitive intervention for depressed men, combining cognitive behavioural therapy with group based discussion about of the impact of masculine norms on depression symptoms presentation and treatment. Primack and colleagues reported that self-reliance and emotional control were factors experienced by all men who participated in the program. Further, all participants reported significant improvement in depression symptoms by the conclusion of the eight week program, and indicated that they enjoy the workshop as it provided an opportunity to interact with other men who experienced the similar gender role pressures and expectations.

The qualitative studies reported above provide important insights into men’s experience of depression, highlighting ways in which depression may manifest for males. Rochlen and colleagues (2009) concluded that aspects of the male role may consciously or unconsciously interfere with the recognition and treatment of depression in men. Men are unlikely to refer to their emotional problems as sadness or hopelessness, instead preferring to refer to emotional problems as ‘stress’ (Ogrodniczuk & Oliffe, 2011), and it is not uncommon for men to act out their stress through overwork, risk activities, or substance use/abuse (Oliffe & Phillips, 2008). Nonetheless, Rochlen and colleagues point out that a focus on men’s symptoms of depression should not imply that such coping responses are not relevant for women. Similarly, Brownhill (2003) found that women who suppressed negative emotion also tended to engage in the big build trajectory (e.g., substance use and

anger). However, in comparison to men, societal and internal pressures to hide emotional distress are less pronounced for women, thus making it safer for women to disclose their depressed mood to others and receive appropriate support and/or treatment (Brownhill, Wilhelm, Barclay, & Schmied, 2005).

The Male Depressive Syndrome

During the 1980's a General Practitioner education program, highlighting the prevention, treatment, and monitoring of depression and suicide was undertaken for all GPs on the island of Gotland, Sweden (Rutz & Rihmer, 2007). A decade later, this program was to lead to a major reconceptualisation of the assessment of depression in men. While evaluation of the initial GP education program found that it was effective in significantly reducing in the suicide rate of women in the region, it had little effect on the male suicide rate (Rutz, Von Knorring, Pihlgren, Rihmer, & Walinder, 1995). Psychological autopsy of males who had committed suicide during this period throughout Gotland indicated that these men were largely unknown to local health care services. Approximately 60% of completed female suicides were known to the medical system while this number was only 20% for males (Rutz, Walinder, Von Knorring, Rihmer, & Pihlgren, 1997). Furthermore, in comparison to females, a relatively high proportion of male suicides were known to social welfare services for drug or alcohol abuse (20% for males, 3% for females) or to local police (15% for males, 0% for females).

The number of male suicides at the time of the Gotland study was unaffected by the ability of GPs to identify, diagnose, and treat depression (Rutz, Walinder, Von Knorring, Rihmer, & Pihlgren, 1997). For men, the sociological situation of Gotland was characterised by traditional gender related expectations characterised by male autonomy and unwillingness to seek help (Rutz, 2001). The finding of the initial Gotland study lead Rutz and colleagues (1995) to conclude that males and females may be afflicted by depression in different ways. They postulated that the female overrepresentation of depression, and the male overrepresentation for suicide, may be an artefact of under-diagnosis and treatment of male depression. A booster education program was undertaken and directed to all GPs throughout Gotland. Corresponding with this, Rutz and colleagues (1997) proposed the existence of a male depressive syndrome – characterised by a range of diagnostic indicators not present in the DSM-IV conceptualisation of depression. These diagnostic indicators included lowered stress tolerance, aggression and impeded impulse

control, substance use, feelings of emptiness, chronic fatigue, irritability, and abuse of others.

Related lines of theorising were also underway in the United States (e.g., Cochran & Rabinowitz, 2000; Pollack, 1998; Real, 1997). Based on clinical experience, Pollack (1998, 2005) suggested that masculinity may filter the symptoms of depression in some men, resulting in a subtype of the disorder he termed Major Depressive Disorder – Male Type, characterised by a range of behaviours that contravene the DSM-IV conceptualisation of depression. Pollack argued that many depressed men will deny sadness (sadness is one of the two diagnostic symptoms that *must* be present in order for a DSM-IV diagnosis of depression to be applied to an individual). Other symptoms of Major Depressive Disorder – Male Type included behaviours characterised by anger outbursts or impulsive mood, substance abuse, overwork, withdrawal from relationships, denial of emotional pain, increasingly rigid demands for autonomy, avoidance of help, and changes in libido. In a similar manner, Cochran and Rabinowitz (2000) proposed the existence of masked depression in males (see Chapter 1), characterised by alcohol and substance use, irritability, anger management issues, and distraction routines.

The subtypes of depression noted above are in close accord with the findings of qualitative research into men's experience of depression reviewed above (e.g., Chuick et al., 2009; Heifner, 1997; Rochlen et al., 2010; Shirt, 2008). Both the male depressive syndrome, and Major Depressive Disorder - Male Type, share key similarities with the big build model of hidden depression (Brownhill, Wilhelm, Barclay, & Schmied, 2005), in which suppression of negative emotion, substance abuse (typically alcohol), distraction routines (e.g., overwork), and the dysregulation of aggression are key indicators. Broadly speaking, the behaviours hypothesised to reflect a male subtype of depression (e.g., those identified by Pollack, 1998; Rutz, Von Knorring, Pihlgren, Rihmer, & Walinder, 1995) fall into one of four categories: suppression of emotion; irritability, anger and aggression; substance use; and risk taking behaviours. Specific research on these four categories of behaviours is reviewed below.

Suppression of Emotion

With the exception of the sporting context, where situational norms may deem emotional expression such as crying to be appropriate (Wong, Steinfeldt, LaFollette, &

Tsao, 2010), the expression of emotion is generally considered unmanly (Brody, 2000). As indicated, males face more severe consequences than do females when they violate gender norm expectations such as showing emotions or expressing hurt (Aube & Koestner, 1992; Courtenay, 2003; Pleck, 1981, 1995), and men who demonstrate expressions of emotion are likely to experience repercussions in both social and economic terms (Moss-Racusin, Phelan, & Rudman, 2010). While research suggests that restricting emotional expression is strongly related to men's feelings of success and power (Liu, 2002), evidence of the deleterious outcomes of such emotional suppression is growing (Wong & Rochlen, 2005).

Compared to females, males are socialised to express emotion in different ways (Wong & Rochlen, 2005). While some men are able to openly express emotion, research indicates that on average, men use strategies of emotional suppression to a greater extent than do women (Gross & John, 2003; John & Gross, 2004). However, contrary findings have been reported from a sample of cancer support groups (Cordova et al., 2003), where no sex differences in emotional suppression were found. However, this sample was recruited from those attending group programs facilitated by a licensed psychotherapist, and it is possible that men who are attracted to such support groups may be more emotionally expressive, and thus less likely to suppress emotion than men who would not attend such groups.

Although emotional suppression is typically utilised by individuals to relieve psychological distress, research indicates that it is an ineffective emotion regulation technique, particularly for individuals experiencing mood disorder (Campbell-Sills, Barlow, Brown, & Hofmann, 2006). While emotional suppression can assist in short term affect regulation, in the longer term it serves to take up finite mental resources (Fine, 2010). Men who suppress their emotions are often unable to articulate their distress, placing them at greater risk of a range of illnesses including heart disease, hypertension, alcohol and substance abuse, and self-harm (Wilhelm, 2009). Men's restricted emotionality, (a form of emotional suppression that relates to difficulty expressing one's feelings, or denying others the rights to emotional expressiveness) has been found to correlate with lower self-esteem, anxiety, depression, stress, shame, and marital dissatisfaction (O'Neil, 2008). Unsurprisingly, men with higher discomfort expressing their emotions report less favourable attitudes to face-to-face counselling (Rochlen, Land, & Wong, 2004).

Emotional suppression may also be linked to mortality and physical health problems (Helmers & Mente, 1999). For example, suppressed aggression has been found to accelerate the early development of hypertension in males, placing them on a steeper trajectory for the early development of high blood pressure (Perini, Muller, & Buhler, 1991).

Irritability, Anger, and Aggression

While men are more likely to suppress sadness, they are less likely to suppress anger (Gross & John, 2003). However, when mood disturbance is characterised by prominent symptoms of anger and aggression, the assessment of depression can be impeded (Jensen, Munk, & Madsen, 2010; Stromberg, Backlund, & Lofvander, 2010). As anger outbursts are most frequently expressed towards members of the immediate family (Alpert et al., 2003), aggressive behaviour may be masked within the context of clinical assessment where members of the immediate family are typically not present (Weissman, Klerman, & Paykel, 1971). Given the wide variety of clinical pictures that can occur within depressed patients, current diagnostic classification systems may underestimate the role played by externalising responses related to irritability, anger, aggression, and hostility (Pasquini, Picardi, Biondi, Gaetano, & Morosini, 2004).

Currently, most depression screening measures fail to assess symptoms associated with anger. Further, while the DSM-IV includes irritable mood as a diagnostic marker of depression in children or adolescents, irritability does not feature in the diagnostic criteria for adults (APA, 2000). However, in failing to assess behaviours linked to irritability, anger, and aggression, current depression rating scales fail to assess important clinical information for many individuals experiencing depression (Overall, 1980; Pancheri, Picardi, Pasquini, Gaetano, & Biondi, 2002). Some even argue that behaviours associated with irritability and aggression are key diagnostic indicators of depression in adults (Fava et al., 2009).

In terms of sex differences related to anger, research indicates that anger attacks (characterised by sudden spells of anger and aggression) are twice as common in males experiencing depression (40.8%), compared to females experiencing depression (21.3%), and may result from suppressed emotion and unresolved psychosocial conflicts (Winkler, Pjrek, & Kasper, 2006). Similarly, Fava and colleagues (1993) identified a subgroup of highly irritable and hostile depressed inpatients with a distinct psychological profile from

depressed patients without anger attacks. A greater percentage of men (56%) compared to women (38%) experienced these anger attacks. Other research suggests that anger, aggressiveness, and hostility can be prominent features of the symptomology of individuals diagnosed with depression (without co-morbidity) as assessed by the MMPI-2 (e.g., Biondi et al., 2001 as cited in Pancheri et al., 2002).

Martin (2010) recently explored the concept of irritable depression by substituting irritability for dysphoria within the depression diagnostic criteria. In contrast to the findings reviewed above, Martin reported that within a large nationally representative sample ($N = 10,341$), irritable depression was prevalent in 5.8% of the sample, but was slightly more common amongst women. Martin concluded that while irritability is not a prevalent symptom of depression, it is a symptom that both men and women are comfortable endorsing. A large scale study of 2,541 outpatients from across the United States failed to report greater irritable mood amongst males, with both sexes reporting high levels of irritability – 79% of men and 83% of women (Marcus et al., 2008). Marcus and colleagues assessed irritability using the Inventory of Depressive Symptoms (Rush, Gullion, Basco, Jarrett, & Trivedi, 1996), where irritability is assessed by the following item '*Have you been feeling especially tense or irritable this past week?*'. If respondents endorse this item, follow up questions enquire with the following: '*Have you been unusually argumentative or impatient?*' and '*Have you found yourself becoming angry with others for little apparent reason?*' Whilst Marcus and colleagues failed to report sex differences in irritability, they did report that depressed men show more externalising behaviours with their irritable mood, noting that males in their study were more likely to engage in alcohol and substance abuse than were females. This led to the conclusion that substance abuse screening is necessary for all men treated for depression. Taken together, these studies may indicate that males and females experience similar rates of irritability when depressed, but males may be more likely to transition irritable states to anger and aggression.

Alcohol Use

It is known that distressed men develop psychopathologies other than depression (Loewenthal et al., 1995), and that alcohol consumption is more likely among men than among women in response to stress and distress (Angst et al., 2002; Robins & Martin, 1993; Roeloffs, Fink, Unutzer, Tang, & Wells, 2001). Accordingly, depressed men may be

more likely to diagnostically appear under the rubric of alcoholism (Weissman & Klerman, 1977; Williams & Spitzer, 1983). Australian research suggests that men are at greater risk than women of developing alcohol and drug use disorders, and while the prevalence of both disorders decreases with age, the sex difference increases – the sex ratio for those aged 18–34 was 2.1:1 (male to female) compared to 8.8:1 among those aged over 55 years (Teesson, Hall, Lynskey, & Degenhardt, 2000). However, research suggests that those who display heavy drinking patterns, yet fail to qualify for a diagnosis of alcohol use disorder (e.g., sub-threshold cases), may also experience significant social and functional impairment (McBride, Adamson, Bunting, & McCann, 2009). Furthermore, research undertaken on a psychiatric outpatient sample indicates that men with substance abuse disorder were more likely to have had past psychiatric inpatient admissions, and were more likely to have made a suicide attempt in comparison to men without substance abuse disorder (Ray, Prmack, Chelminski, Young, & Zimmerman, 2010).

A range of studies indicate that depressed men cope with their distress by increasing their alcohol consumption (e.g., Angst et al., 2002), however, given that the consumption of alcohol serves as a cultural marker of masculinity in Western culture, the relationship between masculinity, alcohol, and mental health is complicated (DeVisser & Smith, 2007). Accordingly, Cochran (2005a) argues that the frequency of use of substances (including alcohol) should be addressed early in a male client's assessment process. Similarly, Marcus and colleagues (2008) argue that assessment of alcohol use disorder should always occur when working therapeutically with men.

Sex-specific processes of genetic inheritance have been identified for the lifetime co-morbidity of depression and alcoholism (Prescott, Aggen, & Kendler, 2000). Drawing on a sample of 3,755 twin pairs, Prescott and colleagues reported that while their results failed to support a causal model of vulnerability in which depression causes alcoholism, findings did indicate that genetic risk of Major Depressive Disorder and alcohol dependence likely combine with sex-specific social factors. They reported that males may be shaped by social factors to develop drinking problems rather than to express their depressive tendencies. The research reviewed above from Orthodox Jewish (Loewenthal et al., 1995) and Old Order Amish communities (Egeland & Hostetter, 1983) supports this notion. Indeed the finding that sex differences in depression vanish in the absence of alcoholism suggests that in the larger culture (where alcohol consumption is socially

acceptable), alcoholism in males may represent a masked form of affective disorder (e.g., Williams & Spitzer, 1983). Consistent with the findings of Prescott and colleagues, a large scale epidemiological study from the US reported that the odds of transition to daily drinking tended to be higher among depressed men relative to men who were not depressed, than it was for depressed women relative to non-depressed women (Crum, Brown, Liang, & Eaton, 2001).

Risk-Taking

Several of the qualitative studies reviewed above indicate that men experiencing depression are likely to engage in risk-taking behaviours such as dangerous driving, alcohol and drug abuse, and aggression (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005). Quantitative research indicates that males score higher than females on drug use, risky driving, and gambling (Zuckerman & Kuhlman, 2000). Furthermore, risk-taking behaviour may be normalised amongst males. Most cultures have tended to use men for high risk or dangerous occupations (Baumesiter, 2007), and many contact sports played by males involve significant physical risk-taking and/or violence (e.g., Weinstein, Smith, & Wiesenthal, 1995).

A meta-analysis of 150 studies exploring the risk-taking tendencies of males and females found that males were more likely to engage in 14 of the 16 types of risk behaviours examined (Byrnes, Miller, & Schafer, 1999). These sex differences varied according to age and context. Behaviours such as reckless driving tended to become more prominent in males as age increased, while other behaviours such as risky sexual activities were relatively constant across age groups. Wilson and Daly (1985) argue that risk-taking is an attribute of masculine psychology that has evolved from sexual selection processes: males who engage in risky competition are more likely to fend off same-gendered competitors. Referring to the Young Male Syndrome, Wilson and Daly report on dangerous driving, gambling, and homicides, and conclude that these behaviours may be driven by status competition amongst males.

In many societies, displays of social proof are still required to earn the term 'man' (Baumeister, 2007). Consistent with Pleck's (1981,1995) notion of discrepancy strain, earning such proof often requires men to engage in hypermasculine activities that put them at risk. In a series of studies examining differences in perceived threats to manhood compared to threats to womanhood, it was concluded that manhood is viewed as a social

accomplishment that can be lost, and must be defended with active demonstrations of manliness such as aggression (Vandello, Bosson, Cohen, Burnaford, & Weaver, 2008). Threats to women failed to activate such behaviours of social proof. From this finding Vandello and colleagues coined the term 'precarious manhood' arguing that men may be particularly sensitive to the precariousness of social status. For example, Vandello and colleagues reported that when males were presented with feedback that they did not measure up to others of their sex, they experienced increased anxiety, threat, and aggression-related thoughts. When females were faced with equivalent feedback they failed to demonstrate any of these responses.

Given the powerful role played by popular culture in constructing gender stereotypes (e.g., Gauntlett, 2002), media portrayals of risk-taking make a significant contribution to notions of masculinity within contemporary society. Soulliere (2006) investigated the roles of proof and assertion of manhood in the context of World Wrestling Entertainment (WWE) bouts. WWE wrestling is particularly popular amongst young Western males, and involves highly stylised physical confrontations (both in and out of the wrestling ring) with strong themes of aggression and violence. Content analysis of 118 televised programs revealed key messages regarding the assertion of masculinity in related to aggression, violence, emotional restraint, success, and achievement. Further, and perhaps most importantly, manhood was effectively accomplished by questioning the manhood of other men, particularly by implying that competitors lacked male genitalia. Researchers have also called for careful analysis of the ways in which media coverage of motor-vehicle racing impacts on the risk taking behaviour of young drivers (Blum, 1991). Male adolescents have the highest fatal crash rates (Shope & Bingham, 2008) and advertising by the motor car industry, alcohol distributors, and other advertisers all convey powerful messages about the association of cars, car use, and masculinity (Walker, Butland, & Connell, 2000).

In summary, when males believe they fail to live up to masculine role expectations they may feel significant pressure to prove themselves, and their masculinity. For males who experience mood difficulties, and who also view depression as a women's illness, engaging in hypermasculine behaviours (e.g., risk-taking behaviours, excessive alcohol consumption, anger and aggression) and suppressing negative affect may assist to reduce threats to self, or manhood, and reaffirm ones position of status.

Summary

When men talk of their lived experiences of depression a fuller picture emerges, shaped by roles and expectations related to masculinity, and what men 'should' be. This relates to the psychosocial process of internalised gender roles – an explanation that provides an important contribution to understanding sex differences in depression prevalence rates at the epidemiological level (Kuehner, 2003). The internalisation of male gender roles and expectations may impose a lens with which depressed mood is filtered in men, causing a restructuring of symptom presentation, or promoting a set of coping strategies that are maladaptive, avoidant, or hypermasculine. Furthermore, behaviours such as aggression and substance abuse (which are commonly experienced by depressed men) may impede the assessment of depression in men. Issues however remain, and it is still unclear whether the symptoms hypothesised to reflect male depression are indeed symptoms, or are a coping response. For example, promiscuous risky sex (e.g., a risk taking behaviour) may reflect an inability to form intimate stable relationships, which may lead to depression, or depression may lead to frequent superficial sexual relations as a way to deal with negative affect (Booth, Johnson, & Granger, 1999). Alternatively, externalising behaviours may serve as a means of generating attention from others in an attempt to reduce social isolation (Vaske & Gehring, 2010). Nonetheless, evidence does indeed suggest that a significant proportion of men experience depression and its consequences in different ways to women.

Chapter 4: Male Specific Depression Rating Scales

The Gotland Male Depression Scale

The first developed and most widely used male specific scale of depression is the Gotland Male Depression Scale (GMDS; Rutz, 1999; Zierau, Bille, Rutz, & Bech, 2002). The GMDS is based on the theoretical premise that incorporation of an externalising component (e.g., aggression, substance use, overwork, stress) into the conceptualisation of depression would aid in the diagnosis of depressed males who may otherwise remain unidentified and untreated (Rutz, Von Knorring, Pihlgren, Rihmer, & Walinder, 1995). In doing so, the GMDS assesses symptoms that characterise the male depressive syndrome (Rutz, Walinder, Von Knorring, Rihmer, & Pihlgren, 1997; Rutz, 2001).

The GMDS was validated on a sample of 87 males diagnosed with Alcohol Use Disorder. It comprises 13 items that reflect two *a priori* subscales; depression (assessing symptoms of burnout, tiredness, indecision, sleep difficulties, hopelessness, and family history of depression or suicide) and distress (assessing symptoms of stress, aggressiveness, irritability, feelings of displeasure, over consumption of alcohol or related substances, behaviour changes, tendency for self-pity). Of note, the GMDS does not enquire directly about sadness, though it is possible that sadness may be inferred from positive responses to items assessing hopelessness, negativity, and self-pity. Scoring of the GMDS provides three diagnostic categories; 'no depression' (scores 0-12), 'probable depression and antidepressants should be considered' (scores 13-26), and 'definite depression and antidepressants should be prescribed' (scores 27-39).

Educating GPs in the use of the GMDS is now considered one of the essential measures offered in suicide prevention across Sweden (Rutz, 2008). Since initial validation, the GMDS has been translated into a number of languages, and is receiving increasing clinical and research interest (Rutz & Rihmer, 2007, 2009). However, despite the burgeoning use of the GMDS, it is not without its limitations. Some researchers argue that underlying methodological concerns limit its clinical utility (Ajayi, 2011; Magovcevic & Addis, 2008, Martin, 2010) and to date, reliability and validity studies of the GMDS are limited (Melrose, 2010).

Criticism of the GMDS

Modern psychometric rating scales are expected to exhibit a relatively stable factor structure (Worthington & Whittaker, 2006). Unfortunately, the proposed factor structure of the GMDS was not statistically validated by factor analysis within the initial validation study (c.f., Rutz, 1999; Zierau, Bille, Rutz, & Bech, 2002), and attempts to statistically validate the *a priori* GMDS subscales have failed (Levin & Sanacora, 2007). The first published factor analysis of the GMDS was undertaken by Möller-Leimkühler, Heller, and Paulus (2007a). In this study, principal components analysis in a sample of male adolescents yielded a two-factor solution that failed to correspond to the *a priori* GMDS factor structure originally proposed (e.g., Zierau, Bille, Rutz, & Bech, 2002). Instead Möller-Leimkühler and colleagues identified one large mixed factor (10 items), assessing a combination of the depression and distress items, and a smaller distress factor (3 items).

Two more recent attempts to validate the *a priori* GMDS factor structure have also failed. Möller-Leimkühler and Yucel (2010) undertook a series of separate principal components analysis on males and females and reported diverging factor solutions. Across the whole sample, two mixed distress and depression factors were identified similar to those identified by Möller-Leimkühler, Heller, and Paulus (2007a). When separate principal components analyses were undertaken for males and females at risk of male depression (e.g., GMDS score ≥ 13), a mixed three factor solution was identified for males, and a four factor solution was identified for females. A further factor analysis was reported by Innamorati and colleagues (2011a). In this analysis principal axis factoring was used, based on factor loadings greater than 0.30. Separate analyses for males and females indicated two-factor solutions, however the authors failed to report which items corresponded to each factor. Nonetheless, in each instance, GMDS item 13 reported a factor loading below 0.30. Based on this Innamorati and colleagues recommend that GMDS item 13 (*In your biological family, is there any tendency towards abuse, depression/dejection, suicide attempts or proneness to behaviour involving danger?*) be removed from the scale.

Failure of GMDS subscales to be statistically validated is suggestive of poor scale development (e.g., De Villis, 2003). The validation sample of 87 participants used to develop the GMDS was particularly small – scale development researchers typically recommend sample sizes in the order of 300 or more (Tabachnick & Fidell, 2007). Furthermore, scholars have criticised the wording of GMDS items. Several items of the

GMDS are exceptionally lengthy, use poor expression, and contain multiple referents (Magovcevic & Addis, 2008). For example, GMDS item 9 reads as '*Overconsumption of alcohol and pills in order to achieve a calming and relaxing effect. Being hyperactive or blowing off steam by working hard and restlessly, jogging, or other exercises, under- or overeating*'. This single item involves assessment of at least five separate constructs (Martin, 2010), and violates many of the recommended practices regarding scale development, including readability, length, and the number of referents contained within the items (e.g., DeVillis; Worthington & Whittaker, 2006). Combining five constructs within the one item also threatens the overall reliability of the measure (Martin). Furthermore, GMDS item 13 reads as '*In your biological family, is there any tendency towards abuse, depression / dejection, suicide attempts, or proneness to behaviour involving danger?*' This item also encompasses several referents and may be best reconceptualised as a categorical yes/no item.

Results of factor analysis studies for the GMDS suggest an unstable factor structure. Not only do items fail to correspond to the two *a priori* subscales, but factor analysis solutions cannot be replicated across different samples. In addition, to date, no published studies could be located that confirm the *a priori* factor structure of the GMDS using modern data analytic techniques such as confirmatory factor analysis. However, while questions remain regarding the validity of the GMDS, it has nevertheless been instrumental in furthering research into men's experiences of depression.

A total of 21 studies could be located reporting empirical data on the GMDS in male samples. Four of these studies could only be located in abstract form (e.g., abstracts generated from conference presentations). Of these 21 studies, 14 included data from both male and female study participants (although analysis of sex comparisons were not always reported for GMDS data). The majority of studies were conducted in Europe ($n = 18$), while a further two studies were undertaken in each of the United States, and Canada. It was not possible to locate any published peer reviewed journal articles reporting on empirical data using the GMDS within an Australian sample. The major findings of these studies are reviewed below.

GMDS Studies Reporting Data for both Male and Female Participants

Studies reporting GMDS data from clinical samples tend to report few sex differences in GMDS total score, or individual GMDS items. Amongst a large sample of German inpatients hospitalised for depression ($n = 2411$, males = 656), sex equivalent GMDS total scores were reported (Möller-Leimkühler, Bottlender, Straub, & Rutz, 2004). However, offering some support for the notion of masculine depression, Möller-Leimkühler and colleagues did find that atypical symptoms such as irritability, aggressiveness, and antisocial behaviour were more frequently intercorrelated in depressed males compared to depressed females. Similar findings were reported in an Italian study ($n = 326$, males = 152) using data from inpatients experiencing a range of psychiatric diagnoses (Innamorati et al., 2011a). Consistent with the findings of Möller-Leimkühler and colleagues, sex equivalent GMDS total scores were reported. Innamorati and colleagues also reported that an abbreviated version of the GMDS (with item 13 removed) was able to accurately categorise groups of inpatients with varying degrees of suicidal behaviour (e.g., those admitted for suicide attempt in the last 48 hours versus those without recent suicide attempt) equally as successfully as the widely used Beck Hopelessness Scale.

Comparable findings also come from other studies reporting GMDS data from clinical samples. A Canadian study examined sex differences in GMDS scores in 1,257 cardiac patients (males = 951) and reported sex equivalent GMDS total scores (Yee et al., 2009). Interestingly, however, Yee and colleagues reported that females in this study had significantly higher BDI-II scores than did males. This finding supports the notion that the GMDS assess an atypical constellation of symptoms beyond those that characterise DSM-IV type depression. Yee and colleagues also reported that correlations between the GMDS and BDI-II were stronger for males ($r = .80$) than for females ($r = .68$), suggesting that for males, atypical depression symptoms are more closely related to prototypic depression symptoms than for females. In another study, drawing on data from Austrian outpatients ($n = 217$, males = 113) diagnosed with Major Depressive Disorder, males were found to be more likely than females to experience lower impulse control (GMDS item 2) and engage in more symptomatic substance abuse / hyperactive behaviour (GMDS item 9) (Winkler, Pjrek, & Kasper, 2005). Unfortunately Winkler and colleagues did not report analysis of sex differences for the GMDS total score. However, they did report that male participants experienced twice as many anger attacks when compared to female participants. This study

was strengthened by the exclusion of patients with psychiatric comorbidity (e.g., personality disorder and substance abuse disorder). However, the study design required participants to retrospectively rate symptoms for their last episode of depression. With a mean latency of hospitalisation at 1.5 years \pm 0.7, the accuracy of symptom recall within this study may have been comprised.

A number of other studies report GMDS data for males and females but unfortunately fail to report analyses of GMDS sex differences. Nonetheless, findings from these studies can be used to examine the construct validity of the GMDS. In exploring neurobiological predictors of suicidality, Pompili and colleagues (2007) utilised the GMDS as an index of the severity of depression within a sample of inpatients diagnosed with either Major Depressive Disorder, or Bipolar Disorder. Analyses indicated that only 45 of the total 65 participants within this sample were classified as either experiencing moderate or high depression on the GMDS. This suggests that the GMDS may not be sufficiently sensitive to identify individuals experiencing substantial mood disorder. Further, in contrast to the findings of Innamorati and colleagues (2011a), results failed to indicate any relationship between those classified as experiencing high or moderate depression on the GMDS, and neurobiological predictors of suicidality (e.g., White Matter Hyperintensities identified by MRI scans). A further psychometric study reporting the development of a suicide risk scale utilised the GMDS within a sample of 129 psychiatric inpatients (males $n = 57$) experiencing a range of psychiatric diagnoses (Innamorati et al., 2011b). Of these inpatients, 17.2% had attempted suicide within the previous 24-48 hours. Surprisingly, Innamorati and colleagues found that suicide risk (as assessed by the Suicide History Self-Rating Screen Scale) scale was only moderately correlated with GMDS scores (Spearman rho = .52).

Pompili and colleagues (2009) reported data for 31 participants (males $n = 16$) with substance abuse disorder, matched on age and sex, with a group of 31 controls (e.g., no substance abuse disorder). In comparison to controls, those with substance use disorder tended to be represented more frequently in the GMDS severely depressed (25.8% vs 12.9%) and moderately depressed (54.8% vs 48.4%) categories. In comparison to controls, substance abusers were less likely to be in the no depression category (19.4% vs 38.7%). However, the design of this study was compromised by diagnostic comorbidity and the heterogeneity of disorders included – participants included those diagnosed with Bipolar I

and II disorder, Major Depressive Disorder, and psychotic disorders. More recently Pompili and colleagues (2011) evaluated GMDS scores in inpatients with Bipolar I and Bipolar II disorder. Those with a current Bipolar II diagnosis were more likely to be in the moderate to severe range according to the GMDS than those with Bipolar I, (respective frequencies were 70.7% and 53.1%).

Two abstracts reporting on recent GMDS data for males and females were also located. For those with current diagnoses of Major Depressive Disorder, Rihmer and colleagues (2009a) reported that 100% ($n = 74$) of depressed male inpatients who had completed suicide also rated as having male type depression as previously assessed by the GMDS. This was in comparison to 83% ($n = 10$) of female suicides where male type depression was indicated by the GMDS. This sex difference was statistically significant. In addition, when compared to normal controls, GMDS scores were significantly higher in suicide victims and suicide attempters, and male suicide victims tended to have higher GMDS scores than female suicide victims (males = 22.85, females = 18.58, $p = 009$). In a further study using the GMDS undertaken by Rihmer's research group, the association of childhood abuse and nonviolent suicide attempt was reported for 150 adults (Rihmer et al., 2009b). It was found that the male depressive syndrome, as assessed by the GMDS, was common amongst both males and females who had made a suicide attempt. Unfortunately actual GMDS or statistical data justifying this claim was not reported in this abstract. The authors did however report that GMDS scores were higher amongst those who had experienced physical and sexual childhood abuse ($p < .01$), an effect that held regardless of sex.

A further study using the GMDS found that glaucoma patients with a cyclothymic temperament (e.g., prone to alternating patterns of hypomanic/irritable mood interspersed with depressive moods) reported significantly higher GMDS scores than glaucoma patients with hyperthymic temperaments (e.g., energetic and productive) (Scuderi et al., 2011). Given the differences in cyclothymic and hyperthymic personality, this difference in GMDS score is expected. Unfortunately however, sex comparisons of GMDS scores were not reported. In another study, of 61 adult outpatients (53 males) experiencing chronic daily headaches, GMDS scores were found to significantly correlate ($r = .72$, $p < .001$) with the Italian Perceived Disability Scale – a 20 item self-report scale used to assess degree of impairment associated with headaches (Innamorati et al., 2009). Unfortunately

Innamorati and colleagues (2009) did not report statistical analyses of sex differences of GMDS scores. However, patients in this study with higher suicidal intent reported significantly higher mean GMDS scores ($p < .05$) than patients without suicidal intent.

In summary, research from inpatient and clinical samples fails to demonstrate sex differences in GMDS total scores. Further, there is inconsistency between these studies regarding sex differences in individual GMDS items. These studies demonstrate that GMDS associations with other measures of distress (e.g., suicidality) are variable, further limiting construct validity of the scale. However, while these findings appear inconsistent with the notion of the male depressive syndrome, it has been argued that inpatient populations are not conducive for testing the construct validity of the GMDS (e.g., higher male GMDS scores versus females GMDS scores) (Magovcevic & Addis, 2008). Males hospitalised for major depression already meet the prototypic definition of depression. Hence, such males are not the target population of the GMDS as they have been detected as depressed with the current depression diagnostic criteria. Furthermore, Möller-Leimkühler, Bottlender, Straub, and Rutz (2004) report that evidence suggests that men experiencing severe depressive symptomatology may be more likely to exhibit prototypic symptoms of depression, while men with less severe symptoms may be more likely to develop depression masked as distress aggression and alcohol abuse. In comparison to females meeting the full diagnostic criteria, males may score higher on the GMDS when they fail to meet the diagnostic threshold for a major depressive episode (e.g., those males displaying subclinical levels of depression). Given this, it is necessary to examine sex differences in GMDS scores in community samples.

Diamond (2008) utilised the GMDS in a large scale online community study of 1072 individuals (749 males). Based on the GMDS scoring, Diamond reported that 36% of male participants and 30% of female participants were classified as 'depression indicated'. However, chi-square analysis failed to indicate that this difference was significant ($p = .056$). While it is not specified in Diamond's study which level of GMDS cut-off was used to determine these classifications, with incidence rates of this magnitude it is likely that the GMDS cut-off of 13 (e.g., 'possible depression') was utilised. Unfortunately Diamond failed to report GMDS mean scores or subscale scores.

The most relevant study specifically designed to explore sex differences in GMDS scores was undertaken recently by Möller-Leimkühler and Yucel (2010). This study incorporated a measure of gender role, enabling analysis of GMDS scores according to both sex and gender (e.g., masculinity, femininity). Data was collected from a sample of 1,018 (males $n = 518$) German university students. Based on the GMDS scoring protocol, significantly more females than males were found to be at risk of male depression ($p = .024$). Further, inspection of sex differences for prevalence of individual GMDS items indicated that none of the GMDS items were more prevalent amongst males. Females were more likely to endorse GMDS items assessing stress, aggression, irritability, sleep problems, morning anxiety, and self-pity. In addition, this study found that biological sex and gender role orientation exerted independent effects on GMDS scores (e.g., the terms failed to significantly interact). Positive characteristics associated with masculinity (e.g., self-confidence) were negatively related to GMDS total scores ($r = -.37$), while negative characteristics associated with femininity (e.g., verbal passive-aggressiveness) were positively related to GMDS total scores ($r = .45$). For participants scoring at, or beyond the GMDS clinical cut-off score (e.g., > 13), those with low levels of positive masculinity who were in the undifferentiated gender role category (e.g., low femininity and low masculinity) were at highest risk of male depression. When analysed separately by sex, for females, those with a feminine (e.g., high feminine, low masculine) or undifferentiated gender role were most at risk of depression as assessed by the GMDS. For males, those with an undifferentiated gender role were most at risk. Möller-Leimkühler and Yucel's findings are both unexpected, and contrary to the theoretical underpinnings of the GMDS, and suggest that the GMDS is closer in alignment to feminine traits than to masculine traits.

Given that the GMDS is designed to assess male specific symptoms of depression, it follows that males should consistently report higher GMDS scores than females. However, the manifestation of male depression has been hypothesised to relate closely to men's adherence to traditional masculine role norms (e.g., Addis & Magovcevic, 2008; Branney & White, 2008; Rutz, 1999, 2001; Rutz, Walinder, Von Knorring, Rihmer, & Pihlgren, 1997; Wilhelm, 2009; Zierau, Bille, Rutz, & Bech, 2002). Should this be the case, significant variability in male depression scores would be expected given men typically vary in their adherence to such masculine role norms (e.g., Mahalik et al., 2003; Mahalik, Talmadge, Locke, & Scott, 2005). In much the same way women vary in their adherence to feminine norms, and some women conform to norms associated with

masculinity more so than femininity (e.g., Mahalik, Morray, Coonerty-Femiano, Ludlow, Slattery, & Smiler, 2005). Nonetheless, Möller-Leimkühler and Yucel (2010) reported that undifferentiated students, not masculine students, were most at risk of depression, as assessed by the GMDS.

As discussed in Chapter 2, the conceptualisation of gender role that was used by Möller-Leimkühler and Yucel (2010) has been widely criticised (e.g., Cook, 1987; Hoffman, 2001; Hoffman & Borders, 2001; Mahalik, Talmadge, Locke, & Scott, 2005). Hence, studies examining GMDS sex and gender differences should look to incorporate a wider range of measures that assess masculinity. Furthermore, given the GMDS was subject to very limited validity checking during development, close attention should be given to each of the GMDS items. The qualitative research reviewed in Chapter 3 consistently suggests that depressed men identify experiencing a range of atypical depression symptoms when depressed. However, results of many of the GMDS studies reviewed above fail to reflect this. Hence, GMDS items may not sufficiently capture the range and scope of male type symptoms of depression (see Chapter 6 for further discussion).

In summary, findings from clinical and community samples are inconsistent in identifying sex differences for GMDS scores. That said, however, many of the published GMDS studies incorporating male and female samples fail to adequately report sex differences in GMDS total scores (e.g., Diamond, 2008; Innamorati et al., 2009; 2011b; Pompili et al., 2007, 2009; Rihmer et al., 2009a, 2009b; Winkler, Pjrek, & Kasper, 2005). Unfortunately such limited reporting of sex differences restricts the conclusions that can be drawn regarding the conceptual validity of male depression.

GMDS Studies Utilising Male Only Samples

Other studies using the GMDS have been undertaken on male only samples. A large scale study of late adolescent males ($n = 1,004$) examined profiles of GMDS items relative to gender role (Möller-Leimkühler, Heller, & Paulus, 2007a). The sample failed to demonstrate higher scores on the GMDS distress subscale (e.g., atypical symptoms) compared to scores on the GMDS depression subscale (e.g., prototypic DMS-IV depression symptoms). When the sample was divided into those considered at probable risk of male depression (e.g., GMDS total score ≥ 13) versus those without depression

(e.g., GMDS ≤ 12), non-depressive males tended to report higher GMDS depression scores, while those scoring ≥ 13 tended to report higher GMDS distress scores. For those at risk of male depression, participants reporting a predominance of distress symptoms reported higher total GMDS scores than those with predominating depressive symptoms. Consistent with the findings of Möller-Leimkühler and Yucel (2010), this study also found that the risk of male depression, as assessed by the GMDS, was particularly pronounced amongst males with low masculinity / instrumentality (e.g., undifferentiated males) (Möller-Leimkühler, Heller, & Paulus, 2007b).

The GMDS was also utilised in a study of paternal postnatal depression amongst Danish fathers ($n = 549$). In this study, Madsen and Juhl (2007) sought to evaluate whether the GMDS enabled better identification of depressed men than the widely used Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987). While the EPDS was developed to detect depression symptoms in women during pregnancy and the postnatal period, the scale has been validated for use with fathers (Matthey, Barnett, Kavanagh, & Howie, 2001). According to the EPDS, Madsen and Juhl reported that 5.0% of the fathers were at risk of depression, while 3.4% of fathers were at risk of depression according to the GMDS. Further analysis indicated that responses on the two scales were significantly related, showing a fair to moderate degree of agreement. This indicated that some 'at-risk' men were detected through both the EPDS and the GMDS, however other 'at-risk' men were only detected with either the EPDS, or the GMDS. In fact, this study indicated that 20.6% of 'at-risk' fathers were detected by the GMDS and not the EPDS, indicating that symptoms of male depression are distinct to those assessed by the EPDS.

In a sample of 223 males, Stromberg, Backlund, and Lofvander (2010) compared clinical cases detected by the GMDS with the Beck Depression Inventory (BDI). Consistent with the findings reported by Yee and colleagues (2009), results indicated that the GMDS and BDI were highly correlated ($r = 0.80$), however, in contrast to the study reviewed above comparing the GMDS with the Edinburgh Postnatal Depression Scale (e.g., Madsen & Juhl, 2007), Stromberg and colleagues reported that the GMDS failed to provide added diagnostic benefit over the BDI. Across the sample, those with a GMDS score of 13 or above ($n = 26$) had been detected as at risk by the BDI. However, five men who were identified within the clinical range for mild depression on the BDI were undetected by the GMDS (e.g., GMDS ≤ 12).

The GMDS was also used alongside the BDI in an American study of 102 men who had recently experienced a negative life event (Magovcevic & Addis, 2008). Magovcevic and Addis reported that GMDS and BDI significantly correlated ($r = .85$), and that the GMDS was also correlated with the Center for Epidemiological Studies Depression Scale (CES-D) ($r = .83$). Of note, non-significant correlations were observed between the GMDS and the total score of the Conformity to Masculine Norms Inventory (CMNI; $r = .17$), and the GMDS and the total score for the Male Role Norms Scale (MRNS; $r = .12$). This is somewhat surprising as GMDS items were developed with male role stereotypes in mind, and higher conformity to such norms would be expected to associate with GMDS scores. The main purpose of Magovcevic and Addis's (2008) study was to report on the psychometric development of the Masculine Depression Scale (reviewed below). It was therefore interesting to note that in contrast to the correlations with the BDI and CES-D, the GMDS demonstrated a strong correlation with the internalising factor of the masculine depression scale ($r = .76$) but only a moderate correlation with the externalising factor of the masculine depression scale ($r = .46$).

An abstract was located that reports on Icelandic data of 534 males on the alibility of GMDS items to predict Major Depressive Disorder (Palsson, Sigurosson, Aevansson, & Olafsdottir, 2009). Prevalence rates (indicated by participants endorsing items as either 'very true', or 'extremely so') of the first 12 GMDS items were reported as; stress (16.8%), aggressiveness (11.8%), burn out (14.5%), tiredness (18.2%), irritability (15.3%), indecision (10.8%), sleep problems (21%), anxiety/uneasiness (10.5%), substance use/hyperactivity/appetite disturbance (10.3%), behaviour changes (4.7%), sadness/hopelessness (10.4%), self-pity (4.8%). Each of these symptoms was found to correlate with Major Depressive Disorder, as diagnosed by a psychiatrist through a semi-structured interview. A stepwise logistic regression model, controlling for medication and age then explored which items contribute independently to depression diagnosis. Results indicated that aggressiveness, irritability, and anxiety/uneasiness significantly predicted depression. This finding is of particular interest, as the externalising symptoms of aggression and irritability are not included in the diagnostic criteria for major depressive disorder when assessing adults.

Finally, the GMDS was also used in a Canadian study exploring the effect of gender socialisation on the presentation of depression among men (Wide, Mok, McKenna,

& Ogrodniczuk, 2011). Male participants ($n = 97$) were recruited from the waiting area of a university family practice clinic. Results indicated that those men reporting extreme conformity to masculine norms (e.g., Mahalik et al., 2003) scored significantly higher on the GMDS than did men in the moderate conformity, or nonconformity groups. Interestingly, scores on the Brief Symptom Inventory-18 (BSI-18; Derogatis, 2000) were not differentiated by masculine norm category. This finding is contrary to the non-significant relationship between the GMDS and CMNI reported by Magovcevic and Addis (2008), but may relate to the authors generating categorical data (e.g., high, moderate, low) from the CMNI scale. Nevertheless, Wide and colleagues concluded greater conformity to traditional Western masculine norms was associated with high male-specific depressive symptoms, while typical depressive symptoms did not differ according to levels of masculine conformity. Wide and colleagues also collected data on present emotional concerns, and whether these concerns were subsequently disclosed to the treating doctor during consultation. Analysis indicated that while four male participants endorsed experiencing current suicidal thoughts on the questionnaire *none* of these men disclosed their suicidal thoughts with their treating doctor.

The findings of Wide, Mok, McKenna, and Ogrodniczuk, (2011) are in contrast to those of Möller-Leimkühler, Heller, and Paulus (2007b), and Möller-Leimkühler and Yucel's (2010). The studies undertaken by Möller-Leimkühler assessed masculinity using the Personality Attributes Questionnaire (PAQ). The PAQ is similar in nature to the Bem Sex Role Inventory (BSRI). In contrast, Wide and colleagues used the Conformity to Masculine Norms Inventory (CMNI). The BSRI/PAQ and the CMNI measure different aspects of psychological functioning (for review see Chapter 2). Some scholars argue that the BSRI/PAQ assess personality related constructs such as emotional expressiveness rather than gender conformity (e.g. Good, Wallace, & Borst, 1994; Smiler, 2004). Given this, the CMNI is now considered a more valid assessment tool of masculinity related attitudes (e.g., Owen, 2011; Parent, Moradi, Rummell, & Tokar, 2011). Hence, future studies examining GMDS sex and gender differences should seek to utilise the CMNI so that comparisons can be made with older measures of gender role such as the BSRI/PAQ.

Other inconsistencies are noted between studies comparing the GMDS with currently used self-report rating scales. While the GMDS may prove useful in identifying fathers at risk of postnatal paternal depression (Madsen & Juhl, 2007), Stromberg,

Backlund, and Lofvander (2010) found that the GMDS was less sensitive in detecting psychological distress or underlying depression than was the BDI. This occurred despite the GMDS correlating with the BDI and other widely used measures of depression (Magovcevic & Addis, 2008). Given the overall inconsistencies related to sex differences in GMDS ratings, it is unsurprising that researchers and clinicians have sought to develop newer measures of male depression.

Beyond the GMDS: Recent Developments in Men's Depression Rating Scales

The Masculine Depression Scale (MDS; Magovcevic & Addis, 2008) was recently developed to overcome the methodological concerns (e.g., poor reliability and unclear wording) of the GMDS. Unlike the GMDS, development of the MDS followed a clearly documented process, with validity checks throughout. However, a relatively small male only sample was utilised for initial validation ($n = 102$). The MDS comprised an internalising symptoms subscale, assessing prototypic depression symptoms (33 items), and an externalising symptoms subscale, assessing masculine externalising behaviours consistent with Western socialisation of men (11 items). It is possible that the internalising and externalising factors would have separated into more homogenous sub-factors with greater specificity were it not for the small sample used (c.f., De Villis, 2003 for scale development recommendations).

Magovcevic and Addis (2008) reported that the MDS correlated with the GMDS (MDS internalising $r = .76$, MDS externalising $r = .46$), and also with the BDI (MDS internalising $r = .80$, MDS externalising $r = .36$) and CES-D (MDS internalising $r = .81$, MDS externalising $r = .33$). In each case, correlations were higher for the internalising subscale than the externalising subscale. This is consistent with the notion that current depression rating scales fail to assess externalising components of depression, as hypothesised to be experienced by men. Further supporting the notion of masculine depression, regression analysis indicated that men adhering to masculine norms tended to have higher scores on the MDS externalising subscale than on the BDI. Further analysis revealed that men who scored higher on the BDI tended to also score higher on both the MDS internalising subscale (a large effect size) and the MDS externalising subscale (a small effect size) compared to men scoring lower on the BDI. While detailed psychometric analyses provided by Magrocevic and Addis indicated that the MDS demonstrates good

discriminant and construct validity, to date, no further published studies could be located that report on the MDS as a measure of depression. Furthermore, the MDS has been criticised for not effectively distinguishing between general externalising dysfunction, and specific externalising symptoms associated with male depression (Ajayi, 2011). Hence, newer male specific depression rating scales may seek to better differentiate the possible externalising component of men's depression.

Several male-specific depression rating scales have also been reported in recently completed doctoral dissertations. Diamond (2008) reported the development of the Diamond Depression Scale (DDS) which aims to assess depression and suicide risk in males. The DDS was evaluated as a three factor scale assessing emotional acting-in, emotional acting-out, and physical acting-out. These three factors are consistent with Diamond's clinical experience working with men (e.g., Diamond, 2005). Diamond (2008) reported that men scored higher than women on factors assessing emotional acting-out and physical acting-out. Each factor significantly correlated with the GMDS and the CES-D. While Diamond's (2008) study draws on a large sample ($n = 1,072$, males = 749), the research methods employed in developing the DDS scale have been critiqued as unorthodox at best (Martin, 2010). Factor analysis for the DDS is reported in scant detail, failing to identify eigenvalues, references to screeplots, factor loadings, or decision criteria. Further, scale items for the DDS were not subject to peer review prior to testing (e.g., De Villis, 2003). Unsurprisingly, to date no further published studies could be located that use the DDS as an outcome measure of depression.

Recently, Martin (2010) developed the Male Symptoms Scale (MSS) based on data from several combined large U.S. representative samples (total $n = 5,692$, males = 2,382). The MSS was developed as a categorical 13-item scale (scores range 0–13) to assess both prototypic and atypical symptoms of depression. Scale items assess symptoms congruent with prototypic depression that are not considered as feminine traits (e.g., loss of interest, restlessness, sleep disturbance) and items reflecting male specific symptoms (irritability, anger, alcohol/drug use, risk taking behaviour, tension). Consistent with factor analysis data on the GMDS (e.g., Möller-Leimkühler, Heller, & Paulus, 2007a; Möller-Leimkühler & Yucel, 2010), the MSS demonstrated differing factor loadings for males and females.

Martin (2010) concluded that the use of the MSS will likely result in greater numbers of men meeting depression criteria. When using a score of five or more on the MSS as a clinical cut-off, 26.3% of men and 21.9% of women met case criteria on the MSS ($p < .01$). The MSS identified an extra 582 cases when compared to the traditional depression diagnostic criteria. Compared to women, men were more likely to report anger/aggression, irritability, substance use, and risk taking. While the development of the MSS (based on data from a nationally representative sample) is a noteworthy contribution to the field, the use of a categorical response format (e.g., responding to items with either a 'yes' or 'no') prevents analysis of symptom severity and limits statistical analyses that can be undertaken on the data. Further, as no measure of masculinity was included in Martin's study, interactions of sex and gender role could not be evaluated. This is particularly problematic given that differences in masculinity levels often account for more variance in depression scores than differences due to sex (Magovcevic & Addis, 2005, 2008; Mansfield, Addis, & Courtenay, 2005; Mansfield, Addis, & Mahalik, 2003).

More recently Ajayi (2011) used the Minnesota Multiphasic Personality Inventory-2-RF (MMPI-2-RF; Ben-Porath & Tellegen, 2008) in a sample of 2,925 psychiatric inpatients (males = 2,208) to assess for depression with co-occurring externalising dysfunction. While the MMPI-2-RF is not itself specific measure of depression, it has the capacity to assess for both the core prototypic symptoms of depression as well as atypical symptoms that may be experienced by depressed men. Ajayi reported sex differences in internalising and externalising psychopathology – a larger proportion of women were identified as depressed while a larger proportion of men were identified as substance abusers. That said, however, equal numbers of males and females were identified as depressed substance abusers. This finding is consistent with that reported by Möller-Leimkühler, Heller, and Paulus, (2007a), suggesting that depressed men and women drawn from inpatient samples are equally likely to experience externalising dysfunction.

Finally, within Australia, Brownhill, Wilhelm, Elivson, and Waterhouse (2003) developed the *For Men Only* mental health prompt list for use by general practitioners (GPs) in primary care to assist in the diagnosis of depression in men. This prompt list was designed to assist men in communicating depression symptoms to GPs (Wilhelm, 2009). As the name suggests, the prompt list is not a diagnostic tool in its own right. The prompt list was developed in consultation with focus groups of men by asking them 'What

questions should general practitioners be asking to detect depressive symptoms in men' (Brownhill et al., 2003, pg. 444). It includes items about intensification and escalation of negative affect as well as prototypic symptoms of depression. Research by Brownhill and colleagues found that 60% of patients who used the prompt list found it useful, and that 71% of GPs reported that it clarified information about their patients. Importantly, general practitioners who used the prompt list reported that barriers could be broken down by asking questions relevant to men's experience of depression, thus allowing men to "open up" and discuss their distress. To date, no further published peer reviewed studies could be located that report on empirical data of the use of the prompt list in clinical practice.

Of the recently developed self-report depression rating scales for men, the Masculine Depression Scale is the most psychometrically rigorous. However to date, data from the MDS has only been published in a single peer reviewed article, and its length – 44 items – will likely prohibit its use in clinical practice and/or primary care, where consultation times are limited, and screening tools need to be brief. While further contributions towards male specific scales have been made by Diamond (DDS; 2008), and Martin (MSS; 2010), to date these scales are yet to be published in peer reviewed journals, or used by other researchers. Similarly, the *For Men Only* mental health prompt list (Brownhill, Wilhelm, Elivson, & Waterhouse, 2003) does not appear to have been widely taken up by practitioners in primary care. While the MMPI-2-RF may assist in identifying depression and co-occurring externalising dysfunction (Ajayi, 2011), MMPI-2-RF profiles are based on 338 items, resulting in overly lengthy administration.

Research Gaps & the Present Program of Studies

The concept of depression symptoms presenting as a qualitatively different syndrome in men does not yet rest on a strong empirical foundation (Rochlen, Whilde, & Hoyer, 2005). Despite growing coverage in the popular media (e.g., Diamond, 2005; Hart, 2001; Kantor, 2007; Lynch & Kilmartin, 1999; Pollack, 1998, 2005), empirical data remains scant. Unfortunately, in many cases where interpretations of sex and gender differences in depression rates occur they are made on an inductive basis, and are typically post hoc and atheoretical (Addis, 2008). Despite a lack of strong empirical evidence, national mental health campaigns across the globe now disseminate psychoeducational material indicating that externalising behaviours such as sudden anger, greater risk-taking, and aggression are potential markers of depression in males (see *Depression in Men*,

BeyondBlue, 2011; *Men Behaving Sadly*, Royal College of Psychiatrists, 2006; *Real Men, Real Depression*, NIMH, 2005). Such inconsistency between diagnostic criteria and psychoeducational material leaves researchers and clinicians with a concerning lack of clarity and consistency around the phenomena, experience, and diagnosis of men and depression.

In seeking to provide a stronger empirical foundation to this area, the increased focus in the targeted study of men's depression from researchers in Europe, the United States and Canada has resulted in greater understanding of men's experiences with depression. However, with the exception of work undertaken by Brownhill and Wilhelm (e.g., Brownhill, 2003; Brownhill, Wilhelm, Elivson, & Waterhouse, 2003; Brownhill, Wilhelm, Barclay, & Schmied, 2005), limited quantitative data from Australia exists on this topic. The following chapters outline a program of research to address this gap, and to better understand men's experience of depression. In doing so, the following studies, based on Australian data, draw on a range of diverse research methodologies and samples. The proposed set of studies aim to explore whether externalising behaviours are linked to male distress, and may reflect a socially appropriate manifestation of depression in males who adhere to gender role stereotypes. As indicated, to date no published journal articles report research using an Australian sample for either the GMDS, or the MDS. Further, methodological issues plague much of the extant research, which has focused solely on male samples. There is overwhelming evidence that gender role plays a significant role in behaviour and psychopathology, and research must be closely scrutinised when only single sex samples are utilised (Sigmon et al., 2007). As such, three of the studies that are described will report on data from both males and females, and incorporate assessment of adherence to gender roles or conformity to masculine norms. Data on depressive symptom presentation will also be reported for two specific sub-samples of males (truck drivers, and older retired males who are participants of a *Men's Shed* program). In addition, the final studies will report on preliminary psychometric data for a new, Australian developed scale of atypical depression symptoms.

Summary

Within the last decade a burgeoning number of scales have been developed to specifically assess depression in men. While the GMDS is the most widely used of these scales, there are noteworthy limitations inherent in its use, including lack of replication of

factor structure and poor item wording. Furthermore, challenging the validity of the GMDS, findings from clinical and community samples are inconsistent regarding sex differences, and studies that evaluate GMDS scores according to gender role report findings that are contrary to the GMDS theoretical underpinnings. With the exception of the *For Men Only* mental health prompt list (Brownhill, Wilhelm, Elivson, & Waterhouse, 2003), none of the male specific depression rating scales have been published in peer reviewed journals using Australian data.

Chapter 5: Overview of Present Studies

The overall aim of the present set of studies was to evaluate prevalence rates, changes over time, and sex and gender differences in the presentation of prototypic and atypical depression symptoms (see Figure 1). These studies also contribute towards the development and validation of a new Australian male specific depression rating scale – the Male Depression Risk Scale (MDRS). The MDRS seeks to improve the clinical assessment by identifying males who may be at risk of depression, or who may be utilising maladaptive coping strategies as a means to manage mood problems.

The data reported within this dissertation was collected primarily from community samples. The decision to sample from community cohorts was made on the basis that community samples are less likely than clinical samples to comprise individuals meeting DSM-IV diagnostic criteria for Major Depressive Disorder. Community samples may, however, include males experiencing atypical depression symptoms who would otherwise fail to meet DSM-IV depression criteria.

A significant limitation within the research literature regarding male-specific depression rating scales is the absence of published studies utilising confirmatory factor analysis. In addressing this limitation, wherever appropriate, the studies presented in this dissertation will employ advanced data analytic techniques for evaluating factor structure. By adopting the use of confirmatory factor analysis in the development of the MDRS, the present set of studies seek to develop a psychometrically rigorous measure, based on sound theoretical principles and current research.

Study 1

The first study presented in this dissertation has two main aims. Firstly, to examine differences according to sex and gender role for the male specific Gotland Male Depression Scale (GMDS; Zierau, Bille, Rutz, & Bech, 2002), and the gender neutral Depression subscale from the Depression Anxiety Stress Scales (DASS-21 D; Lovibond & Lovibond, 1995). While Möller-Leimkühler, Heller, and Paulus (2007b) examined the impact of gender role norms on GMDS scores in a large sample of males, to date only one published study (e.g., Möller-Leimkühler & Yucel, 2010) has made comparisons of GMDS scores according to both sex and gender.

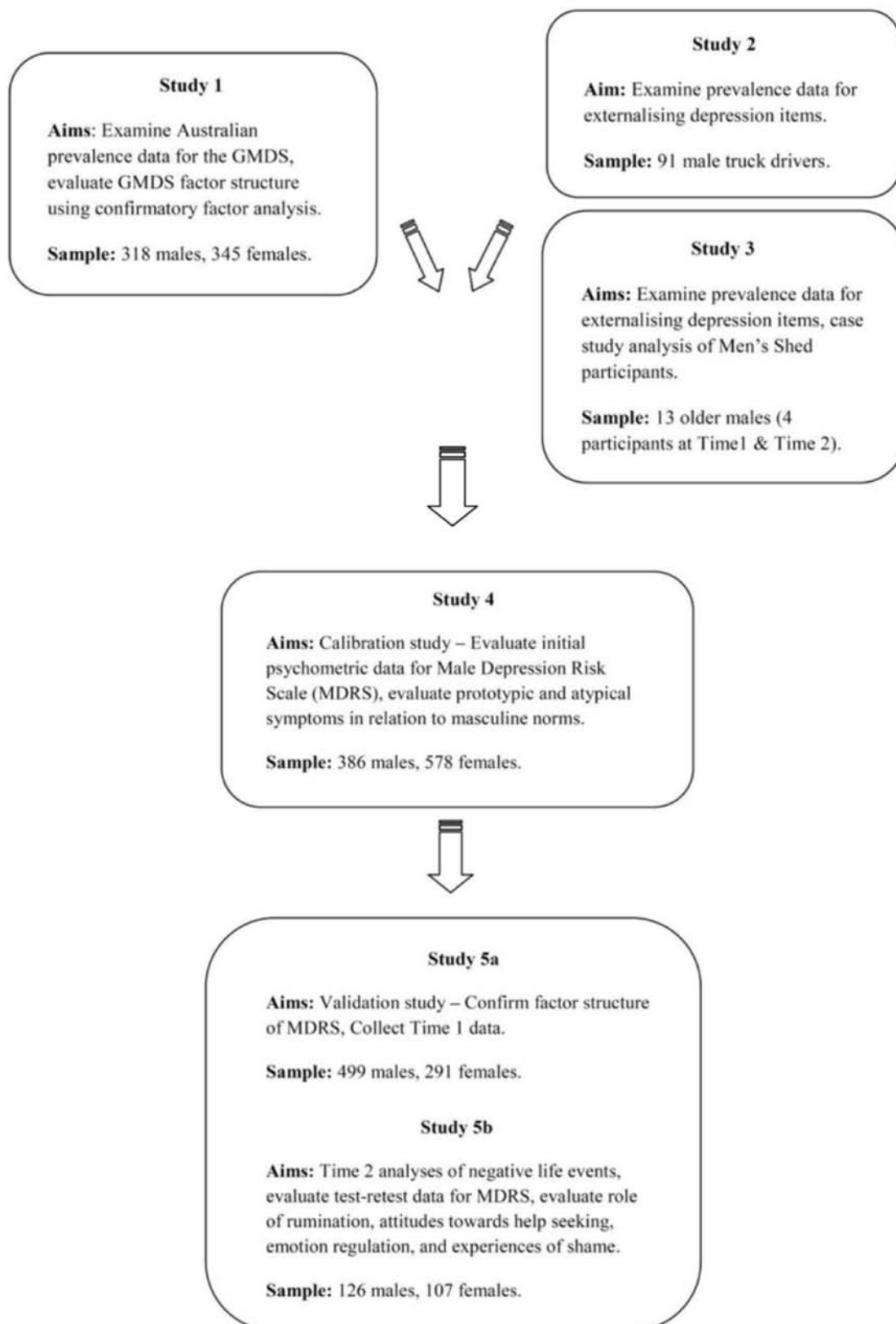


Figure 1. Flowchart depicting the sequence of studies, as reported in Chapters 6 – 10.

By enabling suitable comparisons between males and females within an Australian community sample on these variables, Study 1 will further knowledge in this area. Study 1 was also designed to confirm the proposed factor structure of the GMDS using confirmatory factor analysis (CFA). As indicated, the GMDS was designed to incorporate two factors (e.g., one subscale assessing distress, and one subscale assessing depression). However, the authors of the GMDS based this factor structure on an *a priori* theoretical premise which has failed to be replicated by other researchers (e.g., Möller-Leimkühler, Heller, & Paulus; Möller-Leimkühler & Yucel). Study 1 will be the first known study to date to report CFA data for the GMDS.

Study 2

The aim of Study 2 was to collect prevalence data of prototypic and atypical depression symptoms in sample of male truck drivers. This sample was chosen as the trucking industry is known as a workplace dominated by stereotypical masculine norms (Shattell, Apostolopoulos, Sonmmez, & Griffin, 2010; Stratford, Ellenbrock, Akins, & Hall, 2000). As such, the symptomatology of truck drivers provides an insight into the ways in which masculine socialisation may impact on blue-collar workers' experiences of depression. Study 2 reports on data collected as part of a retrospective design, where truck drivers indicated the last time they felt '*really down in the dumps*'. This expression was chosen as it is a DSM-IV descriptor of depression that does not refer to depression per se. Data was collected on the presence of depression symptoms that are consistent with a DSM-IV diagnosis, in addition to atypical depression symptoms. In doing so, Study 2 is the first known Australian study to collect data on the Externalising Symptoms Subscale of the Masculine Depression Scale (Magovcevic & Addis, 2008).

Study 3

Study 3 was designed to evaluate change in depression symptoms amongst a niche sample of retired males participating in a group psychosocial program. This sample was purposefully sought out as limited data exists on older men's experience of depression, particularly atypical depression symptoms. The Men's Shed program that was chosen for sampling is located on the campus of a regional health service, and as such, engages a range of men experiencing health, and/or psychosocial difficulties. Study 3 used a longitudinal design to examine the stability of atypical depression symptoms over time. The focus of this study was symptoms assessed by the Gotland Male Depression Scale in

addition to a range of items assessing externalising behaviours that may reflect underlying psychological distress. In addition, this study also examined change scores in social support that accompanied participation in the shed program.

Study 4

In drawing on the results of Studies 1-3, Study 4 was designed to provide preliminary psychometric data on the Male Depression Risk Scale (MDRS). In a similar manner to the design of Study 1, a large community sample of males and females was recruited. In advancing research within the field of men's depression, Study 4 was designed to conform to best practice principles of scale development (e.g., De Villis, 2003; Worthington & Whittaker, 2006). This included a wide ranging review of the research and conceptual literature, and subjecting the item pool of scale items to expert review (including expert researchers and clinicians both within Australian, the United States, and Germany). Further, Study 4 was designed to document a structured process of factor analysis in determining the underlying factor structure of the MDRS. Construct validity of the MDRS was also assessed against a widely used measure of depression that is consistent with the DSM-IV diagnostic criteria (e.g., the Patient Health Questionnaire – Depression Module [PHQ-9]; Kroenke, Spitzer, & Williams, 2001).

Study 4 also sought to evaluate differences in prototypic and atypical depression symptoms in the context of conformity to masculine norms. As reviewed above, the field of gender related research has recently progressed from assessing adherence to gender roles (e.g., masculinity and femininity) towards assessing conformity to masculine (or feminine) norms. Although conceptually related to gender role theory, the conformity to masculine norms construct is based in recent theory (e.g., Mahalik et al., 2003), is comprehensive, and is commonly accepted as demonstrating greater validity in the conceptualisation of behaviours associated with normative masculine socialisation (e.g., Owen, 2011). Given this, the findings of Study 4, based on a different assessment of masculinity to that reported in Study 1 (e.g., the Australian Sex Role Scale), will provide an additional vantage point from which gender differences can be interpreted.

Study 5

Study 5 was designed with several aims. Study 5 included a longitudinal component which collected data at two points in time, approximately 12 weeks apart. This

was done to track the impact of recent negative life events (for those who had experienced such events) over time, and to evaluate any sex differentiated trajectories of symptom presentation. As such, Study 5 sought to evaluate whether males and females differed in the patterns of symptoms or coping behaviours in response to depressogenic life events. By incorporating a longitudinal design, Study 5 is one of the first purposefully designed studies to map sex differences in both prototypic and atypical symptom trajectory across time.

A further aim of Study 5 was to confirm the factor structure of the MDRS using confirmatory factor analysis. In addition, Study 5 will be the first known large scale community study to report test-retest data on a male specific measure of depression. Study 5 was also designed to incorporate several other key variables hypothesised to be important in men's experience of depression (e.g., rumination, attitudes towards help seeking, emotion regulation, and experiences of shame). As indicated in the literature reviewed above, each of these variables has been hypothesised to impact on sex differences in experiences of depression.

Integration of Theory

As indicated in the literature presented in Chapters 1-4, the field of men's depression research has lacked a unifying theoretical framework (Addis, 2008). Throughout the five studies outlined in this chapter, results will be interpreted in the light of gender role strain paradigm (Pleck, 1981, 1995). Furthermore, results will also be integrated within the four theoretical frameworks outlined by Addis (e.g., the sex differences framework, the masked depression framework, the masculine depression framework, and the gendered responding framework). In doing so, the current dissertation seeks to contribute towards a unification of theory related to the field of research into men's experiences of depression.

Summary

Five studies will be presented to further knowledge related to men's experience of depression, and contribute toward the development of a new Australian men's depression scale. In aiming to improve the identification of males at risk of depression, the MDRS is designed to be sensitive to atypical symptom presentation and maladaptive coping responses. In an attempt to advance the field, the MDRS will be developed through

rigorous methodology, advanced statistical methods, and validated against a measure that is consistent with the DSM-IV prototypic symptoms of depression. Furthermore, key theories will be integrated and evaluated throughout the interpretation of study findings.

Chapter 6: Study 1 – GMDS Confirmatory Factor Analysis

Background

As indicated in the previous chapters, converging lines of evidence have led scholars to argue that socialisation of proscriptive masculine norms (e.g., stoicism, invulnerability, and emotional suppression) prevent men from seeking help when distressed (Addis & Mahalik, 2003; Alston & Kent, 2008; Courtney, 2003; Mahalik & Rochlen, 2006) and alter depression symptom presentation (Cochran & Rabinowitz, 2000; Pollack, 1998, 2005; Real, 1997; Rutz, Von Knorring, Pihlgren, Rihmer, & Walinder, 1995). Given that depression is typically contingent on the presence of feelings associated with hopelessness, weakness, self-criticism and low mood, masculine characteristics have been theorised to directly contradict the experience of depression.

Externalising responses such as overwork, aggression and risk-taking are not the behaviours assessed in the context of primary care when assessing for depression (Jensen, Munk, & Madsen, 2010; Stromberg, Backlund, & Lofvander, 2010). The use of male specific measures of depression may help to circumvent some of the issues related to the identification of depression in men (Stromber, Backlund, & Lofvander, 2010). However, as indicated in Chapter 4, few studies have examined sex and gender differences across such male specific depression measures, and even fewer studies have reported on the psychometric proprieties of such scales.

Study 1 sought to evaluate Australian prevalence data for the Gotland Male Depression Scale (GMDS). Further, Study 1 also sought to examine sex and gender differences for the GMDS in an Australian sample, and enable comparisons with similar German data (e.g., Möller-Leimkühler, Heller, & Paulus, 2007b; Möller-Leimkühler & Yucel, 2010). In addition, Study 1 was also designed to provide comparative data of diagnostic classification between the GMDS and a widely used gender neutral measure of depression (e.g., the depression subscale from the Depression Anxiety Stress Scales; DASS-21 D; Lovibond & Lovibond, 1995). Finally, Study 1 sought to evaluate competing models of GMDS factor structure using confirmatory factor analysis (CFA).

Hypotheses

Sex and gender differences. In examining of the impact of gender role norm categories (e.g., masculine, feminine, androgynous, undifferentiated) on GMDS scores

Möller-Leimkühler, Heller, and Paulus (2007b) reported that the risk of male depression, as assessed by the GMDS, was particularly pronounced amongst males reporting low levels masculinity (e.g., undifferentiated males). This finding was subsequently replicated in a large sample of male and female undergraduate students, where those with low levels of positive masculine traits who were in the undifferentiated gender role category (e.g., low femininity and low masculinity) were at highest risk of male depression (Möller-Leimkühler & Yucel, 2010). These findings are contrary to the theorised basis of male depression, as purportedly assessed by the GMDS. Also in contrast to the notion of male depression, Möller-Leimkühler and Yucel reported that females were in fact at higher risk of male depression (as assessed by the GMDS) than were males.

Möller-Leimkühler and Yucel (2010) suggested that their findings may reflect the GMDS making a global assessment of aggression. Scale respondents may have interpreted the GMDS aggression items in relation to low level aggression (e.g., nagging, complaining, whining), rather than outward reacting aggression associated with anger or violence. It is possible that low level aggression may accompany the feminine gender role more strongly than the male gender role. Alternatively, Möller-Leimkühler and Yucel suggested that their findings may indicate that young females have become increasingly aggressive over recent years. Further, as the GMDS aggression item is written as '*More aggressive, outward-reacting, difficulties keeping self-control*' it is possible that females may be responding to the second and third elements of this question (e.g., outward-reacting, difficulties keeping self-control), and may be overlooking the aggressive component.

Of the 13 GMDS items, only seven items are designed to assess distress (e.g., those that are considered more likely to occur in males). However, close inspection of the seven GMDS distress items indicate a relatively high degree of conceptual alignment with internalised symptoms that would approximate prototypic depression (e.g., items assessing self-pity, morning anxiety, appetite disturbance). Furthermore, even the item assessing alcohol use (which qualitative research suggests is strongly associated with men's experience of depression) is parcelled with other items assessing use of pills in order to achieve a calming effect, hyperactivity (including both overwork and overexercise) and appetite disturbance. This is problematic for evaluating atypical symptom presentation in

men as this question parcels atypical symptoms (e.g., alcohol use and overwork) with a prototypic symptom present in DSM-IV diagnostic criteria (e.g., appetite disturbance).

As indicated above, GMDS item 9 parcels together an assessment of both alcohol use and use of ‘pills’. While the qualitative research reviewed above indicates that alcohol use typically concurs with men’s experience of depression, a strong line of research indicates that in comparison to males, females are more likely to have exposure to psychotropic drugs than are men (e.g., Simoni-Wastila, 1998; 2000), especially anxiolytic medication used to induced calmed states (e.g., Hohmann, 1989; Taggart, McCammon, Allred, Horner, & May, 1993). Research indicates that females are more likely to use prescription drugs (e.g., nonmedical tranquilizers and narcotic analgesics) than are males (Simoni-Wastila, Ritter, & Strickler, 2004). Item 9 also assesses appetite disturbance, and research indicates that in comparison to men, women are more likely to experience appetite disturbance when depressed (e.g., Silverstein, 1999; 2002; Wenzel, Steer, & Beck, 2005). The sex difference in appetite disturbance may be particularly pronounced for episodes of recurrent depression (Frank, Carpenter, & Kupfer, 1988). Given that items assessing use of pills and appetite disturbance are lumped together with the GMDS item assessing alcohol use, any expected sex difference may be balanced out as some components favour higher scores amongst men (e.g., alcohol) and some components favour higher scores amongst women (e.g., use of pills, appetite disturbance).

Similar to the GMDS distress items, there is little reason to expect that any of the GMDS depression items would be more frequently seen in males (e.g., burnout, fatigue, indecision, sleep disturbance, negativity). Indeed, when correlated with the internalising and externalising subscales of the Masculine Depression Scale, Magovcevic and Addis (2008) found the GMDS correlates more strongly with items assessing internalising depression ($r = .76$) than items assessing externalising depression ($r = .46$). Furthermore, Magocevic and Addis reported that the GMDS correlated very weakly with both the Conformity to Masculine Norms Scale ($r = .17$), and the Male Role Norms Scale ($r = .12$). This suggests that GMDS scores are unrelated to attitudes associated with rigid masculine norms.

Based on the above analysis of GMDS items, and the replicated finding of higher GMDS scores being associated with lower masculinity (e.g., Möller-Leimkühler, Heller, &

Paulus, 2007b; Möller-Leimkühler & Yucel, 2010), the present study hypothesised sex equivalent ratings for the GMDS. Furthermore, consistent with previous research (Möller-Leimkühler et al.; Möller-Leimkühler & Yucel), it was also expected that individuals low in masculine traits (e.g., those in the undifferentiated or feminine gender role categories) would report higher GMDS scores than those with higher masculine scores (e.g., those in the masculine or androgynous gender role categories). A similar pattern was also expected for the DASS-21 depression subscale (DASS-21 D). No sex differences were expected, but those reporting relatively high levels of masculinity (e.g., those in the masculine and androgynous categories) were expected to report lower scores for the DASS-21 D subscale than those reporting lower levels of masculinity (e.g., those in the feminine and undifferentiated categories).

Comparison of diagnostic utility. To date few studies have examined the diagnostic utility (e.g., classification of individuals as depressed or not depressed) of the GMDS in comparison to other commonly used measures of depression. Madsen and Juhl (2007) reported that the GMDS identified additional potential cases of depression amongst men when compared to the Edinburgh Postnatal Depression Scale (EPDS). However, Madsen and Juhl also reported a number of cases that the EPDS detected which were undetected by the GMDS (e.g., the GMDS identified 3.4% of fathers as at risk of depression while the EPDS identified 5.0% at risk). More recently Stromberg, Backlund, and Lofvander (2010) compared the diagnostic utility of the GMDS with the Beck Depression Inventory, failing to find any additional diagnostic utility with the use of the GMDS. In fact, similar to Madsen and Juhl, Stromberg and colleagues found that a number of cases were identified by the BDI that were not detected by the GMDS. While strong correlations (e.g., $r \geq .80$) have been reported between the GMDS and the BDI (Magocevic & Addis, 2008; Stromberg et al.), it is clear that the two scales utilise differing clinical cut-off scores for identifying individuals ‘at risk’ of depression.

The current study sought to compare the clinical classification made by the GMDS with those made by the DASS-21 D subscale. The DASS-21 D subscale is a widely used measure of depression (Roemer & Orsillo, 2007). Given that both the GMDS and DASS-21 D have both been designed to assess depression, it was hypothesised that they would display a high degree of diagnostic overlap, and a strong correlation. However, as the GMDS assess a wider scope of behaviours and/or symptoms in comparison to the DASS-

21 D subscale, it was expected that the GMDS would identify more cases at risk of depression than would the DASS-21 D subscale. Given the expected lack of sex difference for GMDS items, it was also expected that any differences in classification between the GMDS and the DASS-21 D subscale would be equivalent for males and females.

Confirmatory factor analysis. The three previous studies reporting GMDS factor structure provide conflicting results (Innamorati et al., 2011; Möller-Leimkühler, Heller, & Paulus, 2007a; Möller-Leimkühler & Yucel, 2010). Given the diversity of items comprising each GMDS subscale (e.g., the distress subscale including items as varied as self-pity, aggression and appetite disturbance) it is unsurprising that the *a priori* GMDS subscales have failed to be validated. Consequently, the present study hypothesised that the originally proposed GMDS two-factor model (Zierau, Bille, Rutz, & Bech, 2002) would demonstrate poor indices of fit. It was hypothesised that the three factor model identified in the exploratory factor analysis undertaken by Möller-Leimkühler and Yucel would yield better indices of fit. Lastly, the current study sought to evaluate whether the three component parts of GMDS item 9 (e.g., consumption of alcohol or pills, hyperactivity, and under- or overeating) would load on the one factor. Given the heterogeneity of behaviours assessed in this item, these three components were expected to load on different factors, indicating multidimensionality within GMDS item 9.

Method

Study Design

Data was collected from a community sample using an online questionnaire. Online studies provide important benefits to researchers as they have the capacity to reach larger audiences and previously hidden populations (Hammer & Good, 2010), minimise data entry errors (Rhodes, Bowie, & Hergenrather, 2003), limit printing and mailing costs (Kaplowitz, Hadlock, & Levine, 2004), and inhibit socially desirable responding (Booth-Kewley, Larson, & Miyoshi, 2007). Most importantly, online studies have been found to be equivalent to non-online approaches in terms of psychometric properties of self-report rating scales (Birnbaum, 2004), and study findings (Davis, 1999). The findings of online studies have been found to generalise across presentation formats (e.g., the specific format and structure of the website utilised for data collection) and tend to be relatively unaffected by non-serious or repeat responders (Gosling, Vazire, Srivastava, & John, 2004). While some have reported that online studies are prone to frequent responses from unusually

maladjusted individuals such as those suffering greater social isolation or depression (e.g., Kraut et al., 2003), recent research has failed to replicate this finding (Gosling et al., Herrero & Meneses, 2006).

Participants

Data was provided by a total of 896 participants who visited the secure website during the data collection period (July 2008 to February 2009). All participants were aged between 18-77 years. Consistent with research using online methodologies (e.g., Heerwegh & Loosveldt, 2002), inspection of the dataset indicated a high proportion of missing data (see Table 1 below). After data screening was complete (see section below for full details) the resultant usable sample comprised 663 cases. The sample comprised a total of 318 males ($M = 31.87$ years, $SD = 12.09$) and 345 females ($M = 34.10$ years, $SD = 12.39$), the mean age difference between male and female participants was significant $t(661) = 2.34, p = .019$. A total of 330 participants (50.90% of the total useable sample) were below 30 years of age. Detailed information on the sample is provided in Table 2 below.

Materials

Gotland Male Depression Scale. The GMDS (Zierau, Bille, Rutz, & Bech, 2002) was used to assess depression symptoms thought to characterise the symptomology of depressed men (Karlsson, 2010). The GMDS consists of 13 items to which participants rate changes in behaviour over the previous month on a four point scale where; 0 (*not present*), 3 (*present to a high degree*). The GMDS comprises a depression subscale (e.g., '*Feeling burned out and empty*') and a distress subscale (e.g., '*More irritable, restless and frustrated*'). To assist with confirming the factor structure of the GMDS, item 9 of the GMDS was broken into three component parts, resulting in separate items inquiring about consumption of alcohol or pills, hyperactivity, and under- or overeating. However, for the purposes of creating the GMDS distress subscale and the GMDS total score, the mean of these three items were used. Previous research has demonstrated the internal reliability of the GMDS subscales (e.g., Madsen & Juhl, 2007; Magovcevic & Addis, 2008).

Depression Anxiety Stress Scales – Short Form, Depression Subscale. The DASS-21 D (Lovibond & Lovibond, 1995) was used in the current study as a point of reference for classifying clinical and non-clinical caseness for the GMDS. The DASS-21 D

comprises seven questions measuring depression (e.g., *'I couldn't seem to experience any positive feeling at all'*). Respondents make ratings on a four point scale where 0 (did not apply to me at all), 3 (*applied to me very much, or most of the time*). The DASS-21 has been widely used, and is known to be a stable, reliable, and valid measure of prototypic depression (e.g., Crawford & Henry, 2003; Henry & Crawford, 2005).

Australian Sex Role Scale. The ASRS (Antill, Cunningham, Russell, & Thompson, 1981) was used to assess adherence to traditional masculine and feminine gender roles. The ASRS contains 50 adjectives for which participants rate themselves using a seven point scale where; 1 (*never, or almost never true*), 7 (*always, or almost always true*). Scoring the ASRS allows for the determination of four sex role scores for each participant: Masculine positive (Masc Pos; assessed by characteristics seen as desirable in males e.g., 'confident'), masculine negative (Masc Neg; assessed by characteristics seen as undesirable in males e.g., 'noisy'), feminine positive (Fem Pos; assessed by characteristics seen as desirable in females e.g., 'gentle'), and feminine negative (Fem Neg; assessed by characteristics seen as undesirable in females e.g., 'anxious'). Although methodologically contentious (e.g., Hoffman, 2001), to enable suitable comparison with the findings of Möller-Leimkühler and Yucel (2010), gender role categories were determined for each participant via the median split scoring method. Accordingly, each participant was assigned to either a masculine, feminine, androgynous or undifferentiated category.

Demographic data. Participants provided background demographic data to enable sample characteristics to be identified. Demographic data was collected on participant sex, age, ethnicity, current relationship status, cohabitation, place of residence, income, education level, and current employment status. All materials used in the study, including relevant ethics information, are presented in Appendix A and B.

Procedure

Ethical approval was received from the Human Research Ethics Committee of Australian Catholic University. Participants were initially recruited via email invitation, distributed amongst the authors' personal networks. The email contained a brief summary of the aims of the project, and included a hyperlink to the online questionnaire hosted by *psychdata.com*. The invitation contained a statement encouraging participants to forward the email on to known others (e.g., the snowball technique). In addition, paid

advertisements were displayed to Australian members of the *Facebook* social networking site. The advertisement placed on *Facebook* contained the following brief statement: '*Can you spare 15 mins? Why not participate in an anonymous online survey for PhD research into gender, social roles and wellbeing*'. This advertisement was located on the users profile page, alongside several other unrelated sponsored advertisements. By clicking on the hyperlink embedded within the brief statement on *Facebook*, participants were directed to the online questionnaire. Given the initial low response rate to the online advertisement from males, the *Facebook* advertisement was reworded to specifically target men. The reworded advertisement read: '*Can you spare 15 mins? Males are required for an anonymous online survey for PhD research into gender, social roles and wellbeing*'..

The online advertisement was displayed a total of 2,279,334 times to Australian members of *Facebook*. *Facebook* users clicked the advertisement a total of 996 times. Of these individual clicks, 495 failed to result in useable data. That is, the participant either immediately dropped out when they were directed to the questionnaire website, they dropped out part way through completing the questionnaire, or there was excessive missing data across their responses (see section below on missing data).

Once participants were directed to the online questionnaire, the welcome screen provided the opportunity for participants to read the full information letter for the project, including ethics information. Participants were advised that their consent to be involved in the project would be inferred from submission of their results. Participants were also advised that their participation was voluntary, and they were free to withdraw from the study at any time prior to the submission of data.

Data Screening

Prior to statistical analyses and hypothesis testing, data was thoroughly screened to identify complete cases, plausibility of values, outliers, homogeneity of variance and normality. Guidelines regarding data screening and testing of assumptions were followed from Field (2009) and Tabachnick and Fidell (2007). All data was downloaded and transferred into SPSS Version 17.0.

Missing data. Patterns of missing data were initially explored using the SPSS NMISS function. Out of the 896 cases, 599 participants provided complete data, leaving

297 incomplete cases. There was considerable range in the number of missing items. As can be seen from Table 1, a total of 173 participants had all 91 scale items missing and were dropped from the analysis.

Table 1
Frequency of Observed Missing Data (Study1)

Missing data points	Frequency	Sample Percent	Sample Cumulative Percent
0	599	66.9	66.9
1	75	8.3	75.2
2 – 10	21	2.4	77.6
11 – 50	13	1.4	79.0
51 – 90	15	1.6	80.6
91	173	19.4	100.0
Total	896	100.0	100.0

Missing value analysis was subsequently undertaken to aid decision making regarding the size of the final dataset. As the present study utilises structural equation modelling – a data analytic technique requiring large samples (Tabachnick & Fidell, 2007), it was considered necessary to maximise the usable sample size while at the same time balancing data integrity. In the present sample, 75 cases reported a single missing data point. One missed item equates to approximately 1% of the total items within the questionnaire. As this was considered a small percentage of missing data per participant, the decision was made to include these 75 cases in the final dataset, using mean substitution for missing data, on the condition that missing value analysis indicated it was appropriate to do so.

When participants with missing data comprise a random subset of the complete sample of participants, missing data is referred to as missing completely at random (MCAR) (Donders, Van Der Heijden, Stijnen, & Moons, 2006). The pattern of MCAR data can be evaluated in SPSS through Little's MCAR test (SPSS Inc., 2007). For the present sample, Little's MCAR test (which was undertaken according to participant sex) was non-significant ($\chi^2 = 4018.80$, $df = 3960$, $p = .253$), indicating that the data was missing at random (e.g., no identifiable pattern existed to the missing data according to

participant sex). When missing data follows an MCAR pattern, mean substitution for missing values is an acceptable solution (Acock, 2005).

For the 75 cases with missing data, values were replaced with the series mean for that item. Following recommendations by Tabachnick and Fidell (2007), data for the subscales was subsequently analysed separately, once using only the complete cases (e.g., the sample of 599) and again with the larger dataset including the 75 cases where missing values had been replaced with the series mean. The results of these analyses were similar, indicating that mean substitution failed to bias the results (Tabachnick & Fidell). Accordingly, analysis proceeded using the larger dataset.

Plausibility of values. Univariate descriptive statistics were checked for plausibility of means, standard deviations, and the range of values. All values for individual items, subscales, and demographic variables were within the expected range, and item means and standard deviations were plausible.

Outliers. To enable subsequent data screening, subscale scores were computed for each of the rating scales used (e.g., the GMDS, DASS-21 D and ASRS). Subscale scores were explored for univariate outliers using z score transformations. Consistent with Field (2009), cases yielding z score values in excess of ± 2.29 were considered to be univariate outliers. Inspection of z scores for each of the subscales failed to yield any univariate outliers.

Scale scores were also explored for multivariate outliers through the Mahalanobis distance procedure. Based on Tabachnick and Fidell's (2007) recommendations, the criterion for multivariate outliers is Mahalanobis distance at $p < .001$ where Mahalanobis distance is evaluated as χ^2 with the degrees of freedom equal to the number of variables. As such, any case with a Mahalanobis distance greater than 27.88 would be considered a multivariate outlier. This procedure identified five cases meeting criteria. Close inspection of these cases indicated each individual scored particularly high on all variables of interest and in some cases maximum values were endorsed on all variables. As this casts doubt on the validity of responses (e.g., patterned responding, where individuals were simply clicking the maximum value for each item), these five cases were subsequently deleted.

Consistent with Tabachnick and Fidell's (2007) recommendations, the syntax for identifying multivariate outliers was re-run and no further outliers were detected.

Homogeneity of variance. Levene's test was undertaken on each of the nine subscales to determine equality of variance according to participant sex. All tests of homogeneity were non-significant, indicating equality in variances across sex.

Normality. Normality of the dependent variables used in the study was assessed through skewness and kurtosis values, histograms, normal Q-Q plots, and detrended normal Q-Q plots. Skewness and kurtosis values were converted into z scores by dividing the skewness or kurtosis value by the relevant skewness or kurtosis standard error (Tabachnick & Fidell, 2007). Where z scores were greater than ± 3.29 a significant deviation for normal was considered to have occurred (Field, 2009). According to this procedure, a significant negative skew was observed for the ASRS Feminine Negative subscale and significant positive skews were observed for the DASS-21 D subscale, and the two GMDS subscales. Given the construct assessed by the DASS-21 D and the GMDS (e.g., depression) it is unsurprising that these subscales demonstrated a positive skew (e.g., a tendency for lower range values) as data for the present study was collected from a community sample, where most people would be expected in the normal range.

In the case of large samples (e.g., > 300), Tabachnick and Fidell (2007) recommend that the shape of the distribution should be examined rather than formal inference tests (as in large samples the null hypothesis for normality is likely to be rejected as standard errors for skewness and kurtosis decrease with larger N 's). Histograms with a normal curves superimposed were evaluated for each of the subscales. Inspection of the histograms, normal Q-Q plots, and detrended normal Q-Q plots all verified the departures of normality indicated above.

When data is non-normally distributed Tabachnick and Fidell (2007) recommend that the safest strategy is to use transformations of variables to improve their normality unless there is a compelling reason not to. However despite this recommendation opinion remains divided over the necessity of transforming non-normal data, especially in large samples. It has been argued that data transformation changes the construct of interest, which impacts on the interpretability of results (Grayson, 2004). Furthermore, Games

(1984) argues that in large samples, the sampling distribution will be normal regardless of the shape of the variable distributions. Hence, Field (2009) argues that in anything other than small samples, the debate about data transformation is simply academic. Nonetheless, consistent with Tabachnick and Fidell's (2007) recommendations, appropriate square root or logarithmic transformations of scales were undertaken. However, even after the skewed data was subject to these data transformations, the resultant scales still failed to approach normality. Consequently, data was analysed separately (e.g., once using the untransformed data and once using the transformed data). No difference to the findings based on the use of the untransformed or transformed data were observed. Given the lack of difference in findings between the transformed and untransformed data, the large sample size used in the present study, and that the statistical techniques used in the present study (e.g., univariate and multivariate analysis of variance) are known to be robust to violations of normality (e.g., Erceg-Hurn & Mirosevich, 2008; Sawilowsky, 1990), for ease of interpretation the subsequent analyses report findings based on the untransformed data.

Data Analytic Strategy

A between groups data analytic approach (testing for sex and gender differences simultaneously) was adopted. Masculinity and femininity scores were used consistently with the median split approach undertaken by Möller-Leimkühler and Yucel (2010). Comparison of clinical categories was undertaken for the GMDS and DASS-21 D. Confirmatory factor analysis was undertaken using AMOS Version 17.0. While the GMDS is theorised to incorporate two subscales, computation of cut-off scores are dependent on the total score. Unless explicitly stated otherwise, the following results section reports on values for the GMDS total score.

Results

Sample Characteristics

Demographic information for the sample is presented in Table 2. Chi square analyses were undertaken to evaluate sex equivalence on each of the demographic variables. There were no significant sex differences for participant numbers for the ethnicity, marriage, cohabitation, and place of residence categorical variables (all p 's > 0.05). The sample comprised significantly more partnered females $\chi^2(1, N = 663) = 7.96, p = .005$, and female participants also tended to be in the lower income brackets $\chi^2(2, N = 661) = 21.08, p < .001$, and were more likely than males to have a postgraduate degree χ^2

Table 2

Sample Demographic Characteristics by Sex and Total (Study 1)

	Males		Females		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Ethnicity						
Aboriginal	1	0.3	2	0.6	3	0.5
African	1	0.3	2	0.6	3	0.5
Anglo/Caucasian	289	90.9	310	89.9	599	90.3
Asian	9	2.8	17	4.9	26	3.9
Hispanic	1	0.3	1	0.3	4	0.6
Middle Eastern	2	0.6	1	0.3	3	0.5
Relationship Status						
In a Current romantic relationship	181	56.9	233	67.5	414	62.4
Married	87	27.4	101	29.3	188	28.4
Cohabiting with partner	125	39.3	164	47.5	289	43.6
Place of residence						
Metropolitan	254	79.9	257	74.5	511	77.9
Rural/Regional	60	18.9	85	24.6	145	21.9
Income						
Up to \$50,000	172	54.1	232	67.2	406	61.1
\$51,000 - \$100,000	106	33.3	99	28.7	205	31.0
\$101,000+	39	12.3	13	3.8	52	7.9
Highest Education						
Primary	1	0.3	0	0.0	1	0.2
Pre Year 12	27	8.5	19	5.5	46	6.9
Year 12	66	20.8	64	18.6	130	19.6
Trade Qualification	40	12.6	25	7.2	65	9.8
Undergraduate Degree	120	37.7	127	36.8	247	37.3
Postgraduate Degree	62	19.5	110	31.9	173	25.9
Employment Status*						
Full time work	166	52.2	122	35.4	288	43.4
Part time/casual work	80	25.2	112	32.5	192	29.0
Job seeking	14	4.4	16	4.6	30	4.5
Full time study	67	21.1	88	25.5	155	23.4
Part time study	20	6.3	29	8.4	49	7.4
Other	27	8.5	48	13.9	75	11.3

Note. * Participants could indicate more than one employment status.

(5, $N = 661$) = 18.24, $p = .003$. In comparison to females, the sample comprised a greater number of males working fulltime χ^2 (1, $N = 663$) = 19.10, $p < .001$, and fewer males working part time work χ^2 (1, $N = 663$) = 4.29, $p = .038$.

Scale Reliability

Internal consistency of all subscales was evaluated using Cronbach alpha coefficients. Analyses were undertaken separately for males and females (see Table 3). All subscales demonstrated satisfactory internal reliability coefficients (e.g., $> .70$; Schmitt, 1996).

Gender Role Categories

Means, standard deviations, and 95% confidence intervals for the four ASRS subscales are displayed in Table 4. To evaluate sex differences across the ASRS subscales a multivariate analysis of variance (MANOVA) was conducted. A significant multivariate effect was observed $\Lambda = .930$, $F(4, 658) = 12.45$, $p < .001$, $\eta^2 = .070$ indicating mean sex differences across the four ASRS subscales. Significant univariate effects indicated that males rated higher than females on the Masc Pos ($F(1, 661) = 20.72$, $p < .001$, $\eta^2 = .030$) and Masc Neg subscales ($F(1, 661) = 31.24$, $p < .001$, $\eta^2 = .045$). Females rated higher than males on the Fem Pos subscale ($F(1, 661) = 17.65$, $p < .001$, $\eta^2 = .026$). There was no difference between males and females on the Fem Neg subscale.

Gender role categories were constructed using the median split method (e.g., Antill, Cunningham, Russell, & Thompson, 1981; Bem, 1974; Spence, Helmreich, & Stapp, 1975). Consistent with the scoring procedure followed by Möller-Leimkühler and Yucel, the median of the entire sample was taken for the Masc Pos (median = 43) and Fem Pos (median = 53) subscales. For masculinity, individuals scoring below the median were classified low masculine, and individuals scoring above the median were classified high masculine. Similarly, for femininity, individuals scoring below the median were classified low femininity, and individuals scoring above the median classified high femininity. Four categories were subsequently developed; masculine (high in masculinity and low in femininity), feminine (low in masculinity and high in femininity), androgynous (high in masculinity and high in femininity), and undifferentiated (low in masculinity and low in femininity). The breakdown of these categories is shown in Table 5. Chi-square analysis indicated an association between sex and gender role ($\chi^2(3, N = 663) = 29.37$, $p < .001$)

where participants were more likely to conform to traditional gender role categories (e.g., masculine for males and feminine for females). The percentages of males and females in each of the gender role categories closely approximated figures reported by Möller-Leimkühler and Yucel.

Table 3

Reliability Coefficients for Subscales of the GMDS, DASS-21 D and ASRS by Sex

Scale	Subscale	Male α	Female α
GMDS	Distress	.82	.83
	Depression	.77	.83
DASS-21 D	Depression	.92	.92
ASRS	Masc Pos	.72	.73
	Masc Neg	.80	.80
	Fem Pos	.74	.74
	Fem Neg	.83	.87

Table 4

Descriptive Statistics for the ASRS Subscales for Males and Females

Scale	Subscale	Male			Female		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
ASRS	Masc Pos	44.41	8.45	[43.48 – 45.35]	41.38	8.70	[40.45 – 42.30]
	Masc Neg	34.78	10.09	[33.67 – 25.89]	30.53	9.47	[29.53 – 31.53]
	Fem Pos	51.30	7.73	[50.45 – 52.16]	53.70	7.17	[52.97 – 54.50]
	Fem Neg	34.71	10.65	[33.54 – 35.89]	35.26	11.68	[34.02 – 36.50]

Table 5
Gender Role Categories by Sex and Total

Category	Male		Female		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Masculine	99	31.1	61	17.7	160	24.1
Feminine	48	15.1	104	30.1	152	22.9
Undifferentiated	75	23.6	72	20.9	147	22.2
Androgynous	96	30.2	108	30.1	204	30.8

Prevalence of Depression Symptoms

Symptom prevalence for the GMDS items was examined by computing instances where scores were ≥ 1 . Prevalence percentages for GMDS items are shown in Table 6. Consistent with the hypothesis that few sex differences would be observed on the GMDS items, most of the GMDS items demonstrated equivalent prevalence rates for males and females. However, on two items (lowered stress threshold and family history of abuse / depression / suicide) females endorsed higher prevalence rates. Males endorsed a higher prevalence rate for the item assessing hyperactivity / overwork.

Symptom prevalence for the seven DASS-21 D items were also examined by computing instances where scores ≥ 1 . Prevalence rates for the DASS-21 D items are shown in Table 7. Mirroring the prevalence rates for the GMDS items, most of the DASS-21 D items demonstrated equivalent prevalence rates for males and females. However, males indicated greater prevalence of one depression item: feeling as though life is meaningless.

Table 6

Prevalence of GMDS Symptoms (% of Total Within Sex)

GMDS Subscale	Item	Male	Female	χ^2 , sig
Depression	Burn out	33.3	35.3	n.s.
	Fatigue	30.6	34.2	n.s.
	Indecision	21.5	23.6	n.s.
	Sleep disturbance	35.1	37.0	n.s.
	Negativity	18.3	18.4	n.s.
	Family history of abuse/ depression / suicide	17.2	27.9	21.45, $p < .001$
Distress	Lowered stress threshold	31.7	38.3	4.53, $p = .033$
	Increased aggression	23.6	23.9	n.s.
	Irritability	29.9	33.8	n.s.
	Morning anxiety	21.3	21.6	n.s.
	Substance use	14.8	13.6	n.s.
	Hyperactivity / overwork	36.6	28.1	5.44, $p = .020$
	Appetite disturbance	24.4	27.6	n.s.
	Change in behaviour	10.6	10.6	n.s.
	Self-pity	15.0	16.8	n.s.

Note. Df for Chi square tests = (1, 663).

Table 7

Prevalence of DASS-21 D Symptoms (% of Total Within Sex)

DASS Subscale	Item	Male	Female	χ^2 , sig
Depression	Absence of positive feelings	20.5	21.4	n.s.
	Lack of initiative	34.8	37.1	n.s.
	Negative outlook	19.9	19.0	n.s.
	Downhearted & blue	26.8	29.6	n.s.
	Lack of enthusiasm	22.5	23.4	n.s.
	Low self-worth	17.7	19.2	n.s.
	Meaninglessness	16.9	13.8	6.11, $p = .013$

Note. Df for Chi square tests = (1, 663).

Sex and Gender Role Effects

To evaluate whether gender role category interacted with participant sex for GMDS and DASS-21 D scores, a between subjects 4 (gender role category) \times 2 (sex) MANOVA was undertaken. The GMDS total score, and the DASS-21 D subscale score were evaluated as dependent variables. Multivariate main effects were reported for sex $\Lambda = .988$, $F(6, 654) = 3.84$, $p = .022$, $\eta^2 = .012$, and gender role $\Lambda = .928$, $F(6, 654) = 8.34$, $p < .001$, $\eta^2 = .037$. The multivariate interaction was non-significant. In a similar manner, only main effects were reported at the univariate level. In contrast to prediction, males reported higher scores on the DASS-21 D than did females $F(1, 655) = 4.93$, $p = .027$, $\eta^2 = .007$ (see Table 8 for means and *SD*'s). Consistent with prediction there were no significant sex differences observed for the GMDS ($p > .05$). Significant main effects were observed for gender role categories for both the GMDS $F(3, 655) = 8.18$, $p < .001$, $\eta^2 = .036$, and the DASS-21 D $F(3, 655) = 16.71$, $p < .001$, $\eta^2 = .071$. Consistent with prediction that higher GMDS scores would be observed for those reporting low masculinity, post hoc analysis with Bonferonni correction indicated that on the GMDS, those in the feminine gender role category scored significantly higher than those in the masculine ($p < .001$) and androgynous ($p < .001$) categories. There was no difference between those in the feminine category and those in the undifferentiated category. Similarly, there was no difference between those in the undifferentiated category and those in either the masculine or androgynous category (see Table 8 for means and *SD*s). For the DASS-21 D, a similar pattern of differences occurred which also supported the hypothesis. Those in the feminine gender role category scored significantly higher on the DASS-21 D subscale than those in the masculine ($p < .001$) and androgynous ($p < .001$) categories. In addition, those in the undifferentiated category scored higher on the DASS-21 D subscale than those in the masculine ($p = .008$) and androgynous ($p = .001$) categories (see Table 8 for means and *SD*'s).

Table 8

Descriptive Statistics for the GMDS & DASS-21 D According to Gender Role Category by Sex and Total

Subscale	Gender Role	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
GMDS	Masculine	10.01	7.91	[8.43 – 11.59]	10.82	8.52	[8.64 – 12.30]	10.31	8.14	[9.05 – 11.59]
	Feminine	14.92	9.73	[12.09 – 17.74]	14.34	9.71	[12.45 – 16.22]	14.52	9.69	[12.97 – 16.07]
	Androgynous	11.03	7.67	[9.47 – 12.58]	9.68	7.45	[8.26 – 11.10]	10.31	7.57	[9.27 – 11.36]
	Undifferentiated	12.43	8.62	[10.45 – 14.41]	12.17	9.33	[9.97 – 14.37]	12.30	8.95	[10.84 – 13.76]
	Total	11.62	8.43	[10.70 – 12.56]	11.81	8.93	[10.86 – 12.75]	11.72	8.69	[11.06 – 12.38]
DASS-21 D	Masculine	9.00	9.31	[7.14 – 10.86]	8.74	9.54	[6.30 – 11.18]	8.90	9.37	[7.44 – 10.36]
	Feminine	18.07	14.23	[13.91 – 22.23]	14.35	12.69	[11.88 – 16.81]	15.52	13.28	[13.39 – 17.65]
	Androgynous	9.73	10.90	[7.52 – 11.94]	7.30	9.10	[5.57 – 9.05]	8.44	10.04	[7.06 – 9.83]
	Undifferentiated	13.65	11.50	[11.07 – 16.30]	12.22	10.99	[9.64 – 14.80]	12.95	11.24	[11.12 – 14.78]
	Total	11.69	11.58	[10.41 – 12.97]	10.71	11.11	[9.53 – 11.89]	11.18	11.34	[10.31 – 12.04]

Note. GMDS values calculated for GMDS total score.

Clinical Classification According to the GMDS and DASS-21 D

Clinical categories of the GMDS and DASS-21 D were calculated according to cut-offs for each scale (see Table 9). As the norms for the DASS-21 were developed from the longer version of the scale (e.g., 14 items; Lovibond & Lovibond, 1995) scores for the DASS-21 D subscale were multiplied by 2 to enable comparison with established norms and severity ratings (e.g., Henry & Crawford, 2005). Consistent with the hypothesis that there would be sex equivalence in classification rates, chi square analysis failed to indicate any association between sex and clinical categories for either the GMDS total score or the DASS-21 D.

Table 9

GMDS & DASS-21 D Clinical Categories by Sex

Scale / Clinical Category	Male		Female	
	<i>n</i>	%	<i>n</i>	%
GMDS – Total Score				
No Depression <13	189	59.4	207	60.0
Depression Possible 13-26	113	35.5	113	32.8
Depression Probable 27-39	16	5.0	26	7.2
DASS-21 D*				
Normal 0-9	167	52.5	195	56.5
Mild 10-13	35	11.0	38	11.0
Moderate 14-20	49	15.4	47	13.6
Severe 21-27	21	6.6	28	8.1
Extremely Severe 28+	46	14.5	37	10.7

Note. DASS-21 D scores multiplied by 2.

In order to examine differences in diagnostic classification between the GMDS and DASS-21 D, participants were categorised as either normal or depressed for each scale. This was done to ascertain any misclassification between the two measures of depression. Consistent with prediction, chi square analyses indicated a significant association between clinical category and scale type for both males $\chi^2(1, N = 318) = 100.09, p < .001$, and females $\chi^2(1, N = 345) = 127.82, p < .001$ (see Table 10). Comparisons of the percentages for each cell were similar for males and females. Further, there was consistency of classification (e.g., an individual being classified as normal on both scales, or being

classified as depressed on both scales) for 78.0% of males and 80.9% of females. There was a greater likelihood that participants would be classified as normal by the GMDS but ‘at risk’ by the DASS-21 D (14.5% for males, 11.3% for females) compared to being classified ‘at risk’ by the GMDS and normal on the DASS-21 D (7.5% for males, 7.8% for females).

Table 10

Comparison of Clinical Classification by the GMDS and DASS-21 D by Sex

	Males		Females	
	DASS-21 D Normal < 9	DASS-21 D At risk ≥ 10	DASS-21 D Normal < 9	DASS-21 D At risk ≥ 10
GMDS Normal < 13	143 (45.0%)	46 (14.5%)	168 (48.7%)	39 (11.3%)
GMDS At risk ≥ 13	24 (7.5%)	105 (33.0%)	27 (7.8%)	111 (32.2%)

Note. DASS-21 Depression scores multiplied by 2.

Correlations

Pearson correlation coefficients were evaluated for the ASRS subscales, the DASS-21 D subscale, and the GMDS total score separately for males and females (see Table 11). Similar patterns between males and females were observed for both depression scales with the ASRS subscales. Significant weak negative correlations were observed between the Masc Pos scale and both the GMDS and the DASS-21 D subscale. In contrast, significant moderate positive correlations were observed between the Fem Neg scale and both the GMDS and DASS-21 D.

Table 11

Correlations between ASRS Subscales and GMDS and DASS-21 D Scores by Sex

ASRS Subscale	Male		Female	
	GMDS total	DASS-21 D	GMDS total	DASS-21 D
Masc Pos	-.21**	-.31**	-.25**	-.33**
Masc Neg	.11	-.01	.10	-.01
Fem Pos	.04	.06	.05	.05
Fem Neg	.48**	.49**	.58**	.52**

Note. **= $p < .001$.

Pearson correlation coefficients were also evaluated between the GMDS total score, the GMDS subscales, and the DASS-21 D subscale. Correlations were computed separately for males and females (see Table 12). All correlations were statistically significant and were within the moderate to strong range. Consistent with prediction, the GMDS and DASS-21 D were highly correlated.

Table 12

Correlations between the GMDS Total Score, GMDS Subscales and DASS-21 D by Sex

	1.	2.	3.	4.
1. GMDS Total	-	.96**	.94**	.76**
2. GMDS Depression	.95**	-	.82**	.74**
3. GMDS Distress	.93**	.78**	-	.72**
4. DASS-21 Depression	.72**	.69**	.65**	-

Note. Male correlations are presented below the diagonal, female correlations are presented above the diagonal, **= $p < .01$

GMDS Confirmatory Factor Analysis

As indicated above, GMDS data for the present study was non-normally distributed. There remains debate within the literature as to how to manage non-normally distributed data when using confirmatory factor analysis (CFA). Some researchers argue that CFA is relatively robust against violations of normality (Gorsuch, 1983), while others suggest analytic techniques to account for non-normal distributions (e.g., Brown, 2006; Curran, West, & Finch, 1996; Olsson, Foss, Troyne, & Howell, 2000; Satorra & Bentler, 2001). Unfortunately clear guidelines on how to best handle non-normal data in CFA are yet to be developed (Ory & Mokhtarian, 2010).

Despite the lack of consensus concerning what to do with non-normally distributed data when undertaking CFA, one accepted recommendation is that in non-normal samples of at least 200 cases, researchers should use Bollen-Stine bootstrapping (e.g., Bollen & Stine, 1992), with at least 2000 bootstrap samples (Nevit & Hancock, 2001) in combination with maximum likelihood estimation (Byrne, 2001; Schermelleh-Engel, Moosbrugger, & Müller, 2003). In accounting for non-normality, Bollen-Stine bootstrapping adjusts both the χ^2 value of the overall model, and the standard error values of model path estimates. Given adequate sample size, the Bollen-Stine bootstrapping

method has been shown to exert control over Type I errors in instances of non-normality (e.g., falsely accepting a model that in fact poorly fits the data) (Curran, West, & Finch, 1996; Fouladi, 1998). The Bollen-Stine bootstrapping method is a feature of the program AMOS. Following recommendations (e.g., Byrne; Schermelleh-Engel, Moosbrugger, & Müller), Bollen-Stine bootstrapping was used in conjunction with maximum likelihood estimation. Maximum likelihood estimation is the most widely used measure of path estimation in confirmatory factor analysis (Jackson, Gillaspay, & Purc-Stephenson, 2009).

CFA models are typically assessed on the basis of a non-significant χ^2 value (or in the present case non-significant Bollen-Stine bootstrap χ^2 value). However, just as normal χ^2 estimates in CFA are sensitive to sample size, so too are Bollen-Stine bootstrap χ^2 estimates. Given that each fit index demonstrates relative strengths and weaknesses, experts recommend using a variety of indices so that relative weaknesses are offset (Gonzalez & Griffin, 2001). In addition to the χ^2 and Bollen-Stine bootstrap χ^2 , the present study also used the comparative fit index (CFI), the incremental fit index (IFI), the root mean square error of approximation (RMSEA), and the standardised root mean square residual (SRMR) in assessing model fit. Bryne (2001) suggests that in large samples, CFI and TLI values should be greater than .95. RMSEA values less than .06 are indicative of well fitting models (Hu & Bentler, 1999) while SRMR values in the range of .05-.08 are generally indicative of good fit (Byrne).

A series of competing models for the GMDS factor structure were evaluated separately for males and females. Model 1a estimated the originally specified two factor model (using separate values for the three items assessing alcohol use, hyperactivity and appetite). Model 1b estimated the original two factor model with correlated error terms (e.g., Zierau, Bille, Rutz, & Bech, 2002), and Model 1c estimated the original two factor model but used the mean value of the three subscales that had been split apart. Models 2a and 2b examined an alternate two factor model (e.g., as specified by Möller-Leimkühler, Heller, & Paulus, 2007), both with and without correlated error terms. Models 3a and 3b estimated a three factor model (as specified for males by Möller-Leimkühler & Yucel, 2010) both with and without correlated error terms. Model 4 tested a uni-dimensional GMDS factor structure. Finally, Model 5 tested the factor structure of the GMDS-12, as identified by Innamorati and colleagues (2011a).

As indicated, the present study split GMDS item 9 into three component parts that separately assessed consumption of alcohol or pills, hyperactivity, and under- or overeating. This was done to evaluate whether these three items would load on the same factor. To evaluate this, modification indices (MI) were examined. MI values provide valuable information for refining and revising scales (Byrne, 2001; Steger, Frazier, Oishi, & Kaler, 2006), and indicate which parameters of the model should be dropped or added to improve model fit (Aroian & Norris, 2005). Higher MI values indicate model misspecification.

If GMDS item 9 was a uni-dimensional construct, then the three components should demonstrate low MI values when loading on the one factor (in this case, loading on the distress factor from Model 1a). However, Model 1a demonstrated covariance error (MI = 12.85) between the item assessing alcohol and pills (*'Over consumption of alcohol and pills in order to achieve a calming effect'*) and the item assessing hyperactivity (*'Being hyper active or blowing off steam by working hard or by excessive exercise'*). Furthermore, covariance error (MI = 9.95) was also observed between the item assessing alcohol and the item assessing appetite (*'Significant under or overeating'*). Although these modification indices are comparatively low, they do indicate a lack of conceptual link between the three items that comprise GMDS item 9 and the factor to which they belong. Furthermore, several of the fit indices (see Table 16) of model 1a (where the three items assessing consumption of alcohol or pills, hyperactivity, and under- or overeating were assessed separately) were noticeably higher than those for model 1b (where the three components of item 9 were assessed in combination). This suggests that improved model fit occurs when consumption of alcohol or pills, hyperactivity, and under- or overeating are assessed as separate items.

Model Fit Statistics

Fit indices for the competing factor structure models were calculated. As can be seen from Table 16, fit indices for all the initial GMDS models tested (e.g., those without re-specification – models 1b, 2a, 3a, 4, 5) were indicative of poor model fit. Highlighting this, in all cases the χ^2 test of model fit was significant, as was the Bollen-Stine bootstrap χ^2 value. However, the larger the sample size, the more likely the proposed model will fail χ^2 tests of fit (Barrett, 2007). Accordingly, the other fit indices (e.g., the TLI, CFI, SRMR, RMSEA) were also considered. These four additional indices also indicated poor fit for

models 1b, 2a, 3a, 4 and 5, regardless of whether Weston and Gore's (2006) less stringent indices of fit criteria was used. As can be seen from Table 16, this was the case for both males and females.

Of the initial models tested, Model 3a (see Figure 2) provided the best indices of fit. This is consistent with prediction. To evaluate the degree of improvement between the originally specified model (e.g., model 1b) as proposed by Zierau, Bille, Rutz, and Bech (2002) and model 3a as proposed by Möller-Leimkühler and Yucel (2010), the χ^2 difference test was undertaken (e.g., Werner & Schermelleh-Engel, 2010). The χ^2 difference test provides an objective measure of competing models (Aroian & Norris, 2005). The χ^2 difference tests for both males and females were significant ($p < .001$), indicating that model 3a fit the data significantly better than the original model proposed by Zierau and colleagues. Nonetheless, it must be kept in mind that even model 3a demonstrated poor fit indices.

Model 3a comprised three factors, and was identified by Möller-Leimkühler and Yucel (2010) from a subset of approximately 116 males considered at risk of male depression (e.g., GMDS total score ≥ 13). In comparison to the two factor models (1b, 2a) and the uni-dimensional model (Model 4), model 3a provided the closest approximation to the data. However, as can be seen from Figure 2, the items that contribute to each of the factors are somewhat heterogeneous. Möller-Leimkühler and Yucel failed to name each individual factor from the three factor solution they observed, instead referring to the factors globally as 'mixed factors'.

Model Re-specification

Given the poor fit indices obtained for the initial models, model re-specification was undertaken based on the modification indices (MI) provided by AMOS. Model re-specification occurs when parameters are changed to improve the fit of the model (Aroian & Norris, 2005), however such model re-specification should be validated in a subsequent sample as it departs from confirmatory factor analysis procedures (Worthington & Whittaker, 2006).

Testing of Models 1c, 2b, and 3b was conducted where covariance error terms were permitted to correlate. These items were identified using MI values, generated for the

male sample. Modification indices provide an indication of how the discrepancy of fit between the model and the observed data will decrease when the error variance of item pairs is permitted to co-vary. They represent systematic, rather than random measurement error in item responses that can be used in the process of model re-specification (Byrne, 2001). Error covariance occurs when a variable that is not directly measured influences item responses (e.g., social desirability) (Aroian & Norris) or in examples of poorly worded items (that may be similar in nature) that are not central to a clearly articulated construct (Niemivirta, Rijavec, & Yamauchi, 2001; Worthington & Whittaker, 2006). Hence, researchers must keep in mind that correlating error terms to obtain model fit is generally a sign of invalidity and confounded measurement (Levine, 2005).

The threshold for modification indices for the present study was set at 10 (e.g., Bryne, 2001). The modification indices for correlated error terms that were used in the re-specification of models 1b, 2b and 3b are presented in Tables 13, 14, and 15. As can be seen from Table 13, there was a large number of covarying error terms identified for Model 1c. Overall, this indicated a high degree of model misspecification and demonstrated that the GMDS items failed to load on factors that are consistent with the hypothesised *a priori* depression and distress subscales. Table 16 indicates that once the error covariances (as indicated in Table 13) were allowed to co-vary within the model, a good fit was observed (e.g., model 1c). However, as can be seen, the smaller degrees of freedom value for model 1c ($df = 50$) indicates it is more constrained in comparison to the other models. Model 1c required substantial re-specification in order to achieve fit. Model re-specification of such a large magnitude indicates a particularly poorly functioning model (e.g., Byrne, 2001).

Table 13

Modification Indices (> 10) for Males – GMDS Model 1c

Model	Covariance (item pairs)	MI Value
1c	Negativity – Self-pity	92.75
	Fatigue – Burnout	36.23
	Increased aggression – Lowered stress threshold	23.15
	Change in behaviour – Self-pity	20.66
	Negativity – Change in behaviour	20.57
	Sleep disturbance – Fatigue	17.53
	Negativity – Fatigue	16.87
	Negativity – Irritability	16.69
	Family history of abuse/ depression / suicide – Negativity	15.87
	Family history of abuse/ depression / suicide – Irritability	15.44
	Family history of abuse/ depression / suicide – Self-pity	13.60
	Fatigue – Irritability	13.44
	Fatigue – Change in behaviour	11.53
	Family history of abuse/ depression / suicide – Change in behaviour	11.03
	Sleep disturbance – Increased aggression	10.44
	Fatigue – Self-pity	10.12

Note. MI = modification index.

Table 14 shows that Model 2b also yielded a high proportion of misspecification. Of note, the first two values are similar between Tables 13 and 14, indicating that negativity and self-pity, and fatigue and burnout account for the highest amount of misspecification in both models. While the respecified model indicated a good fit according to the fit indices, large scale re-specification was required to achieve this, once again indicating a poor model.

Table 14
Modification Indices (> 10) for Males – GMDS Model 2b

Model	Covariance (item pairs)	MI Value
2b	Negativity – Self-pity	86.44
	Fatigue – Burn out	49.23
	Fatigue – Sleep disturbance	21.90
	Lowered stress threshold – Increased aggression	19.54
	Change in behaviour – Self-pity	19.52
	Negativity – Irritability	18.39
	Negativity – Change in behaviour	16.16
	Family history of abuse/ depression / suicide – Irritability	16.13
	Fatigue – Self-pity	14.51
	Negativity – Family history of abuse/ depression / suicide	14.41
	Fatigue – Negativity	13.75
	Fatigue - Change in behaviour	13.47
	Irritability – Increased aggression	13.00
	Family history of abuse/ depression / suicide – Self-pity	12.06
	Fatigue – Irritability	11.87
	Sleep disturbance – Increased aggression	11.41
	Increased aggression – Burn out	10.88

Note. MI = modification index.

Table 15 indicates that four items for Model 3b had modification indices greater than 10. Model 3b was a three factor model identified by Möller-Leimkühler and Yucel (2010) and included correlated error terms. Given the relatively small number of modification indices identified in Table 15, it can be concluded that a three factor model is a better approximation of the underlying factor structure of the GMDS (e.g., Figure 1). This is consistent with the hypothesis that the two factor GMDS would demonstrate poorer indices of fit in comparison to a three factor model. While the indices of fit for Model 3b are still marginal at best (see Table 16), they were achieved with relatively minor model re-specification. This indicates that a more fine grained approach (e.g., scales assessing a

larger range of factors) may be warranted to better understanding men's experiences of depression.

Table 15

Modification Indices (> 10) for Males – GMDS Model 3b

Model	Covariance (item pairs)	MI Value
3b	Burnout – Fatigue	27.24
	Lowered stress threshold – Increased aggression	25.18
	Family history of abuse/ depression / suicide – Change in behaviour	15.07
	Increased aggression – Irritability	11.44

Note. MI = modification index.

As can be seen from Figure 2, the standardised regression weights for model 3b were similar for males and females. However, for males there was greater error covariance between burnout and fatigue (males = .32, females = .20) and behaviour change and family history (males = .23, females = .12).

In summary, the initial two factor models evaluated (e.g., those without correlated error terms) were all identified as a poor fit to the data. Whilst still reporting marginal fit indices, the three factor model was a significant improvement on the original two factor model. Substantial model re-specification was required for the two separate two factor models. Less re-specification was required for the three factor model, however, the respecified three factor model was still nonetheless a poor fit to the data.

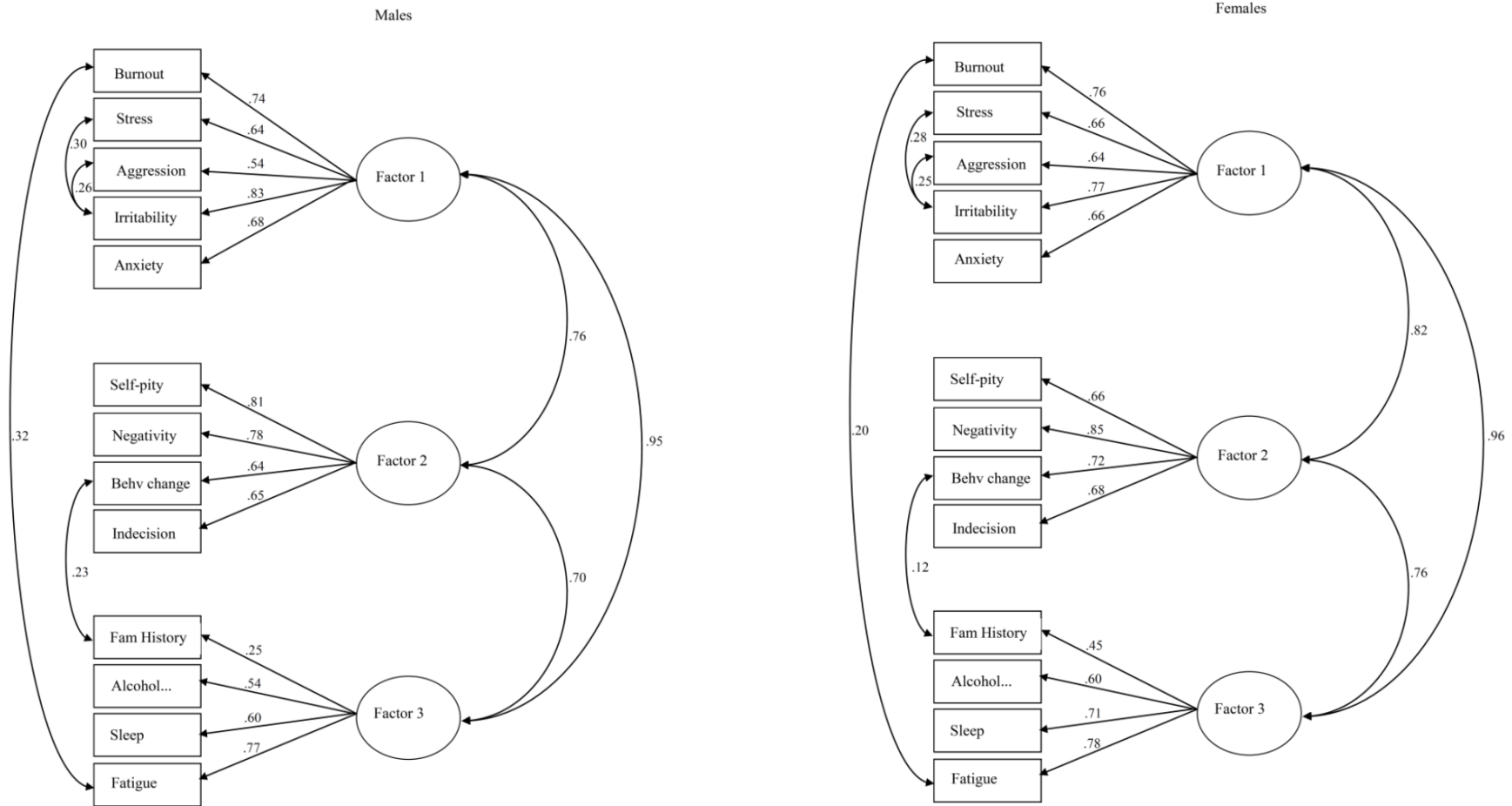


Figure 2. GMDS three factor model (Model 3b) with standardised regression weights for males and females.

Table 16

Summary of CFA Model Fit Indices for Competing Models by Sex

Model	Males							Females						
	χ^2	Bollen-Stein <i>p</i>	<i>df</i>	CFI	TLI	SRMR	RMSEA	χ^2	Bollen-Stein <i>p</i>	<i>df</i>	CFI	TLI	SRMR	RMSEA
1a	431.18**	<.001	89	.814	.781	.073	.110	430.07**	<.001	89	.850	.823	.062	.106
1b	380.91**	<.001	63	.820	.777	.126	.076	361.21**	<.001	63	.863	.830	.062	.117
1c	134.94**	<.001	50	.952	.925	.052	.073	153.82**	<.011	50	.952	.925	.042	.078
2a	381.32**	<.001	64	.820	.781	.074	.125	350.81**	<.001	64	.868	.839	.061	.114
2b	99.74**	.016	47	.970	.950	.041	.059	116.08**	.001	47	.968	.947	.037	.065
3a	290.61**	<.001	62	.871	.837	.079	.108	269.87**	<.001	62	.904	.879	.063	.099
3b	206.64**	<.001	57	.915	.884	.070	.091	212.68**	<.001	57	.928	.929	.058	.089
4	434.54**	<.001	90	.813	.782	.072	.110	430.55**	<.001	90	.851	.826	.063	.105
5	344.17**	<.001	54	.830	.793	.073	.130	351.64**	<.001	54	.858	.826	.065	.127

Note. Model 1a = original two factor model with separate items for alcohol, hyperactivity, appetite, Model 1b = original two factor model with combined item for alcohol, hyperactivity, appetite, Model 1c = original two factor model with combined item for alcohol, hyperactivity, appetite with correlated error, Model 2a = two factor model (e.g., Möller-Leimkühler, Heller, & Paulus, 2007), Model 2b = two factor model (e.g., Möller-Leimkühler, Heller, & Paulus, 2007) with correlated error, Model 3a = three factor model (e.g., Möller-Leimkühler & Yucel, 2010), Model 3b = three factor model (e.g., Möller-Leimkühler & Yucel, 2010) with correlated error. Model 4 = single factor model, Model 5 = single factor model with 12 items (e.g., Innamorati et al., 2011a) with combined item for alcohol, hyperactivity, appetite. ** = $p < .001$.

Discussion

The present study was undertaken to provide the first known set of Australian data for the Gotland Male Depression Scale (GMDS). In doing so, the present study aimed to evaluate sex and gender role differences on the GMDS, examine the diagnostic utility of the GMDS in comparison to a gender neutral measure of depression, and confirm the hypothesised GMDS factor structure. Broadly speaking, the present results are consistent with the hypotheses proposed and previous research that has utilised the GMDS.

Sex Differences

As predicted, the present study failed to report any sex difference in GMDS total scores. This finding corresponds to previous studies (e.g., Diamond, 2008; Innamorati et al., 2011a; Möller-Leimkühler, Bottlender, Straub, & Rutz, 2004; Pompili et al., 2009). The finding of equivalent GMDS scores for males and females has now been replicated in a number of countries including Germany (Möller-Leimkühler, Bottlender, Straub, & Rutz, 2004), Italy (Innamorati et al., 2011a; Pompili et al., 2009), the United States (Diamond, 2008), and Australia (the present study). The consistency of these findings is striking, and evidence appears to be mounting that GMDS total scores do not typically differ between males and females. However, the present findings are in contrast to those of Möller-Leimkühler and Yucel (2010) who reported that females endorsed higher mean scores on the GMDS in comparison to males.

While it is not entirely clear why Möller-Leimkühler and Yucel (2010) found that females reported higher GMDS total scores, their sample was recruited primarily from the medical faculty of a university, with a mean participant age in the mid-twenties. Other previous studies that reported sex equivalence rates for the GMDS used either clinical or community samples where participant mean ages tended to be higher than those of Möller-Leimkühler and Yucel's study. Of note, Möller-Leimkühler and Yucel did report equivalent GMDS means from those scoring above the GMDS cut-off (e.g., those scoring above 13 on the GMDS).

Inspection of sex differences for the prevalence of individual GMDS symptoms in the present study also failed to yield convincing differences between males and females. Of the 15 individual GMDS items assessed in the current study, females reported higher

ratings than males on two (e.g., lowered stress threshold and family history of abuse/depression/suicide), while males reported higher ratings than females for only one item: *'Being hyperactive or blowing off steam by working hard and restlessly, jogging or other exercises'*. However, these sex differences must be interpreted with caution as two of these (hyperactivity / overwork, and lowered stress threshold) would fail to reach statistical significance were a Bonferonni correction to be added.

The sex difference on the item inquiring about family history of abuse/ depression / suicide was almost twice as frequently endorsed by females in comparison to males. This is in contrast to the findings of Möller-Leimkühler and Yucel (2010) who failed to find a significant sex difference on this item. It is not apparent why the sex difference for this item in the present study was so pronounced, but it may reflect either characteristics of the cohort of women who participated in the present study (e.g., women reporting a genuine family history of abuse/ depression / suicide), or the cohort of men who participated in the study (e.g., an unwillingness to admit to, or an ignorance of, such family history). Alternatively, the sex difference on this item may be a combination of these factors.

Males rated significantly higher than females on the GMDS item inquiring about hyperactivity / overwork. This item was one of the components of GMDS item 9, which, in its original form also assess use of alcohol and pills, and appetite disturbance. Even after being split into three parts, the hyperactivity / overwork item is comprised of two referents. As such, it is poorly structured and is difficult to interpret. When rating scales contain items with multiple referents the reliability of the measure is threatened (Martin, 2010). For example, respondents may have interpreted the item within the context of either hyperactivity, overwork, overexercise or a combination of all three. Alternatively, respondents may have viewed this in the context of healthy levels of exercise (e.g., jogging). Regardless, due to the lack of clarity and interpretability, this item yields limited diagnostic information. Möller-Leimkühler and Yucel (2010) failed to find any gender difference for item 9 in its original form. In contrast Winkler, Pjrek, and Kasper (2005) found that on the original GMDS item 9 (e.g., hyperactivity/overwork combined with the items assessing use of alcohol and pills, and appetite disturbance) males rated significantly higher than females. Winkler and colleagues also reported more frequent responses for males for the item assessing aggressiveness. It is unclear why the three studies reporting sex differences for this GMDS item report contradictory findings. It may be that males in

Möller-Leimkühler and Yucel's sample interpreted this question differently to those in Winkler and colleagues sample. Regardless, the inconsistency in sex difference for this item indicates that it fails to reliably differentiate males and females.

Males in the present study reported significantly higher depression ratings (as assessed by the DASS-21 D) than did females. This is contrary to a number of large scale epidemiological studies (e.g., Cyranowski, Frank, Yung & Shear, 2000; Kuehner, 2003; Munce & Stewart, 2007). While the effect size for this sex difference was small, the finding was statistically reliable. A range of recent studies using the DASS-21 D in community samples have each failed to report any sex differences (e.g., Bayram & Bilgel, 2008; Imam, 2008, Norton, 2007). Hence, the present sample appears somewhat anomalous in comparison to similar studies utilising community samples. Given the robustness of the sex differences in depression reported in epidemiological data (Cyranowski, Frank, Yung, & Shear; Kuehner), the present finding is surprising and may reflect a self-selection bias of participants. For example, those males who chose to participate in the study may have done so because they were experiencing low mood, while females may have participated regardless of the salience of depression. There is conflicting evidence whether online designs sample from maladjusted populations suffering greater social isolation or depression (e.g., Kraut, et al., 2003). While one study has found such an effect (e.g., Kraut et al., 2003), research has failed to replicate this finding (Gosling, Vazire, Srivastava, & John, 2004; Herrero, & Meneses, 2006). This is an area that future research should explore.

Taken together, the results of the present study, and the finding of other researchers (e.g., Möller-Leimkühler & Yucel, 2010) suggest that there is little that is overtly 'male' about the wording of items that comprise the GMDS. Although research indicates that some male respondents prefer the GMDS items over other depression rating scales (e.g., Stromberg, Backlund, & Lofvander, 2010), evidence indicates that the wording of GMDS items appears to apply equally well for males and females. This is somewhat problematic given that the GMDS was specifically designed to assess ways in which men may display symptoms of depression. As such, it is difficult to draw conclusions about the phenomenology of sex differences in depression from studies that utilise the GMDS.

Gender Role Differences

Findings related to gender role indicated that individuals reporting high masculinity (e.g., those classified in the masculine or androgynous gender role categories) tended to report lower GMDS total scores in comparison to those low in masculinity (e.g., those classified in the feminine gender role category). This finding corresponds to that reported by Möller-Leimkühler and Yucel (2010) where it was reported that low masculinity predicted high scores of male depression as assessed by the GMDS. As in the present study, Möller-Leimkühler and Yucel also found that sex and gender role failed to demonstrate a significant interaction for GMDS scores, hence this relationship held for both males and females.

The findings observed for gender role differences for the DASS-21 D subscale mirrored those observed for the GMDS. Participants in the feminine gender role category scored significantly higher on the DASS-21 D subscale than those in the masculine and androgynous categories. The similarity of these gender role findings between the DASS-21 D and GMDS scales indicate that the GMDS fails to differentiate between individuals who adhere to stereotypical masculine characteristics any more so than does the DASS-21 D. This seems to further invalidate the claim that the GMDS is a superior diagnostic tool for males compared to gender neutral scales. This claim is further strengthened given the result has now been replicated in different studies (e.g., by Möller-Leimkühler and Yucel (2010), and in the present study).

In the present study, the GMDS (and the DASS-21 D subscale) demonstrated weak correlations with the masculine-positive items from the ASRS. However, the masculine-negative items failed to correlate with the GMDS. In contrast, the feminine-positive items failed to correlate with the GMDS, but the feminine-negative items were moderately correlated. All significant correlations between the GMDS and either the masculine-positive, or feminine-negative items were stronger amongst females. These correlations are similar in magnitude and valence to those observed by Möller-Leimkühler and Yucel (2010), and are consistent with the lack of relationship observed between the GMDS and measures of masculinity or conformity to masculine norms (Magovcevic & Addis, 2008). Furthermore, Magovcevic and Addis found that the GMDS correlated more strongly with internalising aspects of depression in comparison to externalising behaviours.

The pattern of correlations observed in the present study suggests that the GMDS shares greater common variance with traits traditionally associated with the feminine gender role than the masculine gender role. Some researchers argue that men's health risk behaviours are a means of enacting masculine identity, which rests largely on the rejection of femininity (e.g., Courtenay, 2001). However, as the present study found relatively few sex and gender differences, this notion does not appear to be supported by the present data. Given the theoretical basis from which the GMDS was developed, it is surprising, and of concern that GMDS scores failed to correlate with the masculine negative items. From these findings, and those of Möller-Leimkühler and Yucel (2010), it may be the case that the GMDS fails to adequately assess the construct that it seeks to measure – namely, depression with an aggressive component that is thought to occur predominantly in men (e.g., Rutz, Von Knorring, Pihlgren, Rihmer, & Walinder, 1995; Rutz, 1999, 2001).

Gender role data from the present study indicated that those males classified as feminine reported the highest mean DASS-21 D ratings of all the gender role categories. Rosenfield (1980) found the sex differences in depression ratings reverse for males with non-traditional sex roles. This may in part be due to the harsher psychological consequences that follow when males endorse non-traditional gender-related interests and personality traits when compared to girls who endorse corresponding non-traditional traits (Aube & Koestner, 1992; Courtney, 2003; Sakalh-Ugurlu, 2010). Given the relatively high DASS-21 D score for feminine men, it is possible that the present study incorporated a high number of men with low masculinity and high femininity. However, the ASRS subscale means are consistent with previous research in community samples (e.g., Farnill & Ball, 1985).

Comparison of Scale Diagnostic Utility

Data on the diagnostic utility of the GMDS in comparison to the DASS-21 D subscale indicated clinical ratings of 'possible depression' greater than those observed in comparable studies (e.g., Madsen & Juhl, 2007; Stromberg, Backlund, & Lofvander, 2009). In the present study 40.5% of males and 40.0% of females reported GMDS total scores ≥ 13 . Past research reports GMDS total scores ≥ 13 (13 is the cut-off score for considering an individual at-risk) in 21.8% of a sample of male university undergraduates (Möller-Leimkühler & Yucel, 2010), and of 22% of young adult males prior to interview for military services (Leimkühler, Heller, & Paulus, 2007a). However other studies have

reported GMDS total scores ≥ 13 for as low as 3.4% from a sample of new fathers (Madsen & Julh) and 14.3% of males recruited from a primary healthcare clinic (Stromberg, Backlund, & Lofvander). Samples from psychiatric inpatients tend to report GMDS total scores ≥ 13 in approximately 70% of respondent (Möller-Leimkühler, Bottlender, Straub, & Rutz, 2004; Pompili et al., 2007). In the present study the data suggests relatively high prevalence rates for depression to comparable studies in non-clinical samples (e.g., Crawford et al., 2011; Henry & Crawford, 2005). Previous research indicates that non-clinical volunteers without any history of psychopathology report mean DASS-21 D scores close to 2 (Antony, Bieling, Cox, Enns, & Swinson, 1998). The DASS-21 D means for the current study were considerably higher at 11.69 for males, and 10.70 for females. These findings indicate that on average, the present sample was less well psychologically adjusted at the time of their responding than would usually be expected in general community samples. Nonetheless, the mean DASS-21 D score was well below that of 29 which is commonly reported in clinical samples (e.g., Antony, et al.; Ng et al., 2007).

Consistent with prediction, the present study found that the GMDS identified a greater proportion of individuals as being 'at risk' of depression than did the DASS-21 D. Without following up participants with a clinical interview to ascertain diagnostic certainty, it remains unclear whether this finding indicates that the GMDS provides greater diagnostic utility than the DASS-21 depression subscale, or whether the GMDS is providing false positives. The DASS-21 has been subject to a number of large scale norm studies that attest to its validity, reliability, factor structure and score distribution (e.g., Crawford et al., 2011; Crawford et al., 2009; Henry & Crawford, 2005). Unfortunately, the GMDS has not been subject to such evaluation studies. In fact, it is unclear how the authors of the GMDS developed the clinical categories for the GMDS. Furthermore, there remains a lack of research on the robustness of the clinical classifications provided by the GMDS.

Recently Stromberg, Backlund, and Lofvander (2010) concluded that the GMDS provided limited clinical utility beyond that provided by the Beck Depression Inventory (BDI). Of concern, Stromberg and colleagues found that the GMDS failed to detect a number of cases that were identified in the clinical range by the BDI. The present study indicated relatively few cases that were classified in the clinical range by the DASS-21 D, but in the normal range by the GMDS (3.1% males, 2.6% of females). However, relatively

large numbers were classified in the normal range by the DASS-21 D, but in the 'at risk' category for the GMDS (20.1% of males, 19.7% of females). It is of note that relatively equal proportions of males and females are being misclassified between the scales. What is clear from these sex equivalent findings is that the GMDS is no better or worse at classifying either males or females as the numbers for each cell were similar. However without clinical interview data it is difficult to interpret these findings any further.

While the studies above show considerable variability in rates of individuals classified 'at risk' by the GMDS and DASS-21 D, in the present study relatively high levels of depression were reported in comparison to other samples. It is unclear why this was the case, but it may relate to the use of an online research design and participant self-selection. For example, the study may have attracted greater numbers of participants experiencing clinically significant depression, and such participants may have been less likely to drop out prior to completion. As indicated, 222 respondents dropped out of the present study part way through. The majority of those who dropped appeared to have done so after reading the ethics information pertaining to the study. This information included reference to terms such as 'mood', 'wellbeing', and 'negative emotions'. Hence, it may be that those with higher levels of wellbeing (e.g., lower levels of depression) dropped out as they may have perceived that the study aims had little relevance for them. Supporting this notion, Diamond (2008) also recruited participants online and reported that depression was indicated by the GMDS in 35% of males and 30% of females. These rates are a closer approximation to the numbers identified at risk in the present sample and are higher than many of those reported above for previous studies using the GMDS. Similarly, several studies using online data collection report notably higher mean ratings for the DASS-21 D subscale than those reported in community samples using standard paper and pencil responding (e.g., Eakman, 2011; Migliorini, New, & Tonge, 2009; Woods et al., 2006). While the reliability of online studies have been demonstrated (Gosling, Vazire, Srivastava, & John, 2004; Herrero & Meneses, 2006), perhaps motivational differences exist in specific samples, especially those that use online advertising, as online data collection provides researchers access to previously hidden populations (Hammer & Good, 2010).

As predicted, the GMDS total score demonstrated a strong positive correlation with the DASS-21 D subscale (male $r = .72$, female $r = .76$). Correlations of this magnitude

indicate high conceptual overlap between the two scales. Previous research indicates that the GMDS reports weaker correlations with the DASS-21 D subscale than it does with the Beck Depression Inventory (Magocevic & Addis, 2008; Stromberg, Backlund, & Lofvander, 2010), indicating that each of these scales assess differing aspects of behaviour and symptomology.

GMDS Factor Structure

The final aim of the present study was to confirm the factor structure of the GMDS. Previous attempts by researchers to validate the *a priori* factor structure of the GMDS have failed. The results of the present study continue this trend. In the present study it was found that in its original form, GMDS item 9 (e.g., the combined components assessing use of alcohol and pills, hyperactivity/overwork and appetite disturbance) is conceptually problematic. Modification indices for Model 1a indicated that there was correlated error covariance between these three items when participants responded to them as three separate questions (rather than a single item as originally specified by the authors of the GMDS). This finding indicates that these three items are either poorly worded, and/or lack a clear conceptual link between the factor on which they load (Aroian & Norris, 2005; Byrne, 2001; Niemivirta, Rijavec, & Yamauchi, 2001; Worthington & Whittaker, 2006). In either case, such a finding diminishes the validity of GMDS item 9, and adds further evidence to the previously noted psychometric limitations of the GMDS (e.g., Diamond, 2008; Magocevic & Addis, 2008; Martin, 2010; Melrose, 2010; Möller-Leimkühler, Heller, & Paulus, 2007a).

As indicated, the original validity study for the GMDS failed to specify the process used in determining the GMDS scale items. Previous studies that have undertaken factor analysis on the GMDS report conflicting results (Innamorati et al., 2011a; Möller-Leimkühler, Bottlender, Straub, & Rutz, 2004; Möller-Leimkühler & Yucel, 2010). Taken together with the present findings, it appears that the GMDS fails to demonstrate factor stability across differing samples.

Of the initial models tested in the present study, the closest approximation to a well fitting model was the three factor solution (e.g., Model 3a). This model was originally identified through principal components analysis undertaken on the male data by Möller-Leimkühler and Yucel (2010). As the factors of this three-factor solution do not align with

the atypical – prototypic symptom distinction, theoretical interpretation of this factor solution is difficult. With the exception of the anxiety item (which had a low factor loading of .31 as reported by Möller-Leimkühler and Yucel’s exploratory factor analysis), factor 1 could be conceptualised as masculine congruent symptoms of depression (e.g., burnout, stress, aggression, irritability). With the exception of behaviour change, factor 2 could be seen as a cognitive factor (e.g., self-pity, negativity, indecision). Factor 3 is less clear, and it is perhaps unsurprising that the present study reported that this factor had two items with correlated error terms to different subscales. If items assessing family history and fatigue are excluded (as their error terms correlated with other subscales), then factor 3 may represent attempts to numb psychological distress (e.g., with alcohol or drugs as indicated by the alcohol item) and associated difficulties with sleep that may accompany substance use.

The three factor solution for the GMDS suggests that the construct of male depression may be more multifaceted than originally suggested by Zierau, Bille, Rutz, and Bech (2002). If this is the case, then the construct likely requires greater precision of measurement of depression symptoms / externalising behaviours (e.g., more than two broad factors assessing distress and depression). However, for the present sample, when subscale scores were determined for this three factor solution, males and females reported equivalent ratings. This further highlights that there is little male specific, or masculine specific, content embedded within the GMDS items.

Inspection of the modification indices for Model 3a indicated improvement to model fit could be made via correlating error terms. Modification indices identified correlated error between burnout and fatigue and also between the stress, irritability, and aggression items. Given the conceptual overlap between these items, correlated error variance is to be expected, however, these items may be improved through rewording to ensure that respondents can differentiate between these constructs. Further, the item “*Feeling of being burned out and empty*” is relatively non-specific, and respondents may perceive difficulty in differentiating between the items “*More irritable, restless, and frustrated*” and “*More aggressive, outward-reacting, difficulties keeping self-control*”. Should these items be reworded then best practice recommendations would suggest that they each be written with a single referent. For example, irritability, restlessness and

frustration are separate constructs. Similarly, aggression, outward-reactions, and difficulties keeping self-control should also be assessed separately.

The correlated error variance observed between the family history and behaviour change items for Model 3a is less clear. It is possible that this may indicate that both items are poorly worded, or misunderstood by respondents. For example, the item regarding family history of depression, suicide or risk taking behaviour may best be reconceptualised as a categorical yes/no item rather than a Likert type response. Nonetheless, the correlated error terms between these items highlight psychometric issues in the design of the GMDS.

As indicated, several researchers have criticised the item wording of the GMDS (Martin, 2010; Magrocevic & Addis, 2008). As indicated above, the original validity study for the GMDS was undertaken using a small sample (87 participants) and failed to report factor analytic data on the scale (Zierau, Bille, Rutz, & Bech, 2002). Best practice guidelines typically suggest the use of samples approaching 300 participants when developing new scales, including the explicit reporting of exploratory factor analysis, and where possible confirmatory factor analysis (Worthington & Whittaker, 2006). Given that such procedures were not followed in the development of the GMDS, it is unsurprising that researchers have failed in their attempts to validate the GMDS factor structure.

The initial model demonstrating the best indices of fit (Model 3a) still performed relatively poorly, with fit indices below those expected for a well fitting model. By way of comparison, previous research using confirmatory factor analysis on the DASS-21 subscales report fit indices that approximate those recommended for adequate model fit (e.g., Gloster et al., 2008). This is likely due to the fact that the DASS-21 has undergone a significant amount of refinement based on psychometric validity testing (e.g., Crawford et al. 2011; Crawford et al., 2009; Henry & Crawford, 2005; Lovibond & Lovibond, 1995). While the GMDS has heralded important advances for research into the assessment of men's depression, it lacks the psychometric credentials that modern, valid, self-report depression screening measures should demonstrate.

Implications for Theory

It is difficult to determine whether the present findings offer support for Addis' (2008) gendered responding theory. According to this theory, when males experience

depressogenic negative life events that may precipitate low mood, they are likely to engage in distraction techniques that offset the likelihood of developing depression. As reported above, few sex differences were observed for GMDS items, however, the one item where males did report a higher prevalence was hyperactivity / overwork. This is in line with the hypothesis that distraction routines may be a mechanism by which males suppress negative emotion, or distract themselves from low mood. Nonetheless, other distraction techniques assessed by GMDS items (e.g., substance use) were not any more prevalent amongst men when compared to women.

The gendered responding theory (Addis, 2008) also suggests that females are more likely to ruminate when they experience depressed mood, thus exacerbating depressed states. Unfortunately the present study failed to assess rumination, however sex equivalent ratings were found for GMDS items assessing negativity, which has been found to correlate with rumination (Lyubomirsky & Nolen-Hoeksema, 1995). Without assessing the presence of depressogenic life events it is difficult to interpret this finding in accordance with the gendered responding theory.

Given the overall lack of sex differences for GMDS items, the present findings offer little support for the sex differences framework of depression (e.g., Pollack, 1998) which suggests that phenotypic differences exist in the expression of depression symptoms. Similarly, given that femininity was associated with higher GMDS scores for both males and females, the present findings offer little support for the masked depression framework (Rabinowitz & Cochran, 2000), which suggests that socialisation practices (e.g., masculinity) influence the way men experience, express and respond to depression (e.g., higher masculinity lined to externalising behaviours). Furthermore, given the lack of sex difference for GMDS items assessing externalising behaviours, little direct support is evident from the present findings for the masculine depression framework (e.g., Magovcevic & Addis, 2008) which suggests that gender norms encourage the expression of a range of externalising symptoms in conjunction with depressed mood. Each of these theories will be revisited in greater detail in the following chapters.

Limitations and Future Directions

The present study utilised an online design, from which a significant proportion of participants were recruited through the social networking site *Facebook*. Such a design

was advantageous in obtaining the large sample size required for confirmatory factor analysis. While this method of data collection provided a relatively large community sample, the sample demonstrated a high degree of heterogeneity regarding demographic characteristics and clinical presentation. Future studies, undertaken with more homogenous samples (e.g., older men, men working in male dominated industries) may yield further insights regarding symptom presentation in specific cohorts.

The present study failed to enquire about previous help-seeking attempts or current clinical diagnosis. Recent research suggests that male specific concepts related to depression may be most applicable to those males who have resisted seeking help for depression (e.g., Hammer & Vogel, 2010). As such, the manifestation of atypical symptoms of depression may only be relevant to a subset of males who hold specific attitudes related to help-seeking and depression. Such attitudes may be related to, but distinct from, notions of masculinity assessed in the present study. Future studies should seek to explore this by gathering data on current diagnosis and previous help-seeking attempts for depression.

It should be noted that the present study reported relatively large numbers of androgynous individuals in comparison to previous research. Nonetheless, the numbers in each gender role category closely approximated those obtained by Möller-Leimkühler and Yucel (2010). As indicated in previous chapters, the assessment of gender roles has been conceptually superseded. Researchers interested in gender related constructs now tend to assess conformity to masculine or feminine norms. As such, future studies should seek to use recently validated measures of gender related constructs (e.g., such as the Conformity to Masculine Norms Inventory; Mahalik et al., 2003).

Future research may profit from careful consideration of GMDS items for which there was no sex difference observed. For example, sex equivalent prevalence ratings were reported for the GMDS items assessing aggression, irritability, and substance use. Consistent with socialisation processes encouraging such responses from distressed males (e.g., Cochran & Rabinowitz, 2000; Pollack, 1998, 2005; Real, 1997; Rutz, Von Knorring, Pihlgren, Rihmer, & Walinder, 1995), these are the three items which one would most likely expect males to rate more frequently than females. It could, however, be the case that such symptoms are only present in the context of a precipitating event that enacts

maladaptive coping responses. Unfortunately, as the present study failed to assess the presence of depressogenic life events, it is not possible to determine this. As such, closer attention to the proximal and distal effects of negative life events, and how such events influence symptom presentation is warranted. In doing so, future research should collect longitudinal data to examine whether depressogenic life events determine separate trajectories of symptoms for males and females. This would assist in evaluating whether Addis' (2008) gendered responding theory accounts for sex differences in depression rates.

Conclusion

The present study provides the first known Australian data for the GMDS. Findings are similar to recent research conducted in Germany, Italy, and the United States. Taken together, results suggest that few sex differences exist for GMDS items. Furthermore, self-reported levels of masculinity appear to operate as a protective factor, not a risk factor, for GMDS scores. This finding is contrary to the theoretical premise of the GMDS and warrants further study. When compared to a well validated gender neutral measure of depression (e.g., the DASS-21 D), the GMDS exhibits limited diagnostic utility. Furthermore, research has repeatedly indicated that the GMDS fails to demonstrate a stable factor structure. Taken together, these findings suggest that the GMDS is subject to a range of serious conceptual and psychometric issues. Although it is premature to arrive at the conclusion that the GMDS lacks validity, should further studies replicate the present finding, then the continued use of the GMDS should be questioned.

There is little doubt that the GMDS has advanced conceptual thinking and increased attention towards atypical symptom presentation in depressed men. However, given the present findings in combination with those of previous research, it would seem prescient for clinicians and researchers to develop and validate additional gender sensitive depression scales. Such scales should be constructed according to best practice principles of scale development and demonstrate satisfactory levels of psychometric reliability and validity.

Chapter 7: Study 2 – Prevalence of Depression Symptoms in Truck Drivers

Background

The workplace can have detrimental effects on mental health (Huntington et al., 2008). Despite significant increases in community levels of awareness and acceptance of mental health issues, disclosure of mental health problems to colleagues or managers can lead to discriminatory behaviours including lack of opportunities for advancement, over-inferring of mistakes to illness, gossip and social exclusion (Brohan & Thornicroft, 2010; Corrigan & Lundin, 2001). As indicated in the previous chapters, males are likely to avoid disclosures that infer weakness or vulnerability (Courtenay, 2000, 2001). Furthermore, in occupational fields that are dominated by men, career success typically demands stereotypically masculine personality and/or physical qualities such as competitiveness, dominance, aggression, and muscularity (Cejka & Eagly, 1999). In some male dominated occupational fields (e.g., the military) training may foster even greater adherence to male gender role norms, contributing to the development of hypermasculine subcultures (Brooks, 1990, 2001). Given the links between male gender role norms and health risk behaviours (e.g., Mahalik & Rochlen, 2006; Mokdad, Marks, Stroup, & Gerberding, 2004), it is important that researchers better understand how male dominated workplaces can impact on men's mental health.

Generally speaking, males are more likely than females to adhere to norms of social competition (e.g., Schwalbe & Staples, 1991). Research indicates that within the occupational context, in comparison to women, men tend to engage in occupations characterised by hierarchy-enhancing careers and group-based inequality (Pratto, Stallworth, Sidanius, & Siers, 1997). Maccoby (1990) argues that such concern with issues of dominance and disagreement is learnt throughout childhood where males first experience the requirements of maintaining one's status in the social hierarchy.

All definitions of the male role cite work as an essential component of how men define themselves (Brooks, 2010). Illustrating the pervasiveness of male role expectations within the occupational context, men who work in professions that are viewed as feminine and maternal (e.g., nursing) are typically characterised as less masculine (Tillman & Machtmes, 2008). Some male nurses even report feeling that they are regarded by others as an "inferior man" (Harding, 2005, pg. 148).

Within the trucking industry, men far outnumber women (Wootton, 1997), and the work environment is characterised by a hypermasculine work culture (Shattell, Apostolopoulos, Sonmmez, & Griffin, 2010; Stratford, Ellenbrock, Akins, & Hall, 2000). Research suggests that cultural norms dictate health risk behaviours amongst truck drivers. A number of epidemiological studies indicate that truck drivers engage in a range of health risk behaviours (e.g., de Croon, Sluiter, & Frings-Dresen, 2003; Hedberg, Jacobsson, Janlert, & Langendoen, 1993; Van der Beek, Meijman, Frings-Dresen, & Kuiper, 1993). Truck drivers are likely to defer accessing health care – especially in instances where drivers are working on long haul routes (Solomon, Doucette, Garland, & McGinn, 2004). Truck drivers also tend to report elevated levels of smoking, lack of exercise, high blood pressure and alcoholism (Korelitz, Fernandez, Uyeda, & Spivey, 1993), and research indicates that long haul drivers are at risk of lower life expectancy – in some cases life expectancy may be up to 20 years below the male average (Saltzman & Belzer, 2003).

The health risk behaviours that truck drivers engage in are consistent with traditional notions of masculinity that normalise risk taking behaviours (Möller-Leimkühler, 2003), avoidance of expressions of vulnerability (Courtenay, 2000), and heavy drinking and aggression in response to sad and unpleasant feelings (Cochran & Rabonowitz, 2000). Furthermore, the challenging work conditions experienced by truck drivers (e.g., long shifts, rotating rosters, deadline pressures exacerbated by unfavourable traffic / weather conditions, and limited opportunity for exercise and recreation) have been found to contribute to health, family, and relationship problems (Mackie & Moore, 2009). Truck drivers report elevated levels of stress-related symptoms compared to the general population (Orris et al., 1997). Demographic variables such as marital status are also salient predictors of truck driver health. Australian truck drivers who are divorced are three times more likely to experience clinically significant depression, and eight times more likely to experience clinically significant stress in comparison to their married counterparts (Health Survey of the NSW Transport Industry, 2008). Cross cultural research indicates similar trends in the United States (Shattell, Apostolopoulos, Sonmmez, & Griffin, 2010) and Hong Kong (Wong, Tam, & Leung, 2007).

Following recent research and theorising regarding men's depression, Study 2 was designed to collect prevalence data for prototypic and atypical symptoms of depression from Australian male truck drivers. The qualitative studies reviewed in Chapter 2 report that within the one depressive episode, men frequently experience both typical symptoms

of depression and atypical symptoms reflecting ‘acting out’ externalising behaviours congruent with the traditional masculine gender role (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005; Heifner, 1997; Rochlen et al., 2010). As such, researchers have argued that the role of atypical symptoms such as anger, aggressiveness, and irritability should be taken into greater account when assessing unipolar depression (Möller-Leimkühler & Yucel, 2010). Consideration of such atypical symptoms in the context of clinical assessment may improve detection and facilitate early treatment of depression in men (Möller-Leimkühler & Paulus, 2007). Following this, Study 2 sought to assess atypical and prototypic symptoms of depression in retrospective accounts for a previous episode of low mood. Retrospective techniques have been criticised due to reliability of participant recall accuracy (e.g., Weiner, Freedheim, Schinka, & Velicer, 2003) and potential for schema-based processing to bias reporting (e.g., Ross & Giltrow, 1992). However, they are useful in collecting prevalence data across of wider time period than cross-sectional studies, and provide important information on how people *perceive* aspects of their personality or behaviour rather than the accuracy of those perceptions (Miner-Rubino, Winter, & Stewart, 2004).

Given that truck drivers comprise a cohort who are to likely adhere to hypermasculine norms (and are therefore likely to avoid emotional disclosures that infer vulnerability), Study 2 will provide important data regarding depression symptom presentation from a relatively unstudied group (Solomon, Doucette, Garland, & McGinn, 2004). Such data is important from a public health and safety point of view given the spill-over effects of truck driver health onto other road users (Apostolopoulos, Sonmez, Shattell, & Belzer, 2010).

Hypotheses

Evidence suggests that male truck drivers are likely to adhere to traditional masculine norms (e.g., Cejka & Eagly, 1999; Melzer, 2002; Shattell, Apostolopoulos, Sonmez, & Griffin, 2010; Stratford, Ellenbrock, Akins, & Hall, 2000). Given the links between tradition masculine norms and avoidance of expressions of vulnerability (e.g., Courtenay, 2000) it is possible that male truck drivers may demonstrate distinct symptom patterns of depression that minimise perceived vulnerability whilst at the same time maximising hypermasculine type symptoms such as alcohol abuse, dangerous driving,

irritability, aggression and overwork (e.g., Cochran & Rabinowitz, 2000; Magrocevic & Addis, 2008).

Many of the DSM-IV symptoms of depression align with vulnerability, powerlessness, and weakness (e.g., sadness, guilt, concentration problems, loss of confidence). Male norms related to self-reliance, toughness and competence are in direct contrast to such feelings of vulnerability, powerlessness, and weakness (Warren, 1983). Furthermore, for men, such norms serve as a barrier to seeking help for depression (Wilhelm, 2009). Given the complex link between masculine norms and prototypic symptoms of depression, it was predicted that prototypic symptoms would tend to be avoided amongst the present sample of truck drivers. More specifically, hypothesis one predicted that the retrospective accounts of depression symptoms recalled by truck drivers would result in higher recall rates of atypical symptoms (which are congruent with masculine norms) in comparison to prototypic symptoms (which are incongruent with masculine norms).

While hypothesis one predicted that atypical symptoms would be recalled more frequently across the sample, this effect was expected to be particularly strong amongst those meeting DSM-IV diagnostic criteria. This hypothesis was based primarily on qualitative research indicating that prototypic and atypical depression symptoms frequently co-occur in depressed men (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005; Heifner, 1997; Rochlen et al., 2010). Amongst depressed men atypical symptoms may reflect masculine sanctioned coping responses or attempts to reassert masculinity. As such, hypothesis two predicted that the frequency of atypical symptoms would be significantly higher amongst males who met DSM-IV diagnostic criteria for the retrospective rating period in comparison to males who failed to meet DSM-IV clinical criteria.

Method

Participants

Data was collected from 91 male truck drivers as part of a company sponsored health check screening. All truck drivers who attended the health screening check were male. Mean age for the sample was 40.17 years ($SD = 12.98$). A total of 56 participants indicated they were in a current romantic relationship (mean age = 42.42 years, $SD = 13.15$), 19 participants were single (mean age = 36.26 years, $SD = 11.91$) and 21

participants failed to indicate their relationship status (mean age = 36.26 years, $SD = 11.91$). While it was not possible to determine the exact rate of participation, most truck drivers who attended the health screening check participated in the present study. That said, the principal researcher noted a strong participation contagion effect. At times several truck drivers entered the room at the one time. When this occurred, if the first male in the group declined to participate, so too would the remainder of the group. Conversely, if the first male of the group indicated an interest in participating so too would the rest of the group.

Measures

Likert response scales were replaced with a categorical 'yes/no' response format. This stipulation was required by the trucking company to minimise the time required to complete the questionnaire.

Major Depression Inventory. The Major Depression Inventory (MDI; Bech, Rasmussen, Olsen, Noerholm, & Abildgaard, 2001) was utilised to assess typical symptoms of depression. The MDI is a self-report scale comprising 12 items (e.g., '*Have you lost interest in your daily activities*') that broadly correspond to the DSM-IV criteria for a major depressive episode. In this instance the MDI was considered preferable to the DASS-21 given that the MDI items correspond reasonable closely to DSM-IV criteria. For the present study the two separate items inquiring about reduced appetite and increased appetite were combined into a single item that read '*My appetite changed*'. Within the present study the MDI demonstrated satisfactory reliability (Spearman-Brown = .74).

Externalising Symptoms Scale. An adapted form of the Externalising Symptoms Subscale (ESS) of the Masculine Depression Scale (Magovcevic & Addis, 2008) was utilised to assess atypical depression symptoms. The ESS is an 11 item self-report measure designed to assess depression symptoms that are congruent with the masculine gender role (e.g., '*I didn't get sad, I got mad*'). To assess a wider range of masculine congruent symptoms, seven items were added to the ESS assessing distraction through sports, dangerous driving, gambling, thoughts of self-harm, and aggression on the sports field. In addition, two items from the Gotland Male Depression Scale were added, assessing general irritability and excessive exercise. As such, a total of 18 externalising symptoms were assessed. Within the present study the amended (i.e., 18 item) ESS demonstrated satisfactory reliability (Spearman-Brown = .71).

Demographic data. was collected for participant age and current relationship status.

Procedure

Ethics approval for the project was provided by the Australian Catholic University Human Research Ethics Committee. Data collection occurred as part of a company sponsored health and wellbeing screening check that occurred prior to a morning shift. The health screening check was facilitated and administered by the Transport Workers Union, Victorian/Tasmanian Branch, and was undertaken to identify drivers at risk of high blood pressure, sleep apnoea and obesity. The organisation administering the screening check stipulated that data collection for the current study could not in any way interfere or interrupt the health screening check. Furthermore, data collection for the current study would need to be designed in such a way that it did not delay drivers from beginning their shift.

With these stipulations in mind it was agreed that a single page data collection instrument would be used. Due to the required brevity of the questionnaire, it was not possible to collect demographic information (apart from age and relationship status). Furthermore, to ensure efficient and timely responding, Likert type responses were replaced with categorical 'yes/no' response format. Whilst these were undoubtedly significant concessions to make, they were adopted to enable the opportunity to collect data from an otherwise unreachable sample.

As drivers entered the screening area (located in an upstairs office at the truck depot), the principal investigator approached individuals and explained the aims of the project. All interested participants were provided with a participant information letter outlining detailed information about the project. It was explained that participation was voluntary and that neither aggregate nor individual results would not be explicitly made known to the trucking company. Interested participants were subsequently provided with a questionnaire to complete in the waiting room prior to completing the health and wellbeing screening check.

The questionnaire invited participants to indicate symptoms that were experienced last time they recalled feeling '*really down in the dumps*'. This expression was chosen as it is a DSM-IV descriptor of depression (APA, 2000) that does not refer to depression per se. As the questionnaire sought to collect data for retrospective symptom accounts, there was

no stipulation as to how recent the rating period needed to be. Once questionnaires were completed they were posted into a sealed return box and participants subsequently completed the health and wellbeing screening check.

Data Screening

All questionnaire data was entered into SPSS Version 17.0. Frequencies for each item were examined to ensure all values were within the plausible range. Eleven individuals failed to indicate their age. Total scores for the MDI and the extended ESS were evaluated for univariate outliers using boxplots. One case was identified as an outlier on the extended ESS. Closer inspection of this case indicated that the respondent endorsed 13 (of a total 17) extended ESS symptoms and six (of a total nine) prototypic symptoms. While these are relatively high frequencies for each scale, they are within the plausible range. Statistical analyses were undertaken both with and without this case included. As inclusion of this case failed to influence p -values of the inferential tests, analyses reported below are inclusive of this case.

Results

Mean frequency ratings for the MDI and the expanded ESS were calculated (see Figure 3). Results indicated a high degree of symptom overlap between the prototypic and atypical symptoms across the sample (e.g., when presented in descending order of frequency, Figure 3 depicts interspersed prototypic and atypical symptoms). Consistent with this, total scores for the MDI and the expanded ESS demonstrated a significant moderate correlation ($r = .66, p < .001$).

Prevalence of Symptoms

To evaluate the hypothesis that a greater number of externalising symptoms would be recounted compared to prototypic symptoms, scores on the expanded ESS were divided by 1.8 in order to create a proportion equivalent to the MDI scores. Subsequent to this, a paired samples t -test was undertaken on the MDI and adjusted expanded ESS total scores. Contrary to prediction, results indicated higher mean frequency ratings for MDI symptoms ($M = 2.97, SD = 2.59$) compared to ESS symptoms ($M = 1.70, SD = 1.60$), $t(90) = 6.24, p < .001$. There was no difference between partnered and unpartnered participants for symptom frequency on the MDI ($p = .347$) or ESS ($p = .349$).

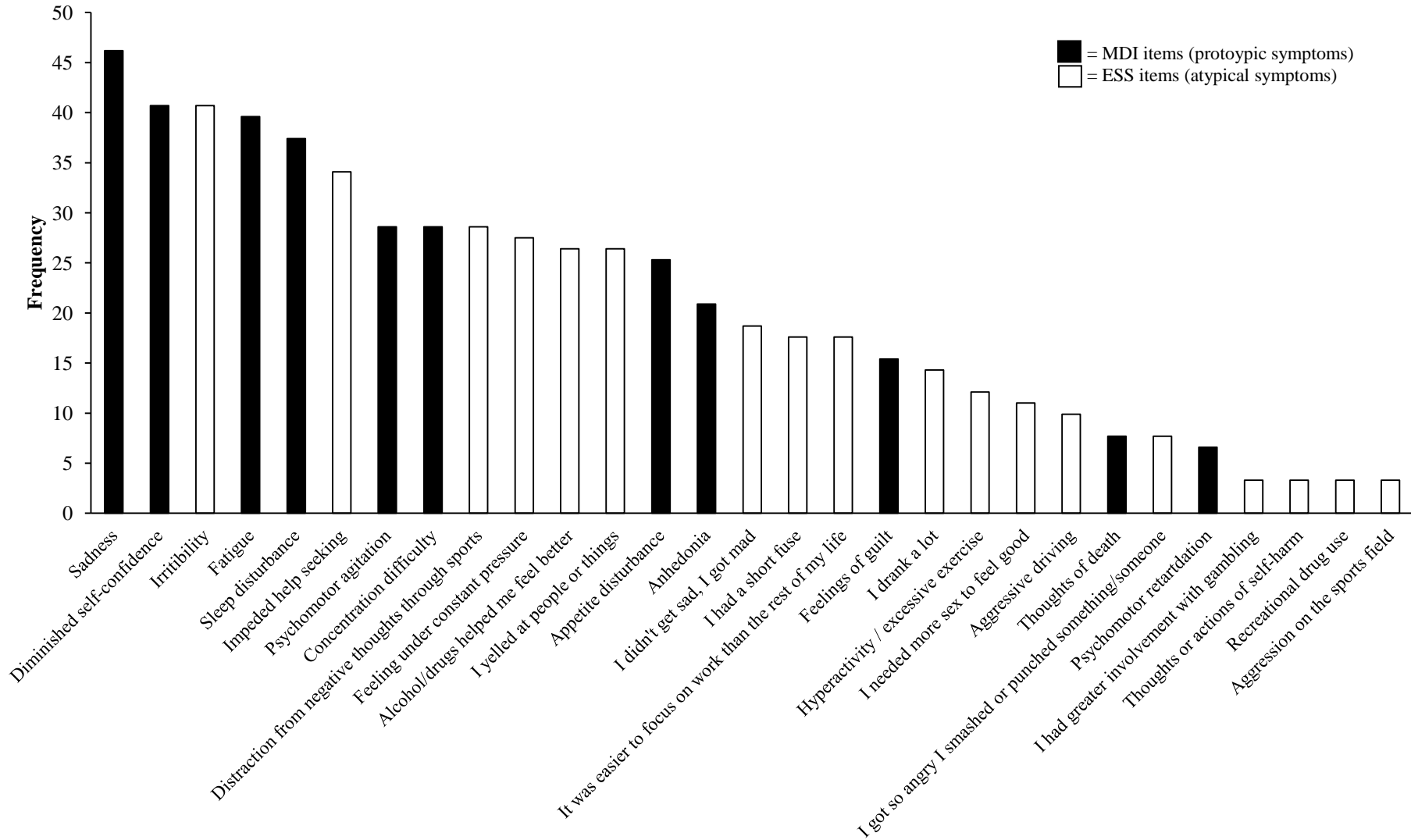


Figure 3. Frequency ratings for the MDI and expanded ESS items.

Symptoms According to Clinical Category

The second hypothesis tested whether participants meeting DSM-IV clinical criteria for the retrospective period would report significantly more atypical behaviours than those who failed to meet DSM-IV clinical criteria. To enable this, consistent with the DSM-IV diagnostic criteria for a Major Depressive Episode (APA, 2000), participants were classified within the clinical range if they endorsed five or more of the MDI items. As specified by the DSM-IV diagnostic criteria, at least one the five symptoms endorsed was required to be either anhedonia or depressed mood. A total of 20 respondents (21.97%) were identified as meeting clinical criteria for the retrospective period for which they were rating. For these 20 respondents, the mean number of prototypic symptoms was 7.05 ($SD = 1.64$). Chi-square analysis indicated no association between relationship status and clinical category $\chi(1) = .314, p = .575$.

Consistent with prediction, an independent samples t -test reported that those meeting clinical criteria for DSM-IV depression reported significantly higher mean frequency ratings for the expanded ESS ($M = 6.25, SD = 3.31$) in comparison to those not meeting clinical criteria ($M = 2.15, SD = 2.00$), $t(89) = 6.92, p < .001$. This was a large effect size ($r = .59$), and indicated that participants meeting clinical criteria on average endorsed almost three times the number of externalising behaviours than did their non-clinical counterparts. For the 20 respondents meeting retrospective clinical criteria, the most frequently endorsed externalising items were '*I felt more irritable, restless and frustrated*' ($n = 17$), '*I needed to handle my problems on my own*' ($n = 14$), '*I felt like I was under constant pressure*' ($n = 13$), and '*Alcohol or drugs helped me feel better*' ($n = 11$).

As the present study collected categorical data it was not possible to evaluate the factor structure of the expanded ESS. As it is unlikely that the 18 items of the expanded ESS would load on the one factor it was considered appropriate to examine differences for the individual items of the expanded ESS according to clinical category. To enable this, a series of Mann-Whitney tests were undertaken. Adding further support to the second hypothesis, in all instances the Mann-Whitney mean rank of ESS items were higher for participants meeting clinical criteria (see Table 17).

Table 17

Frequency Ratings & Comparisons of ESS Items by Clinical Status

ESS Item	% Endorsed		Mann-Whitney Statistics			
	Clinical group <i>n</i> = 20	Normal group <i>n</i> = 71	Clinical mean rank	Normal mean rank	Mann-Whitney U	<i>p</i>
Alcohol or drugs helped me feel better	55.0%	18.3%	59.03	42.33	449.50	.001
I didn't get sad, I got mad	30.0%	15.5%	51.15	44.55	607.00	.144
I distracted myself from negative thoughts through sports	45.0%	23.9%	53.48	43.89	560.50	.067
I drank a lot	40.0%	7.0%	57.70	42.70	476.00	< .001
I drove aggressively or dangerously	15.0%	8.5%	48.33	45.35	663.50	.389
I felt like I was under constant pressure	65.0%	16.9%	63.08	41.19	368.50	<.001
I felt more irritable, restless and frustrated	85.0%	28.2%	66.18	40.32	306.50	<.001
I felt very restless	65.0%	18.3%	62.58	41.33	378.50	<.001
I got so angry I smashed or punched something or someone	25.0%	2.8%	53.88	43.78	552.50	.001
I had a short fuse	35.0%	12.7%	53.93	43.77	551.50	.021
I had greater involvement with gambling	5.0%	2.8%	46.78	45.78	694.50	.631
I had increased thoughts or actions of deliberate self-harm	15.0%	0.0%	51.33	44.50	603.50	.001
I needed more sex to feel good	20.0%	8.5%	50.10	44.85	628.00	.147
I needed to handle my problems on my own	70.0%	23.9%	62.35	41.39	383.00	<.001
I used recreational drugs a lot	10.0%	1.4%	49.05	45.14	649.00	.059
I was abusive or aggressive towards others on the sports field	10.0%	1.4%	49.05	45.14	649.00	.059
I was hyperactive or blew off steam by working hard or by excessive exercise	30.0%	7.0%	54.15	43.70	547.00	.006
I yelled at people or things	40.0%	22.5%	52.20	44.25	586.00	.119
It was easier to focus on work than the rest of my life	30.0%	14.1%	51.65	44.41	597.00	.100

Results of the Mann-Whitney tests indicated a significant effect of clinical status on ten items from the expanded ESS (see Table 17). Results indicated that in comparison to those not meeting clinical criteria, those meeting clinical criteria tended to report more frequent alcohol use, more frequent experiences of irritability, anger, restlessness and of feeling under pressure. In addition, those in the clinical category reported greater thoughts or actions of self-harm, were more likely to report a need to handle their problems without the support of others, and reported higher prevalence of hyperactivity.

Discussion

The present study sought to determine prevalence data for prototypic and atypical depression symptoms amongst men from a relatively unstudied group (e.g., truck drivers). Given the masculine culture inherent within the trucking industry (e.g., Shattell, Apostolopoulos, Sonmmez, & Griffin, 2010; Stratford, Ellenbrock, Akins, & Hall, 2000), it was expected that respondents would report a proportionally higher number of atypical symptoms in comparison to prototypic symptoms. In contrast to prediction, the opposite was found to be the case with respondents endorsing significantly more prototypic symptoms in comparison to atypical symptoms for the retrospective rating period.

Assuming the prototypic symptoms endorsed were present during the same two-week period (a requirement of a DSM-IV diagnosis of depression), close to a quarter of the present sample met retrospective DSM-IV diagnostic criteria for the period in which they last felt 'down in the dumps'. This finding suggests that the DSM-IV diagnostic criteria for a Major Depressive Episode is relevant to the experience of a significant number of men who are immersed within the context of masculine workplace norms. Whilst this finding is contrary to the hypothesis, it is consistent with clinical research indicating that significant numbers of men experience depression as defined by the DSM-IV diagnostic criteria (e.g., Kessler et al., 1994, 2005).

Previous research indicates a high degree of prototypic and atypical depression symptom overlap for men experiencing depression (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005; Heifner, 1997; Rochlen et al., 2010). The present findings are consistent with these studies. Results indicated that those meeting retrospective clinical criteria for depression endorsed close to three times the number of atypical symptoms compared to

their non-clinical counterparts. This was a robust effect, and is noteworthy as it is amongst the first quantitative data indicating prototypic and atypical symptom overlap in men.

Findings suggest that masculine norms may not necessarily cause the suppression of prototypic depression symptoms. Of the eight most frequently endorsed symptoms from the present sample, six were from the MDI. While this indicates that the present sample were able to endorse prototypic symptoms at relatively high frequency's (e.g., sadness and diminished self-confidence were endorsed by 46.2% and 40.7% of the sample respectively), it is not clear from the present data how the experience of such symptoms relates to awareness of depression. It is known that males without tertiary education report low levels of mental health literacy and help seeking for mental health problems (Andrews, Issakidis, & Carter, 2001). Given the combination of low mental health literacy levels and the assumed high conformity to masculine norms, few cases of depression may have been reported to health professionals. Unfortunately the present study was not able to collect data for previous diagnosis or help seeking attempts. However, given that the item related to impeded help seeking (e.g., *'I needed to handle my problems on my own'*) was endorsed by 70% of those in the clinical group, it is plausible that very few of these respondents sought help for mood related difficulties.

The high frequency of atypical symptoms for those in the clinical group suggests that within a depressive episode, men may demonstrate a relatively high number of atypical symptoms. The presence of such symptoms (e.g., alcohol use, anger, impeded help seeking) may further exacerbate depressed mood by promoting men's engagement with risk taking behaviours, and further hinder emotional support from others. Given the strength of the correlation between the frequency totals of prototypic and atypical symptoms, it is clear that the atypical symptoms assessed in the present study were positively associated with psychological distress. This finding corroborates research indicating that irritability, aggressiveness and antisocial behaviour were more strongly intercorrelated in depressed males than in depressed females (Möller-Leimkühler, Bottlender, Straub, & Rutz, 2004).

The most frequently endorsed atypical symptom for the sample was irritability. Of note, irritable mood is included within DSM-IV diagnostic criteria for depression for both children and adolescents, but not adults (APA, 2000). Despite this, research suggests that

behaviours associated with irritability may serve as key diagnostic indicators of depression in adults (Fava et al., 2009). For example, previous research found that 23% of adults meeting DSM-IV diagnosis for depression were found to also display a mixed anger/irritability component (Pasquini, Picardi, Biondi, Gaetano, & Morosini, 2004). While Martin (2010) reported that irritable depression (determined by replacing the DSM-IV depressed mood criteria with irritability) was not particularly prevalent within a large community sample, it was a symptom that both men and women felt comfortable endorsing. The present study found that irritability was reported by 28.2% of respondents in the normal group, but a staggering 85.0% of respondents in the clinical group. Hence, for men, irritable mood may be useful diagnostic marker that co-occurs with depressed mood, that men feel comfortable disclosing (Martin, 2010).

The second most frequently endorsed atypical symptom related to impeded help seeking. This item was endorsed by 70.0% of those in the clinical group. Refusal to seek help is congruent with masculine norms emphasising stoicism and self-reliance. However in some instances deferred help seeking for depression can have disastrous consequences. Truck drivers are a group that are known to defer accessing health care (Solomon, Doucette, Garland, & McGinn, 2004), and research indicates that only a third of truck drivers with identified mental health problems are willing to participate in therapeutic programs of a psychological nature (Health Survey of the NSW Transport Industry, 2008). Hence, more needs to be done to normalise and encourage help seeking for mental health problems amongst such males. It has been suggested that placing mental health nurses at trucking terminals, warehouses, or trucking stops may assist driver to access much needed mental health support (Shattell, Apostolopoulos, Sonmmez, & Griffin, 2010).

Other atypical items endorsed by more than 20% of the sample related to distraction from negative thoughts through sports, feeling under constant pressure, mood enhancement though alcohol/drug use, and yelling at people or things. The items assessing distraction through sports and alcohol/drug use are consistent with research indicating that men are likely to engage in distraction routines when distressed (e.g., Nolen-Hoeksema, 2008). The items assessing anger and feeling under pressure are consistent with men's reluctance to admit to vulnerability (Courtenay, 2000, 2001). That distraction, anger, and stress were endorsed relatively frequently by those in the clinical group within the present sample indicates the salience of these items to men's experience of depression. While

relatively few respondents endorsed the item related to dangerous driving, the tendency (especially amongst those in the clinical group) to report alcohol use and anger is of concern. Amongst truck drivers, heavy alcohol use and impeded impulse control is a worrying combination, especially given that truck drivers are prone to elevated levels of stress (Orris et al., 1997). Hence, greater awareness of symptoms of depression (both prototypic and atypical) within the trucking industry may be warranted.

Atypical depression symptoms that were relatively infrequently endorsed related to gambling, thoughts or actions of self-harm, aggression on the sports field and recreational drug use, (which indicates that the question ‘Alcohol/drugs made me feel better’ may refer more specifically to alcohol). However, the responses to the drug use item must be interpreted with some caution as drug use in truck drivers is believed to be substantially underreported (Shattell, Apostolopoulos, Sonmmez, & Griffin, 2010).

The findings of the present study may have important clinical implications. Clinicians have theorised that men adhering to traditional masculine norms may be reluctant to disclose prototypic symptoms of depression as they imply vulnerability and thereby contravene societal expectations related to masculinity (Lynch & Kilmartin, 1999; Magovcevic & Addis, 2008). However, atypical symptoms such as irritability, aggression and high levels of alcohol use are congruent with stereotypical masculine norms. Males may be more likely to admit to these behaviours as they do not contravene masculine norms. As such, greater awareness amongst clinicians and GPs of these co-occurring symptoms may aid in the assessment, diagnosis and treatment process for men experiencing depression. Research suggests men are unlikely to disclose emotional concerns with their GP, even in instances where the content of their distress involves suicidal thoughts (Wide, Mok, McKenna, & Ogrodniczuk, 2011). However, GPs and clinicians attending to atypical symptoms during consultations may aid in men’s ability to discuss their mental health concerns where they may otherwise avoid the topic (Brownhill, Wilhelm, Eliovson, & Waterhouse, 2003).

Implications for Theory

Given that the present study focused solely on men’s experiences of depressed mood, it is difficult to interpret the present findings as directly supporting one or more of the theories related to sex differences in depression. That said, given the degree of atypical

and prototypic symptom overlap observed in the present study, findings appear inconsistent with the masked depression framework (e.g., Rabinowitz & Cochran, 2008) which suggests that socialisation processes prevent males from demonstrating prototypic diagnostic signs or symptoms of depression. The present results offer partial support for the sex differences framework (e.g., minor phenotypic variations between males and females) and the masculine depression framework (e.g., externalising symptoms occurring in conjunction with depressed mood). However, given that the present study did not incorporate a comparison group of female truck drivers, it is not possible to extrapolate further on these findings. Similarly, without a female comparison group it is not possible to interpret findings in the context of the gendered responding framework (e.g., when distressed, males are more likely to engage in distraction and females are more likely to engage in rumination). The studies discussed in Chapters 9 and 10 incorporate both male and female samples, and will enable a clearer integration of theory.

Future Directions

Item analysis of the expanded ESS indicated that those meeting retrospective clinical criteria were more likely to report substance use, feeling under constant pressure, feeling irritable, feeling restless, damaging property as a consequence of anger, having a short fuse, increased thoughts of deliberate self-harm, and needing to handle problems on ones own. These items are broadly consistent with the notion of male depression, manifest by externalising symptoms (e.g., Magovcevic & Addis, 2008; Möller-Leimkühler & Paulus, 2007). However, the results of the present study indicate that depressed males may engage in both prototypic and male type depression symptoms. Supporting this notion, Magovcevic and Addis reported that internalising and externalising depression symptoms were moderately positively correlated ($r = .40$). It may be the case that depressed males are prone to atypical symptoms as they represent attempts to cope with depressed mood. Alternatively atypical symptoms may represent attempts to reassert masculinity through male sanctioned behaviours in instances where men experienced depressed mood. Further research is required to verify this.

Limitations

While the present study reports novel data from a relatively under-researched population, it does suffer from a range of limitations. The organisation that facilitated data collection for this study stipulated that the data gathering instrument be extremely concise.

This stipulation was required as the organisation would only approve the project on the grounds that it did not interfere with productivity. Due to this, the data collection instrument was limited to a single A4 sheet. As such, there was insufficient space on the questionnaire to collect demographic data other than age and relationship status. Furthermore, to increase efficiency in responding Likert rating scales were replaced with categorical 'yes/no' responses. As a consequence, it was not possible to assess severity of symptoms. Without symptom severity data there is limited diagnostic certainty around the classification of clinical cases, particularly as all data was self-report. Given that the questionnaire collected only categorical data, the range of data analytic techniques was also restricted.

To enable suitable comparison of symptom frequency, total scores for the expanded ESS were converted into proportions. As the expanded ESS scale comprised 18 items and the MDI comprised 11 items, each atypical symptom counted for proportionally less than each prototypic symptom assessed by the MDI. This may have exaggerated the difference between atypical and prototypic symptoms, especially given that four of the expanded ESS symptoms were endorsed by less than 5% of the sample. In overcoming this problem, researchers should look toward developing a definitive set of atypical depression symptoms for men.

The present study required participants to make retrospective symptom ratings. Retrospective techniques are prone to problems with recall accuracy (e.g., Weiner, Freedheim, Schinka, & Velicer, 2003) and schema-based biases in reporting (e.g., Ross & Giltrow, 1992). In some cases this retrospective period may date back many months or even years, thus impacting on the accuracy of symptom recall. Further, given the potential temporal difference between the retrospective period being rated and present relationship status, the current study cannot infer a causal link between retrospective symptom presentation and current relationship status (however, it must be noted that one would expect relative stability in the status of intimate partner relationships for participants within the age range of the current sample). Future research collecting real-time longitudinal data, supplemented with diagnostic interviews would add precision to symptom reporting.

The data collection process for this study revealed an interesting contagion effect. This effect may relate to masculine norms and peer pressure. The choice of the first driver who entered the data collection room to participate appeared to strongly influence the participation of subsequent drivers immediately following him. Unfortunately this meant that a large number of men declined to participate. It is not possible to determine the exact reasons for non-participation, but given that refusal seemed to occur more frequently in the presence of others, it is likely that those who chose not to participate were fearful of the social consequences of their participation (e.g., ridicule from others). This contagion effect of participation may have impacted on the findings of the present study, as those more prone to social pressure may conform more stringently to masculine norms and may have demonstrated a different symptom pattern for other types of men. Regardless, such a phenomena is worthy of further study, particularly if alternative data collection techniques (e.g., one-on-one interviews) minimise the activation of perceived threat from peers.

An additional limitation of the present study was that it did not assess participant masculinity. While research suggests that truck drivers typically experience hypermasculine workplaces, this could be expected to vary from company to company. Hence, the assumption that the present sample were subject to a hypermasculine workplace culture must be held with some caution.

Conclusion

While the present sample endorsed fewer atypical depression symptoms than prototypic symptoms for their last episode of feeling '*down in the dumps*', findings suggest a high degree of prototypic and atypical depression symptom overlap. While the assessment of atypical symptoms may serve as a useful diagnostic adjunct (especially for males who are reluctant to disclose symptoms that imply vulnerability) the present findings suggest that the standalone assessment of atypical symptoms may be of little diagnostic value. Future research may benefit from further studying the role of frequently endorsed atypical depression symptoms (e.g., irritable mood, anger, and substance use). In addition, further study is warranted on the relationship between attitudes towards help seeking, masculinity and depression.

Chapter 8: Study 3 - Depression Symptoms in Older Males

Background

Age is an important factor in the context of sex differences in depression (Safford, 2008). In comparison to females, research suggests that depression rates may be higher for males during childhood (e.g., Hankin & Abramson, 1999; Kessler, Avenevoli, & Merikangas, 2001) and above age 85 (Wallace & O'Hara, 1992). However much of the research conducted on men's experience of depression has focused on middle-aged males, and studies are yet to explore atypical symptom presentation in older cohorts. Older males face particular developmental challenges including retirement, deterioration in health, isolation, disability and separation (Evans, Frank, Oliffe, & Gregory, 2011). These factors place them at risk of depression. Furthermore, as older aged males comprise a distinct group, it necessary to gain an understanding of depression symptomology amongst this cohort.

Social support is an important determinant of health behaviours (Ballinger, Talkbot, & Verrinder, 2009), and those with higher perceived social support experience a lower risk for depression and suicide (Paykel, 1994; Levi, Weinberg, & Nadjar, 2011). Studies indicate that men typically experience lower friendship quality in comparison to women (Elkins & Peterson, 1993). Men's friendships have been conceptualised within the framework of comradeship in that they often lack specificity, commitment and emotional honesty (Brooks, 2010). Aspects of Australian culture emphasising stoicism and restricted emotionality may contribute to low social connectedness and lack of supportive social networks for men.

Given men's reluctance to seek health-related help, innovative methods have evolved that seek to engage men in preventative health practices (Smith, 2007). The Men's Shed movement is one strategy that has recently evolved throughout Australian aimed at addressing the link between men's social connection and poor health outcomes (Morgan, Hayes, Williamson, & Ford, 2007). Signifying a place where men can be relaxed, the shed has a particular cultural meaning throughout Australia and has long been a symbol of masculinity (MacKay, 2010). Community based Men's Sheds provide an environment where men (typically of retirement age) are able to adjust to the losses that are often experienced post-retirement (Ormsby, Stanley, & Jaworski, 2010).

There is a need for mental health services to reach out to men rather than waiting for men to seek help for themselves (Olliffe & Phillips, 2008). The men who attend Men's Sheds would not normally dream of joining a 'men's group' (MacKay, 2010), yet some of the outcomes of Shed participation may be similar to those achieved in structured men's group programs.

'Environments are powerful indicators to people whether or not they should enter a domain' (Fine 2010a, pg. 46). For many men, the environmental cues present in the waiting rooms of GPs and other health professionals (such as women's magazines, female administration staff, and female health practitioners) may signal to men that 'their kind' does not typically frequent 'this place'. Though this assertion is currently without an empirical base (Smith, 2007), it has been made by several commentators (e.g., Courtenay 2000; Schofield, Connell, Walker, Wood, & Butland, 2000). Attempts have been made to offer men 'male friendly' services that incorporate extended opening hours (e.g., Hall, 2003) or modified methods of enquiring about health issues (e.g., Brownhill, Wilhelm, Eliovson, & Waterhouse, 2003). The environmental cues present within a shed are likely to send a more invited set of messages to Australian men compared to those communicated by doctors' surgeries and community health centres.

The design and delivery of men-centred interventions that occur at Men's Sheds are informed by masculine ideals (Evans, Frank, Olliffe, & Gregory, 2011). While this may in part reinforce hegemonic masculine norms (Smith, 2007), it does so in a manner that promotes engagement with health promotion amongst a group of otherwise difficult to engage men (Morgan, Hayes, Williamson, & Ford, 2007). The motto of the Men's Shed movement is '*Men don't talk face to face, they talk shoulder to shoulder*' (Australian Men's Shed Association, 2011), and engaging men in work tasks provides a focus around which conversation can occur. Men's Sheds assist men to overcome isolation, loneliness, and depression through shared projects that assist both their own psychological functioning while contributing to their local community (Olliffe & Phillips, 2008).

As the Men's Shed movement is a relatively new phenomena, to date there is limited research available regarding the psychosocial impact of this initiative (Ormsby, Stanley, & Jaworski, 2010). A case study of a rural Men's Shed group undertaken by Ballinger, Talbot, and Verrinder (2009) claimed that participation enhanced the health and

wellbeing of those involved. Ballinger and colleagues noted that Shed participation provided participants with structure, motivation and most importantly a sense of purpose. A similar finding from Martin, Wicks, and Walpage (2008) reported benefits of Shed participation. It was found that Shed activities enabled the men to feel useful, and provided a reason to get out of bed in the morning, promoting positive social interactions amongst men (all without the presence of alcohol). Similar findings were reported from the evaluation of a Men's Shed set up for men from culturally and linguistically diverse backgrounds (Fildes, Cass, Wallner, & Owen, 2010). Fildes and colleagues reported that a number of Shed participants experienced improvements in a variety of social determinants that are positively related to men's health and wellbeing.

Hypotheses

The present study (Study 3) was designed to complement the findings of Study 2 by collecting prevalence data for symptoms of depression in older men. Furthermore, by incorporating a longitudinal component, Study 3 was also designed to assess the impact of Shed participation on levels of social support, and prototypic and atypical symptoms of depression. Given that depression is inversely related to social support (Paykel, 1994; Levi, Weinberg, & Nadjar, 2011) it was predicted that men with lower levels of social support would report higher ratings for both prototypic and atypical symptoms of depression. Furthermore, it was expected that duration of Shed participation would be associated with higher perceived social support, and that ongoing Shed participation would buffer against mood problems (e.g., depression) at Time 2 (six months after Time 1).

Method

Participants

Time 1. Data were analysed from 13 participants of the Kooweerup Men's Shed. At the time of data collection the Kooweerup Men's Shed comprised approximately 20 regular members. The Kooweerup Men's Shed is located on the grounds of the Kooweerup Regional Health Service, situated in rural area approximately 75kms from Melbourne. Kooweerup has a population of close to 3,000 people and has been identified as amongst the most socially disadvantaged areas within the state of Victoria (Jesuit Social Services, 2004).

The average age of respondents at Time 1 was 71.15 years ($SD = 12.48$), ranging from 45 years to 90 years. The average number of months of Shed attendance was 9.46 ($SD = 5.98$), ranging from 1 month to 24 months. Shed attendance per month ranged between once a month ($n = 2$), three times a month ($n = 1$), four times a month ($n = 3$) and five times a month ($n = 7$). The majority of the sample were retired ($n = 10$) and three participants were on disability support pensions. The majority of participants were married ($n = 9$), one participant identified as in a de facto relationship, one was separated, one was divorced and one participant indicated he was widowed.

Time 2. Data were analysed from 4 participants who had provided data at Times 1 and 2. The average age of these four respondents at Time 2 was 70.00 years ($SD = 8.45$), ranging from 62 years to 81 years. At Time 2 the average number of months of Shed attendance was 20.25 ($SD = 6.65$). Two of the Time 2 participants were retired and two were receiving a disability support pension. All four participants at Time 2 had indicated they were married at Time 1.

Measures

Both qualitative and quantitative data was collected. All quantitative data from self-report scales was collected at both Time 1 and Time 2. Study measures are provided in Appendix D.

Gotland Male Depression Scale. The GMDS (Zierau, Bille, Rutz, & Bech, 2002) was used to assess depression symptoms thought to characterise the symptomology of depressed men. The GMDS is described in detail in Chapter 6. Consistent with Study 1, GMDS item 9 was broken three component parts, resulting in separate items inquiring about consumption of alcohol or pills, hyperactivity, and under- or overeating. However, for the purposes of creating the GMDS total score, the mean of these three items was used.

Atypical Symptoms Scale. The Atypical Symptoms Scale (ASS) was developed for the present study in line with findings from Australian qualitative research into men's experience of depression (Brownhill, Wilhelm, Barclay, & Schmied, 2005). These items were developed for the present study as data collection occurred prior to the publication of the Externalising Symptoms Scale (Magovcevic & Addis, 2008) which was used in Study 2. In total, 15 atypical symptoms were assessed. Items were developed to assess use of

distraction techniques (e.g., overwork, distraction from negative thoughts through work or sports, increased interest in sexual affairs/encounters, using sex to distract from negative feelings), aggression (e.g., road rage, aggression on the sports field), risk taking (e.g., rule breaking, increased interest in gambling, thoughts or actions of deliberate self-harm), feelings of emotional numbness (e.g., experiencing less satisfaction in relationships, experiencing a vague sense that something is wrong but being unable to express it, feeling emotionally numb, withdrawing from relationships and social contact) and worsening physical health. Responses for the ASS were made in reference to the last month, on a scale where; 0 (*not at all*), 3 (*extremely*).

Friendship Scale. Social support was assessed by the Friendship Scale (FS; Hawthorne, 2006). The FS is a self-report measure that comprises six items assessing social isolation (e.g., '*I had someone to share my feelings with*'). Responses are made where; 0 (*not at all*), 4 (*almost always*). Hawthorne (2008) recommends that FS scores be categorised to reflect individuals who are very socially isolated (0 – 11), socially isolated (12 – 15), have some social support (16 – 18), are socially connected (19 – 21) and are very socially connected (22 – 24).

Qualitative data. Qualitative data were collected at both Time 1 and Time 2. Several of the Time 1 qualitative questions were adapted from those used in a recent case study evaluation of a Men's Shed program (Ballinger, Talbot, & Verrinder, 2009). Time 1 qualitative questions were designed to assess initial motivation to attend the Shed, factors maintaining Shed participation, impact of Shed participation on feelings about self, and the opinions of close others (e.g., partner, close friend) regarding whether Shed participation had led to observable psychosocial improvement. At Time 2, qualitative data were collected for anticipated duration of future involvement with the Shed, maintaining factors that have lead to continued Shed participation, benefits to Shed attendance and perceived barriers preventing other men from attending. The qualitative questions were purposively designed to avoid the term depression. This was done to ensure that any references to improvement in psychosocial functioning (including improvements to mood) were made spontaneously by respondents. This helped to provide a degree of confidence that responses related to improvements and benefits of Shed involvement were not biased by the language or tone of the question.

Demographic data. Data were collected at Time 1 for age, length of time involved with the Shed, approximate Shed attendance per month, employment status and relationship status. At Time 2 demographic data was collected for approximate Shed attendance per month.

Procedure

Ethics approval for the project was provided by the Australian Catholic University Human Research Ethics Committee. A mixed-method, longitudinal approach was adopted. In accordance with ethical approval, all participant recruitment was undertaken by the Kooweerup Men's Shed Program Coordinator. Shed participants were briefed about the aims and rationale of the project and informed they were free to withdraw at any time.

At Time 1, all men who regularly attended the Shed were invited to participate ($n = 20$). All data were collected by the Primary Care Partnership worker. There was an option for the men to participate through interview using the questionnaire to address literacy issues. All qualitative questions were asked via a one-to-one interview conducted by the Primary Care Partnership worker. All men who participated at Time 1 ($n = 13$) were invited to participate again at Time 2. Time 2 data collection occurred approximately 6 months (192 days) subsequent to data collection at Time 1. Responses between Time 1 and Time 2 were matched using participant date of birth. While eight participants provided data at Time 2, four of these had to be excluded from analyses as their responses could not be matched to Time 1 measures (either these individuals provided inconsistent dates of birth or they were new members to the Shed who had not provided data at Time 1).

Data Screening

All questionnaire data was entered into SPSS Version 17.0. To evaluate any potential data entry errors, frequencies for each item were examined to ensure all values were within the plausible range. Total scores for the GMDS, ASS, and FS were evaluated for univariate outliers using boxplots. No outliers were identified by this procedure.

Data Analytic Strategy

A twostep approach was taken towards data analysis utilising both quantitative and qualitative strategies. Quantitative analysis was undertaken for the self-report scales. This included reporting of raw item scores, frequencies, means and correlation coefficients. Due to the small sample at Time 1 ($n = 13$) it was not possible to use any inferential statistical

tests. Accordingly, quantitative data were analysed through a descriptive approach. Given the particularly small sample at Time 2 ($n = 4$) a case study approach was adopted for Time 2 quantitative data.

Qualitative analysis was utilised for the free response data (at both Time 1 and Time 2). Common themes were identified within the responses through content analysis. Content analysis is a research technique that seeks to develop replicable and valid inferences from text-based data (Krippendorff, 2004). Content analysis seeks to summarise data rather than report all details of a message set (Neuendorf, 2002), and in doing so classifies textual material into manageable data (Weber, 1990). As the qualitative data provided by the respondents was succinct (e.g., brief responses from all participants) this process did not require a complicated coding system. Multiple coding was undertaken in instances where two or more themes were discussed within the one response.

Results

Time 1 – Quantitative Analysis

Scale reliabilities, means, standard deviations and 95% confidence intervals were calculated for the three self-report scales (see Table 18). Both the GMDS and FS demonstrated satisfactory internal consistency. The internal consistency of the ASS was poor, however this was to be expected given the diversity of behaviours assessed by these items. Given the low alpha value for the ASS, prevalence rates for individual items of the ASS are reported below.

Table 18

Descriptive Statistics and Reliability Coefficients for Variables in Study 3 at Time 1

Subscale	α	M	SD	95% CI
Friendship Scale	.82	17.69	6.60	[13.70 – 21.68]
GMDS (total score)	.91	10.59	10.22	[4.41 – 16.76]
Atypical Symptoms Scale	.31	4.84	3.58	[2.68 – 7.01]

Pearson correlation analysis indicated that there was no relationship between length of involvement in the Shed program and FS total scores ($r = -.23, p = .453$). This was in contrast to prediction.

Based on the FS score categories outlined by Hawthorne (2008), three participants were classified in the ‘very isolated’ range, two were classified as having some social support, four were classified as being socially connected and four were classified in the range ‘very socially connected’. Mean scores for GMDS and atypical symptoms ratings were calculated for each of the FS categories (see Table 19). While higher GMDS total scores were associated with lower FS total scores ($r = -.59, p = .035$) there was no relationship between AS ratings and FS total scores ($r = -.03, p = .921$).

Table 19

Descriptive Statistics for GMDS and Atypical Symptoms Scale by Friendship Scale Category at Time 1

Friendship Scale (FS) Category	GMDS	ASS
	<i>M (SD)</i>	<i>M (SD)</i>
Very socially isolated ($n = 3$)	18.55 (12.21)	4.67 (2.31)
Some social support ($n = 2$)	13.50 (10.60)	3.00 (4.24)
Socially connected ($n = 4$)	9.25 (11.98)	6.00 (5.22)
Very socially connected ($n = 4$)	4.50 (4.12)	4.75 (3.20)

GMDS classifications were evaluated consistent with the guidelines provided by Zierau, Bille, Rutz and Bech (2002). Nine of the respondents fell with the range ‘No signs of depression’, two participants were in the range ‘Depression probable’ and a further two participants were classified in the range ‘Clear signs of depression’. Individual item means for the GMDS and AS were calculated. Indicating a degree of conceptual overlap, a moderate positive correlation was observed between the GMDS total score and the AS total score ($r = .66, p = .014$). Item means for these scales are presented in Tables 20 and 21 respectively. These tables also indicate the total frequency of responses that were greater than 1. Item scores greater than one indicate that the item was applicable at least ‘to some extent’ (Zierau, Bille, Rutz, & Bech, 2002). As can be seen from Table 20, all GMDS items were rated at one or above at least once.

Table 20

GMDS Item Means, SDs, and Frequency Totals for Responses Greater Than Zero

GMDS Item	<i>M (SD)</i>	<i>Freq > 0</i>
Sleep problems	1.62 (1.26)	8
More irritable, restless and frustrated	1.08 (1.32)	6
Difficulty making ordinary everyday decisions	1.08 (1.26)	6
Lower stress threshold/more stressed out than usual	1.00 (1.35)	5
Feeling of being burned out and empty	1.00 (1.35)	5
Constant, inexplicable tiredness	1.00 (1.29)	6
In your biological family, is there any tendency towards abuse, depression...	0.92 (1.26)	5
In the morning especially, having a feeling of disquiet/anxiety/uneasiness	0.62 (1.19)	3
Being gloomy, negative or characterised by a state of hopelessness...	0.62 (1.19)	3
A greater tendency to self-pity, to be complaining or to seem "pathetic"	0.62 (1.03)	5
More aggressive, outward-reacting, difficulties keeping self-control	0.46 (0.88)	3
Significant under- or over eating	0.31 (0.75)	2
Being hyperactive or blowing off steam by working hard or by excessive exercise	0.23 (0.83)	1
Behaviour altering in such a way that you are difficult to deal with	0.23 (0.60)	2
Over consumption of alcohol and/or pills	0.23 (0.44)	3

As can be seen from Table 21, four of the AS items were not endorsed by any respondents. These items assessed aggression on the sports field, withdrawing from social contact, interest in sex, and using sex to distract from negative feelings. Given the age of the present cohort and the fact that they were involved in a psychosocial group program aimed at promoting social contact, this finding is unsurprising. Similarly, it was unsurprising that the most frequently endorsed item from the AS scale assessed worsening physical health. Other frequently endorsed atypical symptoms included having a vague sense that something was wrong, over involvement with work, and breaking rules.

Table 21

ASS Item Means, SDs, and Frequency Totals for Responses Greater Than Zero

AS Item	<i>M (SD)</i>	<i>Freq > 0</i>
Worsening physical health	1.23 (1.42)	6
Experiencing a vague sense that something is wrong, but being unable to...	1.08 (1.32)	6
Over involvement with work or study (workaholism)	0.54 (1.05)	3
Breaking rules	0.38 (0.38)	4
Feeling emotionally numb	0.38 (0.96)	2
Experiencing less satisfaction in relationships	0.31 (0.86)	2
Distraction from negative thoughts through work or sports	0.31 (.86)	2
Increased thoughts or actions of deliberate self-harm	0.23 (.83)	1
Greater involvement in gambling	0.23 (.60)	2
Increased tendency for risky driving, or road rage	0.15 (.56)	1
Abuse or aggression towards others on the sports field	0.00 (.00)	0
Using sex to distract from negative feelings	0.00 (.00)	0
Withdrawing from relationships or social contact	0.00 (.00)	0
Increase interest in non-relationship sexual affairs/encounters	0.00 (.00)	0

Time 1 – Qualitative Analysis

Q1. What started you coming to the Shed? Three themes emerged from the responses to this question. The most frequent response involved receiving a personal invitation to become involved in the Shed ($n = 6$) e.g., “*Invited by staff*” and “*[invited by] my carer at the hostel*”. One participant indicated that the personal invitation overlapped with a specific interest of theirs e.g., “*Ran into another man who said he could teach me how to do computers with computer lessons every Friday*”. Other participants indicated they were drawn to the Shed through developing a particular skill or sharing their skills ($n = 6$) e.g., “*For personal reasons of achievement and satisfaction*”, “*To get out of the house, to get involved in other things*”, and “*A chance to contribute, share the skills of my trade like taking on challenges*”. Some participants were primarily motivated by seeking out social connection ($n = 4$) e.g., “*Get with other people socialising*”, “*Develop relationships with other fellas...*” and “*Sense of community involvement*”.

Q2. What keeps you coming to the Shed? Three key themes emerged from the

responses to this question. The most frequent response to this question (mentioned by almost all respondents) related to having a task to complete ($n = 10$) e.g., *“Having jobs to do such as sanding. When there are jobs to do I come to do them”*. Social connection ($n = 10$) was also reported as a motivating factor for attending the Shed e.g., *“I like it. I gives you a chance for a good chin wag. We all have problems and we can all talk about it...”* The third theme for this question related to achievement ($n = 2$) e.g., *“...When I go home I feel I have done something for the day”* and *“...Provides satisfaction”*.

Q3. Does coming to the Shed make any difference to how you feel about yourself? The majority of participants indicated there was clear benefit to their Shed attendance ($n = 10$). This benefit was typically experienced as improving sense of self-worth, connection to others and improvement in mood e.g., *“Yes, it gives me higher esteem of myself where I can see what I have done. I like to help other people”* and *“Yes, a lot better. Good way to connect friends in town. Come to get vegies from the garden”* and *“Yeah, you are a lot happier, better frame of mind, something to look forward to”*. Of the three participants who answered “no” to this question, one indicated they had not had a chance to experience any personal benefits as yet, and one indicated that they still felt good about coming to the Shed.

Q4. If you have a partner, what do they think about your involvement with the Shed? A number of the participants indicated that their partner was happy about their involvement in the Shed ($n = 5$). Within this theme was the notion that the men’s involvement with the Shed gave their partners time for themselves e.g., *“She thinks it’s good”* and *“My wife is really happy with it. She enjoys gardening and has friends or grandkids to visit”* and *“It gives her time to herself”*. These responses may reflect a degree of dependence on female partners. The remainder of the participants were either single or were unsure about their partners’ perceptions of their Shed involvement.

Q5. What would one of your close friends think about your involvement with the Shed? While several participants were unsure about their friends’ perceptions of their involvement ($n = 3$), the majority of participants reported that their friends were positive about their involvement in the Shed ($n = 10$). In some instances participants have invited their friends to attend e.g., *“One of my close friends has become a member of the Shed and goes on walks...”* and *“They think it’s good. They think it’s made me happier. Helps me cope better and I concur.”*

Time 2 – Quantitative Analysis

The following section reports change scores between the Time 1 and Time 2 for the four participants who participated in both data collection points. These individuals are hereby referred to by pseudonyms; Jack, Bill, Pat and Frank (see Table 22 for demographics).

Table 22

Sample Demographic Characteristics (Study 3, Time 2)

	T2 Age	Shed Involvement (Time 1)	Monthly Attendance (Time 1) (Time 2)		Employment (Time 1)	Relationship (Time 1)
<i>Jack</i>	81	24 months	4	5+	Retired	Married
<i>Bill</i>	72	12 months	5+	5+	Retired	Married
<i>Pat</i>	62	9 months	5+	5+	Disability Pension	Married
<i>Frank</i>	65	12 months	5+	5+	Disability Pension	Married

Time 2 scores were determined for each of the quantitative measures (see Figure 4). With the exception of Frank, all other respondents indicated an increase in social support over time as assessed by the FS. In the case of Jack, the increase in social support between Time 1 and Time 2 reflected a positive change from ‘very socially isolated’ to ‘socially connected’. At Time 2 all respondents fell within the ‘socially connected’ range. Time 1 and Time 2 scores on the GMDS indicated similar improvement. With the exception of Bill, who maintained a GMDS score of 0 between Time 1 and Time 2, all other respondents reported a decrease in GMDS total scores. Apart from Jack, all respondents fell within the ‘no depression’ range on the GMDS. Scores for the atypical symptoms also indicated a trend for improvement over time. Apart from Jack, all other respondents reported decreases in atypical symptoms. In the case of Frank, there was a particularly noticeable decrease in atypical symptoms between Time 1 and Time 2. These findings of changes between Time 1 and Time 2 are broadly consistent with the hypothesis that ongoing Shed participation would buffer against mood problems. While this data is limited to only four participants, it nonetheless suggests a noteworthy trend, and an association between Shed participation and improvement in psychosocial functioning.

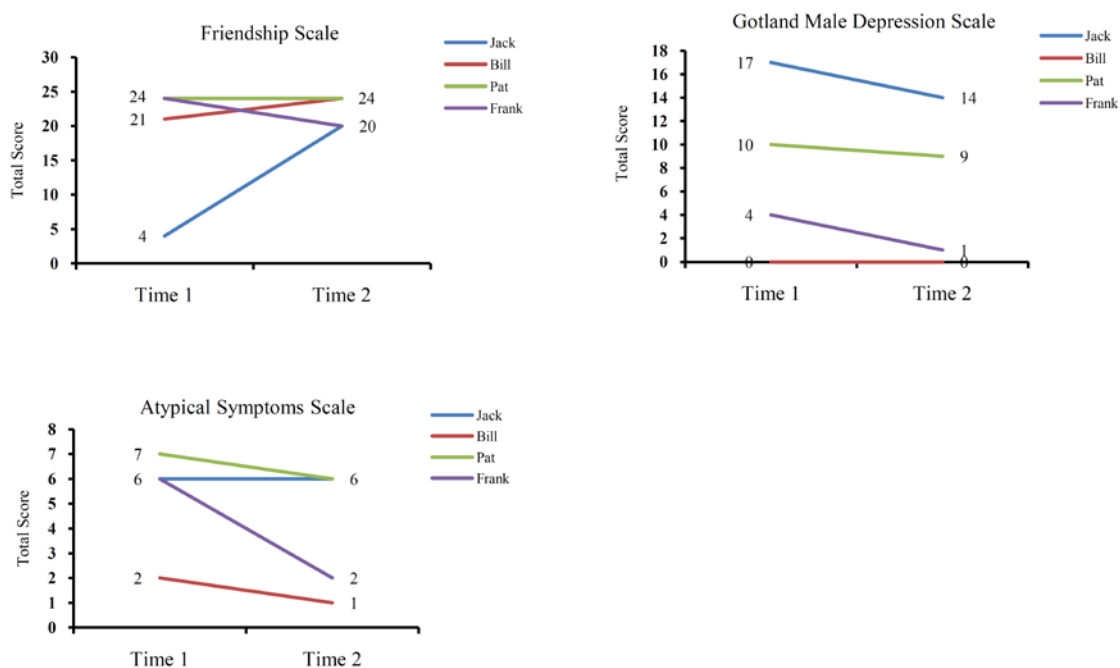


Figure 4. Changes in FS, GMDS and ASS Scores for each participant.

Time 2 – Qualitative Findings

Q1. How long do you think you will keep coming to the Shed? There was consistency in responses to this question. Highlighting the personal benefits of involvement with the Shed, all four men intended to participate for as long as they were able.

Q2. What has kept you coming to the Shed? Three of the men indicated that friendship and social support was key to motivating their attendance e.g., “...*I do what I like to do, and I do it with others*” and “*The social interaction and support you get*”. In addition, one of the participants indicated that satisfaction from their involvement in the Shed motivates their continued participation e.g., “*Get satisfaction from doing a lot of jobs*”.

Q3. Can you name any personal benefits you have experienced from being part of the Shed? Benefits named included social inclusion ($n = 3$), feeling relaxed ($n = 2$), gaining skills ($n = 1$) and a sense of achievement and pride ($n = 1$) e.g., “*Get a lot of pride in what I have done here. Mixed with people I haven't mixed with before. Join in and*

help community. Every Tues help gardening in hospital garden and get lots of satisfaction. Stop sitting around home moping”.

Q4. What do you think stops other blokes from coming along to the Shed? One participant indicated they did not know what prevented others from coming. Another participant indicated that some may attend once and not return. Two participants indicated that shyness, or lack of confidence prevented more men from attending e.g., *“I’ve tried a lot, but I just can’t budge them out of their security zone”*.

Q6. How would you go about encouraging other men to come along to the Shed? Three participants indicated that explaining the program, and the various aspects, including that you don’t have to commit e.g., *“You don’t have to work, you can buy books. No fees, just coffee”* and *“...Come and go as you please”*. One of the participants indicated they had tried encouraging others, but their attempts were met with little success.

Discussion

The present study, reporting on data from an older sample of Australian males, gives new insights into the benefits of innovative methods for engaging men in preventative health practices. Older males face a range of psychosocial factors that may precipitate episodes of low mood including deterioration in health, isolation, disability and separation (Evans, Frank, Oliffe, & Gregory, 2011). Men’s Sheds provide a context where men are able to adjust to, and cope with some of these losses (Ormsby, Stanley, & Jaworski, 2010). The men who join Men’s Sheds are typically not the type who would usually join a traditional men’s group (MacKay, 2010), yet the outcomes of Shed participation may parallel those observed in more traditional men’s support groups.

Consistent with prediction, men with lower levels of social support at Time 1 reported higher GMDS scores at Time 1. The correlation between these two variables was both moderate in strength, and statistically significant. This is a noteworthy finding from such a small sample. Highlighting this, analysis of GMDS scores for each of the social support categories indicated that the mean GMDS scores of those who were within the very socially isolated range were more than four times higher than those in the very socially connected range. Hence, social isolation amongst the present sample was clearly associated as a risk factor for depression.

Aspects of Australian culture may contribute to low social connectedness and poor social networks for men. Furthermore, men's friendships often lack emotional honesty (Brooks, 2010) and are less supportive than women's friendship (Elkins & Peterson, 1993). As social support is a key determinant of good mental health, any programs that provide meaningful improvements to men's support networks should be encouraged. The Men's Shed movement aims to directly address this by focussing on the link between men's social connection and poor health outcomes (Morgan, Hayes, Williamson, & Ford, 2007). With a task to focus on, men may feel more comfortable and less threatened talking amongst one another. Hence, one of the most important factors of the program may be the informal support that occurs between group members.

According to the GMDS clinical cut-off scores, four of the Shed participants were at risk of depression. Unfortunately it was not possible to track improvement for these four participants as only one of these men participated at Time 2. This individual reported a modest improvement, but was still within the at-risk range at Time 2. The three other participants who provided data at both Time 1 and Time 2 maintained scores within the normal range.

In contrast to prediction, Time 1 social support was not associated with the Time 1 total scores for the ASS. This may have been due to the heterogeneity of items (evidenced by the low internal consistency value) that comprise the ASS. The ASS also reported a lower mean total score in comparison to the GMDS. This suggests that the range of atypical symptoms assessed were experienced less frequently than those that were assessed by the GMDS. To date, studies have failed to assess the role of atypical depression symptoms for older men, however research suggests that older men may be more likely to experience prototypic symptoms of depression than younger men (Wallace & O'Hara, 1992). A number of the ASS items were not endorsed by any of the participants, while a further six ASS items were only endorsed by one or two of the sample. This suggests that atypical depression symptoms reflecting externalising responses may be less applicable to samples of older males. However further research is required to substantiate this claim.

Symptom prevalence ratings at Time 1 for the GMDS items indicated that participants tended to report symptoms associated with irritability, burnout/emptiness and somatic difficulties more readily than those that directly imply psychological difficulties.

This is consistent with male role norms emphasising avoidance of vulnerability when distressed. The two most frequently endorsed atypical items referred to worsening physical health (which is to be expected given the age of the present cohort) and having a vague sense that something is wrong but being unable to express it. This latter item may relate to alexithymia – a tendency to be unaware of one’s emotional functioning. Levant (1998) theorised that alexithymia occurs more frequently among men who are socialised to restrict emotional expression, in particular vulnerable or caring emotions. Such restricted emotional expression is believed to leave many men without a vocabulary for, or awareness of, their emotional functioning (Levant et al., 2006), leading to significant difficulties in communicating emotional states (Brooks, 2010).

In contrast to prediction, the duration of Shed participation was not associated with higher perceived social support. It is unclear why this was the case, but it may indicate that some of the Shed participants entered the Shed with relatively robust pre-existing friendship networks, or their involvement with the Shed had already increased their perceived social support prior to Time 1. For example, three of the four participants at Time 2 reported relatively high levels of social support at Time 1, and in each of these cases, perceived social support remained relatively high. Importantly, this social support aspect of Shed involvement was named by many of the participants as a key factor in maintaining Shed participation. Furthermore, several of the participants were able to articulate their appreciation for the opportunity to talk about their problems with other men and enjoy support from others. In this way Shed participation appears to assist older men overcome feelings of loneliness (Olfiffe & Phillips, 2008), and improve men’s mental health.

It was predicted that ongoing Shed participation would buffer against mood problems at Time 2. Findings generally supported this hypothesis. While the longitudinal data was only available for a small number of participants, this finding is nonetheless encouraging. The effectiveness of Shed involvement may be bolstered by accompanying increases in social support, and skills based activities that provide older men of retirement age a sense of purpose and focus (Ballinger, Talbot, & Verrinder, 2009). Hence, community-based Men’s Sheds may enable men to meet their psychological, physical and social needs (Jonsson, Borell, & Sadlo, 2000).

The environmental cues that are present within a Shed are well known to many men, and likely signal a place where they are welcome (Ormsby, Stanley, & Jaworski, 2010). This notion of a 'male friendly space' has been theorised as a key reason why community based Sheds continue to draw men (Ballinger, Talbot, & Verrinder, 2009). The Shed context also provides an opportunity to engage with a work identity that may have been lost post-retirement. In this context, health promotion messages may be more readily received and meaningful peer support provided amongst Shed participants. Importantly, all this happens without the presence of alcohol.

A key theme of the qualitative data (at both Time 1 and Time 2) was that Shed participation provided the men with a sense of meaning, purpose, opportunity for achievement and something to look forward to. Ormsby, Stanley, and Jaworski (2010) reported similar findings and noted that Shed participants felt empowered to face challenges at the Shed, which enabled them to feel a sense of competency and belongingness in their wider lives. Most participants could articulate the benefits of Shed involvement which extended to improvements in self-esteem and mood. Importantly, the qualitative data indicated that close others (e.g., partners or close friends) had provided positive feedback to the Shed men regarding their participation. This demonstrates that other people are also able to observe positive changes in the Shed participants.

The qualitative findings at Time 2 indicated that several Shed participants encouraged fellow men to attend, but were unsuccessful in doing so. This may indicate that Sheds are effective for reaching some groups of men, but they will not work for engaging all men (Smith, 2007). The qualitative data reported at Time 1 indicates that Shed participants were generally responsive to individual invitations to participate, and that continued participation was based on a combination of working on tasks within the context of social connection to others. Most participants were readily able to acknowledge that the Shed has been beneficial to them, and articulate that benefits include improving self-esteem, mood, and generating connections with others. Partnered participants indicated that their partners and friends also valued their participation in the program, hinting that it enabled the partners of the men to have time to themselves.

Implications for Theory

When considering the prevalence findings from the ASS (for which very few items were endorsed), results appear inconsistent with all four theoretical frameworks related to men's depression (e.g., the masked depression, sex differences, masculine depression and gendered responding frameworks). In contrast, several of the GMDS items were relatively frequently endorsed, and these items tended to correspond to symptoms associated with irritability, burnout/emptiness and somatic difficulties. Taken together, findings appear to suggest that older males may not report atypical depression symptoms as frequently as younger males as found in Study 2. While further research is required to substantiate this claim, these results may herald a need for future refinement of theory. For example, it may be necessary to consider the developmental influence of atypical symptoms which may be seen more readily in younger and middle aged males.

Limitations

While the present study was able to recruit more than half of the Shed members at Time 1, only four men provided usable data at Time 2. Hence, while the longitudinal analysis provides some promising results it is far from representative of the broader Shed community. As all participant recruitment was undertaken by the Program Coordinator it was not possible for the researcher to improve the response rate. Future studies should seek to employ strategies to minimise attrition. Furthermore, most of the Shed participants had been involved in the program for a number of months prior to data collection at Time 1. Hence, the Time 1 data does not provide a meaningful baseline indicator of either social support, prototypic or atypical symptoms. It may have been the case that there was a ceiling effect in the measurement of social support. Given that many men were experiencing high levels of friendship at Time 1, there may have effectively been 'no room to move' on the scale at Time 2. Similarly, involvement in the Shed program prior to data collection may have already ameliorated depression levels. Furthermore, the present study failed to incorporate a measure of prototypic depression symptoms. This was omitted as the questionnaire needed to be as brief as possible given that many within the sample experience literacy difficulties.

Future Directions

Given that researchers are yet to comprehensively investigate the role of atypical depression symptoms in older males, further research with this cohort is needed. Men's

Sheds provide a unique vehicle for such research given the type of men (e.g., those interested in wood work, metal work etc.) that Men's Sheds attract. Further research with this population would benefit from ongoing screening procedures so that the health progress of participants can be tracked over time. This is however a challenging prospect as many Shed participants are drawn to Shed programs due to their unstructured and informal aspects. Hence, imposing formal data collection procedures may impact with some men's engagement with the program.

Conclusion

The present study provides unique data from an older cohort of Australian males. While the findings are limited in the context of a small sample and lack of adequate baseline data, they indicated that ongoing participation in a Men's Shed program (at least for those providing data at both Time 1 and Time 2) tended to be associated with either maintenance or improvement to social support and fewer depression symptoms. This finding, if replicated more widely, may have implications for future program development and implementation to address issues related to men's mental health and men's attitudes towards help seeking.

Chapter 9: Study 4 - Development of the Male Depression Risk Scale

Background

This chapter reports the findings of Study 4, an initial psychometric validation and testing of the Male Depression Risk Scale (MDRS). Chapters 1 – 4 made the case for taking a broader view of men's depression (e.g., the presentation of atypical symptoms) based on psychosocial factors (e.g., masculine socialisation and adherence to male role norms). While this notion is theoretically appealing, it is also inherently difficult to empirically examine and challenging to validate (Magovcevic & Addis, 2008). The establishment of a male subtype of depression requires the identification of a cluster of symptoms that would not otherwise be understood as symptomatic of depression (Branney & White, 2008). This is a controversial notion given the challenge it mounts to established DSM-IV diagnostic criteria. Nevertheless, in support of this work a range of researchers have argued that the current classification system for depression is inadequate (e.g., Angst & Merikangas, 2001; Bebbington et al., 1989). Such arguments are made on the basis that a substantial proportion of individuals who experience depressive symptoms, and accompanying distress and impairment, fail to exceed the depression diagnostic threshold. In fact, as indicated in Chapter 1, sub-threshold depression (reflected by two or three DSM-IV depression symptoms) has been found to correlate significantly with disability and suicide risk, and the DSM-V Mood Disorders Work Group have given serious consideration to its inclusion in the upcoming revision of the Major Depressive Disorder diagnostic criteria (Fawcett, 2009).

Perhaps the most pressing practical difficulty regarding the establishment of a male subtype of depression relates to the actual cluster of symptoms that characterise the phenomena. While researchers have suggested that irritability, aggressiveness and risk-taking behaviours are key indicators of a male subtype of depression (e.g., Innamorati et al., 2011a, 2011b), the specific components of these broad symptom categories are yet to be definitively defined. Further adding to the conceptual confusion, recent studies utilising samples of males and females suggest few, if any, sex differences exist for scale items that have been specifically designed to identify depressed men (e.g., Möller-Leimkühler & Yucel, 2010). Furthermore, in contrast to the prototypic / atypical symptom distinction, many men show symptoms of depression that are fully congruent with a DSM-IV diagnosis. For such men, a syndrome of atypical depression symptoms may not be applicable. This suggests that a male subtype of depression may be relevant only to a

certain subgroup of men – however, to date the factors that differentiate these hypothesised groups remain unclear.

As indicated in Chapter 4, there are currently several male specific depression rating scales available (e.g., the Gotland Male Depression Scale, the Diamond Depression Scale, the Masculine Depression Scale, the For Men Only Mental Health Prompt List, and the Male Symptoms Scale). While each of these scales represents an important step forward in researching the construct of male depression, they all suffer from noteworthy limitations. From a psychometric perspective, one of the most significant problems with these scales is their lack of specificity (e.g., they are all relatively long scales with few validated subscales). In moving towards a better understanding of men's depression symptomology, the assessment of discrete behaviours and symptoms is required with multidimensional scales. The broad symptom categories associated with men's distress and depression (e.g., as assessed by the GMDS), internalising and externalising symptoms (e.g., as assessed by the MDS), and acting in and acting out behaviours (e.g., as assessed by the DDS) limit this progress as they fail to elucidate the specific behavioural and affective components of atypical depression symptoms.

With the exception of the For Men Only, Mental Health Prompt List (which is designed to prompt discussion between doctor and patient), none of the published male depression scales have undergone piloting within the Australian context. While the GMDS is the most widely used of the published men's depression scales, it was developed using a sample of male inpatients with alcohol use disorder – potentially biasing its applicability and generalisability to non-inpatients. To date the remaining scales (the DDS, MDS, and the MSS) are yet to be cited in research studies beyond the initial study in which they were developed. Hence, little independent validity data is available on these measures.

There are also issues with the factor structure and response categories of the published male specific scales. For instance, the psychometric properties of the DDS were insufficiently presented by Diamond (2008) (e.g., failure to reference factor loadings, cross loadings, eigenvalues and decision making criteria for item retention / deletion). Hence it is not possible to determine whether the DDS was constructed according to best practice principles of scale development. In addition, the Male Symptoms Scale is limited as it was designed using a categorical (Yes/No) response format. While this may increase the

useability of the scale and decrease administration time, it does so by restricting the scope of statistical analysis that can be undertaken on the scale data (including factor analysis).

While the MDS was subject to a more rigorous psychometric process, the resulting scale is overly long (44 items), comprising an internalising subscale of a cumbersome 33 items, and an externalising subscale of 11 items. Given that the internalising subscale of the MDS is analogous to prototypic symptoms of depression (as defined by DSM-IV diagnostic criteria), the scale is somewhat redundant from a clinical perspective. Males endorsing prototypic symptoms are likely to meet DSM-IV diagnostic criteria for depression. Illustrating this, Magovcevic and Addis (2008) reported that the internalising subscale of the MDS correlated with the Beck Depression Inventory (BDI) emotional symptoms subscale at $r = .80$. Furthermore, the 11 externalising items lack specificity given they are comprised within the one subscale that assesses substance use, anger, aggression, pressure, distraction through sex or work and impeded help seeking.

Study 1 indicated that the GMDS item assessing hyperactivity/overwork was the only item that males were able to endorse more frequently than females. The GMDS was designed to assess the expression of depression symptomology amongst men, and as such it is problematic that Study 1 found that males endorsed only one GMDS item more frequently than did females. Any scale that seeks to assess a phenomenon that is hypothesised to occur more frequently amongst one sex should comprise a range of items that can suitably differentiate male and female responses. Without such differentiation two possible conclusions follow – the scale either lacks validity, or the construct being assessed exists equally amongst males and females. Given there is other evidence suggesting that GMDS symptoms occur more frequently in females (Möller-Leimkühler & Yucel, 2010) and that the GMDS provides very little diagnostic utility over and above gender neutral depression rating scales (Stromberg, Backlund, & Lofvander, 2010), it is plausible to conclude that the GMDS items are not suitably sensitive to men's experience of depression. In addressing this, the MDRS will seek to assess a broad range of discrete theorised male depression symptoms thus enabling suitable sex differentiation of items (see section on scale development process below). In doing so Study 4 seeks to extend upon the psychometric properties of the GMDS by developing a measure with a factor structure that is valid, multidimensional, and replicable.

The findings of Study 2 (see Chapter 7) provided evidence of prototypic and atypical depression symptom overlap. This finding indicated that truck drivers who endorsed DSM-IV depression symptoms were also likely to endorse a range of atypical depression symptoms. While this finding was unexpected it yields an important insight. A number of research studies indicate that men are likely to conceal emotional symptoms that imply vulnerability during medical consultations (e.g., Brownhill, Wilhelm, Eliovson, & Waterhouse, 2003; Houston, Townsend, & Hawton, 2003; Pleck, 1995; Wide, Mok, McKenna, & Ogrodniczuk, 2011). As such, assessment of atypical depression symptoms (which may be more easily disclosed by men) may lead to the same diagnostic conclusion as would the assessment of prototypic depression symptoms (which may be unlikely to be disclosed during consultations). Atypical symptoms that were relatively frequently endorsed by participants in Study 2 included irritability, an emphasis on self-reliance, distraction from negative thoughts, feeling under constant pressure, use of alcohol / drugs, and anger /aggression. Given that these symptoms were endorsed relatively frequently, items related to these symptoms will be included in the initial item pool for the MDRS.

Study 3 (see Chapter 8) indicated that atypical depression symptoms may be less prevalent amongst older males in comparison to younger males. Nevertheless, Study 3 found that depression symptoms associated with irritability, stress, burn out, sleep disturbance and fatigue were more likely to be endorsed than symptoms related to feelings of hopelessness or anxiety. This finding is broadly consistent with the notion of men's avoidance of weakness or vulnerability (e.g., Pleck, 1981, 1995). Hence, the findings of Study 3 also contributed to the development of the MDRS item pool.

Hypotheses

The development of the MDRS occurred from an initial pool of 84 items. Given the initial item pool was based on a number of conceptually related, yet distinct types of symptoms, it was expected that factor analysis would yield a multidimensional factor structure corresponding to the various symptom sub-domains that were identified. Further, given the factor structure of MDRS was evaluated solely on data provided by males, and that scale items were designed specifically with male depression symptoms in mind, it was expected that males would report higher subscale scores for the MDRS than would females.

Study 4 also sought to evaluate differences on the MDRS related to participant sex and masculinity. However, unlike the measure of masculinity used in Study 1 (e.g., the Australian Sex Role Scale; Antill, Cunningham, Russell, & Thompson, 1981), Study 4 sought to utilise the comparatively recent conceptualisation of conformity to masculine norms (e.g., the Conformity to Masculine Norms Inventory; Mahalik et al., 2003). Given the MDRS items were developed in conjunction with the quantitative and qualitative research literature on men's experience of depression, it was predicted that each subscale of the MDRS would be moderately positively correlated with prototypic symptoms of depression. However, given the MDRS items were developed to be conceptually related to masculinity, it was also predicted that the MDRS subscales would report stronger intercorrelations with conformity to masculine norms scores than they would with prototypic depression symptoms. The final hypothesis predicted opposing effects for participant sex and categorical analysis of conformity to masculine norm groups for prototypic and atypical symptoms. In this manner, while it was expected that individuals reporting extreme conformity to masculine norms would report higher scores for the subscales of the MDRS scale compared to those who did not conform to masculine norms, those in the extreme conformity to masculine norms group were expected to report lower prototypic depression symptoms than those in the extreme nonconformity group.

Method

Study Design

Data was collected from a community sample using an online questionnaire. Given the MDRS was designed to be used as a screening tool for men in the wider community (e.g., men from a non-clinical sample), a community cohort was considered appropriate for sampling.

Participants

Data was provided by a total of 1,496 participants who visited the secure website during the data collection period (July 2010 – August 2010). All participants were aged between 18–77 years. Consistent with Study 1, inspection of the full dataset indicated a high proportion of missing data. After data screening was complete (see section below for full details) the resultant usable sample comprised 964 cases. The sample comprised a total of 386 males ($M = 32.74$ years, $SD = 12.58$) and 578 females ($M = 28.34$ years, $SD = 10.69$). On average males were significantly older than females $t(833) = 5.43, p < .001$. A

total of 511 participants (61.2% of the total useable sample) were below 30 years of age. Detailed information on the sample is provided in Table 25 below.

Scale Development Process

Study 4 was designed to conform to best practice principles of scale development. In doing so, guidelines from De Vellis (2003), Field (2009), Tabachnick and Fidell (2007), and Worthington and Whittaker (2006) were followed. DeVellis's guidelines for scale development (see Table 23) were used as a framework for the initial stages of item development and decision making regarding item deletion and retention. Guidelines from Worthington and Whittaker were followed for undertaking the exploratory factor analysis.

Table 23

Guidelines Followed for GMDS Item Development (Adapted from De Vellis, 2003)

Guideline Steps
Step 1: Determine clearly what you want to measure
Step 2: Generate item pool
Step 3: Determine format of measure
Step 4: Have initial item pool reviewed by experts
Step 5: Consider inclusion of validation items
Step 6: Administer items to a development sample
Step 7: Evaluate the items
Step 8: Optimise scale length

The first decision making step (De Vellis, 2003) in the development of the MDRS involved clearly determining the construct that was to be measured. Initially the MDRS was designed to assess both prototypic and atypical depression symptoms. However this decision was later revised as it was concluded that the inclusion of prototypic items would lack a pragmatic basis. Clinicians working within the mental health field are typically adept at the assessment and diagnosis of DSM-IV disorders (particularly high-prevalence disorders such as depression). Such clinicians are unlikely to need a rating scale to assist their decision making. Furthermore, there are ample measures of prototypic depression symptoms currently available to researchers and clinicians. Many of these scales enable efficient administration and yield excellent reliability and diagnostic validity in reference

to a diagnosis of DSM-IV Major Depressive Disorder¹. Hence, it was concluded unfruitful to ‘reinvent the wheel’ by the inclusion of prototypic depression items. Furthermore, the MDRS was developed to assess for depression risk, not necessarily depression per se. In doing so, the MDRS would augment established depression scales, and thus provide clinicians and researchers with an adjunct tool for assessing atypical depression symptoms. A further aim of the MDRS was to produce a psychometric scale that differentiated subtypes of atypical symptoms into relevant factors. For instance, it was considered important to determine different types of anger and aggression that may be sex specific. As such, the MDRS sought to delineate physical aggression from verbal aggression (both of which may be more likely to occur in males) from aggressive cognitions (which may be more likely to occur in females) (Möller-Leimkühler, personal communication, October 28, 2009).

Review of the research literature (as presented in Chapters 1 – 4) and the findings of Studies 1, 2, and 3 (reported earlier) led to the identification of a range of 11 broad sub-domains relevant to men’s experience of depression (see Table 24). These symptom sub-domains were generated consistent with the theoretical premise of gender role strain (Pleck, 1981, 1995) and men’s avoidance of vulnerability (Courtenay, 2003). The 11 sub-domains were also conceptually related to each of the theoretical frameworks for understanding men’s experiences of depression (e.g., the sex differences, masked depression, masculine depression and gendered responding frameworks).

Item development sought to demonstrate homogeneity within each sub-domain category and heterogeneity between the sub-domain categories. Scale items were based on the assumption that men who experience pervasive psychological distress associated with low mood (but fail to meet DSM-IV diagnostic criteria for depression) are either incapable of asking for help or unable to demonstrate weakness or vulnerability (e.g., Rutz, von Knorring, Pihlgren, Rihmer, & Walinder, 1995). Accordingly, such men may demonstrate psychological distress through irritability, anger, aggression, suppression and avoidance of emotional pain, substance abuse and risk-taking.

¹ Perhaps the most diagnostically accurate prototypic measures of depression is the Patient Health Questionnaire – Depression Module (PHQ-9; Kroenke, Spitzer, & Williams, 2001) where items are designed to directly map on to DSM-IV criteria.

Table 24

Theorised Symptom Sub-domains and Defining Characteristics Used for MDRS Item Development

Theorised sub-domain	Defining characteristics
Anger	Cognitive awareness of anger, thoughts associated with anger or the expression of anger, intense escalation of anger.
Aggression – Physical	Behaviours displaying the physical expression of aggression, physical contact that demonstrates intent to express aggression, intimidating behaviour that is out of proportion.
Aggression – Verbal	Behaviours displaying the verbal expression of aggression, vocal communication of anger (e.g., shouting, swearing, verbal abuse directed toward others).
Distraction & Avoidance	Behaviours that may be used to distract from, or avoid dealing with personal problems.
Emotional suppression	Active suppression and avoidance of emotion, inability to express and identify emotions, minimisation of the impact of emotions.
Hostility, Isolation & Relational Discord	Coldness and animosity towards others, withdrawal from relationships, experiencing difficulty in social situations, increase in solitary activities.
Irritability and Stress	Feelings of irritation, frustration, annoyance, inability to relax, build up of tension, inability to tolerate waiting, (e.g., impatience).
Numbing - Alcohol	Problematic use of alcohol as a coping strategy, pervasive need to have alcohol available and accessible, recognition that others perceive alcohol intake as problematic.
Numbing – Other drug	Problematic use of other drugs as a coping strategy, achieving short term relief through drug use.
Risk-Taking	Behaviours involving danger or the threat of danger, behaviours that are reckless or impulsive and demonstrate little regard for self-wellbeing and personal safety.
Somatic Symptoms	Physical complaints with possible psychological origin, decline in physical health status.

A total of 82 items were developed for the initial item pool (see Appendix E for full list of items). Lengthy items, complex items, and multiple negatives were avoided when constructing the item pool. In following De Vellis's (2003) guidelines, items were chosen to reflect the purpose of the scale, and were designed to cater for a relatively low level of reading ability. To personalise the MDRS, all items were written in the first person, but structured within the past tense. The majority of items were framed within the behavioural context (e.g., Kline, 1986) to minimise ambiguity that may be experienced by alexithymic males (e.g., statements referring to 'feelings' were minimised given that many men at risk of experiencing atypical depression symptoms may be relatively unaware of their present emotional state).

The scale format of the MDRS was chosen to enable a continuous measurement of each construct. In order to sufficiently differentiate levels of symptom severity, an eight-point Likert scale was adopted. Responses on the MDRS were made in reference to the past month. The scale used the following introductory statement: *'Please think back over the last month and respond to each item considering how often it applied to you. Please respond where 0 = not at all; 7 = almost always'*.

Prior to trialling the MDRS on a development sample, the item pool was distributed for expert review. The item pool was sent to five clinical psychologists (four practicing in Australia and one practicing in the United States). Each of these psychologists specialised in working with men in clinical settings (e.g., Veterans services, male specific clinical practices). In addition, the item pool was also reviewed by a German researcher who has published widely in the area of men's depression. Expert reviewers were provided with working definitions of each broad construct and asked to a) confirm the provided definition of each phenomenon (e.g., the sub-domains), b) provide feedback related to item relevance, c) provide feedback related to item clarity, and d) suggest any additional or alternative scale items.

Two of the reviewers suggested that the item pool could be improved by including items related to sadness, crying, and loss of self-esteem. While this may have improved the face validity of the MDRS as a measure of depression these items were not subsequently included. This decision was made as symptoms of sadness, crying, and loss of self-esteem are consistent with prototypic symptoms of depression and are already assessed by most

gender neutral depression scales. Other reviewers provided suggestions for the precise language of items, including minor changes to grammar and expression. Following the reviewers' recommendations several items were added that assessed somatic symptoms and health complaints. One reviewer offered a conceptual view on the MDRS items, suggesting that the overall construct being measured may be best conceptualised as a state of 'psychological numbing' or 'defensive posturing' rather than depression per se (this notion is discussed further in the discussion section). The initial item pool was subsequently piloted on several non-experts to ensure overall readability and clarity.

Step 5 of the scale development process (De Vellis, 2003) requires researchers to consider the inclusion of validation items (e.g., either social desirability items or other scales that will provide construct validity data). Due to the large number of items in the initial item pool it was decided that additional social desirability items may make completion of the scale overly onerous. However, to provide data on construct validity a measure of prototypic depression symptoms was included. All MDRS items were presented to participants in alphabetical order.

Additional Measures

Patient Health Questionnaire – Depression Module. Prototypic depression was assessed by the Patient Health Questionnaire – Depression Module (PHQ-9; Kroenke, Spitzer, & Williams, 2001). The PHQ-9 is a well validated and commonly used depression screening tool within both research and clinical practice. The PHQ-9 corresponds to the DSM-IV diagnostic criteria for Major Depressive Disorder and assesses symptoms present over the previous 2 weeks (e.g., *'Feeling down, depressed, or hopeless'*). Participants endorse their responses on a four-point scale; 0 (*not at all*), 3 (*almost every day*). Interpretation of the PHQ-9 is based on the total scores where 1–4 reflects minimal depression, 5–9 reflects mild depression, 10–14 reflects moderate depression, 15–19 reflects moderately severe depression, and 20–27 reflects severe depression. The PHQ-9 was considered superior to the measures of prototypic symptoms of depression used in Study 1 (e.g., the DASS-21 D) and Study 2 (e.g., the MDI) as the language used in the PHQ-9 enables clear comparison with DSM-IV diagnostic criteria (unlike the Major Depression Inventory where descriptive language is used).

Conformity to Masculine Norms Inventory. Masculinity was assessed by the Conformity to Masculine Norms Inventory (CMNI; Mahalik et al., 2003). The CMNI

assesses the extent to which individuals conform to masculinity norms dominant in Western culture (e.g., winning, emotional control, risk-taking, violence, dominance). Higher CMNI scale scores indicate higher conformity to masculine norms. Participants endorse their responses on a four-point scale where; 0 (*Strongly Disagree*), 3 (*Strongly Agree*). The current study utilised the 22-item abbreviated version of the CMNI (Hamilton & Mahalik, 2009). The CMNI-22 consists of the two highest loading items for each of the original 11 factors to yield a total masculinity score.

Demographic data. Participants provided demographic data to enable sample characteristics to be identified. Demographic data was collected on participant sex, age, ethnicity, current relationship status, place of residence, income, and education level. In addition participants indicated whether they had received a previous diagnosis of depression or substance use disorder. All materials used in the study, including relevant ethics information, are presented in the Appendix E.

Procedure

Ethical approval was received from the Human Research Ethics Committee of Australian Catholic University. It is recommended that development samples of at least 300 cases are required for exploratory factor analysis (Field, 2009). To facilitate this, data collection occurred in conjunction with another research project being undertaken by an Honours student at Australian Catholic University.

Participants were initially recruited via email invitations, distributed amongst the personal networks of both individuals undertaking data collection. As in Study 1, the email invitation contained a brief summary of the aims of the project and included a hyperlink to the online questionnaire hosted by *psychdata.com*. The invitation email contained a statement encouraging participants to forward the email on to known others who may have had an interest in participating (e.g., the snowball technique). To boost the sample size, paid advertisements were displayed to Australian members of the *Facebook* social networking site. The same wording used in Study 1, was also used for the *Facebook* advertisements for the present study. By clicking on the hyperlink embedded within the brief statement advertised on *Facebook*, participants were directed to the online questionnaire. The welcome screen provided the opportunity for participants to read the full information letter for the project, including ethics information. Participants were

advised that their consent to be involved in the project would be inferred from submission of their data. Participants were also advised that their participation was voluntary, and they were free to withdraw from the study at any time prior to the submission of data.

Data Screening

Prior to statistical analyses and hypothesis testing, data was thoroughly screened to identify complete cases, plausibility of values, outliers, homogeneity of variance and normality. Data screening procedures followed the same sequence as those present in Study 1. Patterns of missing data were initially explored using the SPSS NMISS function. A total of 970 cases (including 388 males) provided complete data, leaving 526 incomplete cases. Given the large data set of complete cases, only those providing complete data were retained for statistical analysis. Five individuals indicated they were below the age of 18 and were deleted from subsequent analyses. All other values for individual items, subscales, and demographic variables were within the expected range, and item means and standard deviations were plausible.

Univariate outliers were identified using z score transformations for the PHQ-9 and the CMNI-22. Inspection of z scores for the PHQ-9 failed to yield any values in excess of $Z = \pm 2.29$. Two cases were identified as outliers on the CMNI-22 and were re-coded to the relevant uppermost (44) or lowermost (8) surrounding value that was not an outlier. Scale scores were also explored for multivariate outliers through the Mahalanobis distance procedure. No values exceeded $p < .001$ indicting absence of multivariate outliers. Levene's test was undertaken to determine equality of variance according to participant sex. While PHQ-9 scores reported homogenous variances, Levene's test was significant ($p = .001$) for CMNI-22 scores. This is to be expected given that the CMNI-22 was developed specifically for males and was not considered problematic as the CMNI-22 scores were only to be used to determine categorical groups for masculinity (see Data Analytic Strategy below).

Normality of the dependent variables used in the study was assessed through skewness and kurtosis values, histograms, normal Q-Q plots, and detrended normal Q-Q plots. CMNI-22 scores were normally distributed, however the PHQ-9 scores demonstrated a positive skew. Inspection of the histograms, normal Q-Q plots, and detrended normal Q-Q plots all verified the departures of normality indicated above. As

the PHQ-9 data was collected from a community sample, positively skewed scores are to be expected. Given that the statistical techniques used in the present study (e.g., univariate and multivariate analysis of variance) are known to be robust to violations of normality (e.g., Erceg-Hurn & Mirosevich, 2008; Sawilowsky, 1990), the decision was made not to transform PHQ-9 values.

Data Analytic Strategy

Exploratory factor analysis was undertaken on the MDRS items to evaluate latent factors within the data. A between groups data analytic approach (testing for sex and gender differences) was adopted. Masculinity raw scores were converted to Transformed scores (T-scores) separately for males and females and interpreted according to normative data provided by Mahalik, Talmadge, Locke, and Scott (2005) (see below for details). The resultant four masculinity categories (extreme conformity, moderate conformity, moderate nonconformity, and extreme nonconformity) were used as a between groups factor in analyses.

Results

Sample Characteristics

Demographic information for the sample is presented in Table 25. Chi square analyses were undertaken to evaluate sex equivalence on each of the demographic variables. There were no significant sex differences for participant numbers for each category of ethnicity, relationship status, place of residence, previous diagnosis of depression or substance use disorder (all p 's > .05). However, female participants tended to be in the lower income brackets compared to males $\chi^2(4, N = 961) = 64.09, p < .001$, and were less likely than males to have a postgraduate degree $\chi^2(5, N = 963) = 32.96, p < .001$.

Scale Reliability

Internal consistency of the PHQ-9 and CMNI-22 were evaluated using Cronbach alpha coefficients. The PHQ-9 reported satisfactory reliability for males and females, however the CMNI-22 reported marginal reliability for females (PHQ-9 male $\alpha = .89$, female $\alpha = .90$; CMNI-22 male $\alpha = .69$, female $\alpha = .62$). Given the CMNI-22 was designed

specifically for use with males the low reliability coefficient for females is unsurprising. Alpha coefficients for the MDRS subscales are presented in Table 27.

Table 25

Sample Demographic Characteristics by Sex and Total (Study 4)

	Males		Females		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Ethnicity						
Aboriginal	1	0.3	2	0.3	3	0.3
African	2	0.5	3	0.5	5	0.5
Anglo/Caucasian	309	80.1	464	80.3	773	80.2
Asian	3	0.8	18	3.1	21	2.2
Hispanic	1	0.3	6	1.0	7	0.7
Middle Eastern	-	-	3	0.5	3	0.3
Pacific Islander	2	0.5	1	0.2	3	0.3
Relationship Status						
In a Current romantic relationship	241	62.4	324	56.1	565	58.6
Place of residence						
Metropolitan	247	64.9	382	66.1	629	65.2
Rural/Regional	137	35.5	196	33.9	333	34.6
Income						
Up to \$50,000	242	62.7	473	81.8	715	74.1
\$51,000 - \$100,000	111	28.7	95	16.4	206	22.4
\$101,000+	33	8.5	7	1.2	40	4.1
Highest Education						
Primary	1	0.3	1	0.2	2	0.2
Pre Year 12	36	9.3	33	5.7	69	7.2
Year 12	105	27.2	105	33.4	298	30.9
Trade Qualification	56	14.5	56	7.1	97	10.1
Undergraduate Degree	120	31.1	120	41.9	362	37.6
Postgraduate Degree	68	17.6	68	11.6	135	14.0
Previous diagnosis						
Depression	126	32.6	217	37.5	343	35.6
Substance use disorder	13	3.4	9	1.6	22	2.3

Initial Factor Analysis of the MDRS

An iterative process of factor analysis following Step 7 (item evaluation) and Step 8 (optimising scale length) of scale development (De Vellis, 2003) was undertaken. This process aimed to maximise both interpretability and statistical reliability of the final scale factors and corresponding items. Exploratory factor analysis was undertaken on the data provided by male participants. Prior to beginning the factor analysis, for the male data item intercorrelations were calculated, Bartlett's test of sphericity was conducted and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was evaluated. The correlation matrix indicated that many of the observed item intercorrelations were $> .30$, Bartlett's test of sphericity was significant, and the KMO value was > 0.6 (KMO = .928). This indicated that factor analysis was appropriate for the present dataset (Tabachnick & Fidell, 2007). In fact, Field (2009) suggests that KMO values > 0.9 are superb. Hence the present data represented excellent potential for factorability. Analyses were progressively re-run after item deletion to ensure the factor structure did not change with the deletion of items (Worthington & Whitaker, 2006).

Factor analysis was undertaken on data provided by males using principal components analysis with oblimin rotation. Oblimin rotation involves an oblique factor rotation where factors are permitted to correlate. This method of rotation was chosen based on the expected association between MDRS subscales (Field, 2009). The initial analysis (using all 82 items) yielded a 15 factor solution (based on eigenvalues greater than 1), accounting for 72.14% of the total variance. This solution failed to converge in 25 iterations indicating that it was relatively unstable. As extracting factors purely based on eigenvalues leads to more factors than can be theoretically interpreted (De Vellis, 2003; Magovcevic & Addis, 2008) the scree plot was examined. The elbow of the scree plot indicated that six factors could be identified within the dataset. Accordingly, a second factor analysis was performed specifying a six factor solution. This six factor solution accounted for 57.99% of the total variance. Consistent with recommendations from Worthington and Whitaker (2006), factor loadings less than .32 were suppressed and any subsequent cross loading items (e.g., with factor loading values greater than .32) were deleted (discussed further below). This strategy sought to maximise the factor loading values for each subscale and provide a better approximation of a stable final factor structure.

Inspection of the rotated matrix for the initial six factor solution indicated a spread of relatively high factor loadings across each of the factors. However 42 items loaded on the first factor. In addition, 18 items loaded on the second factor, eight items loaded on the third factor, nine items loaded on the fourth factor, eight items loaded on the fifth factor, and seven items loaded on the sixth factor. There were 12 items that cross loaded on two or more of the factors. It is common practice to generate considerably more items for the initial item pool than end up in the final scale so as to enable poorly performing items, or redundant items, to be deleted (De Vellis, 2003). Given the initial item pool comprised 82 items, it was possible that a large number of items could be deleted through subsequent iterations of the factor analysis, in the end yielding relatively high loading, 'pure' items within each factor.

To aid with decision making regarding criteria for item deletion, item communalities for the 42 items on factor 1 were inspected. Item communalities are the squared multiple correlations of the items as predicted from the set of factors in the solution, and items with communalities less than .40 are considered to be weakly correlated with one or more factors in the solution (Tabachnick & Fidell, 2007; Worthington & Whitaker, 2006). Accordingly, items with communalities $<.40$ were deleted. In addition, given that 19 items that loaded on factor 1 demonstrated factor loadings $<.7$, any item with a factor loading on factor 1 below .7 was also deleted. In total, 25 items were deleted and the analysis was re-run (the list of deleted items appears in the Appendix G).

Inspection of the scree plot of the third factor analysis indicated a seven factor solution was most appropriate for the remaining 57 items (all seven factors reported eigenvalues > 1). As such, the analysis was re-run using a specified seven factor solution. The analysis yielded a total of 19 items that loaded on factor 1. To reduce the number of items on this factor, any further items with factor loadings below .7 were deleted. This resulted in a further 13 items being removed. The seven factor solution accounted for 67.33% of the total variance, however three items (*I drove whilst under the influence of an illegal substance*, *People call me a workaholic*, *I am more interested in thinking about sex than most other people*) cross loaded on two or more factors. These three items were deleted and the analysis re-run. The scree plot indicated a seven factor solution was still appropriate, however this iteration indicated that one further item (*I injured myself deliberately*) cross loaded. This item was deleted and the analysis was re-run one final

time. The final seven factor solution converged in 14 iterations and comprised a total of 40 items, accounting for 70.41% of the total variance (the final items, item means and standard deviations, and their corresponding loadings are displayed in Table 26). As can be seen from Table 26, all items in the final solution reported robust factor loadings (all loadings were above .56) and no cross loading items above .32 (the criteria recommended by Worthington and Whitaker, 2006).

The final seven factors corresponded to a distress subscale (12 items, 36.72% of scale variance, eigenvalue = 14.69), a drug use subscale (6 items, 10.23% of scale variance, eigenvalue = 4.04), an alcohol use subscale (6 items, 7.32% of scale variance, eigenvalue = 2.93), and anger and aggression subscale (6 items, 5.90% of scale variance, eigenvalue = 2.36), a somatic symptoms subscale (4 items, 4.10% of scale variance, eigenvalue = 1.64), a risk-taking subscale (4 items, 3.30% of scale variance, eigenvalue = 1.32), and an interest in sex subscale (2 items, 2.84% of scale variance, eigenvalue = 1.14). Though it is relatively unusual to have a two item subscale (as is the case for the interest in sex subscale), there is precedent for this within the depression psychometric research literature (e.g., the widely used Center for Epidemiologic Studies Depression Scale (CES-D) has a two item subscale for assessing interpersonal isolation; Radloff, 1977). However as the number of items in a scale influence the alpha coefficient (inflated alpha values are observed in longer subscales) the interest in sex subscale is prone to low reliability values. That said, all seven subscales demonstrated satisfactory internal consistency for males (see Table 27). For females the interest in sex subscale demonstrated marginal reliability while the risk-taking subscale demonstrated poor reliability. Given the present factor analysis was completed using data from males it is unsurprising that two of the subscales report relatively low Cronbach alpha values for females.

Table 26

List of MDRS Items, Means, SDs, and Item-Factor Loadings for Males

Item	<i>M</i> (males)	<i>SD</i> (males)	Factor 1 Distress	Factor 2 Drug use	Factor 3 Alcohol use	Factor 4 Anger & agg	Factor 5 Somatic	Factor 6 Sex	Factor 7 Risk-taking
I bottled up my negative feelings	2.61	2.33	.895						
I preferred to keep quiet about feeling bad	2.82	2.49	.822						
I tried to ignore feeling down	2.64	2.29	.783						
I tried my hardest to ignore my feelings	1.94	2.32	.777						
I covered up my difficulties	2.44	2.39	.744						
I had to work things out by myself	3.12	2.43	.730						
I was worried	2.60	2.40	.721						
I tried my hardest to stay in control of my emotions	2.62	2.56	.704						
I felt under more pressure than usual	2.46	2.30	.689						
I felt more tense than usual	2.06	2.20	.664						
I found it difficult to mix with others	1.98	2.18	.642						
I was moody and irritable	2.10	2.20	.612						
I used drugs to cope	0.42	1.32		.938					
Using drugs provided temporary relief	0.51	1.49		.906					
I sought out drugs	0.60	1.56		.863					
I thought about using drugs frequently	0.69	1.71		.860					
I craved drugs	0.96	1.85		.827					
Others expressed concern about my drug use	0.26	1.07		.753					
I needed alcohol to help me unwind	1.34	2.05			.941				

Item	<i>M</i> (males)	<i>SD</i> (males)	(Continued)						
			Factor 1 Distress	Factor 2 Drug use	Factor 3 Alcohol use	Factor 4 Anger & agg	Factor 5 Somatic	Factor 6 Sex	Factor 7 Risk-taking
I needed to have easy access to alcohol	0.75	1.55			.821				
I drank more alcohol than usual	1.20	1.90			.819				
I stopped feeling so bad while drinking	1.10	1.94			.810				
I thought about drinking alcohol frequently	1.08	1.87			.758				
Others expressed concern about my drinking	0.37	1.15			.510				
I was verbally aggressive to others	0.79	1.54					-.885		
I yelled at others	0.95	1.68					-.793		
I verbally threatened someone	0.40	1.20					-.792		
I verbally lashed out at others without being provoked	0.56	1.35					-.761		
It was difficult to manage my anger	0.84	1.59					-.680		
I overreacted to situations with aggressive behaviour	0.85	1.52					-.655		
I had unexplained aches and pains	1.18	2.01						.818	
I had stomach pains	0.93	1.68						.809	
I had regular headaches	1.23	2.07						.715	
I had more heartburn than usual	0.89	1.81						.673	
I engaged in sex to distract me from negative thoughts...	0.79	1.65							-.789
I had riskier sexual contacts	0.50	1.41							-.720
I drove whilst over the legal blood alcohol limit	0.29	0.99							
I exercised more than is good for my body	0.43	1.17							
I drove dangerously or aggressively	0.86	1.63							
I needed to gamble more than normal	0.33	1.11							

Table 27
Reliability Coefficients for the MDRS Subscales by Sex

Subscale	Males α	Females α
Distress	.95	.94
Drug use	.93	.90
Alcohol use	.91	.89
Anger & aggression	.92	.89
Somatic symptoms	.86	.77
Risk-taking	.68	.42
Interest in sex	.70	.63

Correlation coefficients were calculated between the seven MDRS subscales and the PHQ-9 and CMNI-22 separately for males and females (see Table 28). All correlations were positive, and within the weak to moderate range. Correlations between the MDRS distress subscale and the PHQ-9 approached .8 (which is the accepted range for a strong correlation). For males all r -values were statistically significant apart from the correlation between the interest in sex subscale and the CMNI-22 total score. For females all correlations were significant apart from the drug use scale, and the CMNI-22 total score. In comparison to females, males tended to report higher intercorrelations between subscales. For example, the alcohol use subscale correlated with the anger and aggression subscale, and risk-taking subscale at .49 and .55 respectively for males, and at .29 and .42 respectively for females. In contrast, females ($r = .48$) reported a higher correlation between the alcohol use subscale and the interest in sex subscale compared to males ($r = .31$). Fisher's r to z transformations indicated that sex comparisons of these three correlation coefficients were significant (p 's < .01).

In contrast to prediction, all MDRS subscales reported stronger correlations with prototypic symptoms (e.g., PHQ-9 scores) than with masculinity scores (e.g., CMNI-22 scores). Of the seven MDRS subscales, the anger and aggression subscale and the somatic symptoms subscale demonstrated the strongest correlations with the PHQ-9. For males, the risk-taking subscale demonstrated the strongest correlation with the CMNI-22 ($r = .32$). For females all correlations between the CMNI-22 and the seven subscales were particularly weak (< .18). Taken together (and contrary to prediction), these findings indicate that the seven subscales share greater conceptual similarity with the PHQ-9 than the CMNI-22.

Table 28

Correlations between MDRS Subscales, PHQ-9, and CMNI-22 by Sex (Study 4)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Distress	-	.26**	.37**	.51**	.63**	.31**	.26**	.74**	.14**
2. Drug Use	.34**	-	.43**	.31**	.28**	.39**	.37**	.25**	.08
3. Alcohol Use	.46**	.38**	-	.29**	.30**	.42**	.48**	.30**	.12**
4. Anger & Aggr	.57**	.37**	.49**	-	.45**	.31**	.24**	.47**	.16**
5. Somatic	.62**	.34**	.39**	.51**	-	.36**	.30**	.59**	.16**
6. Risk-Taking	.36**	.28**	.55**	.43**	.37**	-	.39**	.32**	.17**
7. Interest in Sex	.30**	.32**	.31**	.35**	.39**	.29**	-	.18**	.17**
8. PHQ-9	.75**	.37**	.39**	.50**	.62**	.37**	.29**	-	.08*
9. CMNI-22	.22**	.17**	.18**	.25**	.17**	.32**	.09	.18**	-

Note. Correlations above diagonal are for females, correlations below diagonal are for males. * = $p < .05$; ** = $p < .01$.

Differences According to Sex & Conformity to Masculine Norms

As expected, males ($M = 27.13$, $SD = 6.12$) reported higher CMNI-22 total scores in comparison to females ($M = 23.32$, $SD = 5.17$), $F(1, 962) = 108.18$, $p < .001$, $\eta^2 = .101$. Given this, conformity to masculine norm categories were determined by converting CMNI-22 raw scores to Transformed scores (T-scores) separately for males and females. This was done to ensure distribution to CMNI-22 categories was based on scores relevant to each sex (e.g., unbiased by members of the opposite sex). Transformation of scores was undertaken by computing Z scores for CMNI-22 values and subsequently calculating T-scores using the formula ($T = 10Z + 50$) (Downing, 2009). The resultant four categories reflected extreme nonconformity to masculine norms ($T = 0.00 - 39.99$), moderate nonconformity ($T = 40.00 - 49.99$), moderate conformity ($T = 50.01 - 60.00$), and extreme conformity ($T \geq 60.01$) (Mahalik, Talmadge, Locke, & Scott, 2005). The distribution of conformity to masculine norms categories and respective means and standard deviations are shown in Table 29. As expected, most individuals were categorised within the range of moderate nonconformity – moderate conformity.

Table 29
Means and SD's for CMNI-22 Categories by Sex (Study 4)

CMNI-22 category	Males			Females		
	<i>M (SD)</i>	<i>n</i>	%	<i>M (SD)</i>	<i>n</i>	%
Extreme nonconformity	17.86 (3.00)	63	16.3	15.91 (2.39)	97	16.8
Moderate nonconformity	24.85 (1.63)	152	39.4	21.24 (1.39)	217	37.5
Moderate conformity	30.28 (1.67)	108	28.0	25.75 (1.37)	173	29.9
Extreme conformity	36.53 (2.28)	63	16.3	31.60 (2.67)	91	15.7

Total scores were calculated for the seven MDRS subscales (see Table 30 for the theoretical range of MDRS subscale scores). To evaluate the hypothesis that individuals reporting extreme conformity to masculine norms would report higher scores for the MDRS subscales compared to those who did reporting less extreme conformity to masculine norms, MANOVA was undertaken using the seven MDRS subscales as dependant variables. Sex and CMNI-22 categories were entered as between subjects factors. Consistent with prediction a significant multivariate effect was observed for CMNI-22 category $\Lambda = .915$, $F(21, 2728) = 4.07$, $p < .001$, $\eta^2 = .029$ (e.g., a positive linear association occurred between CMNI-22 category and MDRS subscales scores). In addition a significant multivariate effect was observed for participant sex $\Lambda = .928$, $F(7, 950) = 10.45$, $p < .001$, $\eta^2 = .072$ (e.g., with the exception of distress and somatic symptoms, there was a trend for males to report higher MDRS subscale scores than females). More notably, however, a significant multivariate interaction was found $\Lambda = .961$, $F(21, 2728) = 1.72$, $p = .022$, $\eta^2 = .012$ (see Tables 31, 32, and 33 for means, *SDs* and 95% confidence intervals). Interaction plots were inspected to assist with interpretation of this interaction (see Figure 5). There was a tendency for male scores for the drug use, risk-taking, and interest in sex subscales to become increasingly differentiated from female scores as conformity to masculine norms increased. This pattern was reversed for somatic symptoms where females reported higher subscale scores than did males, especially in the extreme conformity group. Scores were less sex-differentiated for the alcohol use subscale, anger and aggression subscale, and to some extent, the distress subscale.

Table 30

Range of Values for MDRS Subscales and Total Score by Sex

MDRS Subscale	Number of items	Range of Values		
		Plausible Range	Actual Range – Male <i>n</i> = 386	Actual Range – Female <i>n</i> = 578
Distress	12	0 – 84	0 – 83	0 – 84
Drug Use	6	0 – 42	0 – 42	0 – 42
Alcohol Use	6	0 – 42	0 – 42	0 – 42
Anger & Agg	6	0 – 42	0 – 42	0 – 40
Somatic	4	0 – 28	0 – 28	0 – 28
Risk-Taking	4	0 – 28	0 – 23	0 – 18
Interest in Sex	2	0 – 14	0 – 14	0 – 13
MDRS Total Score	40	0 – 280	0 – 219	0 – 208

Follow-up univariate tests were undertaken to explore main effects and interactions for each of the subscales. Also consistent with prediction, univariate analyses indicated weak significant main effects on all seven MDRS subscales for CMNI-22 category (distress symptoms $F(3, 956) = 9.95, p < .001, \eta^2 = .030$; drug use $F(3, 956) = 6.58, p < .001, \eta^2 = .020$; alcohol use $F(3, 956) = 8.24, p < .001, \eta^2 = .025$; anger and aggression $F(3, 956) = 11.59, p < .001, \eta^2 = .035$; somatic symptoms $F(3, 956) = 8.05, p < .001, \eta^2 = .025$; risk-taking $F(3, 956) = 22.48, p < .001, \eta^2 = .066$; and interest in sex $F(3, 956) = 4.12, p < .001, \eta^2 = .013$. Probability values for Bonferonni adjusted post hoc tests for the seven MDRS subscales are summarised in Table 35. Post hoc tests indicated that there were no significant differences between CMNI-22 extreme nonconformity and CMNI-22 moderate nonconformity for any of the seven MDRS subscales. However as predicted, significant differences were observed between CMNI-22 extreme nonconformity and CMNI-22 extreme conformity for all seven MDRS subscales. Similarly, significant differences were also observed between CMNI-22 moderate conformity and CMNI-22 extreme conformity for the seven MDRS subscales. In each instance CMNI-22 extreme conformity was associated with higher subscales scores than lower degrees of CMNI-22 conformity.

In contrast to prediction, univariate main effects for participant sex indicated that females reported significantly higher scores for the somatic symptoms subscale $F(1, 956)$

= 17.46, $p < .001$, $\eta^2 = .018$, while the difference between males and female approached significance for the distress symptoms subscale $F(1, 956) = 3.86$, $p = .050$, $\eta^2 = .004$ (see Tables 31 and 32 for respective means and *SDs*). Consistent with prediction males reported higher means on the drug use $F(1, 956) = 10.28$, $p < .001$, $\eta^2 = .011$; risk-taking $F(1, 956) = 20.60$, $p < .001$, $\eta^2 = .021$; and interest in sex subscales $F(1, 956) = 5.32$, $p = .021$, $\eta^2 = .006$ (see Tables 31, 32, and 33 for respective means and *SDs*). Furthermore, univariate interactions were observed for the distress subscale $F(3, 956) = 3.29$, $p = .020$, $\eta^2 = .010$, and the risk-taking subscale $F(3, 956) = 4.80$, $p = .002$, $\eta^2 = .015$. For the distress subscale, analysis of simple effects indicated a non-significant trend for females to report higher distress symptoms than males for the extreme nonconformity category ($p = .063$). This sex difference was significant for the moderate nonconformity category ($p = .038$), but non-significant for the moderate and extreme conformity categories (see distress plot in Figure 5). For the risk-taking subscale, analysis of simple effects indicated that males reported significantly higher risk-taking than females for the moderate conformity ($p < .001$) and extreme conformity ($p < .001$) categories, but not the extreme nonconformity or moderate nonconformity categories (p 's $> .05$) (see risk-taking plot in Figure 5).

A further analysis was undertaken on the MDRS total score (e.g., the sum of all 40 MRDS items) using participant sex and masculinity category as between subjects factors. Consistent with the multivariate analysis of the MDRS subscales, a near significant interaction was reported for MDRS total scores by sex and masculinity category $F(3, 956) = 2.56$, $p = .054$, $\eta^2 = .008$ (see plot for MDRS total score in Figure 5). Main effects indicated that MDRS total scores were equivalent for males and females ($p = .807$) while respondents differed in MDRS total scores according to masculinity category $F(3, 956) = 17.46$, $p < .001$, $\eta^2 = .050$ (see Table 33 for means and *SDs*). Bonferonni adjusted post hoc analysis indicated that significant differences existed between those reporting extreme conformity and those in each of the other masculinity categories; moderate conformity ($p < .001$), moderate nonconformity ($p < .001$) and extreme nonconformity ($p < .001$). Those reporting moderate conformity also differed from those reporting moderate nonconformity ($p = .030$), and those reporting extreme nonconformity ($p = .002$).

To evaluate the effects of participant sex and masculinity categories on prototypic depression symptoms a two-way ANOVA was undertaken. PHQ-9 total scores were entered as the dependent variable and sex and CMNI-22 categories were used as between subjects factors (see Table 34 for means, standard deviations and 95% confidence

intervals). No sex differences in PHQ-9 total scores were observed ($p = .167$). A main effect was reported for CMNI-22 category $F(3, 952) = 5.67, p = .001, \eta^2 = .018$. In contrast to prediction, higher conformity to masculine norms was associated with higher prototypic symptom ratings. Bonferonni adjusted post hoc analysis indicated that significant differences occurred for CMNI-22 extreme conformity with both CMNI extreme nonconformity ($p = .003$) and CMNI-22 moderate nonconformity ($p = .009$). In addition, a significant interaction was observed between participant sex and CMNI category $F(3, 952) = 3.11, p = .026, \eta^2 = .010$. The interaction pattern was remarkably similar in profile to that observed for the distress subscale (c.f. Figures 5 and 6). Analysis of simple effects failed to indicate any significant sex differences by CMNI-22 category for PHQ-9 scores, though non-significant trends were reported whereby females tended to score higher than males in the moderate nonconformity category ($p = .057$), while males tended to score higher than females in the moderate conformity category ($p = .058$).

Table 31

Descriptive Statistics for the MDRS Distress, Drug Use and Alcohol Use Subscales by CMNI-22 Category and Sex

Subscale	CMNI-22 Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
Distress	Extreme nonconformity	22.95	20.24	[18.85 – 28.04]	29.40	20.21	[25.33 – 33.48]	26.85	20.41	[23.67 – 30.06]
	Moderate nonconformity	25.73	21.60	[22.27 – 29.19]	30.44	21.97	[27.51 – 33.39]	28.50	21.91	[26.26 – 30.74]
	Moderate conformity	35.20	21.07	[31.18 – 39.22]	30.71	20.19	[27.68 – 33.74]	32.44	20.61	[30.02 – 34.86]
	Extreme conformity	34.88	24.40	[28.73 – 41.02]	40.07	22.85	[35.31 – 44.83]	37.95	23.56	[34.20 – 41.19]
	Total	29.42	22.24	[27.19 – 31.64]	31.87	21.55	[30.10 – 33.62]	30.88	21.85	[29.50 – 32.26]
Drug Use	Extreme nonconformity	1.79	5.26	[0.47 – 3.12]	1.78	4.86	[0.80 – 2.77]	1.79	5.01	[1.01 – 2.57]
	Moderate nonconformity	2.60	6.87	[1.50 – 3.70]	1.46	4.67	[0.84 – 2.08]	1.93	5.70	[1.35 – 2.51]
	Moderate conformity	4.23	8.07	[2.69 – 5.77]	1.96	4.96	[1.21 – 2.70]	2.83	6.26	[2.08 – 3.59]
	Extreme conformity	5.74	11.23	[2.91 – 8.57]	3.33	7.65	[1.73 – 4.92]	4.31	9.33	[2.82 – 5.80]
	Total	3.44	7.95	[2.64 – 4.24]	1.96	5.38	[1.52 – 2.40]	2.55	6.56	[2.13 – 2.97]
Alcohol Use	Extreme nonconformity	3.90	6.84	[2.17 – 5.62]	3.27	7.04	[1.86 – 4.70]	3.52	6.95	[2.44 – 4.61]
	Moderate nonconformity	5.10	8.46	[3.75 – 6.46]	4.51	7.92	[3.45 – 5.57]	4.76	8.14	[3.92 – 5.59]
	Moderate conformity	6.63	8.30	[5.04 – 8.21]	4.58	7.14	[3.50 – 5.64]	5.36	7.66	[4.47 – 6.27]
	Extreme conformity	8.35	11.48	[5.46 – 11.24]	7.74	9.79	[5.71 – 9.79]	7.99	10.48	[6.33 – 9.66]
	Total	5.86	8.83	[4.98 – 6.75]	4.83	9.88	[4.18 – 5.49]	5.24	8.34	[4.72 – 5.77]

Table 32

Descriptive Statistics for the MDRS Anger & Aggression, Somatic Symptoms and Risk-Taking Subscales by CMNI-22 Category and Sex

Subscale	CMNI-22 Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
Anger & Agg	Extreme nonconformity	2.47	5.53	[1.08 – 3.87]	2.54	5.64	[1.41 – 3.68]	2.51	5.58	[1.65 – 3.40]
	Moderate nonconformity	3.21	6.74	[2.13 – 4.29]	3.60	6.07	[2.79 – 4.41]	3.44	6.35	[2.79 – 4.09]
	Moderate conformity	5.47	6.94	[4.15 – 6.80]	4.46	7.17	[3.39 – 5.53]	4.86	7.09	[4.02 – 5.69]
	Extreme conformity	7.40	10.23	[4.82 – 9.98]	5.97	9.20	[4.06 – 7.89]	6.56	9.63	[5.02 – 8.09]
	Total	4.41	7.48	[3.66 – 5.17]	4.05	6.98	[3.48 – 4.62]	4.20	7.18	[3.74 – 4.65]
Somatic	Extreme nonconformity	2.81	5.02	[1.55 – 4.08]	4.64	5.71	[3.49 – 5.79]	3.92	5.50	[3.03 – 4.78]
	Moderate nonconformity	3.55	5.63	[2.65 – 4.45]	5.68	6.35	[4.84 – 6.54]	4.81	6.15	[4.18 – 5.44]
	Moderate conformity	5.24	7.44	[3.82 – 6.66]	6.10	6.20	[5.17 – 7.03]	5.76	6.70	[4.98 – 6.56]
	Extreme conformity	5.64	6.81	[3.93 – 7.36]	8.32	5.58	[6.74 – 9.90]	7.22	7.37	[6.05 – 8.40]
	Total	4.24	6.37	[3.61 – 4.88]	6.04	6.49	[5.51 – 6.58]	5.33	6.50	[4.91 – 5.73]
Risk-Taking	Extreme nonconformity	0.71	1.90	[0.23 – 1.19]	0.62	1.31	[0.36 – 0.89]	0.66	1.31	[0.41 – 0.91]
	Moderate nonconformity	1.13	2.79	[0.68 – 1.57]	0.90	2.15	[0.61 – 1.19]	0.99	2.43	[0.74 – 1.24]
	Moderate conformity	2.60	3.69	[1.90 – 3.31]	1.20	2.27	[0.86 – 1.54]	1.74	2.97	[1.40 – 2.09]
	Extreme conformity	3.78	5.01	[2.53 – 5.05]	1.97	3.10	[1.32 – 2.61]	2.71	4.08	[2.07 – 3.36]
	Total	1.91	3.56	[1.55 – 2.26]	1.11	2.28	[0.93 – 1.30]	1.43	2.89	[1.25 – 1.61]

Table 33

Descriptive Statistics for the MDRS Interest in Sex Subscale and MDRS Total Score by CMNI-22 Category and Sex

Subscale	CMNI-22 Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
Interest in Sex	Extreme nonconformity	0.95	2.47	[0.32 – 1.57]	0.44	1.23	[0.20 – 0.69]	0.64	1.83	[0.36 – 0.93]
	Moderate nonconformity	1.14	2.35	[0.76 – 1.51]	0.71	1.96	[0.45 – 0.98]	0.89	2.14	[0.67 – 1.11]
	Moderate conformity	1.62	3.19	[1.01 – 2.32]	0.95	2.11	[0.63 – 1.27]	1.21	2.60	[0.91 – 1.52]
	Extreme conformity	1.46	2.70	[0.78 – 2.14]	1.53	2.94	[0.92 – 2.15]	1.50	2.84	[1.05 – 1.96]
	Total	1.29	2.69	[1.02 – 1.57]	0.87	2.12	[0.70 – 1.04]	1.04	2.37	[0.89 – 1.19]
MDRS Total Score	Extreme nonconformity	35.60	33.97	[27.04 – 44.15]	42.72	32.88	[36.09 – 49.35]	39.91	33.40	[34.70 – 45.13]
	Moderate nonconformity	42.46	40.38	[35.99 – 48.93]	47.32	37.73	[42.27 – 52.37]	45.31	38.86	[41.34 – 49.30]
	Moderate conformity	61.00	42.02	[52.99 – 69.02]	49.63	36.96	[44.42 – 55.51]	54.21	39.28	[49.59 – 58.82]
	Extreme conformity	67.27	55.21	[53.36 – 81.17]	68.94	45.18	[59.53 – 78.35]	68.26	49.37	[60.40 – 76.11]
	Total	50.57	44.11	[46.16 – 54.99]	50.74	38.81	[47.57 – 53.91]	50.67	40.99	[48.09 – 53.27]

Table 34

Descriptive Statistics for PHQ-9 Scores by CMNI-22 Category and Sex

Scale	CMNI-22 Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
PHQ-9	Extreme nonconformity	5.82	5.33	[4.48 – 7.16]	7.42	6.38	[6.13 – 8.70]	6.79	6.02	[5.85 – 7.73]
	Moderate nonconformity	6.58	5.83	[5.65 – 7.52]	7.81	5.90	[7.01 – 8.60]	7.30	5.90	[6.70 – 7.90]
	Moderate conformity	8.89	5.90	[7.76 – 10.01]	7.49	5.57	[6.56 – 8.32]	8.02	5.73	[7.35 – 8.70]
	Extreme conformity	8.62	7.17	[6.81 – 10.42]	9.55	6.63	[8.16 – 10.93]	9.17	6.85	[8.08 – 10.26]
	Total	7.44	6.11	[6.82 – 8.05]	7.92	6.04	[7.43 – 8.42]	7.72	6.07	[7.34 – 8.11]

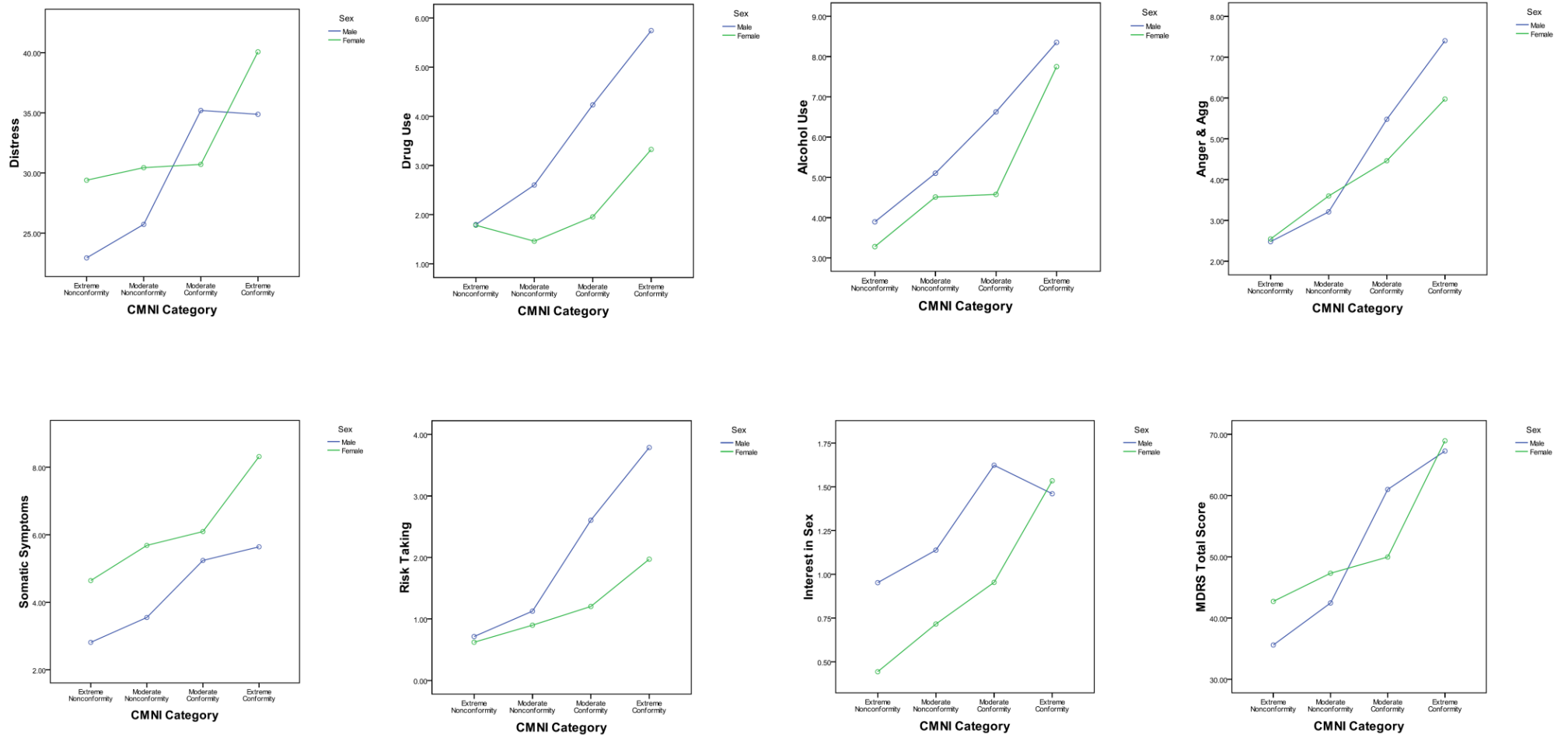


Figure 5. Interaction plots (CMNI-22 category × sex) for the seven MDRS subscales and MDRS total score.

Table 35

Summary of Post Hoc Analysis of MDRS Subscales by CMNI-22 category

Post hoc comparison		Bonferonni adjusted <i>p</i>						
CMNI-22 Cat (I)	CMNI-22 Cat (J)	Distress	Drug use	Alcohol use	Anger & Agg	Somatic	Risk	Sex
Extreme Nonconformity	Moderate Nonconformity	1.000	1.000	.688	1.000	.860	1.000	1.000
	Moderate Conformity	.053	.633	.146	.005	.021	< .001	.090
	Extreme Conformity	< .001	.003	< .001	< .001	< .001	< .001	.007
Moderate Nonconformity	Moderate Conformity	.125	.478	1.000	.071	.342	.004	.505
	Extreme Conformity	< .001	.001	< .001	< .001	< .001	< .001	.039
Moderate Conformity	Extreme Conformity	.064	.135	.009	.098	.137	.007	1.000

Note. Bonferonni adjusted post hoc comparisons calculated for mean difference (I – J).

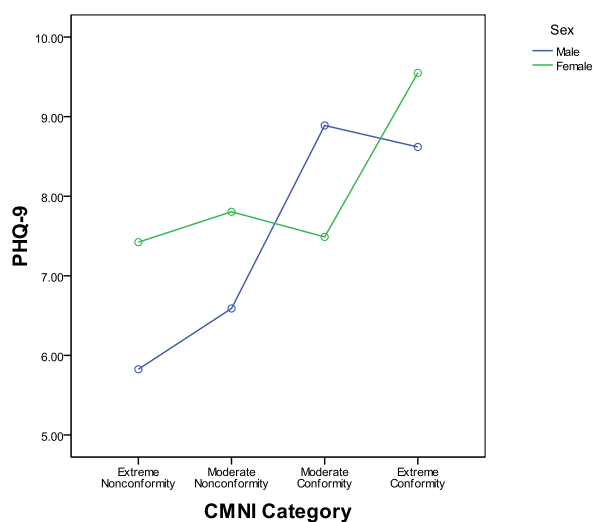


Figure 6. Interaction plot (CMNI-22 category \times sex) for PHQ-9 scores.

Symptom Prevalence

Symptom prevalence ratings for the individual items from the MDRS and the PHQ-9 were examined by computing instances where symptoms were endorsed as being present (e.g., item score ≥ 1). Sex differences and corresponding chi-square and probability values for the MDRS items are shown in Table 36. A total of 25 of the 40 MDRS items reported significant sex differences ($p < .05$). Given the large number of comparisons made, a stringent Bonferonni corrected p value was used to determine statistical significance ($\alpha = .05 / 40$; Bonferonni corrected p value = .001). Only five MDRS sex comparisons met this criteria (e.g., $p < .001$), for which males rated higher on only one (*I needed to gamble more than normal*). That said, there were a range of non-significant trends by which males more frequently endorsed items from subscales assessing drug use, alcohol use, anger and aggression, interest in sex and risk-taking.

Table 36

Prevalence Rates and Sex Comparisons of MDRS Symptoms (% of Total within Sex)

Subscale	Item	Male	Female	χ^2 , sig
Distress	I bottled up my negative feelings	74.2	75.1	n.s.
	I preferred to keep quiet about feeling bad	72.3	74.7	n.s.
	I tried to ignore feeling down	73.2	81.4	9.07, $p = .003$
	I tried my hardest to ignore my feelings	55.4	60.3	n.s.
	I covered up my difficulties	67.4	74.8	6.36, $p = .012$
	I had to work things out by myself	77.3	79.0	n.s.
	I was worried	67.9	78.2	12.68, $p < .001$
	I tried my hardest to stay in control of my emotions	63.4	71.1	6.31, $p = .012$
	I felt under more pressure than usual	68.5	73.9	n.s.
	I felt more tense than usual	62.9	72.7	10.39, $p = .001$
	I found it difficult to mix with others	61.4	59.3	n.s.
	I was moody and irritable	64.2	74.0	10.52, $p = .001$
Drug Use	I used drugs to cope	13.6	8.7	5.81, $p = .016$
	Using drugs provided temporary relief	14.2	8.3	8.60, $p = .003$
	I sought out drugs	17.4	11.1	7.82, $p = .005$
	I thought about using drugs frequently	35.3	26.2	9.24, $p = .002$
	I craved drugs	30.1	21.1	9.67, $p = .002$
	Others expressed concern about my drug use	9.1	5.1	6.02, $p = .014$
Alcohol Use	I needed alcohol to help me unwind	39.4	35.9	n.s.
	I needed to have easy access to alcohol	24.9	18.3	6.07, $p = .014$
	I drank more alcohol than usual	38.0	37.0	n.s.
	I stopped feeling so bad while drinking	32.7	27.2	n.s.
	I thought about drinking alcohol frequently	35.3	26.2	9.23, $p = .002$
	Others expressed concern about my drinking	25.3	26.2	9.23, $p = .002$
Anger & Agg	I was verbally aggressive to others	33.7	24.0	10.76, $p = .001$
	I yelled at others	36.5	36.1	n.s.
	I verbally threatened someone	15.9	8.9	11.09, $p = .001$
	I verbally lashed out at others without being provoked	20.9	20.7	n.s.
	It was difficult to manage my anger	31.1	32.6	n.s.
	I overreacted to situations with aggressive behaviour	32.6	28.7	n.s.
Somatic	I had unexplained aches and pains	36.7	48.0	11.89, $p = .001$

Continued				
Subscale	Item	Male	Female	χ^2 , sig
Somatic	I had stomach pains	31.5	48.8	28.24, $p < .001$
	I had regular headaches	35.9	55.4	34.93, $p < .001$
	I had more heartburn than usual	27.1	23.8	n.s.
Interest in Sex	I engaged in sex to distract me from negative...	25.8	18.7	6.81, $p = .009$
	I had riskier sexual contacts	15.8	11.4	n.s.
Risk-Taking	I drove whilst over the legal blood alcohol limit	12.2	4.2	21.51, $p < .001$
	I exercised more than is good for my body	18.5	13.4	4.54, $p = .033$
	I drove dangerously or aggressively	29.6	21.8	7.45, $p = .006$
	I needed to gamble more than normal	11.5	5.0	13.54, $p < .001$

Note. Df for Chi square tests = (1, 956).

Table 37 displays sex comparisons for the nine prototypic depression symptoms assessed by the PHQ-9. The Bonferonni corrected p value ($\alpha = .05 / 9$) was evaluated as $p = .005$. Two PHQ-9 items met this criterion (fatigue and appetite disturbance) with females more likely to endorse them than were males. The item assessing suicide / self-harm, whilst non-significant with a Bonferonni correction, was more likely to be endorsed be men.

Table 37

Prevalence Rates and Sex Comparisons of PHQ-9 Symptoms (% of Total within Sex)

Scale	Item	Male	Female	χ^2 , sig
PHQ-9	Little interest or pleasure in doing things	57.8	55.3	n.s.
	Feeling down, depressed, or hopeless	56.8	59.8	n.s.
	Trouble falling or staying asleep, or sleeping too much	68.1	73.9	n.s.
	Feeling tired or having little energy	77.7	87.5	16.00, $p < .001$
	Poor appetite or overeating	56.6	70.0	17.98, $p < .001$
	Feeling bad about yourself...	52.9	55.8	n.s.
	Trouble concentrating...	43.8	50.7	4.50, $p = .035$
	Moving or speaking so slowly...	24.9	24.3	n.s.
	Thoughts that you would be better off dead...	22.8	16.6	5.58, $p = .018$

Note. Df for Chi square tests = (1, 956).

The sex difference for the PHQ-9 item assessing suicide / self-harm (though not statistically significant with a Bonferonni correction) is of particular interest given that males are known to be at greater risk of suicide in comparison to females. To further investigate this, correlations were evaluated between MDRS subscales and scores on the suicidal ideation item separately for males and females (see Table 38). All correlations between the suicidal ideation item and the MDRS subscales were statistically significant. Furthermore, in all instances intercorrelations were stronger for males. These sex differences in correlations were significant for the alcohol use subscale ($p = .016$), the anger and aggression subscale ($p = .048$), the somatic symptoms subscale ($p = .039$), and the risk-taking subscale ($p = .005$), and the MDRS total score ($p = .013$). Finally, correlations were observed between the MDRS item with the highest mean rating for males (*I had to work things out by myself*) and suicidal ideation. Males ($r = .36$) reported a significantly stronger correlation ($p = .043$) between these two variables than did females ($r = .24$).

Table 38

Correlations between MDRS Subscales and Total Score with the Suicidal Ideation Item (PHQ-9) by Sex

MDRS subscale	Male r	Female r
	Suicidal ideation	Suicidal ideation
Distress	.54**	.45**
Drug Use	.27**	.23**
Alcohol Use	.29**	.14**
Anger & Agg	.45**	.34**
Somatic Symptoms	.49**	.38**
Risk-Taking	.35**	.18**
Interest in Sex	.17**	.10**
MDRS Total Score	.57**	.45**

Note. ** = $p < .01$

Discussion

Study 4 was designed to provide preliminary psychometric data on the Male Depression Risk Scale (MDRS), a new measure that assesses atypical depression symptoms. Given that atypical depression symptoms are neglected by gender neutral

depression scales, the MDRS may improve the detection of men experiencing psychological distress. Attempts to improve detection rates of distressed males who would otherwise remain unidentified may in turn have downstream benefits by reducing men's comparatively high suicide rates.

MDRS Factor Structure

The final factor analysis yielded seven distinct MDRS subscales. Inspection of the factor loading matrix indicated that each of the 40 retained MDRS items reported relatively strong factor loadings (e.g., all item loadings $> .56$). In addition, the iterative process of factor analysis ensured that all cross loading items were removed from the scale, thus strengthening the overall factor stability. The MDRS subscales demonstrated satisfactory reliability for males, though two of the subscales (risk-taking and interest in sex) reported low reliability values for females. However, given the MDRS is primarily designed for use with male samples, the low subscale reliability for females in the present study is not overly problematic. From a statistical point of view the factor structure of the MDRS is based on a robust set of items that show homogeneity within each factor and sufficient heterogeneity between factors. Highlighting this, the subscale intercorrelations indicated that the scale dimensions are conceptually related to one another. Given the strength of the intercorrelations observed amongst the MDRS subscales, it is possible that the symptoms assessed by the MDRS may constitute a unified syndrome (e.g., sub-threshold depression with externalising or atypical features). That said, further research is required to ascertain whether such a syndrome is empirically distinct from symptoms that constitute a diagnosis of major depression.

The MDRS items were developed in the context of recent research documenting men's experiences of depression (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005; Rochlen et al., 2009). The final MDRS factor solution was broadly consistent with symptoms documented in men's accounts of depression (e.g., suppression of emotion, substance misuse, anger and aggression, risk-taking). The final factor structure of the MDRS diverged from the original 11 sub-domains that were initially identified (see Table 24). Factor analysis resulted in the anger items, and the two sets of aggression items (physical and verbal) combining into one subscale. This is somewhat unfortunate from a psychometric point of view given that male and female responses may be differentiated on these components (Möller-Leimkühler, personal communication, October 28, 2009).

Nonetheless, this finding corresponds to that reported by Möller-Leimkühler and Yucel (2010) where females reported relatively high levels of aggressiveness.

There were also some consistencies between the final MDRS factor solution and the theorised sub-domains of men's depression. MDRS subscales assessing drug use, alcohol use, risk-taking and somatic symptoms remained relatively unchanged from the initial sub-domains identified. Of note, the interest in sex items (originally proposed as part of the avoidance behaviours domain) loaded on their own unique factor. Changes in libido (either increases or decreases) corresponding to men's experiences of depression have been documented in the research literature. On the one hand, men's greater interest in sex has been described within the context of distraction routines and avoidance techniques (e.g., Good & Sherrod, 1997) while other researchers and clinicians argue that it may stem from ongoing intimacy difficulties, especially in cases of frequent nonrelational sexual activity (e.g., Levant & Brooks, 1997). Conversely, decreases in libido may be linked to prototypic symptoms of depression including fatigue, sleep disturbance, or anhedonia. Within the present study, for both males and females the interest in sex subscale was only weakly correlated with PHQ-9 scores. That said, the two MDRS items assessing interest in sex do not enquire about an increase or decrease in sexual behaviour. Instead these items enquire about using sex to distract from negative thoughts or feelings, and the propensity for risky sexual practices. Hence, these items may capture maladaptive coping responses (possibly more frequently seen in males) more so than changes in libido.

The MDRS distress subscale accounted for the greatest proportion of total scale variance. These items were derived from a range of initial sub-domains (e.g., emotional suppression items, hostility, isolation and relational discord items, and the irritability and stress items). The MDRS distress subscale is conceptually related to a tendency for self-reliance, suppression of negative affect, and irritability. These are symptoms consistent with much of the literature on men's experience of depression (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005; Rochlen et al., 2009). It was therefore surprising that females reported higher scores on the distress subscale compared to males. Following this, of the seven MDRS subscales the distress subscale provided the best approximation to prototypic depression symptoms, correlating with the PHQ-9 at .75 for males, and .74 for females. Correlations of this magnitude suggest a relatively high degree of conceptual overlap. While the MDRS does not have specific items, or a specific subscale that assess prototypic

depression symptoms, the distress subscale may serve as a proxy to this end. Furthermore, given the distress subscale assesses a range of behaviours that are maladaptive (e.g., impeded help seeking and suppression of negative affect), it may yield important information regarding other aspects of functioning that may exacerbate low mood.

The item assessing impeded help seeking (*I had to work things out by myself*) from the distress subscale reported the highest mean value amongst all MDRS items and was frequently endorsed (by 77.3% of males and 79.0% of females). While this item failed to differentiate males and females it demonstrated a stronger correlation with suicidal ideation for males. This is consistent with research literature linking suicide risk to deferred help seeking (e.g., Barnes, Ikedam & Kresnow, 2001; Pitman & Osborn, 2011), especially for men (Bjerkset, Romundstad, & Gunnell, 2008).

In contrast to prediction, results also indicated that the MDRS subscales were relatively weakly correlated with CMNI-22 scores. For all MDRS subscales, correlations were higher for the PHQ-9 than for the CMNI-22. This finding corresponds to other measures of atypical depression symptoms that report weak correlations with CMNI scores (e.g., Magocevic & Addis, 2008) or general masculinity scores (Möller-Leimkühler & Yucel, 2010). Given that a range of studies, across several different measures of atypical symptoms, all report weak correlations between atypical symptomatology and masculine variables, findings may indicate that atypical depression symptoms occur in the context of factors related to masculinity, but not necessarily drawing on masculinity itself. For example, atypical symptom presentation may be associated with masculine attitudes towards help seeking (e.g., stoicism), or feelings related to shame (e.g., not measuring up to expected ideals of masculinity) than with a global assessment of conformity to masculine norms. Future research should look broader for constructs that may co-occur with externalising responses so as to better understand the precursors of atypical symptomatology.

Differences According to Sex and Conformity to Masculine Norms

Between groups analysis indicated that those in the extreme conformity to masculine norms category tended to report higher scores on all seven MDRS subscales. This finding was in line with prediction and similar research using the GMDS and CMNI (Wide, Mok, McKenna, & Ogrodniczuk, 2011). However it was also predicted that those

in the extreme conformity group would report lower PHQ-9 scores. In contrast to this prediction, the profile of PHQ-9 scores according to CMNI-22 category closely corresponded to that for atypical symptoms (e.g., higher conformity to masculine norms corresponded to higher scores for prototypic depression symptoms). This finding suggests that prototypic and atypical depression symptoms may co-occur for individuals reporting high conformity to masculine norms. This finding is consistent with results from the truck drivers sample (Study 2). Individuals reporting nonconformity to masculine norms reported relatively low scores for prototypic and atypical symptoms. Hence, conformity to masculine norms appears to be a risk factor for both prototypic and atypical depression symptoms.

Quantitative studies are yet to identify a subgroup of men who report relatively high scores for atypical depression symptoms but relatively low scores for prototypic symptoms. Such a distinction is required in order for a male subtype of depression (e.g., Zierau, Bille, Rutz, & Bech, 2002) to be empirically validated and a corresponding diagnostic criteria developed and validated – for example see Pollack’s (1998, 2005) attempt to outline symptoms for Major Depressive Disorder – Male Type (Chapter 3). However, given that the present findings, in conjunction with similar research (e.g., Magocevic & Addis, 2008; Möller-Leimkühler & Yucel, 2010) suggest that prototypic and atypical symptoms co-occur, the empirical reality may be that these two groups of symptoms are so entwined that it is not possible to identify a high atypical, low prototypic group. Should this be the case, what may exist is a more homogenous group of men, who experience a range (albeit possibly a restricted range) of prototypic depression symptoms in conjunction with co-occurring atypical depression symptoms. If such a finding were to be reliably established, then it may be possible to attribute sex differences in incidence rates of depression to the effect of gendered attitudes towards help seeking and stigma (e.g., concealing symptoms due to a sense of shame) more so than differences in symptom presentation per se. If so, differential diagnosis rates between males and females may be the effect of males simply not presenting to primary care in the first place. After all, it is not possible to achieve a diagnosis without first attending a consultation. It is well known that males tend to avoid consultations with health practitioners, and are therefore much less likely than females to be diagnosed or treated for depression. Future research investigating the links between prototypic and atypical depression symptoms and men’s

attitudes related to stigma and perceived or actual help seeking barriers may assist in elucidating this possibility.

Individual item analysis of the MDRS indicated a number of items that differentiated male and female responses. Females were more likely than males to endorse items from the distress subscale and the somatic symptoms subscale. In contrast, males were more likely to endorse items assessing drug use (in fact males were more likely than females to endorse all six drug use items). Further, males were more likely to endorse a range of items assessing alcohol use, one item assessing aggression, the item relating to engaging in sex to distract from negative thoughts or feelings, and all four risk-taking items. It could be argued that these items essentially assess gendered behaviour (e.g., these items may assess maleness or a variant of masculinity more so that assessing depression or psychological distress). However, each of the MDRS subscales reported stronger correlations with the PHQ-9 than with the CMNI-22. Hence, the MDRS items appear to share more in common with depressed mood than they do with conformity to masculine norms. Furthermore, all MDRS subscales correlated significantly with suicidal ideation, further suggesting that the MDRS items share common variance with emotional states that are related to psychological distress.

A number of the PHQ-9 items were more frequently endorsed by females (fatigue and appetite disturbance). At the same time males were more likely to endorse the suicidal ideation item (though this sex difference lost statistical significance with a Bonferonni correction). This finding is of particular interest given the inverse relationship between men's depression and suicide rates. The present study also indicated that all subscales of the MDRS reported significant correlations with suicidal ideation. A number of these correlations, perhaps most notably the MDRS total score, were significantly stronger for males compared to females. Hence, the MDRS may be a promising measure of psychological distress and/or pathways to suicidal ideation, particularly for men.

A substantial number of men in the present sample (22.8%) endorsed the item assessing suicidal ideation (compared to 16.6% for women). Research indicates that men may withhold disclosing suicidal ideation to health practitioners even in instances where they endorse self-report scale items assessing suicidality immediately prior to a medical consultation (Wide, Mok, McKenna, & Ogrodniczuk, 2011). Hence, men may refuse the

potential help available to them when they are experiencing suicidal ideation. Within the present study males consistently reported higher MDRS subscale intercorrelations with the suicidal ideation item than did females – this occurred despite females reporting higher scores on two of the MDRS subscales. While further research is required in this area, it may be that the MDRS subscales tap into a masculine-type suicide risk factor. For example, high scores on particular combinations of the MDRS subscales (e.g., distress, alcohol use, anger and aggression, risk-taking) may herald a problematic combination for some men. Men who score highly on items assessing impeded help seeking and suppression of negative emotion in conjunction with items assessing violence and impulsivity may be at particular risk of harm to self in the context of negative life events, especially in instances of low perceived social support and high alcohol consumption (e.g., De Leo, Cerin, Spathonis, & Burgis, 2005).

Implications for Theory

Study 4 failed to assess to the role of recent depressogenic life events that may precipitate episodes of low mood. Assessment of such negative life events is necessary to enable the identification of individuals who may be at risk of experiencing episodes of low mood, depression or psychological distress (a limitation that will be addressed in Study 5). For example, it may be that individual differences in the way in which men respond to negative affect experienced as a consequence of negative life events may determine the way in which distress is presented (e.g., prototypic versus atypical depression symptoms) (Magovcevic & Addis, 2008). Given this design limitation, the present results fail to offer strong support for any of the four theoretical frameworks related to men's depression. However, partial support was achieved for three of the frameworks.

Findings of the present study appear most in line with the masculine depression framework. The masculine depression framework suggests that masculine gender norms encourage the expression of a range of externalising symptoms in conjunction with depressed mood. The co-occurrence of atypical and prototypic symptoms observed in the present study supports this notion. It is unclear whether such externalising / atypical symptoms reflect men's use of maladaptive coping responses, attempts to reassert perceived lost masculine attributes, or diagnostic symptoms equally as valid as those outlined in the diagnostic criteria for Major Depressive Disorder. The replication and validation of these findings across wide ranging populations (e.g., clinical versus

nonclinical, inpatient versus outpatient, cross-cultural studies, comorbidity studies) is required to substantiate this claim.

Given the present study identified differences between males and females for a number of the prototypic depression symptoms, there was some evidence supporting the sex differences framework. The sex differences framework postulates that depression exists as the same illness in men and women, but with minor phenotypic variations. The present findings suggest that women may be more likely than men to endorse symptoms related to fatigue and appetite disturbance while males may be more likely to report suicidal ideation. However, the remaining symptoms were endorsed equally as frequent between the sexes. Further, as neither of the 'mandatory' DSM-IV diagnostic items for depression (e.g., anhedonia or sadness) were endorsed differentially for males or females, this finding may have little practical or clinical significance.

Given the sex differentiation for prevalence rates for a number of atypical symptoms, findings also provided partial support for the gendered responding framework – that males are more likely to distract themselves from depressed mood, which in turn lessens the likelihood of them experiencing an episode of depression. Illustrating this, MDRS correlations for the drug use, alcohol use, interest in sex and risk-taking subscales (which may all equate to distraction techniques) were weaker with prototypic symptoms than were the correlations for the distress subscale. However, males reporting extreme conformity to masculine norms reported the highest atypical symptom scores and also the highest prototypic symptoms scores. This finding suggests that distraction techniques assessed by the MDRS may not be associated with lower prototypic depression symptoms as is suggested by the gendered responding framework. To further explore this effect future research should evaluate recent experiences of negative life events, and determine whether sex differentiated patterns of coping responses occur (e.g., rumination versus distraction) in relation to prototypic and atypical symptoms.

The masked depression framework argues that socialisation practices influence the way men experience, express and respond to depression. Accordingly, men may fail to show prototypic symptoms as they are masked by atypical symptoms. The present findings were inconsistent with this notion given that males reporting greater conformity to masculine norms reported high scores for both atypical and prototypic symptoms of

depression. Given this, there is little evidence from the present study to conclude that atypical symptoms were ‘masking’ prototypic symptoms. While the masked depression framework is supported by clinical experience and case study evidence (e.g., Cochran & Rabinowitz, 2000; Rabinowitz & Cochran, 2008) there remains little quantitative research supporting this notion.

Limitations

One of the greatest challenges in researching constructs related to gender (e.g., gender roles, masculinity, femininity) relates to the assessment of these characteristics. The present study utilised the relatively recently developed Conformity to Masculine Norms Inventory (CMNI-22). However, this scale was designed and validated for assessing masculinity in males. It is therefore unsurprising that the reliability of the CMNI-22 in the present sample of females was marginal at best. While the corresponding scale, the Conformity to Feminine Norms Inventory (CFNI), was designed for use with females, use of the CFNI would not enable direct comparison with respective male CMNI scores (e.g., the result, even using standardised scores for both scales would be akin to comparing apples with oranges given the differing item content). Future research designs may profit from alternative assessment of gender related constructs that are brief and relevant to both sexes. One such construct is the concept of gender group identification (Wilson and Liu, 2003) where respondents indicate whether they feel closer to males or females regarding attitudes, priorities in life, content of friendships, life experiences, and general gender group identification.

While the present study drew upon a large sample, this sample may have been limited in its representativeness, and possible self-selection bias. While the use of anonymous online protocols have been found to reduce socially desirable responding (Booth-Kewley, Larson, & Miyoshi, 2007) and have capacity to reach previously hidden populations (Hammer & Good, 2010), they suffer from the same issues of participant self-selection as those experienced in paper and pencil methodologies. In the present study there were high numbers of cases that dropped out partway through completion of the questionnaire. Though the online advertising material that was used to recruit participants (e.g., advertisements placed on *Facebook*) avoided the term ‘depression’, the participant information letter on the first page of the website used for data collection outlined the study aims in detail. Upon reading this, it seems that many individuals terminated their

participation. Those participants who did complete the full questionnaire may have had a particular motivation to do so. For example, over a third of the sample indicated they had been provided with a previous diagnosis of depression. Perhaps future research designs could examine mean differences in prototypic and atypical symptom presentation based on actual help seeking. For example, Hammer and Vogel (2010) found that a male-sensitive brochure improved attitudes toward help-seeking for depression amongst men who met the clinical cut-off for depression, but had not sought help for depression.

Though MDRS items were kept brief, a moderate literacy level was required to complete the full questionnaire. Given this, it is important that further research be undertaken using the MDRS in diverse populations of men accounting for variation in literacy levels.

Future Directions

As indicated in the method section, one of the reviewers of the initial item pool for the MDRS suggested that the overall construct measured by the MDRS may be best described as a state of ‘psychological numbing’ or ‘defensive posturing’. This suggestion is consistent with the notion of masculine depression – where externalising / atypical symptoms may augment prototypic symptoms that may already be present. If this were to be the case, then future research may indicate a particular additional features specifier (e.g., such as externalising features) that could be added to a pre-existing diagnosis of Major Depressive Disorder (e.g., in a similar way to the catatonic, atypical, melancholic and postpartum onset features currently available to clinicians). This would likely increase research and clinical attention to the prevalence and mechanisms of externalising responses within the context of depression. However, were this to be the case, such a specifier would be unlikely to improve detection rates amongst males as any additional features first require that full diagnostic criteria be met.

A number of suggestions have been made throughout the present chapter for the need to assess the role of negative life events. Consideration of experiences of recent negative life events is crucial for being able to determine whether males and females (or sub groups of males and females) enter differing behavioural trajectories (e.g., prototypic versus atypical depression symptoms) upon experiencing such events. While this poses logistical challenges that are inherent in all longitudinal research, such an approach is

necessary to determine changes in behaviour or symptom presentation that may occur after experiencing negative life events.

A further key area for development relates to the need for diagnostic verification. To date, very few studies examining men's experience of depression have corroborated scores from self-report depression rating scales with actual clinical diagnoses achieved through clinical interview (Addis, 2008). While such research is resource intensive and relatively costly, study designs seeking to better understand men's experiences of depression should seek to work toward this end.

The next stage in the psychometric development of the MDRS is to subject the scale to confirmatory factor analysis (CFA) using a new sample. It is likely that CFA will result in changes to the structure of MDRS (e.g., amendments to the final number of items and subscales). However, such changes, informed by statistical decision making procedures, will result in a more robust, stable and valid instrument. Prior to undertaking CFA on the MDRS, careful consideration should be given to the addition of any further items. Given the relatively low reliability of the risk-taking and interest in sex subscales, there may be value in developing appropriate items to improve the reliability of these subscales.

Conclusion

The initial validation of the MDRS indicates it to be a multidimensional scale with promising psychometric properties. The multifactorial structure of the MDRS will enable quantitative data to be collected on atypical depression symptomatology, thus furthering understanding of men's experiences of depression. Findings indicated that males reported higher scores for a number of the MDRS subscales, and stronger associations between the MDRS subscales and suicidal ideation. Further, higher conformity to masculine norms was associated with higher MDRS subscale scores. Results are broadly consistent with similar studies investigating men's experience of depression. Nonetheless, further research is required to evaluate sex differentiated pathways in the expression of prototypic and atypical depression symptoms.

Chapter 10: Study 5 - Confirmatory Factor Analysis of the MDRS

Background

It is recommended that scales in early stages of development be refined through the use of confirmatory factor analysis (CFA) (Jackson, Gallaspy, & Purc-Stephenson, 2009). CFA aides to support scale validity after initial exploratory factor analysis is undertaken (Worthington & Whitaker, 2006). It is common practice for scales that are still in development to report reasonably poor model fit indices (Herting & Costner, 2000). However, by evaluating the factor structure of competing models, CFA procedures enable researchers to revise and refine scales (Floyd & Widaman, 1995), resulting in improved measurement and better validation of the latent structure (Brown, 2006).

Study 5 was conducted in two parts (Study 5a and Study 5b). Study 5a had two aims – firstly, to confirm the factor structure of the MDRS, and secondly, to replicate findings reported in Study 4. The aim of Study 5b was to evaluate test re-test reliability of the MDRS, and explore the associations between negative life events at Time 1 and MDRS scores at Time 2 (Time 2 data was collected approximately 3 months after Time 1). In doing so, Study 5b sought to determine whether males considered at higher risk of depression would report higher MDRS scores than would females at corresponding risk of depression. Furthermore, Study 5b sought to determine sex differences in the predictive relationship between key variables hypothesised to differentiate depression symptom presentation between male and females.

Study 4 indicated that the MDRS risk-taking and interest in sex subscales reported marginal internal consistency. In an attempt to improve the reliability of these subscales, several items were added to the MDRS for Study 5a. The additional items related to risk-taking behaviour (*I stopped caring about the consequences of my actions*, and *I took unnecessary risks*) and interest in sex (*I had more sex than usual* and *I thought about sex more frequently than usual*). The risk-taking items were added to asses a more global attitude toward risk-taking rather than assessing discrete risk-taking behaviours. In doing so, it was considered that the added risk-taking items would improve the overall assessment of the construct. While there is little direct empirical evidence suggesting that depressed men seek out or think about sex more frequently than non-depressed men, sexual compulsions have been theorised to occur as a coping response to depression

amongst some men (Hart, 2001). Hence, two items were added to the interest in sex subscale to account for this.

Hypotheses

Study 5a. Research indicates that relatively lengthy scales can be difficult to validate empirically through confirmatory factor analysis (Floyd & Widman, 1995). Lengthy scales require copious numbers of parameters to be estimated and have a higher probability of comprising items with significant measurement error (Yang, Nay, & Hoyle, 2010). As Study 4 identified the MDRS as a relatively lengthy scale (e.g., 44 items), it was expected to report relatively poor fit indices and require substantial re-specification. That said however, it was predicted that the underlying factor structure of the MDRS (e.g., the seven broad factors identified in Study 4) would be validated using CFA through shortening the scale – suggesting that the initial broad factor structure would approximate a valid conceptualisation of depression risk (e.g., Moore, Halle, Vandivere, & Marina, 2002). In addition, it was expected that Study 5a would replicate the findings of Study 4 related to sex and masculinity differences for the MDRS subscales. Hence, a multivariate interaction was predicted. Consistent with the findings of Study 4, it was hypothesised that males reporting extreme conformity to masculine norms would report consistently high scores on the MDRS subscales, and that MDRS subscale scores would become increasingly sex differentiated with greater conformity to masculine norms.

Study 5b. Safford (2008) argued that conceptual progress in the study of sex differences in prototypic and atypical depression symptom presentation is dependent on the use of longitudinal designs that examine symptom trajectories of individuals at risk of low mood. Given that qualitative studies consistently indicate that depressed men report a range of atypical symptoms beyond those assessed by DSM-IV depression criteria (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005; Heifner, 1997; Shirt, 2008), the present study hypothesised an interaction between participant sex and depression risk category for the MDRS. That is, males reporting greater conformity to masculine norms *and* experiencing a comparatively high number of negative life events (and thus being in a higher risk category for depression than males experiencing few recent negative life events) at Time 1 were expected to report particularly high MDRS subscale scores at Time 2 (approx 15 weeks later) when examined against comparable females. Further, in comparison to scores on the MDRS, males and females were expected to be less

differentiated between Time 1 and Time 2 for prototypic depression symptoms (e.g., no main effect for sex, or interaction with depression risk, was predicted for PHQ-9 scores).

To date, Diamond (2008) is the only researcher to report on unique predictors of atypical depression symptoms in men. Diamond reported that younger age, and lower levels of relationship happiness significantly predicted each of the three domains of the Diamond Depression Scale (e.g., emotional acting-in, emotional acting-out, and physical acting-out). However, studies are yet to examine broader cognitive or affective risk factors as predictors of atypical depression symptoms. Addis (2008) proposed that in accordance with the gender responding framework, distressed females are more likely than males to engage in rumination (thus exacerbating episodes of depression) while males are more likely than females to engage in distraction routines (thus lessening the likelihood of experiencing depression). Based on Addis's proposition, it was predicted that in comparison to males, females would report higher correlations for the two aspects of rumination assessed (negative brooding and neutral reflection) with prototypic depression symptoms. Further, given the MDRS assesses depression risk through externalising symptoms, it was expected that neither aspect of rumination would predict MDRS total scores for either males or females.

In comparison to females, males are significantly less likely to seek help when experiencing psychological distress (Courtenay, 2003). Given this, it was expected that perceived barriers to help seeking (e.g., need for control and self-reliance, distrust of caregivers, emotional control) would predict greater variance in MDRS scores for males in comparison to females. It has been theorised that males may refuse to seek help for emotional problems due to masculine norms emphasising stoicism (Alston & Kent, 2008). Accordingly, males who experience mood disturbance may experience a sense of shame for not living up to masculine ideals (Courtenay, 2001). To assess the effect of shame over time, experiences of shame were assessed at both Time 1 and Time 2. As males experiencing depressed mood may experience co-occurring feelings of shame for not living up to masculine ideals (e.g., Krugman, 1995), it is possible that such experiences of shame may precipitate maladaptive coping responses that conceal men's distress (e.g., increased alcohol use, emotional suppression, anger). Given experiences of depression are less incongruent with feminine role norms, it was predicted that shame would be a stronger predictor of MDRS scores for males compared to females.

Lastly, Study 5b sought to evaluate the role of emotion regulation in predicting MDRS scores. Emotion regulation is typically conceptualised through expressive suppression and cognitive reappraisal. Expressive suppression occurs where individuals inhibit ongoing emotion-expressive behaviour, while cognitive reappraisal occurs when one changes the emotional impact of an emotion eliciting situation (John & Gross, 2004). Whereas response-focussed strategies such as suppression influence how emotional responses are modulated once triggered, antecedent-focussed strategies such as reappraisal influence the initial triggering of particular emotional responses (Gross & John, 2003). Hence, reappraisal has the capacity to modify the entire emotional sequence prior to emotional response tendencies being generated. It is assumed that symptoms assessed by the MDRS occur due to emotional processes. Given this, it was predicted that greater reappraisal would be associated with lower MDRS scores, and that reappraisal would predict MDRS scores for both males and females.

Method – Study 5a

Study Design

Data was collected from a community sample using an online questionnaire. All participants who provided data at Time 1 were also invited to provide data at Time 2 (see Study 5b).

Participants

At Time 1, data was provided by a total of 1,232 participants who visited the secure website during the data collection period (November 2010 – December 2010). All participants were aged between 18 – 82 years. Consistent with Study 1 and Study 4, inspection of the full dataset indicated a high proportion of missing data. After data screening was complete (see section below for details) the resultant usable sample comprised 790 cases. The sample comprised a total of 499 males ($M = 38.95$ years, $SD = 14.02$) and 291 females ($M = 36.39$ years, $SD = 12.85$). On average, male participants were significantly older than female participants $t(788) = 2.55, p = .011$. A total of 266 participants (33.3% of the total useable sample) were below 30 years of age. Detailed information on the full sample is provided in Table 40.

Additional Measures

Patient Health Questionnaire – Depression Module. The PHQ-9 (Kroenke, Spitzer, & Williams, 2001) was used to assess prototypic depression symptoms. See Chapter 9 for psychometric details.

Conformity to Masculine Norms Inventory. The CMNI-22 (Mahalik et al., 2003) was used to assess conformity to masculine norms. See Chapter 9 for psychometric details.

Demographic data. Participants provided demographic data to enable sample characteristics to be identified. Demographic data was collected on participant sex, age, ethnicity, current relationship status, place of residence, income, and education level. In addition participants indicated whether they had received a previous diagnosis of depression or substance use disorder. All materials used in the study, including relevant ethics information, are presented in Appendix F.

Procedure

Ethical approval was received from the Human Research Ethics Committee of Australian Catholic University. All participants were recruited via paid advertisements displayed to Australian members of the *Facebook* social networking site. The same wording as that used in Study 1 and Study 4 was also used for the *Facebook* advertisements for the present study. Participants were directed to the online questionnaire by clicking the hyperlink embedded within the brief statement advertised on *Facebook*. The questionnaire welcome screen provided the opportunity for participants to read the full information letter for the project, including ethics information. Participants were advised that their participation was voluntary, and they were free to withdraw from the study at any time prior to the submission of data. In order to boost the number of male participants, advertisements were targeted specifically to male members of *Facebook*.

At the conclusion of the questionnaire participants were invited to participate at Time 2 by providing their email address. It was stated that the researcher would email the hyperlink to the Time 2 in approximately 12 weeks time. To enable participant data to be matched between Time 1 and Time 2, all participants were invited to provide a unique four

digit identification code. It was suggested that participants choose their first and last initial, and the last two digits of their year of birth.

Data Screening

Prior to statistical analyses and hypothesis testing data was thoroughly screened to identify complete cases, plausibility of values, outliers, homogeneity of variance and normality. Data screening procedures were initially undertaken on the entire dataset (e.g., $N = 1,228$) and followed the same sequence as those presented in Study 1 and Study 4.

Patterns of missing data were initially explored using the SPSS NMISS function. A total of 571 cases provided complete data, leaving 657 incomplete cases. There was considerable range in the number of missing items. As can be seen from Table 39, a total of 306 participants had all 90 scale items missing (e.g., these participants appeared to provide responses to only the demographic questions at the beginning of the questionnaire). One hundred and seventy four cases had a single piece of missing data across the scale items, while fifty three cases had two pieces of missing data.

Table 39

Frequency of Observed Missing Data (Study 5a)

Missing data points	Frequency	Sample Percent	Sample Cumulative Percent
0	571	46.7	46.7
1	174	14.1	60.8
2	53	4.3	65.1
3 – 10	34	2.8	67.9
11 – 50	44	3.1	71.0
51 – 89	46	3.5	74.4
90	306	25.5	100.0
Total	1228	100.0	100.0

Given that confirmatory factor analysis provides more stable results when undertaken with larger samples (Weston & Gore, 2006), it was necessary to maximise the size of the final data set. In the present sample, 227 cases reported either one or two missing data points. Two missed item equates to approximately 2% of the total items

within the questionnaire. As this was considered a small percentage of missing data per participant, the decision was made to include these 227 cases in the final dataset (using mean substitution for missing data) on the condition that missing value analysis indicated it was appropriate to do so. For the present sample, Little's MCAR test (which was undertaken according to participant sex) was non-significant ($\chi^2 = 10,567.62$, $df = 10,597$, $p = .578$), indicating that the data was missing completely at random and that mean substitution for missing values was acceptable (Acock, 2005). For the 227 cases with missing data, values were replaced with the series mean for that item. Following recommendations by Tabachnick and Fidell (2007), data for the subscales was subsequently analysed separately, once using only the complete cases (e.g., the sample of 571) and again with the larger dataset including the 227 cases where missing values had been replaced with the series mean. The results of these analyses were similar, indicating that mean substitution failed to bias the results (Tabachnick & Fidell). Accordingly, analysis proceeded using the larger dataset.

Univariate descriptive statistics were checked for plausibility of means, standard deviations, and the range of values of the MDRS, PHQ-9 and CMNI-22. All values for individual items, subscales, and demographic variables were within the expected range, and item means and standard deviations were plausible.

Univariate outliers were identified using z score transformations for each of the measures. Inspection of z scores identified three cases as outliers on the CMNI-22 (e.g., values in excess of $Z = \pm 2.29$). Each of these values was rescored to data points reflecting the mean plus two standard deviations (e.g., Field, 2009). A comparatively high number of cases were identified as outliers for the MDRS subscales. Outliers were identified for 20 cases for the drug use subscale, 16 cases for the alcohol use subscale, 11 cases for anger and aggression, 5 cases for the somatic, 13 for risk-taking, and 16 for the interest in sex subscale. In each instance outliers were toward the upper bound and were rescored to values reflecting the mean plus two standard deviations (Field). Scale scores were also explored for multivariate outliers through the Mahalanobis distance procedure. Seven cases were identified that exceeded Mahalanobis distance values of $p < .001$. Inspection of these seven cases indicated they were all well below the sample mean for the MDRS subscales of drug use, alcohol use, anger and aggression, somatic symptoms, risk-taking,

and interest in sex. Consistent with the approach adopted for multivariate outliers in Study 1, these seven cases were deleted prior to analyses.

Levene's test was undertaken to determine equality of variance according to participant sex. Levene's test was significant ($p < .001$) for the MDRS distress, drug use, alcohol use, anger, risk-taking and interest in sex subscales. All other subscales reported equality of variances. Given the MDRS subscales were designed to specifically assess depression risk in males, differences in variance are to be expected.

Normality of the dependent variables used in the study was assessed through skewness and kurtosis values, histograms, normal Q-Q plots, and detrended normal Q-Q plots. Apart from the MDRS distress subscale, all others scales reported a positive skew. Inspection of the histograms, normal Q-Q plots, and detrended normal Q-Q plots all verified the departures of normality indicated above. Relatively flat, kurtotic distributions were observed for the MDRS distress, drug use, alcohol use, anger and aggression, and interest in sex subscales. As indicated in Study 1 and Study 4, positively skewed scores are to be expected on these variables given data was collected from a community sample.

Data Analytic Strategy

Confirmatory factor analysis was undertaken using the MDRS items. Validation of the MDRS was undertaken in two phases. The sample of males was randomly divided into two separate groups; a calibration group and a validation group. The initial CFA, and subsequent model re-specification of the MDRS was undertaken with the calibration group. The factor structure of the re-specified MDRS model was then evaluated using CFA with the validation group. The validation of respecified CFA models is completely reasonable and appropriate when tested with a new, independent sample (Thomson, 2004). This process was followed to ensure model re-specification and validation did not capitalise on chance alone (e.g., Byrne, 2001; Worthington & Whitaker, 2006). In addition, a between groups data analytic approach (testing for participant sex and masculinity differences) was also adopted. As in Study 4, masculinity raw scores were converted to Transformed scores (T-scores) to determine the four masculinity categories (extreme conformity, moderate conformity, moderate nonconformity, and extreme nonconformity).

Results

Sample Characteristics

Demographic information for the sample used in Study 5a is presented in Table 40. Chi square analyses failed to indicate any significant association between participant sex and any of the demographic variable categories.

Table 40

Sample Demographic Characteristics by Sex and Total (Study 5a)

	Males		Females		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Ethnicity						
Aboriginal	3	0.6	0	0	3	0.4
African	1	0.2	0	0	1	0.1
Anglo/Caucasian	426	85.4	241	82.8	667	84.4
Asian	14	2.8	9	3.1	23	2.9
Hispanic	4	0.8	0	0	4	0.5
Middle Eastern	1	0.2	2	0.7	3	0.4
Pacific Islander	5	1.0	1	0.3	6	0.8
Relationship Status						
In a Current romantic relationship	302	60.5	201	69.1	503	63.7
Place of residence						
Metropolitan	295	59.1	192	66.0	487	61.6
Rural/Regional	203	40.7	98	33.7	301	38.2
Income						
Up to \$50,000	270	54.1	171	58.8	441	55.8
\$51,000 - \$100,000	155	31.1	90	30.9	245	31.0
\$101,000+	60	12.0	25	8.6	85	10.8
Highest Education						
Primary	4	0.8	0	0	4	0.5
Pre Year 12	34	6.8	19	6.5	53	6.7
Year 12	70	14.0	25	8.6	95	12.0
Trade Qualification	98	19.6	31	10.7	129	16.3
Undergraduate Degree	130	26.1	98	33.7	228	28.9
Postgraduate Degree	79	15.8	78	26.8	157	19.9
Previous diagnosis						
Depression	186	37.3	121	41.6	307	28.9

Confirmatory Factor Analysis of the MDRS

CFA was undertaken separately for males and females. A second-order factor structure was hypothesised to underlie the MDRS (see Figure 7). The first order factors were conceptualised as each of the identified MDRS subscales. Each subscale was theorised to load on an overarching factor that reflected a latent variable assessing depression risk. To enable parameter estimates for the second order model to be evaluated, each factor required the variance of one item to be fixed (Weston & Gore, 2006). Following guidelines from Byrne (2001), items with the highest factor loading for each subscale factor were fixed to 1.

To enable model re-specification and subsequent validation in a separate sample, male respondents were randomly divided into two groups. Random allocation of the sample was undertaken using the SPSS random sample function. Using this procedure, two separate groups were identified; a calibration group ($n = 241$) and a validation group ($n = 258$). In small sample sizes ($N = 250$ or less), goodness of fit indices tend to over-reject properly specified models (Yu, 2000). Weston and Gore (2006) argue that in samples of fewer than 500, less stringent goodness of fit indices should be used when evaluating and confirming factor structure of scales (e.g., CFI > .90, TLI > .90, RMSEA and SRMR < 1.0). These guidelines were used for assessing model fit in the present study.

Consistent with the recommendations outlined in Study 1 regarding non-normally distributed data, CFA models were evaluated using Bollen-Stine bootstrapping (Bollen & Stine, 1992), with 2000 bootstrap samples (Nevit & Hancock, 2001) in combination with maximum likelihood estimation (Byrne, 2001; Schermelleh-Engel, Moosbrugger, & Müller, 2003).

Model 1 estimated the originally specified seven factor model (c.f. Table 27, Chapter 9) with the inclusion of two additional items assessing risk-taking, and two additional items assessing interest in sex. Consistent with prediction, fit indices demonstrated that the initial seven factor model was a poor fit to the data; males (calibration group), ($\chi^2 = 2403.52$, $df = 895$, Bollen-Stine $p < .001$, CFI = .793, TLI = .781, RMSEA = .084, SRMR = .089), and females ($\chi^2 = 2454.88$, $df = 895$, Bollen-Stine $p = .002$, CFI = .815, TLI = .804, RMSEA = .078, SRMR = .093).

Model Re-specification & Evaluation

The process of determining model re-specification occurred consistent with the guidelines presented in Chapter 6. Model parsimony was used to direct initial decision making (e.g., given the MDRS has been developed for use in both research and clinical practice, a succinct scale was to be preferred over a scale of extended length). Given the initial factor structure of the MDRS had been established in Study 4, it was considered appropriate to shorten the scale and re-evaluate the model. Shortening scales during model re-specification is typically based on retaining those items with highest factor loadings (Moore, Halle, Vandivere, & Marina, 2002; Yang, Nay, & Hoyle, 2010).

Based on guidelines provided by Bollen (1989) and Pearson, Ensley, and Amason (2002), the wording of each MDRS item was examined and compared to the relative construct definition. Bollen suggests that CFA model misspecification often occurs in instances where single factors assess more than one latent construct. Given the distress subscale (which comprises 12 items) was derived from items assessing three broad domains (e.g., distraction and avoidance, emotional suppression, and hostility, isolation and relational discord – see Study 4 for more details), it is plausible that more than one latent construct exists within the distress subscale items. Exploratory factor analysis of the distress factor (Table 27, Chapter 9) indicated that each of the six highest loading distress items reflected behaviours related to emotional suppression. Given this, it is possible that the distress factor is better conceptualised by a latent factor assessing the more specific construct of emotional suppression than general distress. Accordingly, the lowest six loading items from the distress subscale were removed and the model re-run using data from the calibration group. While this resulted in improvement to model fit, fit indices indicated further re-specification was required (males, calibration group: $\chi^2 = 1731.85$, $df = 658$, Bollen-Stine $p < .001$, CFI = .820, TLI = .808, RMSEA = .082, SRMR = .086).

Based on theoretical and empirical considerations, additional items were removed from the MDRS. Firstly, the four items assessing interest in sex were removed. This decision was made for two reasons; these items demonstrated relatively poor alpha reliability in Study 4, and the theoretical and empirical evidence surrounding the inclusion of these items is weak at best. While this also resulted in a significant improvement to model fit, fit indices still indicated further re-specification was required (males, calibration

group: $\chi^2 = 1426.42$, $df = 521$, Bollen-Stine $p = .001$, CFI = .837, TLI = .824, RMSEA = .085, SRMR = .087).

Individual items of the remaining six subscales were inspected for item redundancy, clarity, and association to the factor on which they were hypothesised to load (e.g., Bollen, 1989; Pearson, Ensley, & Amason, 2002). While item redundancy serves to improve internal consistency of subscales (e.g., items that assess overlapping constructs inflate subscale coefficient alpha values), item redundancy also serves to decrease overall model fit in CFA (e.g., Guppy et al., 2004), and is reflected in higher values for modification indices (Brigstock, 2007). In such cases researchers may choose to delete redundant items by removing the item with the lowest coefficient (e.g., Ryan & Morrison, 2010). In minimising item redundancy within the MDRS, it was decided to limit each subscale to the highest loading four items as identified in the initial exploratory factor analysis (see Chapter 9).

It was further decided to delete any items that were highly semantically related to any higher loading item. As a consequence, two redundant items were deleted from the emotional suppression subscale (*I preferred to keep quiet about feeling bad* and *I tried my hardest to ignore my feelings*, both of which were considered redundant to the higher loading item *I bottled up my negative feelings*), and two redundant items were deleted from the anger subscale (*I yelled at others* and *I verbally threatened someone* both of which were considered redundant to the higher loading item *I was verbally aggressive to others*). Inspection of reliability values (Table 26, Chapter 9) indicated that the risk-taking subscale reported relatively low internal consistency. Inspection of the individual items comprising this subscale indicated that items tended to assess focussed aspects of behaviour (e.g., gambling, overexercise, drink driving). These aspects of risk-taking behaviour may only be relevant to a small number of individuals. Consequently, these three items were deleted enabling the risk-taking subscale to assess a broader 'attitude' towards risk-taking rather than specific risk-taking behaviours. The re-specified model was re-evaluated using data from the calibration group. Once again fit indices improved (males, calibration group: $\chi^2 = 529.52$, $df = 224$, Bollen-Stine $p = .002$, CFI = .908, TLI = .896, RMSEA = .075, SRMR = .078). Modification indices were subsequently evaluated to identify correlated error terms.

As in Chapter 6, the threshold for modification indices was set at 10 (e.g., Bryne, 2001). There were 10 pairs of correlated error terms with modification indices greater than 10 (see Table 41). However, as indicated, model re-specification should occur on the basis of changes that make conceptual sense in line with theory. Table 41 indicates that correlated error for the latent variables assessing emotional suppression and somatic symptoms. Similarly, correlated error was observed between the somatic symptoms item assessing aches and pains and the latent variable assessing emotional suppression. There is an established theoretical relationship between emotional suppression and somatic pain where it is suggested that greater emotional suppression leads to more severe somatic pain (e.g., Burns, 2006; Burns et al., 2008). Hence, as these correlated error terms may be explained by the causal relationship between them (e.g., Bollen, 1989), no changes were made to these items. Similarly, modification indices may indicate an underlying causal relationship between two of the alcohol use items (*I drank more alcohol than usual* and *I needed alcohol to help me unwind*) and the overarching depression risk latent variable (e.g., alcohol use may be masking depression in some males; Williams & Spitzer, 1983). Accordingly, no changes were made to these items.

Two other sets of item pairs were identified as having correlated error related to the item *I thought about using drugs frequently*. This particular item is distinct to the other drug use items as it enquires about drug use cognition rather than drug related behaviour. Hence, the item may have low specificity regarding drug use given the association it shares with both the alcohol use latent variable, and the item assessing risk-taking. Given these considerations this item was deleted. The remaining four sets of items reporting correlated error terms all had relatively low modification indices (e.g., ≤ 12.01). Hence it was decided that little conceptual improvement would be made to the MDRS by any further re-specification.

The final model (see Figure 7) comprised six subscales and 22 items. Based on Weston and Gore's (2006) goodness of fit cut-offs, model fit indices indicated that the factor structure of the 22 item MDRS was a good fit to the data (males, calibration group: $\chi^2 = 418.32$, $df = 201$, Bollen-Stine $p = .006$, CFI = .922, TLI = .911, RMSEA = .070, SRMR = .074). Consistent with prediction, validation occurred with scale shortening, indicating that the originally specified factor structure was a reasonable approximation to the data.

Table 41
Modification Indices (> 10) for Males for the MDRS

Error covariance (item pairs)	MI Value
I thought about using drugs frequently – Alcohol use (latent variable)	21.94
I drank more alcohol than usual – Depression Risk (latent variable)	17.38
Emotional suppression (latent variable) – Somatic symptoms (latent variable)	13.68
I thought about using drugs frequently – I took unnecessary risks	12.78
I stopped feeling so bad while drinking – I stopped caring about the consequences of my actions	12.01
I verbally lashed out at others without being provoked – It was difficult to manage my anger	11.92
I stopped caring about the consequences of my actions – I drove dangerously or aggressively	11.38
I had unexplained aches and pains – Emotional Suppression (latent variable)	10.90
I needed alcohol to help me unwind – Depression Risk (latent variable)	10.41
I took unnecessary risks – I bottled up my negative feelings	10.27

Note. MI = modification index.

Validation of the Respecified Model

Given the significant re-specification that had occurred to the MDRS item structure, it was necessary to validate the modified model in a separate sample of males (Byrne, 2001; Worthington & Whitaker, 2006). For this purpose, data from the validation group was used. Based on Weston and Gore's (2006) goodness of fit cut-offs, the modified model was validated as a good fit, (males, validation group: $\chi^2 = 440.72$, $df = 203$, Bollen-Stine $p = .009$, CFI = .937, TLI = .928, RMSEA = .068, SRMR = .075) (see Figure 7 for factor loadings). The validated scale is here by referred to as the MDRS-22. The final items and corresponding factors are presented in Table 42. The MDRS-22 also reported satisfactory fit indices for females ($\chi^2 = 425.77$, $df = 203$, Bollen-Stine $p = .084$, CFI = .933, TLI = .934, RMSEA = .068, SRMR = .079).

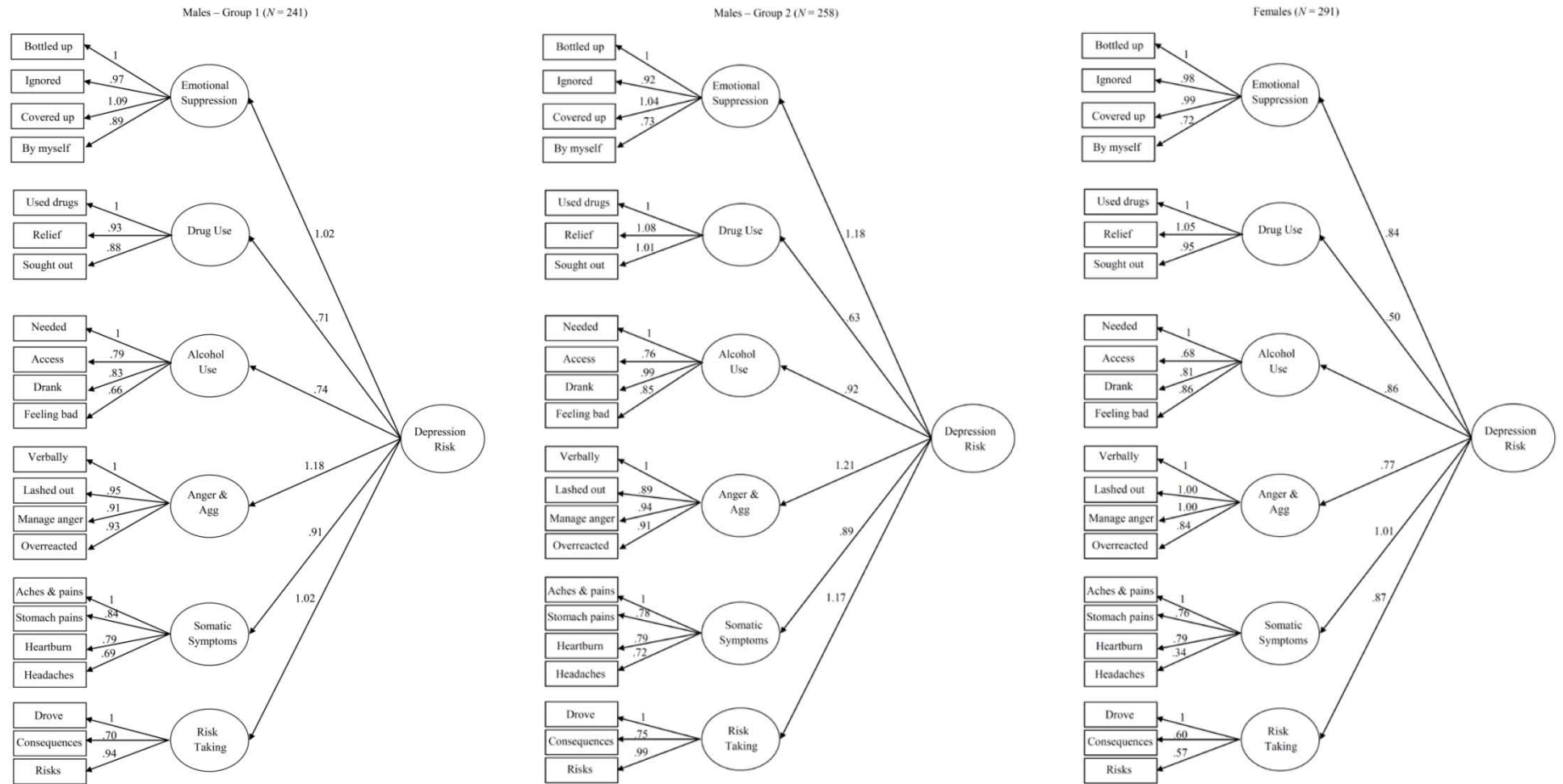


Figure 7. MDRS-22 factor structure for males in Group 1 (calibration group), males in Group 2 (validation group), and females.

As can be seen from Figure 7, regression weights for the item and factor loadings were relatively similar for males in Group 1 (the calibration group), and males in Group 2 (the validation group). With the exception of the somatic symptoms factor, all subscale factor loadings were higher for males in comparison to females. With the exception of the risk-taking items, females reported similar item loadings in comparison to males. For males, the emotional suppression, anger and aggression, and risk-taking subscales reported the highest loadings towards the overarching depression risk latent variable. In all instances of validation the drug use factor reported the lowest loading on depression risk. For females the somatic symptoms factor was the highest loading latent variable for depression risk.

Table 42

MDRS-22 Subscales and Corresponding Items

Subscale	Items
Emotional Suppression	I bottled up my negative feelings
	I tried to ignore feeling down
	I covered up my difficulties
	I had to work things out by myself
Drug Use	I used drugs to cope
	Using drugs provided temporary relief
	I sought out drugs
Alcohol Use	I needed alcohol to help me unwind
	I needed to have easy access to alcohol
	I drank more alcohol than usual
	I stopped feeling so bad while drinking
Anger & Aggression	I was verbally aggressive to others
	I verbally lashed out at others without being provoked
	It was difficult to manage my anger
	I overreacted to situations with aggressive behaviour
Somatic Symptoms	I had unexplained aches and pains
	I had stomach pains
	I had regular headaches
	I had more heartburn than usual
Risk-taking	I drove dangerously or aggressively
	I stopped caring about the consequence of my actions
	I took unnecessary risks

Scale Reliabilities, Subscale Values and Intercorrelations

Internal reliabilities were evaluated using Cronbach alpha coefficients (see Table 43). Apart for the MDRS risk-taking subscale for females, all MDRS-22 subscales reported satisfactory reliability. The CMNI-22 reported marginal reliability for females.

Table 43

Reliability Coefficients for MDRS-22 Subscales, MDRS-22 Total Score, CMNI-22 and PHQ-9 by Sex (Study 5a)

Subscale	Male α	Female α
MDRS-22 Emotional Suppression	.85	.83
MDRS-22 Drug use	.90	.91
MDRS-22 Alcohol use	.91	.90
MDRS-22 Anger & Aggression	.91	.88
MDRS-22 Somatic symptoms	.79	.74
MDRS-22 Risk-Taking	.72	.57
MDRS-22 Total Score	.92	.89
CMNI-22	.69	.65
PHQ-9	.92	.92

Correlation coefficients were evaluated for the MDRS-22 subscales and the CMNI-22 and PHQ-9 (see Table 44). Apart from the relationship between drug use and masculinity for females, all correlations were positive and statistically significant. Correlations between the CMNI-22 and MDRS-22 subscales tended to be stronger for males in comparison to females. For both males and females, strong positive correlations were observed between the MDRS-22 total score and the PHQ-9.

Each of the MDRS-22 subscales reported wide variation for both males and females (see Table 45). The theoretical range of MDRS-22 total scores was between 0 – 132.

Table 44

Correlations between MDRS-22 Subscales, PHQ-9, and CMNI-22 by Sex (Study 5a)

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Emotional Suppression	-	.15**	.25**	.47**	.51**	.39**	.75**	.65**	.28**
2. Drug Use	.29**	-	.40**	.22**	.28**	.51**	.52**	.24**	.08
3. Alcohol Use	.34**	.39**	-	.26**	.25**	.45**	.63**	.26**	.18**
4. Anger & Aggression	.53**	.37**	.34**	-	.35**	.44**	.70**	.52**	.17**
5. Somatic Symptoms	.54**	.22**	.26**	.49**	-	.39**	.72**	.60**	.13**
6. Risk-Taking	.53**	.49**	.46**	.62**	.40**	-	.70**	.41**	.12*
7. MDRS-22 Total Score	.79**	.58**	.66**	.79**	.70**	.78**	-	.70**	.26**
8. PHQ-9	.69**	.31**	.32**	.57**	.63**	.52**	.70**	-	.17**
9. CMNI-22	.26**	.09*	.16**	.30**	.16**	.30**	.30**	.19**	-

Note. Correlations above diagonal are for females, correlations below diagonal are for males. * = $p < .05$; ** = $p < .01$.

Table 45

Range of Values for MDRS-22 Subscales and Total Score by Sex

MDRS-22 Subscale	Items	Range of Values		
		Possible Range	Actual Range – Male $n = 499$	Actual Range – Female $n = 291$
Emotional Suppression	4	0 – 24	0 – 24	0 – 24
Drug Use	3	0 – 18	0 – 18	0 – 18
Alcohol Use	4	0 – 24	0 – 24	0 – 24
Anger & Aggression	4	0 – 24	0 – 24	0 – 24
Somatic Symptoms	4	0 – 24	0 – 24	0 – 24
Risk-Taking	3	0 – 18	0 – 18	0 – 15
MDRS-22 Total Score	22	0 – 132	0 – 111	0 – 120

Differences According to Sex & Conformity to Masculine Norms

As expected, males ($M = 28.10$, $SD = 6.10$) reported significantly higher CMNI-22 total scores in comparison to females ($M = 23.40$, $SD = 5.35$), $F(1, 788) = 118.83$, $p < .001$, $\eta^2 = .131$. Following the procedure outlined in Study 4, conformity to masculine norm categories were determined by converting CMNI-22 raw scores to Transformed scores (T-scores) separately for males and females. The distribution of conformity to

masculine norm categories and respective means and standard deviations were equivalent to those reported in Study 4 (c.f., Table 29 and Table 46).

Table 46

Means and SD's for CMNI-22 Categories by Sex (Study 5a)

CMNI-22 category	Males			Females		
	<i>M (SD)</i>	<i>n</i>	%	<i>M (SD)</i>	<i>n</i>	%
Extreme nonconformity	18.06 (2.70)	69	13.8	15.61 (2.85)	49	16.8
Moderate nonconformity	25.57 (1.92)	191	38.3	21.12 (1.53)	100	34.4
Moderate conformity	31.17 (1.62)	169	33.9	26.00 (1.35)	99	34.4
Extreme conformity	37.48 (3.71)	70	14.0	31.65 (3.10)	43	14.8

MDRS-22 total scores and subscale scores were calculated. MANOVA was undertaken to evaluate the hypothesis that individuals reporting extreme conformity to masculine norms would report higher MDRS-22 total scores compared to those reporting less extreme conformity to masculine norms. Sex and CMNI-22 categories were entered as between subjects factors. Results indicated a non-significant trend for males to report higher MDRS-22 total scores in comparison to females $F(3, 782) = 2.84, p = .092, \eta^2 = .005$. Further, a significant main effect indicated that MDRS-22 total scores differed according to CMNI-22 category $F(3, 782) = 23.91, p < .001, \eta^2 = .084$ (see Table 47 for means and *SDs*). Bonferonni adjusted post hoc analysis indicated that those in the extreme conformity to masculine norms category reported higher MDRS-22 total scores than those reporting moderate conformity ($p < .001$), moderate nonconformity ($p < .001$) and extreme nonconformity ($p < .001$). Further, those reporting extreme nonconformity scored lower than those reporting moderate nonconformity ($p = .010$) and moderate conformity ($p < .001$).

To further evaluate the effects of participant sex and CMNI-22 category on the six domains assessed by the MDRS-22, a MANOVA was undertaken on each of the six MDRS-22 subscales. Consistent with prediction, the same pattern of effects was reported as those found in Study 4. At the multivariate level, MANOVA indicated that males reported higher MDRS-22 subscale scores than did females $\Lambda = .947, F(6, 777) = 7.29, p < .001, \eta^2 = .053$ (see Tables 48 and 49 for means and *SDs*). In addition, a significant

multivariate effect for CMNI-22 category was observed with those in the extreme conformity to masculine norms category consistently reporting higher MDRS-22 subscale scores than those in the lower conformity categories $\Lambda = .884$, $F(18, 2198.17) = 5.42$, $p < .001$, $\eta^2 = .040$. Consistent with prediction, a significant multivariate interaction between participant sex and CMNI-22 category was also found $\Lambda = .953$, $F(18, 2198.17) = 2.08$, $p = .005$, $\eta^2 = .016$ (see Tables 48 and 49 for means and *SDs*). Inspection of interaction plots indicated a linear association between CMNI-22 category and severity of symptoms (see Figure 8). Consistent with prediction, there was a tendency for greater sex differentiation in MDRS subscale scores (higher for males) as conformity to masculine norms increased (see interaction plots in Figure 8 for drug use, anger and aggression, risk taking, and to some extent, alcohol use). There was comparatively less sex differentiation for emotional suppression and somatic symptoms.

Follow-up univariate main effects for participant sex indicated that males reported higher scores for the risk-taking subscale $F(1, 782) = 28.98$, $p < .001$, $\eta^2 = .036$ (see Tables 48 and 49 for means and *SDs*). Near significant sex differences were also reported for the drug use subscale $F(1, 782) = 3.50$, $p = .064$, $\eta^2 = .004$ and the anger and aggression subscale $F(1, 782) = 3.26$, $p = .071$, $\eta^2 = .004$. The remaining sex comparisons were non-significant.

Follow-up univariate analyses indicated weak to moderate significant main effects for the six MDRS-22 subscales for CMNI-22 category (emotional suppression $F(3, 782) = 20.55$, $p < .001$, $\eta^2 = .073$; drug use $F(3, 782) = 3.39$, $p = .018$, $\eta^2 = .013$; alcohol use $F(3, 782) = 10.61$, $p < .001$, $\eta^2 = .039$; anger and aggression $F(3, 782) = 15.81$, $p < .001$, $\eta^2 = .057$; somatic symptoms $F(3, 782) = 6.60$, $p < .001$, $\eta^2 = .025$; risk-taking $F(3, 782) = 17.98$, $p < .001$, $\eta^2 = .065$). Probability values for Bonferonni adjusted post hoc tests for the six MDRS-22 subscales are summarised in Table 50. As predicted, post hoc analysis indicated that those in the extreme conformity group consistently reported higher MDRS-22 subscale scores than those in the extreme nonconformity group.

A significant univariate interaction between CMNI-22 category and participant sex was reported for the risk-taking subscale $F(3, 782) = 4.74$, $p = .003$, $\eta^2 = .018$, and a near significant interaction was reported for the emotional suppression subscale $F(1, 782) = 2.61$, $p = .050$, $\eta^2 = .010$ (refer to Figure 8). For the risk-taking subscale, analysis of simple effects indicated that males and females in the extreme nonconformity group reported equivalent scores ($p = .851$), and that risk-taking scores became increasingly differentiated

(higher male scores) across moderate nonconformity ($p = .008$), moderate conformity ($p < .001$), and extreme conformity ($p < .001$). For the emotional suppression subscale simple effects indicated sex equivalent scores for the extreme and moderate nonconformity categories. Females reported significantly higher scores than males for the moderate conformity category ($p = .033$), whilst there was a trend for males to score higher on the emotional suppression subscale than females in the extreme conformity category ($p = .073$).

To evaluate the effects of participant sex and masculinity categories on prototypic depression symptoms, a two-way ANOVA was undertaken. PHQ-9 total scores were entered as the dependent variable and participant sex and CMNI-22 categories were used as between subjects factors. No sex differences in PHQ-9 total scores were observed ($p = .102$). A main effect was reported for CMNI-22 category $F(3, 782) = 11.13, p < .001, \eta^2 = .041$ (see Table 51 for means, *SDs*). Higher conformity to masculine norms was associated with higher prototypic depression symptom ratings. Bonferonni adjusted post hoc analysis indicated that those in the extreme conformity category reported higher scores than those reporting extreme nonconformity ($p < .001$), moderate nonconformity ($p < .001$), and moderate conformity ($p < .001$). The remaining post hoc comparisons were non-significant.

Table 47

Descriptive Statistics for the MDRS-22 Total Score by CMNI-22 Category and Sex

Subscale	CMNI-22 Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
MDRS-22	Extreme nonconformity	17.15	16.33	[13.22 – 21.07]	18.80	17.34	[13.82 – 23.78]	17.83	16.71	[14.79 – 20.88]
Total Score	Moderate nonconformity	25.58	20.43	[22.67 – 28.50]	23.12	17.88	[19.58 – 26.67]	24.73	19.60	[22.47 – 27.00]
	Moderate conformity	28.94	21.50	[25.67 – 32.20]	27.55	15.59	[24.44 – 30.66]	28.43	19.50	[26.08 – 30.78]
	Extreme conformity	44.21	27.30	[37.70 – 50.72]	35.47	22.42	[28.57 – 42.38]	40.89	25.81	[36.08 – 45.69]
	Total	28.16	22.60	[26.18 – 30.15]	25.72	18.43	[23.60 – 27.85]	27.27	21.18	[25.75 – 28.75]

Table 48

Descriptive Statistics for the MDRS-22 Emotional Suppression, Drug Use and Alcohol Use Subscales by CMNI-22 Category and Sex

Subscale	CMNI-22 Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
Emot.	Extreme nonconformity	7.80	6.35	[6.27 – 9.32]	7.22	5.82	[5.55 – 8.89]	7.56	6.12	[6.45 – 8.67]
Suppress.	Moderate nonconformity	10.04	6.41	[9.13 – 10.96]	10.25	5.91	[9.07 – 11.42]	10.11	6.23	[9.39 – 10.83]
	Moderate conformity	10.67	5.86	[9.78 – 11.56]	12.30	5.34	[11.24 – 13.36]	11.27	5.72	[10.58 – 11.96]
	Extreme conformity	14.69	7.27	[12.95 – 16.41]	12.53	5.57	[10.81 – 14.25]	13.86	6.73	[12.61 – 15.11]
	Total	10.59	6.60	[10.01 – 11.18]	10.71	5.93	[10.09 – 11.46]	10.66	6.36	[10.22 – 11.11]
Drug Use	Extreme nonconformity	0.75	2.67	[0.10 – 1.39]	0.96	2.96	[0.11 – 1.81]	0.82	2.78	[0.32 – 1.34]
	Moderate nonconformity	1.45	3.59	[0.94 – 1.97]	0.61	2.22	[0.18 – 1.05]	1.16	3.20	[0.80 – 1.54]
	Moderate conformity	1.43	3.63	[0.89 – 1.99]	0.68	2.52	[0.18 – 1.18]	1.53	3.28	[0.74 – 1.55]
	Extreme conformity	2.41	4.42	[1.36 – 3.47]	1.80	4.01	[0.56 – 3.04]	2.18	4.26	[1.39 – 2.98]
	Total	1.49	3.63	[1.16 – 1.80]	0.87	2.78	[0.55 – 1.19]	1.25	3.36	[1.02 – 1.49]
Alcohol Use	Extreme nonconformity	2.36	4.70	[1.23 – 3.49]	2.51	4.57	[1.20 – 3.87]	2.49	6.62	[1.58 – 3.26]
	Moderate nonconformity	3.47	5.21	[2.73 – 4.22]	2.67	4.46	[2.03 – 3.97]	3.20	4.97	[2.62 – 3.77]
	Moderate conformity	4.58	6.20	[3.63 – 5.52]	3.01	4.88	[2.03 – 3.98]	4.00	5.79	[3.30 – 4.69]
	Extreme conformity	6.01	7.41	[4.24 – 7.78]	6.55	7.32	[4.30 – 8.81]	6.21	7.35	[4.89 – 7.58]
	Total	4.05	5.92	[3.53 – 4.57]	3.33	5.28	[2.72 – 3.94]	3.80	5.70	[3.38 – 4.19]

Table 49

Descriptive Statistics for the MDRS-22 Anger & Aggression, Somatic Symptoms and Risk-Taking Subscales by CMNI-22 Category and Sex

Subscale	CMNI-22 Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
Anger & Agg	Extreme nonconformity	2.42	4.14	[1.43 – 3.42]	2.93	4.87	[1.54 – 4.34]	2.61	4.45	[1.82 – 3.45]
	Moderate nonconformity	3.74	5.05	[3.02 – 4.46]	3.13	5.06	[2.30 – 4.31]	3.60	5.06	[3.01 – 4.18]
	Moderate conformity	4.86	5.05	[3.02 – 4.46]	4.20	4.59	[3.27 – 5.10]	6.62	5.39	[3.97 – 5.26]
	Extreme conformity	8.64	8.18	[6.69 – 10.60]	6.02	6.59	[3.99 – 8.05]	7.64	7.70	[6.21 – 9.08]
	Total	4.62	6.00	[4.10 – 5.16]	3.95	5.20	[3.34 – 4.55]	4.37	5.72	[3.98 – 4.78]
Somatic Symptoms	Extreme nonconformity	2.74	4.30	[1.71 – 3.77]	4.00	5.35	[2.46 – 5.54]	3.62	4.78	[2.39 – 4.13]
	Moderate nonconformity	4.69	5.24	[3.85 – 5.30]	5.03	5.43	[3.95 – 6.11]	4.74	5.31	[4.13 – 5.32]
	Moderate conformity	4.39	5.06	[3.62 – 5.16]	5.91	5.02	[4.91 – 6.91]	4.95	5.09	[4.34 – 5.56]
	Extreme conformity	6.92	6.64	[5.33 – 8.50]	6.05	5.29	[4.41 – 7.67]	6.58	6.15	[5.43 – 7.74]
	Total	4.59	5.39	[4.12 – 5.07]	5.31	5.28	[4.70- 5.91]	4.86	5.35	[4.49 – 5.23]
Risk-Taking	Extreme nonconformity	1.07	2.00	[0.59 – 1.55]	1.16	2.64	[0.40 – 1.93]	1.11	2.27	[0.69 – 1.52]
	Moderate nonconformity	2.26	3.32	[1.79 – 2.74]	1.23	2.40	[0.75 – 1.71]	1.91	3.09	1.56 – 2.27[]
	Moderate conformity	3.00	3.52	[2.47 – 3.53]	1.45	1.92	[1.07 – 1.84]	2.43	3.12	[2.06 – 2.80]
	Extreme conformity	5.53	4.91	[4.36 – 6.70]	2.52	3.23	[1.52 – 3.51]	4.38	4.57	[3.53 – 5.24]
	Total	3.94	5.20	[3.34 – 4.55]	1.48	2.47	[1.20 – 1.77]	2.32	3.38	[2.09 – 2.56]

Table 50

Summary of Post Hoc Analysis of MDRS-22 Subscales by CMNI-22 Category

Post hoc comparison		Bonferonni adjusted <i>p</i>					
CMNI-22 Cat (I)	CMNI-22 Cat (J)	Emotional Suppression	Drug use	Alcohol use	Anger & Aggression	Somatic	Risk- Taking
Extreme Nonconformity	Moderate Nonconformity	.001	1.000	1.000	.672	.065	.120
	Moderate Conformity	< .001	1.000	.071	.158	.025	.001
	Extreme Conformity	< .001	.014	< .001	< .001	< .001	< .001
Moderate Nonconformity	Moderate Conformity	.158	1.000	.608	.158	.065	.344
	Extreme Conformity	< .001	.039	< .001	< .001	.010	< .001
Moderate Conformity	Extreme Conformity	.001	.045	.002	< .001	.032	< .001

Note. Bonferonni adjusted post hoc comparisons calculated for mean difference (I – J).

Table 51

Descriptive Statistics for PHQ-9 Scores by CMNI-22 Category and Sex

Subscale	CMNI-22 Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
PHQ-9	Extreme nonconformity	6.04	6.15	[4.57 – 7.52]	5.34	5.86	[3.66 – 7.03]	5.75	6.01	[4.65 – 6.85]
	Moderate nonconformity	7.30	6.83	[6.33 – 8.28]	7.14	6.49	[5.85 – 8.42]	7.25	6.70	[6.47 – 8.02]
	Moderate conformity	7.73	6.41	[6.67 – 8.71]	7.42	5.77	[6.27 – 8.57]	7.62	6.17	[6.88 – 8.36]
	Extreme conformity	11.87	8.10	[9.93 – 13.80]	9.53	8.00	[7.07 – 12.00]	10.98	8.11	[9.46 – 12.50]
	Total	7.92	6.98	[7.30 – 8.53]	7.29	6.48	[6.54 – 8.03]	7.68	6.80	[7.21 – 8.16]

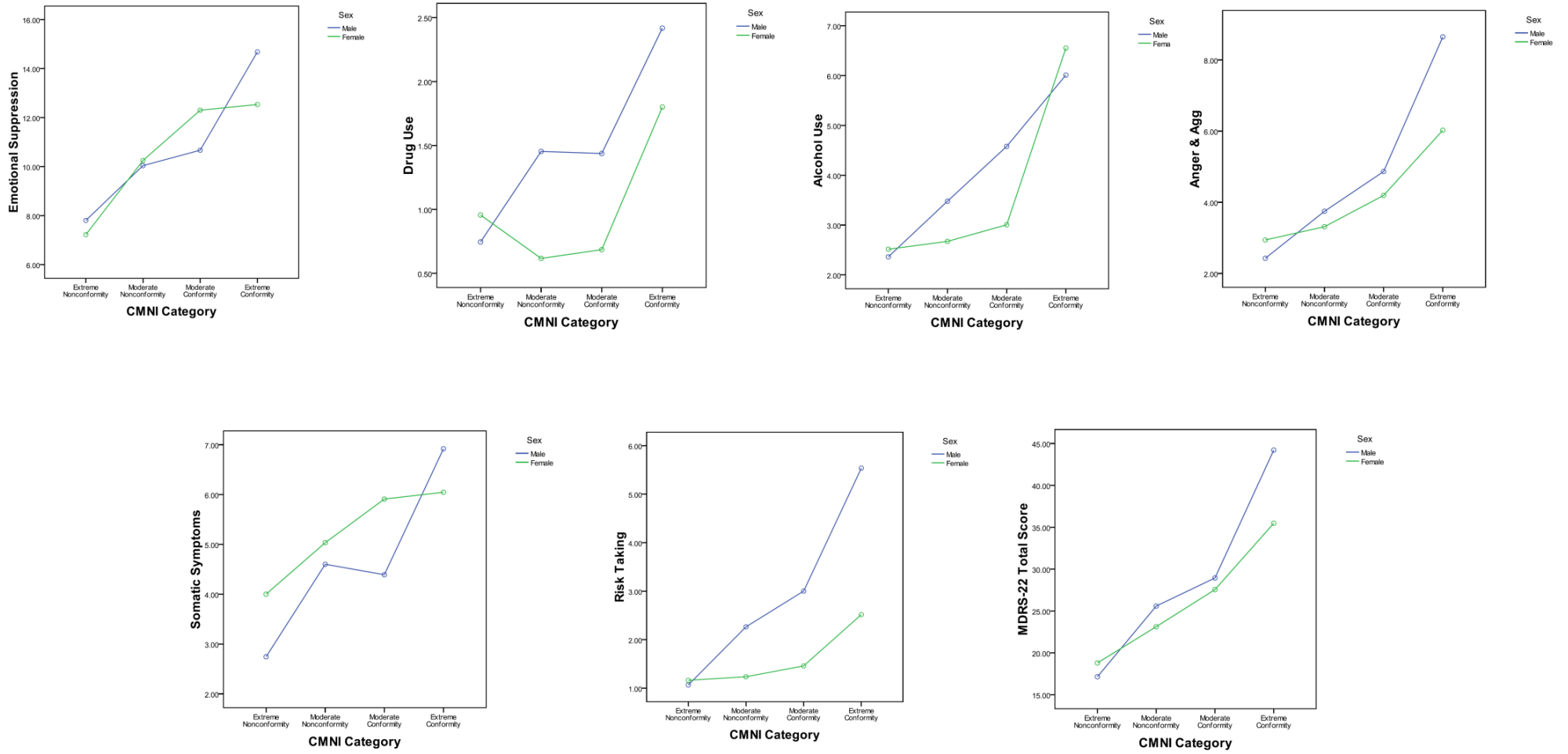


Figure 8. Interaction plots (CMNI-22 category \times sex) for the MDRS-22 subscales and the MDRS total score.

Method – Study 5b

Participants

Time 2 data was provided by a total of 238 participants. Based on the usable data at Time 1, this represented a 30.12% response rate at Time 2 (of those who provided an email address at Time 1, 39.01% responded at Time 2). After data screening was complete (see section below for full details) the resultant usable sample comprised 233 cases. The Time 2 sample totalled 126 males ($M = 38.92$ years, $SD = 14.56$) and 107 females ($M = 35.11$ years, $SD = 13.46$). The mean age difference between male and female participants was significant $t(231) = 2.06, p = .041$. A total of 77 participants (33.9% of the total useable sample) were below 30 years of age. Detailed information on the full sample is provided in Table 53.

Additional Measures

Barriers to Help Seeking Scale. Barriers to help seeking were assessed by the Barriers to Help Seeking Scale (BHSS; Mansfield, Addis, & Courtenay, 2005). The BHSS was designed to assess barriers men experience for seeking help and comprises five subscales assessing need for control and self-reliance (e.g., *'I would think less of myself for needing help'*), minimising problems and resignation (e.g., *'The problem wouldn't seem worth getting help for'*), concrete barriers and distrust of caregivers (e.g., *'Financial difficulties would be an obstacle to getting help'*), privacy (e.g., *'This problem is embarrassing'*) and emotional control (e.g., *'I don't like to talk about feelings'*). Responses are made on a five-point scale where; 0 (*not at all*); 4 (*very much*). For the present study participants were asked to respond to the BHSS questions in the context of hypothetically suspecting they had depression. Given this, the three questions from the privacy subscale related to physical examination were not presented to respondents as they were not relevant.

Emotion Regulation Questionnaire. The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) assessed emotion regulation strategies. The ERQ contains two subscales used to assess the habitual use of two emotion regulation strategies. Six items assess cognitive reappraisal (e.g., *'When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm'*) and four items assess expressive suppression (e.g., *'I control my emotions by not expressing them'*). The ERQ comprises 10

items to which responses are made on seven-point scale where; 1 (*strongly disagree*), 7 (*strongly agree*). Higher ERQ subscale scores indicate more frequent use of that strategy.

Stressful Life Events Checklist. Negative life events were assessed by the Stressful Life Events Checklist (SLEC; Costello & Devins, 1988). The SLEC assesses 22 potential stressful life events that may precipitate psychological distress or depression (e.g., death of spouse, serious chronic illness, loss of job, severe marital or relationship problems). The full list of SLEC items are presented in Appendix F. Participants responded to whether they had experienced these items in the preceding 3 months where; 0 (*not applicable*), 1 (*minor stress*), 6 (*major stress*). SLEC data was collected at Time 1.

Patient Health Questionnaire – Depression Module. The PHQ-9 (Kroenke, Spitzer, & Williams, 2001) was used to assess depression symptoms. See Chapter 9 for psychometric details.

Ruminative Responses Scale. Rumination was assessed by the 10 item Ruminative Responses Scale (RRS; Treynor, Gonzalez, & Nolen-Hoeksema, 2003). The RRS describes responses to depressed mood that are self-focused and focused on the possible consequences and causes of depressed mood (Nolen-Hoeksema, Larson, & Grayson, 1999). The RRS contains subscales for the neutrally valenced concept of reflection (e.g., ‘*Go some place alone to think about your feelings*’) and the negatively valenced concept of brooding (e.g., ‘*Think “Why can’t I handle things better?”*’). Respondents rated each RRS item on a four-point scale where; 1 (*almost never*), 4 (*almost always*).

Experiences of Shame Scale. Shame was assessed by the three personal items taken from the Experiences of Shame Scale (ESS; Andrews, Qian, & Valentine, 2002). These items were selected as they best conceptualised global self-perception of shame. The three items were ‘*Have you felt ashamed of the sort of person you are?*’, ‘*Have you worried about what other people think of the sort of person you are?*’ and ‘*Have you tried to conceal from others the sort of person you are?*’. These items were rated on a four-point scale where; 1 (*not at all*), 4 (*very much*).

Procedure

Ethical approval was obtained from the Australian Catholic University Human Research Ethics Committee. Email invitations to participate at Time 2 were sent out to all

participants who provided a valid email address at Time 1. Invitations to participate were sent approximately 12 weeks after data collection concluded at Time 1. A combined thank you / reminder message was emailed one week after the initial invitation was sent. As in the previous studies reported, the email invitation directed respondents to the online survey. Data was matched between Time 1 and Time 2 based on the ID codes provided by respondents. On average, approximately 15 weeks (mean = 102.81 days, $SD = 7.12$ days) elapsed between the provision of data at Time 1 and Time 2. While data was collected for the MDRS-22, PHQ-9, ESS and SLEC at both Time 1 and Time 2, only Time 2 data was collected for the remaining scales used in Study 5b (e.g., the BHSS, ERQ, and RRS).

Data Screening

Prior to statistical analyses and hypothesis testing data was thoroughly screened to identify complete cases, plausibility of values, outliers, homogeneity of variance and normality. Data screening procedures followed the same sequence as those present in Study 1, Study 4, and Study 5a.

Patterns of missing data were initially explored using the SPSS NMISS function. Most participants responded to all questions (see Table 52). There were five respondents who failed to answer between 11 and 41 questions. These respondents were deleted from the analysis. Little's MCAR test for missing data (which was undertaken according to participant sex) was non-significant ($\chi^2 = 5,595.51$, $df = 5,892$, $p = .266$), indicating that mean substitution was appropriate for the remaining cases that were missing data (e.g., either 1 or 2 data points). This resulted in a final sample of 233 individuals.

Table 52

Frequency of Observed Missing Data (Study 5b)

Missing data points	Frequency	Sample	Sample
		Percent	Cumulative Percent
0	147	61.8	61.8
1	58	24.4	86.1
2	17	7.1	93.3
3 – 10	11	4.5	97.9
11 – 41	5	2.1	2.1
Total	238	100.0	100.0

Univariate descriptive statistics were checked for plausibility of means, standard deviations, and the range of values of all responses to Time 2 scales and subscales. All values for individual items, subscales, and demographic variables were within the expected range and item means and standard deviations were plausible. Univariate outliers were identified using z score transformations for each of the measures. Inspection of z scores failed to yield any values in excess of $z = \pm 2.29$ for the PHQ-9, ESS, RRS or emotional regulation subscales. Two outliers were observed for the concrete barriers subscale of the BHSS. For the MDRS-22 subscales, eight outliers were identified for the drug use subscale, five for the alcohol use and risk-taking subscales, three for the anger and aggression subscale, and one for the somatic symptoms subscale. In addition there were two outliers for the MDRS-22 total score. In all instances outliers were above the mean and were rescored to values reflecting the respective subscale mean plus two standard deviations (e.g., Field, 2009). Scale scores were also explored for multivariate outliers through the Mahalanobis distance procedure. No multivariate outliers were identified using this procedure.

Levene's test was undertaken to determine equality of variance according to participant sex. Levene's test was significant ($p < .001$) for the MDRS-22 total scores and the distress, drug use, alcohol use, anger, risk-taking, and interest in sex subscales. All other subscales reported equality of variances. Given the MDRS subscales were designed to assess depression risk in males, differences in variance are to be expected.

Normality of the dependent variables used in the study were assessed through skewness and kurtosis values, histograms, normal Q-Q plots, and detrended normal Q-Q plots. Apart from the MDRS-22 emotional suppression subscale, all other MDRS-22 subscales reported a positive skew. In contrast, the RRS reappraisal subscale had a negative skew. Inspection of the histograms, normal Q-Q plots, and detrended normal Q-Q plots all verified the departures of normality indicated above. As indicated in Study 1 and Study 4, positively skewed scores are to be expected on these variables given data was collected from a community sample.

Data Analytic Strategy

To evaluate the stability of MDRS-22 scores between Time 1 and Time 2, test re-test correlations were computed. Between groups analyses were undertaken for the PHQ-9

and the MDRS-22 subscales using participant sex and Time 1 depression risk category (described below) as independent variables. In addition, separate hierarchical regression analyses were undertaken for males and females predicting to Time 2 MDRS-22 total scores.

Results

Sample Characteristics

Demographic information for the Time 2 sample is presented in Table 53. Apart from education level, chi square analyses failed to indicate any significant associations between participant sex and any of the demographic variables. Females were more likely than males to have a postgraduate degree, while males were more likely than females to have a trade qualification $\chi^2(6, N = 233) = 17.98, p = .001$.

Reliability Coefficients and Intercorrelations

Reliability coefficients for all scales and subscales were satisfactory (see Table 54). The exception to this was the risk-taking subscale for females. Reliability coefficients for the MDRS-22 total score were particularly high.

Intercorrelations between study variables were evaluated separately for males and females (see Table 55). Correlations ranged from weak to strong, and were positive. The exceptions to this were correlations for the reappraisal subscale, where, consistent with prediction, correlations were negatively valanced. While in comparison to females, males reported a stronger correlation between the MDRS-22 total score and PHQ-9, this difference failed to achieve significance ($p = .190$). Moderate correlations were observed between the MDRS-22 total score and negative events at Time 2. In contrast to prediction, equivalent correlations for males and females were observed between the rumination variables and PHQ-9 scores.

Table 53

Sample Demographic Characteristics by Sex and Total (Study 5b)

	Males		Females		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Ethnicity						
Anglo/Caucasian	115	97.5	91	93.8	206	95.8
Asian	3	2.5	5	5.2	8	3.7
Pacific Islander	0	0	1	0.5	1	0.5
Relationship Status						
In a Current romantic relationship	77	61.1	66	61.7	143	61.4
Place of residence						
Metropolitan	83	65.9	69	64.5	152	65.2
Rural/Regional	43	34.6	38	34.8	81	34.8
Income						
Up to \$50,000	77	62.6	68	63.6	145	63.0
\$51,000 - \$100,000	35	28.5	32	29.9	67	29.1
\$101,000+	11	8.9	7	6.5	18	7.8
Highest Education						
Primary	2	1.6	0	0	2	0.9
Pre Year 12	5	4.0	5	4.7	10	4.3
Year 12	35	27.8	22	20.5	57	24.5
Trade Qualification	21	16.7	5	4.7	26	11.2
Undergraduate Degree	39	31.0	39	36.4	78	33.5
Postgraduate Degree	24	19.0	36	33.6	60	25.8
Previous diagnosis						
Depression	51	40.5	38	35.5	89	38.2

Note. Not all participants identified their ethnicity.

Table 54

Reliability Coefficients for Study Scales and Subscales by Sex (Study 5b)

Subscale	Male α	Female α
MDRS-22 Emotional Suppression	.80	.87
MDRS-22 Drug use	.89	.82
MDRS-22 Alcohol use	.90	.89
MDRS-22 Anger & Aggression	.92	.83
MDRS-22 Somatic symptoms	.73	.78
MDRS-22 Risk-taking	.73	.56
MDRS-22 Total score	.90	.87
BHSS Minimising Problems	.90	.90
BHSS Privacy	.65	.65
BHSS Concrete Barriers	.72	.80
BHSS Need for Control	.91	.92
BHSS Emotional Control	.85	.84
ESS – Time 1	.89	.82
ESS – Time 2	.85	.83
RRS Brooding	.80	.82
RRS Reflection	.80	.77
ERQ Suppression	.80	.70
ERQ Reappraisal	.85	.76
PHQ-9 – Time 1	.91	.92
PHQ-9 – Time 2	.92	.89

Note. Unless otherwise stated, reliability coefficients reported are for Time 2 measures.

Table 55

Correlation Coefficients for Study Variables by Sex (Study 5b)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. MDRS-22 Total Score	-	.33**	.53**	.53**	.44**	.52**	.60**	.72**	.47**	.26**	.37**	-.29**	.55**	.13	.44*
2. BHSS Minimising Problems	.35**	-	.44**	.36**	.57**	.58**	.25**	.25**	.09	-.09	.34**	.04	.07	.16	-.02
3. BHSS Privacy	.42**	.54**	-	.62**	.67**	.63**	.45**	.52**	.23*	.14	.29**	-.23*	.36**	.24*	.22*
4. BHSS Concrete Barriers	.56**	.49**	.53**	-	.44**	.42**	.48**	.51**	.30**	.19**	.25**	-.33**	.49**	.23*	.31*
5. BHSS Need for Control	.52**	.63**	.65**	.59**	-	.66**	.28**	.45**	.09	.06	.30**	-.21*	.20*	.24*	.20*
6. BHSS Emotional Control	.48**	.56**	.71**	.52**	.70**	-	.34**	.45**	.16	-.04	.47**	-.29**	.22*	.12	.15
7. Shame – T1	.45**	.35**	.39**	.28**	.34**	.35**	-	.73**	.67**	.53**	.27**	-.18	.72**	.14	.39**
8. Shame – T2	.63**	.26**	.41**	.45**	.36**	.39**	.66**	-	.52**	.40**	.34**	-.21*	.58**	.19	.45**
9. RRS Brooding	.62**	.27**	.29**	.41**	.33**	.39**	.63**	.62**	-	.51**	.16	-.22*	.58**	.07	.33**
10. RRS Reflection	.41**	.07	.11	.22*	.14	.14**	.36**	.39**	.47**	-	.01	-.08	.40**	-.09	.29**
11. ERQ Suppression	.39**	.41**	.43**	.37**	.44**	.66**	.20*	.26**	.35**	.16	-	-.19*	.23*	.03	.12
12. ERQ Reappraisal	-.32**	-.06	-.10	-.14	-.06	-.06**	-.20*	-.19*	-.19*	-.05	.02	-	-.17	.07	.01
13. PHQ-9	.66**	.33**	.36**	.48**	.39**	.45**	.62**	.58**	.67**	.37**	.39**	-.26**	-	.24*	.50**
14. Neg Life Events – T1	.28**	.07	.12	.17	.21*	.20*	.26*	.24*	.37*	.14	.23**	-.13	.35**	-	.56**
15. Neg Life Events – T2	.40**	.04	.09	.27**	.17	.15	.18*	.26**	.34**	.26**	.20**	-.14	.33**	.39**	-

Note. Unless stated otherwise, correlations are for Time 2. Correlations above diagonal are for females, correlations below diagonal are for males. T1 = Time 1, T2 = Time 2, * = $p < .05$; ** = $p < .001$.

Test re-test correlations were computed for the MDRS-22 subscales, the MDRS-22 total score, and the PHQ-9 (see Table 56). With the exception of the emotional suppression subscale, all test re-test correlations were stronger for males than for females. The differences were statistically significant (Fischer r to z transformation) for the drug use, anger and aggression, and somatic symptoms subscales. Correlations for the MDRS-22 total scores indicate a high degree of score stability over the 15 week period, especially for males.

Table 56

Test Re-test Reliability and Sex Comparisons for the MDRS-22 Subscales, Total Score, and PHQ-9

	Sex		Sex comparison
	Male r	Female r	p
Emotional Suppression	.69**	.70**	.440
Drug use	.80**	.68**	.021
Alcohol use	.72**	.66**	.195
Anger & Aggression	.80**	.49**	< .001
Somatic Symptoms	.73**	.56**	.013
Risk-taking	.64**	.50**	.058
MDRS-22 Total Score	.78**	.67**	.078
PHQ-9	.71**	.68**	.659

Note. ** $p < .001$

Effects of Participant Sex and Negative Life Events

Respondents were allocated to one of three categories of negative life events based on SLEC total scores at Time 1 (SLEC scores at Time 1 ranged from 0 – 119). The first group comprised those who were considered to be at low risk of depression. Respondents allocated to this group reported that they had not experienced any recent negative life events (e.g., within the previous three months) that had caused either significant or major stress (e.g., all respondents in group 1 had a SLEC total score ≤ 5). The second group was comprised of those who reported SLEC scores in the range of greater than 5 but less than 19. Minimally, respondents allocated to this group would have experienced at least one recent negative life event that caused significant or major stress (e.g., ≥ 5), or the

cumulative effect of several negative events causing mild stress. Based on this, respondents in the second group were considered to be at low–moderate risk of experiencing depression. The third group reported SLEC scores greater than 20, and were considered to be at moderate–high risk of experiencing depression. Relatively equal numbers of males and females were in each group (see Table 57). SLEC total scores were equivalent for males and females across the three categories ($p = .983$).

Table 57

Descriptive Statistics for Depression Risk Category Scores by Sex

Depression Risk Category	Males			Females		
	<i>n</i>	Mean	<i>SD</i>	<i>n</i>	Mean	<i>SD</i>
1 – Low risk	41	1.43	1.58	36	1.58	1.61
2 – Low/mod risk	48	11.04	3.99	46	10.35	4.24
3 – Mod/high risk	36	42.72	21.96	26	42.59	29.74

Consistent with the assumption that the three SLEC categories would report either low, low–moderate or moderate–high risk of depression, a main effect for stressful life events category was observed for Time 2 PHQ-9 scores $F(1, 227) = 29.65, p < .001, \eta^2 = .207$. Bonferonni adjusted post hoc analysis indicated that those in the low risk category ($M = 3.15, SD = 3.21$) reported significantly lower depression scores ($p < .001$) than those in the low–moderate risk category ($M = 7.20, SD = 5.30$), who in turn reported significantly lower depression scores ($p = .001$) than those in the moderate–high risk category ($M = 10.70, SD = 8.17$). As hypothesised, no main effect for participant sex, or interaction was reported. Based on the interpretation of PHQ-9 scores (e.g., Kroenke, Spitzer, & Williams, 2001), on average, those in the low risk group were in the ‘minimal depression’ range, those in low-moderate risk group were in the ‘mild depression’ range, and those in the moderate-high risk group were in the ‘moderate depression’ range.

Between groups analyses were undertaken to evaluate the effects of participant sex and depression risk at Time 1 on atypical and prototypic depression symptoms at Time 2. In the initial analyses MDRS-22 total scores were used as dependent variables and participant sex and life events categories were entered as between subjects factors. For the MDRS-22 total score, a significant main effect was found for participant sex, with males

reporting higher scores than females $F(1, 227) = 7.85, p = .006, \eta^2 = .033$ (see Table 58 for means and *SDs*). A significant main effect was also reported for depression risk category $F(2, 227) = 18.43, p < .001, \eta^2 = .140$. Bonferonni adjusted post hoc analysis indicated no significant difference between those in the low risk and the mod-low risk ($p = .123$). However, the low risk group reported significantly lower MDRS-22 total scores than those in the moderate-high risk group ($p < .001$). Further, the low-moderate risk group scored lower than the moderate-high risk group ($p = .005$). Consistent with prediction, a significant interaction between participant sex and depression risk category was also found $F(2, 227) = 3.99, p = .020, \eta^2 = .034$ (see Figure 9). As predicted, analysis of simple main effects indicated that males and females reported equivalent MDRS-22 total scores for the low ($p = .101$), and low-moderate depression risk categories ($p = .592$). However, while MDRS-22 total scores of females in the moderate-high depression risk category tended to plateau, male scores for those in the moderate-high depression risk category markedly increased, and were significantly higher than equivalent female scores ($p = .003$).

Further between groups analysis was undertaken on the Time 2 scores for the six MDRS-22 subscales using MANOVA. A significant multivariate main effect was reported for participant sex, where, with the exception of somatic symptoms, males reported higher subscale scores than females $\Lambda = .897, F(6, 222) = 4.25, p < .001, \eta^2 = .103$ (see Tables 59 and 60 for means). A multivariate effect was also reported for depression risk category with those in the moderate-high risk category reporting higher subscale scores than those in lower risk categories $\Lambda = .816, F(6, 222) = 3.96, p < .001, \eta^2 = .097$. Further, also consistent with prediction, a significant multivariate interaction was found $\Lambda = .887, F(12, 444) = 2.29, p = .008, \eta^2 = .058$ (see Figure 10 for interaction plots). The interaction indicated a tendency for greater sex differentiation in subscale scores (higher male scores) as depression risk increased (see Figure 10 interaction plots for drug use, alcohol use, anger and aggression, and risk taking). There was comparatively little sex differentiation of scores for the emotional suppression and somatic symptoms subscale.

Follow up univariate tests indicated that males reported higher mean scores for the drug use subscale $F(1, 227) = 7.86, p = .006, \eta^2 = .033$, the alcohol use subscale $F(1, 227) = 7.20, p = .008, \eta^2 = .033$, and the risk-taking subscale $F(1, 227) = 21.16, p < .001, \eta^2 = .085$ (see Tables 59 and 60 for means and *SDs*). There were also univariate effects for depression risk category for five of the MDRS-22 subscales (emotional suppression $F(2,$

227) = 20.11, $p < .001$, $\eta^2 = .151$; alcohol use $F(2, 227) = 3.68$, $p = .027$, $\eta^2 = .031$; anger and aggression $F(2, 227) = 6.77$, $p < .001$, $\eta^2 = .056$; somatic symptoms $F(2, 227) = 6.90$, $p = .001$, $\eta^2 = .057$, and risk-taking $F(2, 227) = 8.63$, $p < .001$, $\eta^2 = .071$). Bonferonni adjusted post hoc analysis (see Table 61) indicated that those in the low depression risk category consistently reported lower subscales scores than those in the moderate-high depression risk category. Finally, there were also univariate interactions between participant sex and depression risk category for the emotional suppression subscale $F(2, 227) = 3.55$, $p = .030$, $\eta^2 = .030$, and the risk-taking subscale $F(2, 227) = 6.23$, $p = .002$, $\eta^2 = .052$, and a trend for an interaction for the alcohol use subscale ($p = .085$). For the emotional suppression subscale, analysis of simple effects indicated trends for higher male scores compared to female scores for the low risk category ($p = .062$), while there were no sex differences for the low-mod ($p = .097$) or mod-high categories ($p = .138$). In contrast, for the risk-taking subscale there were no sex differences in subscale scores for the low ($p = .306$), or low-mod categories ($p = .116$), but a significant sex difference (higher male scores) for the mod-high category ($p < .001$). This pattern also held for the alcohol use subscale (see Figure 10).

Means, *SDs* and 95% *CI*'s were calculated for the remaining subscales (see Table 62). One-way MANOVA indicated a significant multivariate effect whereby males reported higher scores in comparison to females across the five barriers to help seeking subscales $\Lambda = .945$, $F(5, 227) = 2.70$, $p = .023$, $\eta^2 = .055$. Univariate effects indicated that males reported higher scores than females on four of the five BHSS subscales (need for control subscale $F(1, 231) = 3.92$, $p = .049$, $\eta^2 = .017$, the concrete barriers subscale $F(1, 231) = 9.27$, $p = .003$, $\eta^2 = .039$, the privacy subscale $F(1, 231) = 7.96$, $p = .005$, $\eta^2 = .033$, and the emotional control subscale $F(1, 231) = 4.62$, $p = .033$, $\eta^2 = .020$). A separate one-way MANOVA indicated that males also reported higher mean scores than females for the expressive suppression subscale $F(1, 231) = 15.41$, $p < .001$, $\eta^2 = .065$, but not the reappraisal subscale ($p = .145$), while a further one-way MANOVA indicated that females scored higher than males on the ruminative reflection subscale $F(1, 231) = 4.42$, $p = .037$, $\eta^2 = .019$. There was no significant sex difference for the ESS at either Time 1 or Time 2.

Table 58

Descriptive Statistics for MDRS-22 Total Scores by Depression Risk Category and Sex

Subscale	Depression Risk Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
MDRS-22	Low Depression Risk	16.97	16.29	[11.83 – 22.11]	11.37	9.86	[8.04 – 14.71]	14.35	13.86	[11.21 – 17.50]
Total Score	Low-Mod Depression Risk	23.52	18.14	[18.26 – 28.80]	24.74	14.21	[20.52 – 28.96]	24.12	16.26	[20.79 – 27.45]
	Mod-High Depression Risk	37.39	21.10	[30.25 – 44.32]	24.17	16.00	[17.57 – 30.78]	32.00	20.13	[26.86 – 37.12]
	Total	25.43	20.07	[21.89 – 28.97]	20.11	14.66	[17.30 – 22.92]	22.99	17.96	[20.68 – 25.31]

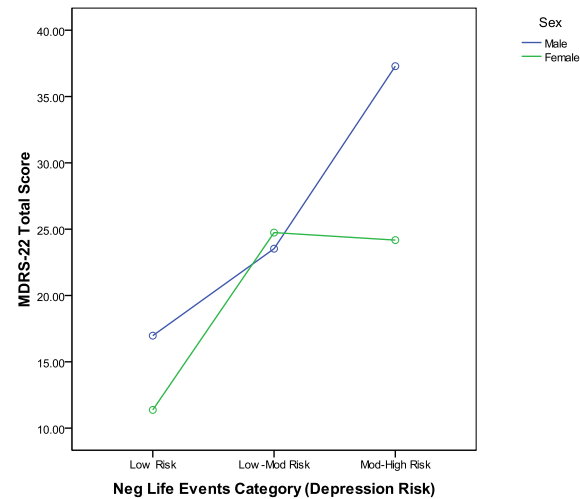
Figure 9. Interaction plot (depression risk category \times sex) for MDRS-22 total score.

Table 59

Descriptive Statistics for the MDRS-22 Emotional Suppression, Drug Use and Alcohol Use Subscales by Depression Risk Category and Sex

Subscale	Depression Risk Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
Emot.	Low Depression Risk	7.71	5.56	[5.59 – 9.46]	5.30	4.70	[3.71 – 6.89]	6.54	5.28	[5.38 – 7.78]
Suppress.	Low-Mod Depression Risk	10.12	6.51	[8.23 – 12.01]	11.92	5.37	[10.35 – 13.51]	11.00	6.01	[9.77 – 12.24]
	Mod-High Depression Risk	12.89	5.45	[11.07 – 14.71]	11.03	5.26	[8.81 – 13.24]	12.14	5.44	[10.75 – 13.52]
	Total	10.15	6.21	[9.06 – 11.24]	9.48	5.92	[8.35 – 10.62]	9.85	6.08	[9.06 – 10.63]
Drug Use	Low Depression Risk	0.59	2.29	[0.13 – 1.31]	0.14	0.54	[0.04 – 0.32]	0.38	1.72	[0.01 – 0.77]
	Low-Mod Depression Risk	1.51	3.68	[0.43 – 2.57]	0.14	0.55	[0.02 – 0.30]	0.84	2.74	[0.27 – 1.40]
	Mod-High Depression Risk	2.00	4.12	[0.62 – 3.37]	0.83	2.24	[0.10 – 1.74]	1.52	3.51	[0.63 – 2.41]
	Total	1.35	3.47	[0.74 – 1.97]	0.29	1.20	[0.07 – 0.52]	0.86	2.72	[0.51 – 1.22]
Alcohol Use	Low Depression Risk	2.29	3.82	[1.08 – 3.49]	1.02	2.01	[0.34 – 1.69]	1.69	3.16	[0.97 – 2.42]
	Low-Mod Depression Risk	2.95	4.94	[1.52 – 4.39]	2.80	4.65	[1.42 – 4.18]	2.88	4.77	[1.90 – 3.86]
	Mod-High Depression Risk	5.56	6.77	[3.31 – 7.82]	2.00	3.87	[0.40 – 3.60]	4.12	6.01	[2.60 – 5.65]
	Total	3.20	5.38	[2.56 – 4.46]	2.01	3.81	[1.29 – 2.74]	2.82	4.77	[2.21 – 3.48]

Table 60

Descriptive Statistics for the MDRS-22 Anger and Aggression, Somatic Symptoms and Risk-Taking Subscales by Depression Risk Category and Sex

Subscale	Depression Risk Category	Male			Female			Total		
		<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's	<i>M</i>	<i>SD</i>	95% CI's
Anger & Agg	Low Depression Risk	2.73	4.69	[1.25 – 4.21]	1.77	2.71	[2.69 – 1.40]	2.28	3.90	[1.40 – 3.16]
	Low-Mod Depression Risk	3.29	4.73	[1.91 – 4.67]	3.64	4.43	[2.33 – 4.67]	3.41	4.57	[2.53 – 4.40]
	Mod-High Depression Risk	6.41	6.50	[4.24 – 8.58]	4.08	4.28	[2.32 – 5.88]	5.47	5.79	[4.00 – 6.94]
	Total	4.02	5.48	[3.05 – 4.99]	3.11	3.99	[2.35 – 3.88]	3.60	4.86	[2.97 – 4.24]
Somatic Symptoms	Low Depression Risk	2.68	3.89	[1.45 – 3.91]	2.58	3.94	[1.24 – 3.91]	2.64	3.89	[1.75 – 3.51]
	Low-Mod Depression Risk	2.52	4.56	[2.19 – 4.84]	5.23	5.27	[3.56 – 6.70]	4.31	4.96	[3.29 – 5.32]
	Mod-High Depression Risk	5.96	5.12	[4.25 – 7.67]	5.32	5.76	[2.94 – 7.70]	5.71	5.35	[4.32 – 7.06]
	Total	3.96	4.70	[3.13 – 4.79]	4.32	5.10	[3.34 – 5.30]	4.13	4.87	[3.50 – 4.76]
Risk-Taking	Low Depression Risk	0.97	1.85	[0.37 – 1.55]	0.56	1.18	[0.16 – 0.96]	0.77	1.58	[0.41 0 1.13]
	Low-Mod Depression Risk	2.12	3.36	[1.15 – 3.10]	1.10	1.70	[0.59 – 1.61]	1.62	2.71	[1.06 – 2.17]
	Mod-High Depression Risk	4.56	4.48	[2.96 – 5.60]	0.92	1.71	[0.22 – 1.62]	3.03	4.01	[2.01 – 4.05]
	Total	2.43	3.62	[1.80 – 3.07]	0.88	1.55	[0.58 – 1.17]	1.72	2.96	[1.34 – 2.10]

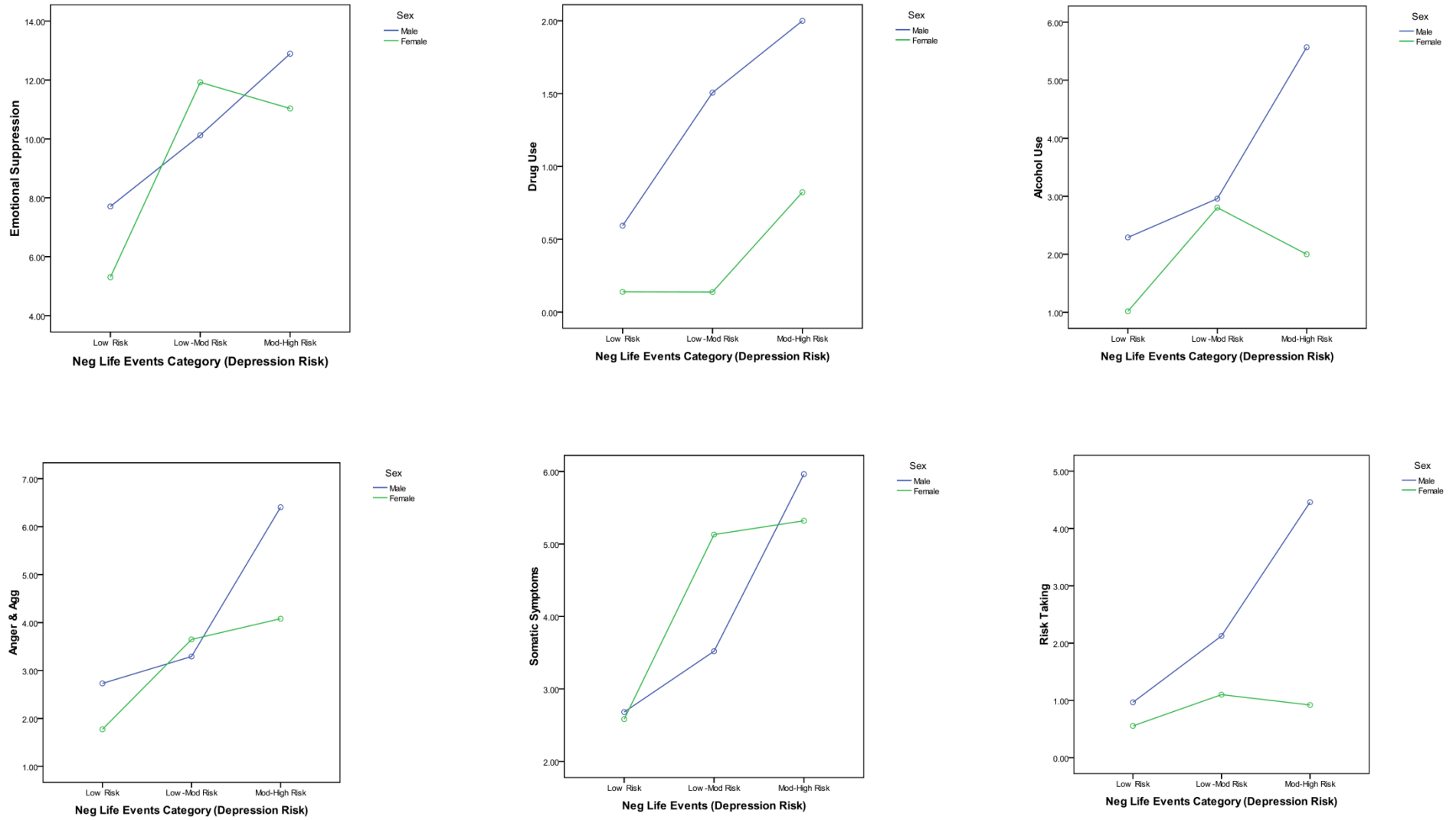


Figure 10. Interaction plots (depression risk category × sex) for MDRS-22 subscales

Table 61

Summary of Post Hoc Analysis of MDRS-22 Subscales by Depression Risk Category

Post hoc comparison		Bonferonni adjusted <i>p</i>					
Depression Risk Category (I)	Depression Risk Category (J)	Emotional Suppression	Drug use	Alcohol use	Anger & Aggression	Somatic	Risk- Taking
Low Risk	Low-Mod Risk	< .001	.799	.289	.311	.069	.123
	Mod-High Risk	< .001	.037	.007	< .001	.001	< .001
Low-Mod Risk	Mod-High Risk	.640	.346	.303	.030	.222	.005

Note. Bonferonni adjusted post hoc comparisons calculated for mean difference (I – J).

Table 62

Descriptive Statistics for Study Subscales by Sex (Study 5b)

Subscale	Male			Female		
	<i>M</i>	<i>SD</i>	95% CI	<i>M</i>	<i>SD</i>	95% CI
BHSS Minimising Problems	9.13	6.36	[8.01 – 10.25]	8.71	6.20	[7.53 – 9.91]
BHSS Privacy	2.57	2.40	[2.15 – 3.00]	1.75	2.00	[1.36 – 2.13]
BHSS Concrete Barriers	5.21	4.72	[4.38 – 6.04]	3.42	4.20	[2.61 – 4.22]
BHSS Need for Control	14.42	10.03	[12.65 – 16.19]	11.87	9.45	[10.06 – 13.69]
BHSS Emotional Control	5.69	4.89	[4.84 – 6.56]	4.41	4.16	[3.61 – 5.20]
ESS Time 1	6.41	3.05	[5.86 – 6.91]	6.10	2.49	[5.62 – 6.59]
ESS Time 2	5.65	2.58	[5.18 – 6.12]	5.25	2.13	[4.84 – 5.67]
RRS Brooding	10.50	3.10	[9.94 – 11.07]	11.07	3.20	[10.45 – 11.69]
RRS Reflection	9.93	3.24	[9.33 – 10.52]	10.82	2.80	[10.28 – 11.37]
ERQ Suppression	15.47	5.57	[14.45 – 16.48]	12.75	4.68	[11.84 – 13.65]
ERQ Reappraisal	28.01	7.11	[26.72 – 29.30]	29.27	5.54	[28.20 – 30.34]

Prediction of Time 2 MDRS-22 Total Scores

The final hypothesis related to the prediction of Time 2 MDRS-22 total scores based on key variables thought to influence sex differences in depression symptom presentation. Hierarchical regression analyses were undertaken separately for males and females. It is noted that the present sample of males ($n = 125$) is just large enough following Field's (2009) recommendations for multiple regression sample size (e.g., $104 + k$, where k is the number of predictors). Hence, for a regression model with 15 predictors (as in the present case) the minimum required sample is 119. However, the present sample of females included 108 respondents, hence, results of the hierarchical regression for females must be interpreted with caution. Nonetheless the Durbin-Watson statistic was > 1.00 for each model, (males = 1.71, females = 1.26) indicating that regression was appropriate for each sample (Field; Tabachnik & Fidell, 2007).

Steps 1 and 2 of the hierarchical regression controlled for Time 1 depression risk symptoms (e.g., Time 1 MDRS-22 total scores) and prototypic depression symptoms (e.g., PHQ-9 scores). This was done to enable the regression analyses to assess to any changes in Time 2 MDRS-22 that may have occurred due to recent negative life events. Accordingly

total scores for Time 1 and Time 2 negative life events were entered at Step 3. At Step 4, the rumination (brooding and reflection), emotion regulation (reappraisal and suppression), and shame subscales were entered. Finally at Step 5, the five barriers to help seeking subscales were entered. As can be seen from Table 63, the regression models accounted for large proportions of Time 2 MDRS-22 total score variance. In summary, after controlling for MDRS-22 and PHQ-9 scores at Time 1, there were six significant predictors for male Time 2 MDRS-22 total scores (Time 1 negative life events, Time 2 negative life events, Time 1 shame, Time 2 shame, cognitive reappraisal and need for control). In contrast, for females, only one significant predictor was identified (Time 2 shame). As expected, the rumination subscales did not predict MDRS-22 scores for either males or females. Also consistent with prediction, both Time 1 and Time 2 shame were significant predictors of male MDRS-22 scores, but not female MDRS-22 scores. In contrast to prediction, reappraisal was significant only for males. Further, for males, only one of the barriers to help seeking subscales (need for control) significantly predicted Time 2 MDRS-22 total scores.

Table 63

Summary of Hierarchical Regression Analyses Predicting Time 2 MDRS-22 Scores by Sex

Predictor	Males		Females	
	ΔR^2	β	ΔR^2	β
Step 1	.62***		.43***	
MDRS-22 Total Score – T1		.58***		.53***
Step 2	.01		.02	
PHQ-9 – T1		.01		-.03
Step 3	.03*		.03	
Negative life events – T1		-.12*		-.02
Negative life events – T2		.11*		.12
Step 4	.09***		.18***	
Brooding – T1		.07		.07
Reflection – T1		.08		-.01
Reappraisal – T2		-.15**		-.10
Suppression – T2		.07		.05
Shame – T1		-.23**		-.11
Shame – T2		.30***		.42***
Step 5	.02		.01	
Need for control – T2		.17*		-.04
Minimising problems – T2		.00		.06
Concrete barriers – T2		.00		.04
Privacy – T2		.02		.03
Emotional Control – T2		-.06		.13
Total Adj R^2	.73***		.63***	
<i>n</i>	125		108	

Note. T1 = Time 1, T2 = Time 2. * $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

Study 5a and 5b sought to confirm the factor structure of the MDRS, replicate the sex and masculinity effects reported in Study 4, and evaluate the impact of negative life events on MDRS scores. Results were broadly consistent with hypotheses. CFA validated the factor structure of the MDRS-22 and between groups findings demonstrated that the MDRS-22 reliably differentiates respondents on the basis of sex and conformity to masculine norms. Results also suggest that negative life events (e.g., depression risk) correspond to higher MDRS scores, particularly for males. Taken together, findings

suggest that the MDRS-22 is a promising tool for researching factors that may contribute to, or co-occur with men's depression.

Psychometric Properties of the MDRS-22

Goodness of fit indices validated the factor structure of the MDRS-22, indicating that the six domains assessed by the MDRS-22 each contribute to an overarching latent construct. The model fit indices were considered satisfactory based on guidelines for CFA in samples less than 500 (e.g., Weston & Gore, 2006). The strength of the correlations between the MDRS-22 and the PHQ-9 indicate that the two scales are conceptually similar. Hence, there is a strong association between depression risk, as assessed by the MDRS-22, and prototypic symptoms of depression. This is a noteworthy finding as none of the 22 MDRS items actually assess symptoms that comprise a DSM-IV diagnosis of depression as assessed by the PHQ-9. Hence, the MDRS-22 may provide a relatively brief measure of a range of problematic behaviours that may place individuals (and possibly males in particular) at risk of experiencing mood problems, or prototypic depression without assessing DSM-IV type depression per se.

As predicted, CFA fit indices of the initial MDRS model indicated that a more parsimonious factor structure was required in order to obtain adequate fit indices. While this resulted in a number of items being deleted, the outcome is a brief, yet statistically reliable assessment tool. Due to the combination of relatively small sample size (e.g., approximately 250 respondents in each sample), and a large number of items (e.g., 44-items), substantial model re-specification was required. That said, the fit indices reported for the initial 44 item MDRS were better than those obtained for the two-factor CFA model that was evaluated for the Gotland Male Depression Scale in Study 1 (GMDS; see Table 16, Chapter 6). By virtue of being the first male specific depression scale available to researchers and clinicians, the GMDS appears to be the measure of choice for assessing atypical depression symptoms in men (e.g. Innamorati et al., 2011). Nonetheless, as reviewed in Chapter 4, the GMDS embodies a number of psychometric problems and the validity of the factor structure remains in doubt (see Study 1). The underlying factor structure of the MDRS-22 may have greater validity than the hypothesised factor structure of the GMDS, and may therefore result in better assessment of depression in men.

Model fit improvement was made to the MDRS through deleting redundant and low loading items. The resultant improvement in fit indices that were commensurate with this change indicated that the items originally assessed under the 12 item distress factor (e.g., irritability tension, difficulties socialising, worry) may have been too disparate to contribute to the one latent variable, in this case, emotional suppression. Measurement error is reduced in instances where there is higher homogeneity in subscale items, but this consideration must be balanced with the exclusion of overly redundant items. While redundant items improve internal reliability, they also decrease overall model fit. The final outcome of the CFA on the MDRS-22 resulted in relatively few items contributing to each subscale, with each item having relatively high face validity. However, high face validity in scale items may result in respondents being able to interpret the broader constructs being assessed, which may influence responding in line with social desirability norms (e.g., under-reporting). That said, results of the present set of studies indicate substantial variance in responses to MDRS-22 items suggesting that respondents may not have attenuated their responding.

The six factors of the MDRS-22 are congruent with the findings of studies that suggest males display externalising symptoms when depressed (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005; Chuick et al., 2009; Clarke & van Ameron, 2008; Heifner, 1997; Oliffe, Ogradniczuk, Bottorff, Johnson, & Hoyak, in press; Rochlen et al., 2010; Shirt, 2008). For the calibration and validation samples of males, the emotional suppression, anger and aggression, and risk-taking subscales reported the highest loadings towards the depression risk latent variable. In both samples the drug use subscale reported the lowest loading. This may be indicative of a floor effect for the drug use scale. For males in Study 5a, the mean score on the MDRS-22 drug use subscale was 1.49, while for females it was 0.87. Such low ratings indicate that drug use items were reasonably inapplicable to most respondents. However, given the MDRS-22 also utilises a total score where all six subscales contribute to construct measurement (e.g., 19 other items), it is likely that this floor effect is relatively unimportant.

All subscales of the MDRS-22 reported satisfactory internal reliability for males. This was also the case for females, with the exception of the risk-taking subscale. The fact that females reported marginal reliability for the risk-taking subscale in all three studies examining the MDRS suggests that risk-taking behaviour is more applicable and

consistently experienced amongst men. This finding is consistent with much of the literature on sex differences in risk-taking behaviour (e.g., Baumesiter, 2007; Byrnes, Miller, & Schafer, 1999; Zuckerman & Kuhlman, 2000), and supports the notion that risk-taking behaviour may be a means by which men enact masculinity (Vandello, Bosson, Cohen, Burnaford, & Weaver, 2008; Walker, Butland, & Connell, 2000; Wilson & Daly, 1985).

The six subscales of the MDRS-22 all reported significant weak to moderate positive intercorrelations. In general, in comparison to females, intercorrelations between the subscales were stronger for males. The test re-test correlations for the MDRS-22 indicated relative stability in of subscale scores between the Time 1 and Time 2 data collection points. In particular, sex differences indicated that males reported significantly stronger test re-test correlations for the drug use subscale, anger and aggression subscale, somatic symptoms subscale, and near significant differences for the risk-taking subscale ($p = .058$) and MDRS-22 total score ($p = .078$). Test re-test correlations for the MDRS-22 total score were comparable to those reported for the PHQ-9. In general, these findings suggest that the MDRS-22 is a more stable measure for males than for females. However, further study using larger samples is required to verify this. Given there was no specific intervention applied between Time 1 and Time 2, high test re-test correlations are to be expected.

Correlations from the additional measures collected at Time 2 also provide construct validity for the MDRS-22. Moderate positive correlations were observed between the Time 2 MDRS-22 total score and each of the five subscales from the Barriers to Help Seeking Scale. Further, correlations indicated that higher scores for shame (at both Time 1 and Time 2), rumination (both negative brooding and neutral reflection), and affective suppression were also associated with higher MDRS-22 total scores. As expected, a negative relationship was observed between cognitive reappraisal and Time 2 MDRS-22 total scores. This indicated that individuals who are able to engage in reappraising their thoughts also tend to experience less of the symptoms assessed by the MDRS-22.

Sex and Masculinity Differences for the MDRS-22

As predicted, findings of Study 5a replicated those reported in Study 4 regarding differences in MDRS-22 subscale ratings according to participant sex and conformity to masculine norms. In both Study 5a and Study 4, multivariate effects were reported for CMNI-22 category, with those in the extreme conformity to masculine norms category reporting higher MDRS/MDRS-22 total scores. When the MDRS/MDRS-22 subscales were evaluated together in the one multivariate analysis, both studies reported weak, but statistically significant multivariate interactions. With the exception of the somatic symptoms scale, interactions tended to indicate a linear trend between masculinity and MDRS scores, with males in the extreme conformity category tending to report particularly high subscale scores relative to comparable females. Notably, Study 5a also reported a significant univariate interaction for the risk-taking subscale (consistent with the findings of Study 4), and a near significant interaction for the emotional suppression subscale (Study 4 reported a significant interaction for the distress subscale which was renamed emotional suppression in Study 5). In comparison to females, males reported higher scores for the risk-taking subscale, and near significant differences for the drug use, and anger and aggression subscale.

The sex differences reported for a number of the MDRS-22 subscales indicate that a range of MDRS-22 items differentiate males and females. Hence, it appears there is value in considering both participant sex and conformity to masculine norms when researching men's experiences of depression. The univariate interactions indicated that there was a tendency for males to report increasingly elevated levels of emotional suppression and risk-taking with escalating levels of masculinity. For females scores on these domains tended to plateau with increasing conformity to masculine norms. As predicted, PHQ-9 scores failed to indicate a significant interaction between participant sex and masculinity. These findings suggests that while males in the extreme conformity to masculine norms category were at particular risk for symptoms assessed by the MDRS, this was less the case for prototypic symptoms, where there were no significant effects reported for participant sex. This finding is consistent with the notion that men adhering to masculine norms are at particular risk of atypical symptoms (Magovcevic & Addis, 2008).

Negative Life Events and MDRS-22 Scores

Safford (2008) stated that there is a need for researchers to examine the role of atypical symptoms in the context of those at risk of depression. In doing so, Study 5b

determined categories of depression risk based on negative life events. While the average score of those in the low risk category indicated they were in the ‘normal’ range for PHQ-9 scores, those in the low-moderate risk category were in the ‘minimal’ depression range, and those in the moderate-high risk category were in the ‘moderate’ range for depression. Hence, there was an association between depression risk and the actual experience of prototypic depression symptoms. Given this, the three depression risk categories used in Study 5b were aptly named, and serve as a valid reference point for examining MDRS-22 subscale scores.

As predicted, Study 5b demonstrated an interaction between participant sex and depression risk for the MDRS-22 total score, and the subscale scores. Males in the moderate-high depression risk category reported noticeably higher Time 2 MDRS-22 total scores than did females in the moderate-high depression risk category. The two lower risk depression categories reported equivalent scores between males and females. Also as predicted, there was no interaction between sex and depression risk for PHQ-9 scores (only a main effect for depression risk category as reported above). One interpretation of these findings is that males who experience several concurrent negative life events (and are thus at risk of depression) are at heightened risk of experiencing atypical symptoms as assessed by the MDRS-22 compared to females who experience a comparable number of negative life events.

Interaction effects were particularly marked for the drug use, alcohol use, anger and aggression, and risk-taking subscales. For these four subscales, males in the moderate-high depression risk category reported scores well above those reported by females in the same depression risk category, while less sex differentiation tended to occur for low and moderate-low depression risk categories. Given sex and depression risk failed to interact for PHQ-9 scores, these findings appear consistent with the masculine depression framework (discussed further below). The emotional suppression and somatic symptoms scales were less prone to any interaction. As such, these symptoms appear to occur equivalently in males and females regardless of the context of negative life events.

Mean PHQ-9 scores of respondents in the moderate-high depression risk category indicated that on average, these individuals were experiencing symptoms of prototypic depression within the moderate range (e.g., Kroenke, Spitzer, & Williams, 2001). For

males especially, those in the moderate-high depression risk category on average reported markedly elevated scores for the drug use and alcohol use subscales. It is possible that drug use and alcohol use amongst this cohort may be attempts to self-medicate. This notion is feasible given that males are more likely than females to experience substance abuse problems (e.g., Brady, & Randall, 1999; Walitzer & Dearing, 2006).

The findings from Study 5a related to risk-taking, and anger and aggression are open to a number of interpretations. It has been suggested that risk-taking and aggression may be strategies that some men use to re-assert a diminished sense of masculinity which may be elicited due to failure in meeting masculine norms (e.g., Vandello, Bosson, Cohen, Burnaford, & Weaver, 2008). Another possibility is that risk-taking and aggression reflect a male sub-type of depression (Rutz, Von Knorring, Pihlgren, Rihmer, & Walinder, 1995; Rutz & Rihmer, 2009). Alternatively, higher scores on the drug, alcohol, risk-taking and aggression subscales may result in loss of social support which in turn elevate risk for depression and suicide (Möller-Leimkühler, 2003), or they may reflect maladaptive coping strategies that evolve in part due to impeded or eroded social support structures. For example, research suggests that in comparison to females, male friendship structures are less emotionally supportive and caring (e.g., Mahalik et al., 2005), and males are more likely than females to be socially rejected by their peers for discussing weaknesses and vulnerabilities (Branney & White, 2008). Lack of emotionally supportive relationships may direct some men to engage in dynamic externalising behaviours as a means of coping without meaningful emotional support. Further research is required to verify this. Nonetheless, regardless of the interpretation of these findings, Study 5b indicated that being male and experiencing concurrent negative life events was associated with elevated substance use and impeded impulse control behaviours.

While the findings related to negative life events appear consistent with the notion of atypical symptom presentation in depressed men, a number of caveats must be acknowledged. While males and females in the moderate-high depression risk group reported equivalent total scores on the Stressful Life Events Scale, differing types of negative events, or different emotional responses to these events, may have influenced the findings. For example, it is reasonable to expect that the unexpected death of a partner is likely to result in more severe emotional consequences than the permanent break-up of a relationship with a girlfriend or boyfriend. However, the data analytic approach used in the

present study essentially treated each negative life event equally. In addition, an alternative interpretation of the data is that the reverse causal pattern may have occurred. For example, MDRS-22 factors themselves may in some instances precipitate negative life events. While this cannot be true in all cases (e.g., death of a loved one), some of the negative life events assessed may have been precipitated by the associated effects of high levels of drug or alcohol use, or anger and aggression (e.g., break up of relationship with partner, loss of job). It is beyond the scope of the present dissertation to investigate this, but further research using longitudinal designs with greater complexity and additional data collection points will assist in understanding these findings.

Predictors of MDRS-22 Total Score

To date, very few studies have examined predictors of atypical depression symptoms in men. The present study undertook separate hierarchical regression analyses for males and females to determine sex differences in the prediction of Time 2 MDRS-22. After controlling for Time 1 MDRS-22 and PHQ-9 scores, the overall regression model was a better predictor of male Time 2 MDRS-22 scores than female Time 2 MDRS-22 scores. At the final step of the regression both Time 1 and Time 2 negative life events were significant predictors for male Time 2 MDRS-22 scores, but not for females. This finding is consistent with the between groups analysis reported above, and suggests that in comparison to females, the experience of recent negative life events may constitute a heightened risk of males engaging in maladaptive externalising behaviours (e.g., alcohol use, anger and aggression, risk-taking).

The regression model yielded other noteworthy sex differences. As hypothesised, while Time 2 shame was a significant predictor for both males and females, Time 1 shame was also a significant predictor for males, but not females. While males and females reported equivalent scores for shame, it is possible that feelings of shame may have differing temporal effects on symptom presentation. A recent meta-analysis concluded that feelings of shame underpin depressive symptoms (Kim, Thibodeau, & Jorgensen, 2011). Shame leads to global self-statements of failure (Cohen, Wolf, Pantner, & Insko, 2011) and is associated with problem denial, denial of responsibility, avoidance of others, and anger (Leith & Baumeister, 1998). Cochran and Rabonowitz (2000) argue that conformity to gender role restrictions causes many men to suppress feelings of inadequacy and shame that have built up over many years. Given that shame was a predictor of MDRS-22 scores

at both Time 1 and Time 2 for males, results may indicate that feelings of failure and shame may precipitate atypical depression symptoms more readily for males than for females.

In contrast to prediction, cognitive reappraisal significantly predicted lower Time 2 MDRS-22 scores for males but not females. This suggests that atypical symptoms assessed by the MDRS-22 are related to emotional processing for males more so than females. Cognitive reappraisal is a component of emotion regulation that serves to change the emotional impact of an emotion eliciting situation (John & Gross, 2004). Reappraisal has the capacity to modify the entire emotional sequence prior to emotional response tendencies being generated (Gross & John, 2003). Though further research is required, the present finding suggests that significant gains may be made by teaching reappraisal techniques (e.g., changing the way one thinks about a situation) to males who may be engaging in externalising responses.

Consistent with prediction, barriers to help seeking predicted greater variance for males in comparison to females, but the difference was marginal. Further, the only significant predictor of MDRS-22 total scores was the need for control subscale for males. That the need for control subscale made a unique contribution above and beyond all the other predictors indicates how pervasive this notion is for many men. Notions of control and self-reliance are strongly related to masculine norm expectations of stoicism and beliefs about what it means to be a man (Emslie, Ridge, Ziebland, & Hunt, 2007; Heifner, 1997; Primack, Addis, & Miller, 2010). Indeed, loss of control has been cited as a reason why many men avoid emotional expression, or psychotherapeutic treatment for emotional disorders (Addis & Mahalik, 2003; Brooks, 2010). High scores on the need for control and self-reliance subscale suggest that the individual believes that help seeking would threaten autonomy and ability to function independently (Mansfield, Addis, & Courtenay, 2005). Given this, individuals with high scores on the need for control subscale may self-medicate (e.g., drug or alcohol use), deny problems (e.g., emotional suppression), or engage in distraction activities (e.g., risk-taking) as a means of coping with psychological distress rather than seeking professional psychotherapeutic help.

Implications for Theory

Of the four theoretical frameworks related to men and depression, results of Studies 5a and 5b are most congruent with the masculine depression framework. Taken together, findings suggest that greater conformity to masculine norms is related to higher scores for prototypic depression symptoms as well as higher scores for atypical depression symptoms. In addition, males considered at high risk of prototypic depression reported elevated MDRS-22 scores compared to equivalent females. The present findings also replicate those reported in Study 4, and suggest a high degree of prototypic and atypical symptom overlap. The masculine depression framework suggests that externalising depression symptoms occur in conjunction with depressed mood resulting in a phenotypic variation of prototypic depression. Further, the masculine depression framework theorises that men may deny depressive experiences that imply vulnerability (e.g., sadness). Hence, the assessment of the atypical depression symptoms that assess key externalising responses may assist in identifying males at risk of depression. Further research and theoretical development is required to elucidate the conditions and symptoms associated with masculine depression. The MDRS-22 may make a valuable contribution towards this end.

The findings in relation to rumination offer little support for the gendered responding framework. Firstly, in contrast to prediction, Study 5b indicated that the two subscales assessing rumination (brooding and reflection) reported stronger correlations with Time 2 MDRS-22 scores for males in comparison to females. This occurred despite females reporting higher reflection scores in comparison to males. Further, males reported a stronger correlation between brooding and PHQ-9 scores in comparison to females. Correlations were equivalent for the reflection and PHQ-9 scores. In addition, neither brooding nor reflection significantly predicted Time 2 MDRS-22 total scores for males or females. The gender responding framework argues that females are more likely to ruminate when distressed while distressed males are more likely to engage in distraction routines. There is little in the present data that suggests that rumination is associated with higher depression scores in females more so than males. If anything, the relationship between brooding and prototypic depression at Time 2 was stronger for males. This finding however is somewhat contrary research suggesting greater rumination responses in females compared to males (e.g., Nolen-Hoeksema, 2008) and may suggest something unique about the present sample and tendency for rumination. Further, it must be acknowledged that study 5b reported only cross-sectional data for rumination. It is possible

that rumination impacts on depression over a prolonged period of time (e.g., Nolen-Hoeksema, 1987). Hence, while the present findings of Study 5b provide little direct support for the gender responding framework further research is required to replicate this finding.

Equivalent scores for prototypic depression symptoms for males and females indicated little support for the sex difference framework. Similarly, little support was observed for the masked depression framework. Given the consistency of findings reported throughout this dissertation, there seems little empirical support for these two explanations of sex differences in depression rates. Based on this, and the findings of others, it appears that the sex difference and masked depression frameworks hold little future promise for furthering empirical understanding of men's depression (e.g., Addis, 2008).

Limitations & Future Directions

The results of the present studies would be strengthened by a broader assessment of psychopathology and comorbidity. For example, behaviours assessed by the MDRS-22 may bear strong association to bipolar type disorders more so than unipolar depression (see Chapter 11 for further discussion). In addition, studies using larger sample sizes and alternative data analytic methods would serve to validate the reported findings. In particular, it must be acknowledged that there were relatively small numbers of participants in each cell of the between groups analysis conducted in Study 5b and the regression analysis only met minimal sample size requirements. Further, the present studies report on data from community samples. The decision to use community samples was based on the notion that men in the clinical range for depression already meet threshold criteria for a DSM-IV diagnosis. However, future research should look to expand the sampling base, as with any community based study, self-selection bias may have influenced the results.

The between groups analyses undertaken required respondents to be assigned to groups based on conformity to masculine norms and recent negative life events. There was a clear rationale and justification for such groupings, primarily relating to the interpretability of results. Nonetheless, grouping participants in such ways results in a loss of variance, and future studies may consider data analysis methods that retain the continuous properties of the data (e.g., testing for interaction effects in multiple

regression). The current study required participants to complete a relatively large number of questionnaire items. Wherever possible, short forms were used in an attempt to minimise participant attrition that may have otherwise occurred through boredom, fatigue, or onerous time requirement. As such, future research should also look to use full length scales (incorporating relevant subscales) of shame and conformity to masculine norms to evaluate the specific aspects of these constructs that may be impacting on depression experiences.

While the present studies indicate that both prototypic and atypical depression symptoms bear a linear association with conformity to masculine norms and negative life events, further research is required to ascertain likely patterns of prototypic and atypical depression symptom overlap. For example, anhedonia may be more strongly associated with atypical symptoms than sadness. Identifying likely symptom patterns may provide additional clues as to groups of men who may be at particular risk of not being identified as distressed or depressed by health professionals.

One of the most striking findings for masculinity and depression risk differences for the MDRS-22 related to the risk-taking subscale. However, it must be acknowledged that the risk-taking subscale reported poor internal consistency for females. Hence, the differences between males and females on this subscale may be complicated by measurement error. Consideration should be given to adding or rewording risk-taking items to ensure the validity of future sex comparison for risk-taking behaviours. Further, two of the scales used in the present study were designed and validated specifically for use with male samples (e.g., the CMNI-22 and the BHSS). While these scales reported adequate internal consistency for females, future research should look to use a broader range of measures that are validated with both males and females samples. Further research is also required to examine the impact of MDRS-22 item order (e.g., order effects), proneness to socially desirable responding, and assess divergent validity of the MDRS-22. As the present study examined the role of negative life events the corollary would be to examine the impact of MDRS-22 scores in light of recent positive life events.

Further research is required to determine whether the latent construct assessed by the MDRS-22 is a subtype of depression in its own right. Advanced statistical models such as latent class analysis, which seeks to evaluate groups or subtypes of cases in multivariate

analysis may assist in answering this question. Further work also needs to be done to ascertain the range of atypical symptoms relevant to depression in men. While the MDRS-22 assesses six broad symptom clusters there are likely many others that should be considered. For example, the Masculine Depression Scale (Magovcevic & Addis, 2008) includes items related to overwork and powerlessness, while the Gotland Male Depression Scale (Zierau, Bille, Rutz, & Bech, 2002) includes items related to irritability and stress. Concerted effort is required on the part of researchers to identify the types of scale items that best capture men's experiences of depression.

Further study using the MDRS-22 should also look to validate the factor structure in large samples in line with more stringent accepted criteria of CFA fit indices (e.g., Byrne, 2001; Hu & Bentler, 1999). Broader comparisons should also be made between the MDRS-22 and other presently used measures of prototypic depression (e.g., the Beck Depression Inventory) and atypical depression (e.g., the GMDS and the MDS). In addition, future longitudinal research should look to collect data over longer time periods (e.g., years as opposed to months), and map corresponding changes in symptom trajectories according to sex. Further, it would be valuable to trial the MDRS-22 in a clinical setting and gain feedback from practitioners and clients regarding item wording and scale utility.

Conclusion

Preliminary findings indicate that the MDRS-22 has satisfactory psychometric properties. Further research utilising the MDRS-22 will likely assist in the wider validation of the masculine depression construct. The MDRS-22 comprises specific subscales and thus enables assessment of various sub-domains of male risk behaviours. While these findings need to be replicated in diverse samples, results suggest that the MDRS-22 may extend upon the currently available male specific measures of depression through assessing sub-domains that may constitute depression risk for males. Further study may extend the application of the MDRS-22 to clinical practice and assessment of men at risk.

Chapter 11: Summary, Implications and Concluding Remarks

Rationale for Undertaking the Research

From an early age, men and women receive contrasting messages regarding vulnerability, emotionality, and seeking help (Courtenay, 2000, 2009; Pleck, 1981, 1995). The internalisation of these messages impacts heavily on health behaviours. While males report significantly lower prevalence rates of major depression than females (Munce & Stewart, 2007; Riska, 2009), they are four times more likely than females to commit suicide (Houle, Mishara, & Chagnon, 2008). Depression is thought to underlie more than half of suicides (Möller-Leimkühler, 2003). One avenue to preventing suicidality is to intervene prior to the point where suicidal ideation becomes suicide attempt. Living up to ideal norms for masculine behaviour, including expectations of self-reliance and emotional control remain key themes for men experiencing depression (Primack, Addis, & Miller, 2010). Qualitative studies suggest that depressed men turn to substances, exhibit a lowered threshold for anger or aggression, and engage in risk-taking behaviours, (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005) and depression awareness campaigns now specifically communicate the different ways in which depression may present in men (e.g., BeyondBlue, 2011; NIHM, 2005; Royal College of Psychiatrists, 2006). However, scant quantitative data is currently available on these phenomena.

It is known that masculinity and gender role expectations play a salient role in men's help seeking attitudes and symptom presentation (Addis & Mahalik, 2003; Oliffe et al., 2010). Furthermore, evidence indicates significant variation in both the patterns of depression symptoms experienced, and the ways in which men respond to these symptoms (Addis, 2008). Whilst many men exhibit the prototypic internalising symptoms of depression (e.g., Kessler et al., 1994, 2005), others may demonstrate an externalising symptom cluster that is incongruent with a depression diagnosis (Rutz & Rihmer, 2007). Men who display externalising behaviours such as aggression, substance abuse, and risk-taking often generate immense problems for themselves and those in their close environment (Rutz & Rihmer, 2009). Such externalising behaviours may impede the assessment of depression, particularly in primary care settings where consultations tend to be short, and focus on the most urgent problems (Stromberg, Backlund, & Lofvander, 2010).

Improvement in the assessment and treatment of men's depression requires innovative approaches that are mindful of barriers that impede successful management of men's health needs (Harris & McKenzie, 2006; Ide, Wyder, Kolves, & De Leo, 2010; Primack, Addis, & Miller, 2010; Rutz & Rihmer, 2007). While recent innovative attempts have been made to validate novel screening tools that assess for male type symptoms, each of these published scales have significant limitations (Ajayi, 2011, Martin, 2010). The present set of studies sought to contribute to the literature on men's depression by developing a psychometrically valid male specific depression scale. Findings were evaluated in the context of differences in sex, masculinity, and negative life events, and were consistent with the gender role strain paradigm (Pleck, 1981, 1995) and the masculine depression framework (Magovcevic & Addis, 2008).

Study Highlights, Interpretations, and Implications

Study 1 indicated that few sex differences occurred for the items of the Gotland Male Depression Scale (GMDS). Furthermore, confirmatory factor analysis (CFA) indicated that significant model re-specification was required in order for the GMDS to approach satisfactory model fit. As this was the first known confirmatory factor analysis of the GMDS, these results require replication. However, given that two previous studies have failed in their attempts to replicate the original factor structure of the GMDS using exploratory factor analysis (Möller-Leimkühler, Bottlender, Straub, & Rutz, 2004; Möller-Leimkühler & Yucel, 2010), and a further study recommends that GMDS item 13 be removed from the scale (Innamorati et al. 2011a), results suggest that the GMDS requires revision and revalidation. This is especially the case given the poor wording of many of the GMDS items (Ajayi, 2011; Magrocevic & Addis, 2008; Martin, 2010).

Study 1 also indicated that individuals who were categorised as having a feminine gender role reported higher GMDS scores than those in the masculine or androgynous categories. This finding replicated that reported by Möller-Leimkühler and Yucel (2010), and suggests little relationship between the GMDS and measures of masculinity. Furthermore, other research reports a weak relationship between GMDS scores and conformity to masculine norms (Magovcevic & Addis, 2008). Given this, it is unsurprising that studies using the GMDS consistently fail to report higher scores for males in comparison to females (e.g., Innamorati et al., 2011a; Möller-Leimkühler, Bottlender, Straub, & Rutz, 2004; Möller-Leimkühler & Yucel; Pompili et al., 2009). Hence, given GMDS items apply to both males and females, regardless of whether data is collected from

inpatient or community samples, the conclusion can be drawn that there is little specifically 'male' about the wording or content of GMDS items.

To assist with the development of the Male Depression Risk Scale (MDRS), prevalence ratings of atypical depression symptoms were assessed amongst two specific cohorts of men. Study 2 reported data from truck drivers and found that those meeting retrospective clinical criteria for depression reported three times the number of concurrent atypical depression symptoms as did those in the normal range. This finding was consistent with qualitative studies of men's experiences of depression (e.g., Brownhill, Wilhelm, Barclay, & Schmied, 2005; Heifner, 1997; Rochlen et al., 2010). Furthermore, many of the atypical symptoms reported by the truck drivers meeting clinical criteria may serve to exacerbate depressed mood (e.g., alcohol use, anger, impeded help seeking).

In contrast to Study 2, Study 3 found that older men participating in a Men's Shed program reported comparatively low levels of atypical depression symptoms. This finding suggests that age is an important factor in the expression of atypical depression symptoms, and is consistent with the finding that prevalence rates of prototypic depression may be sex equivalent in older age (e.g., Wallace & O'Hara, 1992). Importantly, Study 2 also found that those men reporting lower levels of social support tended to report higher GMDS scores. Ongoing Shed participation was found to be a protective factor, with Time 2 data indicating that ongoing Shed participation was associated with improvement, or maintenance of, social support and depression symptoms.

Study 4 built on the findings of Studies 1, 2, and 3 by evaluating the initial factor structure of the MDRS. By way of establishing construct validity, Study 4 found that each of the MDRS subscales reported statistically significant correlations with the suicidal ideation item taken from the Patient Health Questionnaire – Depression Module (PHQ-9). Furthermore, Study 4 found that greater conformity to masculine norms was associated with both higher MDRS subscale scores, and higher PHQ-9 scores. These findings are consistent with the masculine depression framework, but appear to contrast findings reported in Study 1, and those reported by Möller-Leimkühler and Yucel (2010), where femininity was found to be associated with higher GMDS and DASS-21 D scores.

Study 5a replicated the findings of Study 4 regarding MDRS differences according to sex and conformity to masculine norms. Furthermore, Study 5a also validated the factor structure of the MDRS-22 using CFA. This is the first known study to utilise CFA in the

development of a male specific depression related measure. In using longitudinal data, Study 5b provided further construct validity for the MDRS-22, reporting stable test re-test reliability. Consistent with the masculine depression framework, males experiencing concurrent negative life events reported elevated MDRS-22 scores relative to males not experiencing concurrent negative life events and females. Lastly, as predicted, regression analyses indicated that negative life events, emotion regulation, shame, and barriers to help seeking predicted greater variance in male MDRS-22 scores compared to female scores.

Gender sensitive analyses, assessing the role of masculinity in men's lives is essential to understanding men's health and illness behaviours (Evans, Frank, Oliffe, & Gregory, 2011). One of the challenges in researching sex differences in depression is that group differences based on biological sex fail to adequately capture the pervasive and influential role of socialisation and gender related attitudes. Individuals may or may not conform to normative messages regarding gendered behaviour (Mahalik, 2000), and the means by which researchers assess gender related attitudes may influence study outcomes. Study 1 utilised Bem's (1979) four gender role categories, generated from the Australian Sex Role Scale (ASRS). In contrast, Studies 4 and 5a utilised four categories of conformity to masculine norms generated from the Conformity to Masculine Norms Inventory (CMNI-22). Whereas Study 1 found that those in the masculine category (e.g., high masculine and low feminine scores) reported lower GMDS and DASS-21 D scores than those in the feminine category, Studies 4 and 5a reported opposing effects – those in the extreme conformity to masculine norm category reported higher MDRS-22 and PHQ-9 scores than those reporting less conformity to masculine norms. While these findings seem to be somewhat contradictory in nature, both have been replicated – Möller-Leimkühler and Yucel (2010) reported similar findings to those reported in Study 1, and the findings of Study 4 were replicated in a separate sample in Study 5a. Given this, when taken overall, the present set of findings may indicate that the MDRS is less prone to the theoretical shortcoming of the GMDS (e.g., whereas higher GMDS scores appear to be associated with femininity, higher MDRS scores appear to be associated with masculinity).

Theoretical Considerations

Targeted research examining men's experiences of depression is a recent phenomena. Hypotheses regarding male subtypes of depression first appeared in the research literature in the late 1990's (e.g., Pollack, 1998; Rutz, Walinder, Von Knorring, Rihmer, & Pihlgren, 1997). Such theorising has led to the development of increasingly

sophisticated and refined screening tools. However, greater precision is required in both the theory and method used to understand both the complex relationship linking masculine gender socialisation to men's depression (Addis, 2008), and the specific motives of men who refuse psychological services when suffering from depression (McCusker & Gallupo, 2011). In time, data may indicate that atypical depression symptoms have as much diagnostic validity as prototypic depression symptoms, though ongoing focused study will be required to support such an assertion. This may be especially the case if it is found that men (or some men) feel more comfortable disclosing atypical depression symptoms to their health care providers than they do disclosing prototypic depression symptoms. Nonetheless, the presence of atypical symptoms such as risk-taking, substance abuse, and anger and aggression place individuals at risk of serious injury or health complication (Rutz & Rihmer, 2009). Hence, there is clinical importance and value in assessing, and as required, treating, atypical symptoms.

It has been acknowledged throughout this dissertation that the full range of atypical depression symptoms that men may experience is yet to be determined. Hence, a body of work remains to be undertaken. Should future research serve to validate a male sub-type, or sub-types of depression, the logical extension of this work would be the establishment of evidence based diagnostic criteria and incorporation of such criteria into clinical nomenclature. However, at present the field remains far from this end. Whilst the notion of a male sub-type of depression remains theoretically appealing, it is inherently difficult to empirically examine and challenging to validate (Magovcevic & Addis, 2008). Nonetheless, the comparatively high rate of male suicide is perhaps the most evident proof that current assessment, diagnostic and treatment procedures are insufficient, particularly for males (Rutz & Rihmer, 2009). Further research is warranted in investigating whether atypical symptoms of depression constitute a separate depression sub-type, and how useful such symptoms are in predicting future suicidal behaviours (Innamorati et al., 2011a).

Of the four theoretical frameworks incorporated throughout this dissertation, the strongest lines of evidence support the masculine depression framework. The masculine depression framework argues that men who adhere more strongly to masculine norms exhibit their depression in ways that are more congruent with these norms. Hence, the masculine depression framework proposes that men who adhere strongly to masculine norms are likely to experience depression in the prototypic way (as described by DSM-IV), but avoid or deny the experience as it is incongruent with the male role (Magovcevic

& Addis, 2008). The masculine depression framework is consistent with Pleck's (1981; 1995) notion of gender role strain – the psychological pressure that men experience when they attempt to live up to the expected standards of the male role. Experiences of gender role strain may also create significant barriers for men to cope adaptively with emotional problems once they exist (Addis, 2008).

Generally speaking, in comparison to women, men are more constrained by gender role ideologies and are subject to greater scrutiny and stigma should they deviate toward un-masculine practices (Evans, Frank, Oliffe, & Gregory, 2011). As nonconformity to male role expectations results in negative evaluation from others, men who perceive they have violated such expectations may attempt to compensate for such discrepancies through hypermasculine behaviours. Consistent with this notion, Oliffe and colleagues (2010) reported that experiences of depression eroded men's masculine identities. Furthermore, experimental research suggests that depressed men, regardless of psychological help seeking attempts, are perceived as possessing lower levels of masculine traits than are non-depressed men (McCusker & Gallupo, 2011). These findings suggest that males who adhere strongly to masculine norms may feel little choice but to express their depressed affect in ways that are congruent with such norms, especially in instances where they are unable, or unwilling to receive appropriate treatment.

In furthering the masculine depression framework, Addis (2008) suggested that traditional masculine norms may place men at risk both for prototypic symptoms of depression, and for atypical symptoms that coincide with depression, but are not formally part of the disorder. Addis's notion is particularly compelling given the findings of the present set of studies. Masculine norms create barriers for men to communicate prototypic symptoms of depression when they are present (Addis & Mahalik, 2003), and atypical symptoms that accompany prototypic symptoms may be a means by which some men seek to reassert a lost sense of masculinity (Pleck, 1981, 1995). Furthermore, men who are more likely to self-stigmatise and less likely to self-disclose are also less willing to seek psychological help than those who are less likely to self-stigmatise and more likely to self-disclose (Pederson & Vogel, 2007). It is crucial that health professionals improve means of detecting such men, and implementing treatment if, and when, it is needed. The interactions between participant sex and conformity to masculine norms for the MDRS-22 subscales observed in Study 4 and 5a suggest that in comparison to females, males reporting extreme conformity to masculine norms are at greater risk of elevated MDRS-22

scores than are equivalent females. No such interaction occurred for PHQ-9 scores. This finding was replicated in the Study 5a, and is consistent with Addis's theorising that masculine norms place men at risk of both prototypic and atypical symptoms.

An alternative interpretation is that atypical symptoms may signal maladaptive coping responses (e.g., alcohol use, ignoring the problem, distraction from the problem) that are more readily seen in males who strongly adhere to masculine role norms. Given men who adhere strongly to masculine norms are less likely to seek help from mental health professionals, atypical depression symptoms may represent attempts to self-medicate, distract, or avoid thinking about mood disturbances. A further alternative is that atypical depression symptoms may occur prior to prototypic symptoms, and may even precipitate the development of prototypic symptoms. For example, episodes of anger and aggression may result in diminished social support (e.g., Siewert, Kubial, Jonas, Weber, 2011), while substance abuse may lead to ongoing mood problems (e.g., Abraham & Fava, 1999; Kessler et al., 1997).

Safford (2008) argued that the most promising methodology for validating the construct of masculine depression would involve longitudinal designs that identify men at risk of depression. Promisingly, the Australian Longitudinal Study on Male Health (Australian Government Department of Health & Aging, 2011) is currently being designed to recruit a cohort of 58,000 males to examine the cause and effect relationships between social, psychological, and environmental factors that enhance or inhibit good physical and mental health in males. This study may assist to shed the light on some of the unknown factors regarding causal and temporal relationships regarding men and depression. Unfortunately the duration and size of the longitudinal design undertaken in Study 5b was insufficient to draw firm conclusions. Future research that comprehensively screens for both prototypic and atypical depression symptoms at a range of time points, over a number of years, will assist to determine symptom trajectories. For example, greater support for the masculine depression framework could be determined if the occurrence of prototypic symptoms were followed by the occurrence of atypical symptoms in those at risk of depression, or if presentation of both types of symptoms increased simultaneously. Such trajectories would not be expected to occur in males who did not strongly adhere to masculine norms. Such males may constitute those who report depressive episodes congruent with prototypic DSM-IV depression (e.g., Kessler et al., 1994, 2005).

Future Directions

Limitations and avenues for future research have been addressed in each of the Study chapters. However, a few further comments are warranted. Consistent with the findings of Möller-Leimkühler and Yucel (2010), and Innamorati and colleagues (2011a), the present study found that atypical symptoms are relatively common in both males *and* females. This finding is not necessarily inconsistent with the masculine depression framework. Just as some males may adhere to feminine norms, some females adhere to masculine norms. Consistent with the findings of Möller-Leimkühler, Bottlender, Straub, & Rutz (2004), Ajayi (2011) reported that men and women in an inpatient sample were equally likely to experience externalising dysfunction comorbid to depression. Ajayi concluded that externalising responses such as substance abuse may have been attempts to cope with distress through self-medication. Should studies continue to replicate such findings, the term masculine depression may need to be replaced with a term that is more gender inclusive, given that externalising responses or atypical symptoms may be readily experienced by both males and females. In a related manner, one area that beckons further study is the association between atypical depression symptoms and bipolar disorders (e.g., Pompili et al., 2011). While males report significantly lower prevalence rates of major depressive disorder compared to females, prevalence rates of bipolar disorder are sex equivalent (e.g., Merikangas et al., 2007). Given that some atypical depression symptoms (e.g., anger and aggression, risk-taking, substance use) are strongly associated with bipolar symptoms (e.g., Holmes et al., 2009), researchers should look to study these concepts within individuals prone to experiencing episodes of mania or hypomania. Furthermore, there may be differences in association in atypical symptoms between bipolar I disorder (where individuals meet diagnostic criteria for both depressive and manic episodes) and bipolar II disorder (where depressive episodes are accompanied by hypomanic episodes).

The findings of the current research program are strengthened in that they were drawn from an array of samples recruited from the general community. As such, the present findings complement depression research undertaken with clinical samples. It has been argued that further research is required amongst community samples to assist with understanding the onset of mood disorders, and the ways in which non-pathological behaviour expression develops into dysfunction and the need for care (McGorry, Pucell, Goldstone, & Amminger, 2011). That said, studies investigating masculine depression have largely neglected the use of structured diagnostic interviews. Such interviews would

enable interviewers to probe for, and clarify the presence of both prototypic and atypical depression symptoms, and the ways in which masculine norms may influence the presentation of such symptoms (Addis, 2008). In addition, further consideration should be given to age effects in the presentation of atypical symptoms. Consistent with the findings of Study 3, Diamond (2008) reported that age was a significant predictor of typical depression symptoms assessed by the Diamond Depression Scale. Given this, future research should investigate different age cohorts to assess populations where screening for atypical depression symptoms may be most relevant.

A further matter requiring additional study is the disjuncture between men endorsing symptoms on self-report rating scales and communicating such symptoms to health care professionals. Wide, Mok, McKenna, and Ogrodniczuk (2011) found that males who endorsed current experiences of suicidal ideation failed to disclose these experiences to their GP, despite having a GP consultation immediately after completing the questionnaire. While suicidal ideation does not necessarily signal intent, males who attend GP consultations but withhold information regarding suicidal ideation likely constitute a high risk group. The current studies indicate that men are readily able to endorse atypical depression symptoms and research suggests that men feel relatively comfortable engaging in discussion of atypical symptoms such as anger, and substance use, with their GP (e.g., Brownhill, Wilhelm, Elivson, & Waterhouse, 2003; Stromberg, Backlund, & Lofvander, 2010). Opening up discussion with symptoms that men feel comfortable discussing may enable GPs to then probe for risk symptoms and enquire about suicidality. Hence, further research is required to assess the clinical utility of the MDRS-22, and assess whether it is the kind of screening tool that would assist GPs in their clinical decision making and referral for psychological / psychiatric treatment.

In interpreting the findings of the present set of studies, broader issues regarding sampling and access to participants must also be considered. It is probable that many males who adhere strongly to masculine norms may be reluctant to voluntarily provide self-report depression symptom data, as the act of disclosing ones emotional state, even if done anonymously, contravenes masculine norms related to emotional restriction and independence. While findings from the present set of studies indicate that men reporting comparatively high levels of conformity to masculine norms were willing to endorse both prototypic and atypical depression symptoms (and often such men rated higher on these scales / subscales than those men reporting comparatively lower conformity to masculine

norms), it is plausible that many hyper-masculine men declined to participate in the present studies. Hence, it may be the case that some of the most revealing data may remain hidden from researchers within the field. This notion was in part illustrated when collecting data for Study 2, where a strong contagion effect was observed amongst truck drivers who chose not to participate in the study. It is impossible to determine why these men refused to participate. However, gaining the insights of such reluctant men, possibly through the use of creative and non-threatening recruitment strategies should be a priority for those researching men's experiences of depression. In instances where reimbursement or incentives are not offered to participants (which is more often the case than not), samples may fail to incorporate sufficiently high numbers of men who adhere strongly to masculine norms. Future research designs should consider ways of circumventing such sampling problems by investigating if novel means of data collection, including use of smart phones, or online focus groups can improve representativeness of samples.

Finally, perceptions remain that the psychotherapeutic environment is a place for women, not men (e.g., McCusker & Galupo, 2011; Möller-Leimkühler, 2003). The need for the development of treatment environments and programs geared towards men's needs has been flagged, for example, male friendly reading material in the waiting room, out of hour's practice, on the day appointments, reception staff and areas that are more engaging for men, and therapy modules that incorporate discussion of the benefits and risks of male role expectations (e.g., Holden, Allen, & McLachlan, 2010; Primack, Addis, & Miller, 2010). However, to date very little research has been conducted on this. In parallel with assessment procedures geared towards men's mental health (e.g., use of the MDRS-22), adapting the physical surrounds and service models of treatment may prove to be a successful strategy for improving men's help seeking. Just as maternity care services are designed to meet the physical and psychological needs of pre-, and post-partum women (e.g., O'Cathain, Thomas, Walters, Nicholl, & Kirkham, 2002), in time mental health services could be designed to be more appealing to men. Indeed the findings of Study 3, based on data provided from the Men's Shed group, support this notion.

Concluding Remarks

The present set of studies highlight the complexities related to sex and gender differences in prototypic and atypical depression symptoms. Findings indicate that those who conform to masculine norms, regardless of their biological sex, are at greater risk of experiencing symptoms of both prototypic and atypical depression. This effect was

particularly pronounced for males reporting comparatively high levels of conformity to masculine norms. Furthermore, consistent with the masculine depression framework, findings suggest that males who experience concurrent negative life events are prone to reporting particularly high scores for atypical depression symptoms when appraised against comparable females. The present set of studies has also given rise to a promising tool for better understanding the conditions under which atypical symptoms occur – the MDRS-22. Use of the MDRS-22 may contribute towards the identification of males who are unwilling, or unable, to disclose depression symptoms, but who may be at risk of suicidal ideation or actual suicide attempt. While further research and theoretical development is required within the field, the present set of studies indicates that a high proportion of men experience atypical depression symptoms that fall outside the diagnostic criteria for depression. Given the problematic social and behavioural sequela associated with such symptoms, there is little doubt that men who experience atypical depression symptoms do so with accompanying psychological distress. The challenge remains for researchers and clinicians to work together in developing more effective means of intervening and reducing such distress. Such research should not simply seek to develop a discourse that pits men's health against women's health, or vice-versa (Broom, 2009). Instead, researchers should work toward a more comprehensive understanding of gender-sensitive interventions and assessment procedures. The health and wellbeing of not only men, but also of women and children involved in the lives of such men, depends on this.

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Appendix A: Ethics Approval Documents

Australian Catholic University
Brisbane Sydney Canberra Ballarat Melbourne



Human Research Ethics Committee

Committee Approval Form

Principal Investigator/Supervisor: Prof Barry Fallon Melbourne Campus

Co-Investigators: Melbourne Campus

Student Researcher: Simon Rice Melbourne Campus

Ethics approval has been granted for the following project:

An investigation into the male depressive syndrome: Using the gender role strain paradigm to account for gender differences in depression.

for the period: 10.07.08 to 10.07.09

Human Research Ethics Committee (HREC) Register Number: V200708 95

The following **standard** conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans (2007)* apply:

- (i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
 - security of records
 - compliance with approved consent procedures and documentation
 - compliance with special conditions, and
- (ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
 - proposed changes to the protocol
 - unforeseen circumstances or events
 - adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than low risk. There will also be random audits of a sample of projects considered to be of negligible risk and low risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed:  Date: 10-7-08

(Research Services Officer, Melbourne Campus)



Human Research Ethics Committee

Committee Approval Form

<p>Principal Investigator/Supervisor: Prof Barry Fallon Melbourne Campus</p> <p>Co-Investigators: Melbourne Campus</p> <p>Student Researcher: Simon Rice Melbourne Campus</p>
--

<p>Ethics approval has been granted for the following project: A Reconceptualisation of the Measurement of Male Depression: Accounting for Gender Differences in Reported Incidence Rates</p> <p>for the period: 08.05.09 to 08.05.10</p> <p>Human Research Ethics Committee (HREC) Register Number: V2009 27</p>
--

The following standard conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans* (2007) apply:

- (i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
 - security of records
 - compliance with approved consent procedures and documentation
 - compliance with special conditions, and
- (ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
 - proposed changes to the protocol
 - unforeseen circumstances or events
 - adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than low risk. There will also be random audits of a sample of projects considered to be of negligible risk and low risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed: Date:
(Research Services Officer, Melbourne Campus)

From Ivy Hajduk **Date** Fri May 08 2009 17:34:48 GMT+1000 (AUS Eastern Standard Time)
To Barry Fallon; Simon Rice
Cc
Subject ethics approval V2009 27

[V2009 27 Approval Form.doc](#) (48 KB [HTML](#))

Dear Barry and Simon,

Thank you for returning the amendments to your ethics application V2009 27.

In light of the received amendments, the Chair of the Human Research Ethics Committee has granted ethics approval.

The approved period of data collection is the **08.05.2009 to 08.05.2010**. A progress report is due at the end of this period. The relevant form may be obtained via the ACU National website www.acu.edu.au, or by contacting Research Services directly.

Should any harm or risk to participants or breaches of any approved protocols be discovered during the course of the research project, the Chief Investigator must report this immediately to the Chair of ACU's HREC.

I have attached an electronic copy of the Approval Form and will put the hard copy in internal mail to Barry.

We wish you well in this research project.

Kind regards
Ivy



Human Research Ethics Committee

Committee Approval Form

Principal Investigator/Supervisor: BAFALLON Melbourne Campus

Co-Investigators: Melbourne Campus

Student Researcher: Daniel Moore Simon Rice Melbourne Campus

Ethics approval has been granted for the following project:

The relationship between conformity to gender norms, depression and attitudes towards emotional displays.

for the period: 03.06.10 - 31.10.10

Human Research Ethics Committee (HREC) Register Number: V2010 47

The following standard conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans (2007)* apply:

- (i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
 - security of records
 - compliance with approved consent procedures and documentation
 - compliance with special conditions, and
- (ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
 - proposed changes to the protocol
 - unforeseen circumstances or events
 - adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than low risk. There will also be random audits of a sample of projects considered to be of negligible risk and low risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed:

..... Date:03.06.2010.....
(Research Services Officer, Melbourne Campus)



Human Research Ethics Committee

Committee Approval Form

Principal Investigator/Supervisor: BAFALLON Melbourne Campus Co-Investigators: Melbourne Campus Student Researcher: Simon Rice Melbourne Campus
--

Ethics approval has been granted for the following project: Reconceptualising the measurement of Male Depression: Accounting for Sex Differences in Reported Incidence Rates for the period: 08.04.10 - 10.02.11 Human Research Ethics Committee (HREC) Register Number: V2010 25


The following standard conditions as stipulated in the *National Statement on Ethical Conduct in Research Involving Humans (2007)* apply:

- (i) that Principal Investigators / Supervisors provide, on the form supplied by the Human Research Ethics Committee, annual reports on matters such as:
 - security of records
 - compliance with approved consent procedures and documentation
 - compliance with special conditions, and
- (ii) that researchers report to the HREC immediately any matter that might affect the ethical acceptability of the protocol, such as:
 - proposed changes to the protocol
 - unforeseen circumstances or events
 - adverse effects on participants

The HREC will conduct an audit each year of all projects deemed to be of more than low risk. There will also be random audits of a sample of projects considered to be of negligible risk and low risk on all campuses each year.

Within one month of the conclusion of the project, researchers are required to complete a *Final Report Form* and submit it to the local Research Services Officer.

If the project continues for more than one year, researchers are required to complete an *Annual Progress Report Form* and submit it to the local Research Services Officer within one month of the anniversary date of the ethics approval.

Signed:  Date:08.04.2010.....
 (Research Services Officer, Melbourne Campus)

Appendix B: Study 1 Invitation to Participate & Questionnaire

TITLE OF PROJECT: Gender, Social Roles, and Wellbeing
 RESEARCHER: Professor Barry Fallon
 STUDENT RESEARCHER: Simon Rice



Dear Participant,

You are invited to participate in research being undertaken through the School of Psychology at Australian Catholic University. This research is examining the impact of gender and social roles on wellbeing and is being conducted by PhD student Simon Rice and supervised by Professor Barry Fallon. The purpose of this study is to investigate the relationship between traditional notions of masculinity and femininity, and their relationship to positive and negative mood states and wellbeing. You are invited to complete a questionnaire that will provide information on your perceptions of gender roles, positive and negative emotions, stress, and your feelings of wellbeing. It will take approximately 20 minutes to complete the questionnaire.

By volunteering to complete the questionnaire your consent to participate will be inferred. You will not be able to be identified at any stage of the research. At no stage will you be required to give your name. In time, the results of this important research may be presented at conferences and in scholarly journals. In any case, all reports will refer to aggregated group findings and no individuals will be identifiable. All data collected as part of this project will be securely stored within the School of Psychology, and destroyed after 5 years.

You are free to withdraw from the study at any stage prior to submission of the questionnaire without supplying a reason. You can direct any questions regarding this project to Professor Barry Fallon on 03 9953 3108 within the School of Psychology, St Patrick's Campus, Locked Bag 4115, Fitzroy VIC 3065, b.fallon@patrick.acu.edu.au. If you would like to receive a summary of the results at the conclusion of the study, please contact the student researcher at s.rice@patrick.acu.edu.au.

This study has been approved by the Human Research Ethics Committee of the Australian Catholic University. Completing the questionnaire will provide participants with an opportunity to reflect on traditional social roles and their feelings of wellbeing. While it is very unlikely that the questionnaire items will provoke any distress, in the event that distress is experienced, participants may contact Dr. Terry Bowles, Clinical Psychologist 03 9953 3117 for independent and confidential advice regarding counseling or other relevant support.

In the event that you have any complaint or concern regarding that way you have been treated during the study, or if you have a query that the researcher and student researcher have not been able to satisfy, you may write to: **The Chair of the Human Research Ethics Committee, C/O Research Services, Australian Catholic University, Melbourne Campus, Locked Bag 4115, Fitzroy VIC 3065 (tel. 03 9953 3157, fax 03 9953 3305)**. Any complaint or concern will be treated in confidence and fully investigated with the participants informed of the outcome.

Thank you for your interest. Should you wish to participate, your involvement and support will be most appreciated.

Sincerely,

Prof. Barry Fallon
 Researcher

Simon Rice
 Student Researcher

Social Roles and Wellbeing Questionnaire

Background information

Please indicate your age: _____

Please indicate your gender (tick one):

Male Female

Please indicate your ethnicity: _____

Are you currently in a romantic relationship?

Yes No

If yes, is this romantic relationship exclusive?

Yes No

Are you currently residing with a partner?

Yes No

If yes, are you married to your partner?

Yes No

Please indicate your place of residence (tick one):

Metropolitan Rural / Regional

What is your income? (tick one):

Under \$50,000 \$51,000 - \$100,000 \$101,000 +

If you are currently living with a partner, what is your partners income? (tick one):

Under \$50,000 \$51,000 - \$100,000 \$101,000 + N/A

Please indicate your highest level of education attained (tick one):

Primary School High School Pre Year 12 High School Year 12
 Trade Qualification University Undergraduate University Postgraduate

Please indicate your current employment status (tick appropriate):

Working full time Working part time / casually Looking for work
 Studying full time Studying part time Other (please specify):

(Gotland Male Depression Scale)

The next scale refers to recent changes to behaviour and mood. Please respond by circling a number where 1 = *Not at all*, 4 = *Extremely*. During the past month, have you or others noticed that your behaviour has changed, and if so, in which way?

*Not at all**Extremely*

Lower stress threshold/more stressed out than usual	1	2	3	4
More aggressive, outward-reacting, difficulties keeping self-control	1	2	3	4
Feeling of being burned out and empty	1	2	3	4
Constant, inexplicable tiredness	1	2	3	4
More irritable, restless and frustrated	1	2	3	4
Difficulty making ordinary everyday decisions	1	2	3	4
Sleep problems (sleeping too much/too little, restless sleep, difficult falling asleep, waking up early)	1	2	3	4
In the morning especially, having a feeling of disquiet/anxiety/uneasiness	1	2	3	4
Over consumption of alcohol and pills in order to achieve a calming and relaxing effect	1	2	3	4
Being hyperactive or blowing off steam by working hard or by excessive exercise	1	2	3	4
Significant under- or over eating	1	2	3	4
Do you feel your behaviour has altered in such a way that neither you yourself, nor others can recognise you, and that you are difficult to deal with?	1	2	3	4
Have you felt, or have others perceived you as being gloomy, negative or characterised by a state of hopelessness in which everything looks bleak?	1	2	3	4
Have you or others noticed that you have a greater tendency to self-pity, to be complaining or to seem "pathetic?"	1	2	3	4
In your biological family, is there any tendency towards abuse, depression/dejection, suicide attempts or proneness to behaviour involving danger?	1	2	3	4

(Depression Anxiety Stress Scales – 21, Depression Items)

The next set of questions refer to stress you may be experiencing. Please read each statement and circle a number 0, 1, 2, or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any one statement. Please respond where 1 = *Did not apply to me at all*, 4 = *Applied to me very much*.

	<i>Did not apply to me at all</i>			<i>Applied very much</i>
I couldn't seem to experience any positive feelings at all	1	2	3	4
I found it difficult to work up the initiative to do things	1	2	3	4
I felt that I had nothing to look forward to	1	2	3	4
I felt down hearted and blue	1	2	3	4
I was unable to become enthusiastic about anything	1	2	3	4
I felt I wasn't worth much as a person	1	2	3	4
I felt that life was meaningless	1	2	3	4

(Australian Sex Role Scale)

This task asks you to describe yourself. Below is a list of personality characteristics. Please use these characteristics to describe yourself. Indicate on a scale from 1 to 7 how true of you these characteristics are. Please respond where 1 = *Never or almost never true*, 7 = *Always or almost always true*.

*Never or
almost never true*

*Always or
almost always true*

Loves children	1	2	3	4	5	6
Firm	1	2	3	4	5	6
Dependent	1	2	3	4	5	6
Patient	1	2	3	4	5	6
Tense	1	2	3	4	5	6
Bossy	1	2	3	4	5	6
Noisy	1	2	3	4	5	6
Needs approval	1	2	3	4	5	6
Rash	1	2	3	4	5	6
Show-off	1	2	3	4	5	6
Interesting	1	2	3	4	5	6
Appreciative	1	2	3	4	5	6
Nervous	1	2	3	4	5	6
Sensitive to the needs of others	1	2	3	4	5	6
Aggressive	1	2	3	4	5	6
Confident	1	2	3	4	5	6
Self-sufficient	1	2	3	4	5	6
Competitive	1	2	3	4	5	6
Casual	1	2	3	4	5	6
Timid	1	2	3	4	5	6
Self-critical	1	2	3	4	5	6
Logical	1	2	3	4	5	6
Grateful	1	2	3	4	5	6
Sarcastic	1	2	3	4	5	6

Forceful	1	2	3	4	5	6
Clear-thinking	1	2	3	4	5	6
Weak	1	2	3	4	5	6
Bashful	1	2	3	4	5	6
Mischievous	1	2	3	4	5	6
Responsible	1	2	3	4	5	6
Emotional	1	2	3	4	5	6
Resourceful	1	2	3	4	5	6
Skilled in business	1	2	3	4	5	6
Shy	1	2	3	4	5	6
Childlike	1	2	3	4	5	6
Anxious	1	2	3	4	5	6
Devotes self to others	1	2	3	4	5	6
Feels superior	1	2	3	4	5	6
Boastful	1	2	3	4	5	6
Loyal	1	2	3	4	5	6
Strong	1	2	3	4	5	6
Carefree	1	2	3	4	5	6
Absent-minded	1	2	3	4	5	6
Rude	1	2	3	4	5	6
See self running show	1	2	3	4	5	6
Outspoken	1	2	3	4	5	6
Worrying	1	2	3	4	5	6
Gentle	1	2	3	4	5	6
Silly	1	2	3	4	5	6
Pleasure-seeking	1	2	3	4	5	6

End of questionnaire. Thank you for your participation.

Appendix C: Study 2 Invitation to Participate & Questionnaire



INFORMATION LETTER TO PARTICIPANTS

TITLE OF PROJECT: Gender and Wellbeing
RESEARCHER: Professor Barry Fallon
STUDENT RESEARCHER: Simon Rice

Australian Catholic University Limited
ABN 15 050 192 660
Melbourne Campus
250 Victoria Parade East Melbourne
Victoria 3002 Australia
Locked Bag 4115 Fitzroy MDC Fitzroy
Victoria 3065 Australia
www.acu.edu.au

Dear Participant,

You are invited to participate in research being undertaken through the School of Psychology at Australian Catholic University. This research is examining the impact of gender on wellbeing and is being conducted by PhD student Simon Rice and supervised by Professor Barry Fallon. The purpose of this study is to investigate differences in the ways that males and females react when they are “down in the dumps”. **You are invited to complete a questionnaire that will take less than 2 minutes to complete.**

By volunteering to complete the questionnaire your consent to participate will be inferred. You will not be able to be identified at any stage of the research. At no stage will you be required to give your name. In time, the results of this important research will be presented at conferences and in scholarly journals. In any case, all reports will refer to aggregated group findings and no individuals will be identifiable. All data collected as part of this project will be securely stored within the School of Psychology, and destroyed after 5 years.

You are free to withdraw from the study at any stage prior to submission of the questionnaire without supplying a reason. You can direct any questions regarding this project to Professor Barry Fallon on 03 9953 3108 or barry.fallon@acu.edu.au. If you would like to receive a summary of the results at the conclusion of the study, please contact the student researcher at simon.rice@acu.edu.au.

This study has been approved by the Human Research Ethics Committee of the Australian Catholic University. Completing the questionnaire will provide participants with an opportunity to reflect on their current wellbeing. While it is very unlikely that the questionnaire items will provoke any distress, in the event that distress is experienced, participants may contact Dr. Terry Bowles, Clinical Psychologist 03 9953 3117 for independent and confidential advice regarding counseling or other relevant support.

In the event that you have any complaint or concern regarding that way you have been treated during the study, or if you have a query that the researcher and student researcher have not been able to satisfy, you may write to: The Chair of the Human Research Ethics Committee, C/O Research Services, Australian Catholic University, Melbourne Campus, Locked Bag 4115, Fitzroy VIC 3065 (tel. 03 9953 3157, fax 03 9953 3305). Any complaint or concern will be treated in confidence and fully investigated with the participants informed of the outcome.

Thank you for your interest. Should you wish to participate, your involvement and support will be most appreciated.

Sincerely,

Prof. Barry Fallon
Researcher

Simon Rice
Student Researcher

Please think back to a time where you were really “*down in the dumps*” and tick which of the following you experienced or did when you felt really down*.

* All information provided will remain confidential and anonymous. No raw data will be passed on to any third party including the TWU.

***Tick if felt or
experienced***

Alcohol or drugs helped me feel better	<input type="checkbox"/>
I didn't get sad, I got mad	<input type="checkbox"/>
I distracted myself from negative thoughts through sports	<input type="checkbox"/>
I drank a lot	<input type="checkbox"/>
I drove aggressively or dangerously	<input type="checkbox"/>
I felt in low spirits or sad	<input type="checkbox"/>
I felt lacking in energy and strength	<input type="checkbox"/>
I felt less self-confident	<input type="checkbox"/>
I felt like I was under constant pressure	<input type="checkbox"/>
I felt more irritable, restless and frustrated	<input type="checkbox"/>
I felt subdued	<input type="checkbox"/>
I felt that life wasn't worth living	<input type="checkbox"/>
I felt very restless	<input type="checkbox"/>
I got so angry I smashed or punched something or someone	<input type="checkbox"/>
I had a short fuse	<input type="checkbox"/>
I had difficulty in concentrating, e.g. when reading the newspaper or watching television	<input type="checkbox"/>
I had difficulty making ordinary everyday decisions	<input type="checkbox"/>
I had feelings of guilt	<input type="checkbox"/>
I had greater involvement with gambling	<input type="checkbox"/>
I had increased thoughts or actions of deliberate self-harm	<input type="checkbox"/>
I had trouble sleeping at night	<input type="checkbox"/>
I lost interest in daily activities	<input type="checkbox"/>
I needed more sex to feel good	<input type="checkbox"/>
I needed to handle my problems on my own	<input type="checkbox"/>
I used recreational drugs a lot	<input type="checkbox"/>
I was abusive or aggressive towards others on the sports field	<input type="checkbox"/>
I was hyperactive or blew off steam by working hard or by excessive exercise	<input type="checkbox"/>
I yelled at people or things	<input type="checkbox"/>
It was easier to focus on work than the rest of my life	<input type="checkbox"/>
My appetite changed	<input type="checkbox"/>

What is your age? _____

Are you currently in a relationship? Yes No

Thanks for your time.

Appendix D: Study 3 Permission Letters, Invitation to Participate & Questionnaire



South Coast
Primary Care Partnership

P.O. Box 105 Inverloch Vic 3996
P. (03) 5674 0900 F. (03) 5674 3124
E. admin@www.southcoastpcp.org.au
www.southcoastpcp.org.au

10th May 2010

Professor John Ozolins
Chair
Human Research Ethics Committee
Australian Catholic University
Locked Bag 4115 DC
Fitzroy, Victoria 3065

Dear Professor Ozolins,

Re: Men's Shed Program Evaluation

The Manager of Health Promotion from the South Coast Primary Care Partnership will be conducting interviews with men at the Kooweerup Men's Shed on behalf of the Kooweerup Regional Health Service. This will assist in the collection of data for the program evaluation conducted by Simon Rice of Australian Catholic University, School of Psychology.

The data collected as part of the evaluation will contribute to Simon Rice's PhD in Clinical Psychology. The data collected will also be utilised to evaluate the Men's Shed program in terms of improving community integration and psychosocial functioning of the Men's Shed participants.

This data will be part of a wider evaluation of men's sheds in the South Coast Primary Care Partnership Catchment that includes all men's sheds in Bass Coast, South Gippsland local government areas and the catchment of the Kooweerup Regional Health Service. Simon Rice's evaluation survey tool will be used to collect this broader data. With permission granted by other men's sheds participants we would be happy to make this data available to Simon for his study.

Yours sincerely,

A handwritten signature in cursive script that reads "Vicki Bradley".

Vicki Bradley
Manager Health Promotion
South Coast Primary Care Partnership
Email: hp@southcoastpcp.org.au
Phone: 5674 0903



Koo-Wee-Rup

Regional Health Service

P.O. Box 53, Rossiter Road,
Kooweerup Victoria 3981
www.kooweeruphospital.net.au

Tel: (03) 5997 9679
Fax: (03) 5997 1248

17th February, 2010

Professor John Ozolins
Chair
Human Research Ethics Committee
Australian Catholic University
Locked Bag 4115 DC
Fitzroy, Victoria 3065

Dear Professor Ozolins,

Re: Men's Shed Program Evaluation

The Kooweerup Men's Shed hereby authorises Simon Rice of Australian Catholic University, School of Psychology to conduct a program evaluation of the Kooweerup Men's Shed program.

The data collected as part of the evaluation will contribute to Simon Rice's PhD in Clinical Psychology. The data collected will also be utilised to evaluate the Men's Shed program in terms of improving community integration and psychosocial functioning of the Men's Shed participants.

Yours sincerely,

TERRONA RAMSAY
Chief Executive Officer/Director of Nursing
TR/sg/13367



Australian Catholic University Limited
 ABN 15 050 192 660
 Melbourne Campus (St Patrick's)
 115 Victoria Parade Fitzroy VIC 3065
 Locked Bag 4115 Fitzroy VIC 3065
 Telephone 03 9953 3000
 Facsimile 03 9953 3005
www.acu.edu.au

INFORMATION LETTER TO PARTICIPANTS

TITLE OF PROJECT: Men's Shed Evaluation
PRINCIPAL INVESTIGATOR: Professor Barry Fallon
STUDENT RESEARCHER: Simon Rice
PROGRAMME IN WHICH ENROLLED: PhD (Psychology)

Dear Participant,

You are invited to participate in a project exploring the effectiveness of Men's Sheds programs in creating links to the community and enhancing wellbeing. The project is being run with Kooweerup Regional Health Service in conjunction with PhD student researcher Simon Rice from the School of Psychology at Australian Catholic University. Your participation would be greatly appreciated, and would involve completing an anonymous and confidential questionnaire that will take approximately 10 minutes. By volunteering to complete the questionnaire your consent to participate will be inferred.

The questionnaire will include items related to feeling connected to your local community, friendship, and behaviours related to your wellbeing. There will also be an opportunity for you to report any benefits you have noticed about being involved in the Men's Shed program, and changes you would like to see made at the Men's Shed in the future. If you agree to participate you will also be invited to complete a second questionnaire of the same length in several months time. This will allow the researchers to determine any changes over the course of several months. It is not anticipated that there will be any risks involved as participation simply requires completing an anonymous and confidential questionnaire.

This important project will assist to further our understanding of the health and wellbeing of older men in Australia. In time, the results of this study will be made available to the Kooweerup Regional Health Service and will assist with improving the Men's Shed program for the future. In addition, results of this project may be presented at conferences and in scholarly journals. In any case, all research reports will refer to aggregated group findings and no individuals will be identifiable.

You are free to decline to participate, or to withdraw from the project at any stage. You do not need to supply a reason for your withdrawal. Should you wish to know more about this project, you can direct any questions to:

Professor Barry Fallon
 03 9953 3108
 School of Psychology
 Melbourne Campus
 Locked Bag 4115
 Fitzroy VIC 3065
barry.fallon@acu.edu.au

If you would like to receive a summary of the results at the conclusion of the study, please contact the student researcher at simon.rice@acu.edu.au.

This study has been approved by the Human Research Ethics Committee of the Australian Catholic University. While it is very unlikely that the questionnaire items will provoke any distress, in the event that distress is experienced, participants may contact Dr. Barbara Jones, Clinical Psychologist, 03 9953 3464 for independent and confidential advice regarding counseling or other relevant support.

In the event that you have any complaint or concern regarding the way you have been treated during the project, or if you have a query that the researcher and student researcher have not been able to satisfy, you may write to:

Chair, HREC
C/- Research Services
Australian Catholic University
Melbourne Campus
Locked Bag 411
FITZROY VIC 3065
Tel: 03 9953 3158
Fax: 03 9953 3315

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

Thank you for your interest. Should you wish to participate, your involvement and support will be most appreciated.

Sincerely,

Professor Barry Fallon
Supervisor

Simon Rice
Student Researcher

Men's Shed - Evaluation Questionnaire

Completion & return of this questionnaire indicates your consent to participate in this project

Today's Date _____

Your date of birth: -- / -- /----

Day Month Year

Which Men's Shed group are you involved with? (E.g., Kooweerup) _____

How many months have you been involved with The Shed? _____ (months)

Approximately how many times per month do you attend The Shed?

- Once a month Twice a month Three times a month Four times a month Five times or more

Please indicate your current employment status:

- Retired Working part time / casually Working full time
 Looking for work Studying

Please indicate your current relationship status:

- Single Married Defacto Separated Divorced Widowed

Please think back over the past month, and respond to the following statements by circling a number where 1 = *not at all*, 5 = *almost always*.

Not at all

Almost always

	1	2	3	4	5
It has been easy to relate to others	1	2	3	4	5
I felt isolated from other people	1	2	3	4	5
I had someone to share my feelings with	1	2	3	4	5
I found it easy to get in touch with others when I needed to	1	2	3	4	5
Others felt they had to help me	1	2	3	4	5
When with other people I felt separate from them	1	2	3	4	5
I felt alone and friendless	1	2	3	4	5
I feel like part of the community, like I belong here	1	2	3	4	5
I know my way around this community	1	2	3	4	5
I know the rules of the community and can fit in with them	1	2	3	4	5
I feel like I am accepted in this community	1	2	3	4	5
I can be independent in this community	1	2	3	4	5
I like where I am living now	1	2	3	4	5
There are people I feel close to in this community	1	2	3	4	5
I know a number of people in this community well enough to say hello and have them say hello back	1	2	3	4	5

There are things I can do in this community for fun in my free time	1	2	3	4	5
I have something to do in this community during the main part of my day that is useful and productive	1	2	3	4	5

During the past month, have you or others noticed that your behaviour has changed, and if so, in which way? Please respond by circling a number where 1 = *Not at all*, 4 = *Extremely*

	<i>Not at all</i>			<i>Extremely</i>
Lower stress threshold/more stressed out than usual	1	2	3	4
More aggressive, outward-reacting, difficulties keeping self-control	1	2	3	4
Feeling of being burned out and empty	1	2	3	4
Constant, inexplicable tiredness	1	2	3	4
More irritable, restless and frustrated	1	2	3	4
Difficulty making ordinary everyday decisions	1	2	3	4
Sleep problems (sleeping too much/too little, restless sleep, difficult falling asleep, waking up early)	1	2	3	4
In the morning especially, having a feeling of disquiet/anxiety/uneasiness	1	2	3	4
Over consumption of alcohol and/or pills in order to achieve a calming and relaxing effect	1	2	3	4
Being hyperactive or blowing off steam by working hard or by excessive exercise	1	2	3	4
Significant under- or over eating	1	2	3	4
Increased tendency for risky driving, or road rage	1	2	3	4
Over involvement with work or study (workaholism)	1	2	3	4
Greater involvement in gambling	1	2	3	4
Increase interest in non-relationship sexual affairs/encounters	1	2	3	4
Increased thoughts or actions of deliberate self-harm	1	2	3	4
Behaviour altering in such a way that you are difficult to deal with	1	2	3	4
Being gloomy, negative or characterised by a state of hopelessness in which everything looks bleak	1	2	3	4
A greater tendency to self-pity, to be complaining or to seem "pathetic"	1	2	3	4
In your biological family, is there any tendency towards abuse, depression/dejection, suicide attempts or proneness to behaviour involving danger?	1	2	3	4
Abuse or aggression towards others on the sports field	1	2	3	4
Breaking rules	1	2	3	4
Using sex to distract from negative feelings	1	2	3	4
Taking on more tasks or projects	1	2	3	4
Becoming very task focused	1	2	3	4
Experiencing less satisfaction in relationships	1	2	3	4
Worsening physical health	1	2	3	4

Distraction from negative thoughts through work or sports	1	2	3	4
Experiencing a vague sense that something is wrong, but being unable to express it	1	2	3	4
Feeling emotionally numb	1	2	3	4
Withdrawing from relationships or social contact	1	2	3	4

What started you coming to the Shed?

What keeps you coming to the Shed?

Does coming to the Shed make any difference to how you feel about yourself?

If you have a partner, what do they think about your involvement with the Shed?

What would one of your close friends think about your involvement with the Shed?

Thank you – Your time and input is appreciated

Men's Shed - Evaluation Questionnaire

Time 2

Completion & return of this questionnaire indicates your consent to participate in this project

Today's Date _____

Your date of birth: --/ -- /-----

Day Month Year

Which Men's Shed group are you involved with? (E.g., Kooweerup) _____

Approximately how many times per month do you attend The Shed

- Once a month Twice a month Three times a month Four times a month Five times or more

Please think back over the *past month*, and respond to the following statements by circling a number where 1 = not at all, 5 = almost always.

Not at all

Almost always

It has been easy to relate to others	1	2	3	4	5
I felt isolated from other people	1	2	3	4	5
I had someone to share my feelings with	1	2	3	4	5
I found it easy to get in touch with others when I needed to	1	2	3	4	5
Others felt they had to help me	1	2	3	4	5
When with other people I felt separate from them	1	2	3	4	5
I felt alone and friendless	1	2	3	4	5
I feel like part of the community, like I belong here	1	2	3	4	5
I know my way around this community	1	2	3	4	5
I know the rules of the community and can fit in with them	1	2	3	4	5
I feel like I am accepted in this community	1	2	3	4	5
I can be independent in this community	1	2	3	4	5
I like where I am living now	1	2	3	4	5
There are people I feel close to in his community	1	2	3	4	5
I know a number of people in this community well enough to say hello and have them say hello back	1	2	3	4	5
There are things I can do in this community for fun in my free time	1	2	3	4	5
I have something to do in this community during the main part of my day that is useful and productive	1	2	3	4	5

During the past month, have you or others noticed that your behaviour has changed, and if so, in which way? Please respond by circling a number where 1 = *Not at all*, 4 = *Extremely*

	<i>Not at all</i>			<i>Extremely</i>
Lower stress threshold/more stressed out than usual	1	2	3	4
More aggressive, outward-reacting, difficulties keeping self-control	1	2	3	4
Feeling of being burned out and empty	1	2	3	4
Constant, inexplicable tiredness	1	2	3	4
More irritable, restless and frustrated	1	2	3	4
Difficulty making ordinary everyday decisions	1	2	3	4
Sleep problems (sleeping too much/too little, restless sleep, difficult falling asleep, waking up early)	1	2	3	4
In the morning especially, having a feeling of disquiet/anxiety/uneasiness	1	2	3	4
Over consumption of alcohol and/or pills in order to achieve a calming and relaxing effect	1	2	3	4
Being hyperactive or blowing off steam by working hard or by excessive exercise	1	2	3	4
Significant under- or over eating	1	2	3	4
Increased tendency for risky driving, or road rage	1	2	3	4
Over involvement with work or study (workaholism)	1	2	3	4
Greater involvement in gambling	1	2	3	4
Increase interest in non-relationship sexual affairs/encounters	1	2	3	4
Increased thoughts or actions of deliberate self-harm	1	2	3	4
Behaviour altering in such a way that you are difficult to deal with	1	2	3	4
Being gloomy, negative or characterised by a state of hopelessness in which everything looks bleak	1	2	3	4
A greater tendency to self-pity, to be complaining or to seem "pathetic"	1	2	3	4
In your biological family, is there any tendency towards abuse, depression/dejection, suicide attempts or proneness to behaviour involving danger?	1	2	3	4
Abuse or aggression towards others on the sports field	1	2	3	4
Breaking rules	1	2	3	4
Using sex to distract from negative feelings	1	2	3	4
Taking on more tasks or projects	1	2	3	4
Becoming very task focused	1	2	3	4
Experiencing less satisfaction in relationships	1	2	3	4
Worsening physical health	1	2	3	4
Distraction from negative thoughts through work or sports	1	2	3	4
Experiencing a vague sense that something is wrong, but being unable to express it	1	2	3	4

Feeling emotionally numb	1	2	3	4
Withdrawing from relationships or social contact	1	2	3	4

How long do you think you will keep coming to the shed? _____ months _____ years

What has kept you coming to the Shed?

Can you name any personal benefits you have experienced from being part of the Shed?

What do you think stops other blokes from coming along to the Shed?

How would you go about encouraging other men to come along to the Shed?

What is the best way to promote the Men's Shed?

How would you like to be involved in the running of the Shed?

What could happen to make the Shed better?

Have the Shed's opening hours been enough for you? (If no, when would you like the Shed open?)

Are there other resources you would like the Shed to have?

Thank you – Your time and input is appreciated

Appendix E: Study 4 Invitation to Participate & Questionnaire



Australian Catholic University Limited
 ABN 15 050 192 660
 Melbourne Campus (St Patrick's)
 115 Victoria Parade Fitzroy VIC 3065
 Locked Bag 4115 Fitzroy VIC 3065
 Telephone 03 9953 3000
 Facsimile 03 9953 3005
www.acu.edu.au

Dear Participant,

You are invited to take part in a research project investigating the factors that influence psychological wellbeing.

The study will explore the effects that perceptions of gender and social factors have on psychological wellbeing. This project involves people from the wider Australian community, 18 years of age and above. Participants will be asked to complete an online survey which takes approximately 15 minutes. The survey can be completed at your own rate and at any time that best suits you.

By continuing on to the website you are agreeing that you are giving your informed consent to participate in the study.

We will ask you to complete several short tasks; to begin with you will be asked to answer a few background questions about age, gender, years of education, and relationship status. You will be asked to indicate your level of agreement with common statements about what it means to be a man or a woman. You will be asked questions about your level of satisfaction with various people in your life. We are also interested in learning more about how you personally have been feeling lately, so we will ask you to complete a short measure that asks you to rate your mood and feelings over the few last weeks. In addition you will be asked to indicate your level of agreement with statements about a fictional character. If you are in a romantic relationship, you will be asked to complete a brief questionnaire about your feelings and attitudes about this relationship.

Participation in this research project is voluntary. You are free to withdraw from the study at any stage without giving any reason. Confidentiality will be maintained during the study and in any report. Researchers will not be able to link your name with your answers. The students will be reporting the findings in a thesis and we plan to also report the findings at a conference and/or in a scientific journal. It is emphasized that individual participants will not be able to be identified in any report of the study, as only aggregate data will be reported.

Any questions regarding this project can be directed to the staff supervisor: Professor Barry Fallon in the School of Psychology, St. Patrick's Campus (Australian Catholic University, 115 Victoria Parade, Fitzroy 3065, phone: 03 9953 3108).

The Human Research Ethics Committee at Australian Catholic University has approved this study. In the event that you have any complaint or concern about the way you have been treated during the study, or if you have any query that the Student Researcher and Staff Supervisor have not been able to satisfy, you may write to:

Chair, Human Research Ethics Committee
 C/o Research Services
 Australian Catholic University
 Locked Bag 4115
 FITZROY, VIC. 3065 Tel: 03 9953 3157 Fax: 03 9953 3315

Any complaint will be treated in confidence and investigated fully and any participant lodging such a complaint

will be informed of the outcome.

If you are willing to participate please continue to the online survey below.

If at any stage during the study you feel distressed, please do not hesitate to contact lifeline on 131114. Lifeline is a counselling service that respects everyone's right to be heard, understood and cared for. Or alternatively you may wish to contact a Clinical Psychologist at Australian Catholic University, Dr Barbara Jones can be contacted on (03) 99533464 for further referral.

Mr. Daniel Moore
Student Researcher

Mr. Simon Rice
Student Researcher

Professor. Barry Fallon
Staff Supervisor

(The Patient Health Questionnaire – Depression Module; PHQ-9)

Over the *last 2 weeks*, how often have you been bothered by any of the following problems?

	Not at all		Almost every day	
	0	1	2	3
Little interest or pleasure in doing things	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Trouble falling or staying asleep, or sleeping too much	0	1	2	3
Feeling tired or having little energy	0	1	2	3
Poor appetite or overeating	0	1	2	3
Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

	Not difficult at all		Extremely difficult	
	0	1	2	3
If you checked off any problems above, how difficult have these problems made it for your work, take care of things at home, or get along with people?	0	1	2	3

(Male Depression Risk Scale – Full Item Pool)

Please think back over the last month and respond to each item considering how often it applied to you. Please respond where 0 = *not at all*; 7 = *almost always*.

	Not at all							Almost always
Any existing pains felt much worse	0	1	2	3	4	5	6	7
Everyone seemed to bother me	0	1	2	3	4	5	6	7
I tried to ignore feeling down	0	1	2	3	4	5	6	7
I am more interested in thinking about sex than most other people	0	1	2	3	4	5	6	7
I avoided going home	0	1	2	3	4	5	6	7
I avoided talking to others	0	1	2	3	4	5	6	7
I bottled up my negative feelings	0	1	2	3	4	5	6	7
I couldn't concentrate properly, or I had difficulty making decisions	0	1	2	3	4	5	6	7
I covered up my difficulties	0	1	2	3	4	5	6	7
I craved drugs	0	1	2	3	4	5	6	7
I distracted myself from negative thoughts through sports	0	1	2	3	4	5	6	7
I drank more alcohol than usual	0	1	2	3	4	5	6	7
I drove dangerously or aggressively	0	1	2	3	4	5	6	7
I drove whilst over the legal blood alcohol limit	0	1	2	3	4	5	6	7
I drove whilst under the influence of an illegal substance	0	1	2	3	4	5	6	7
I engaged in sex to distract me from negative thoughts or feelings	0	1	2	3	4	5	6	7
I exercised more than is good for my body	0	1	2	3	4	5	6	7
I experienced problems relating to people close to me	0	1	2	3	4	5	6	7
I experienced worsening physical health	0	1	2	3	4	5	6	7
I felt more tense than usual	0	1	2	3	4	5	6	7
I felt out of control	0	1	2	3	4	5	6	7
I felt under more pressure than usual	0	1	2	3	4	5	6	7
I found it difficult to mix with others	0	1	2	3	4	5	6	7
I got annoyed easily	0	1	2	3	4	5	6	7
I got so mad I started a fight	0	1	2	3	4	5	6	7

I had a hard time putting my negative feelings into words	0 1 2 3 4 5 6 7
I had aggressive thoughts about others	0 1 2 3 4 5 6 7
I had arguments with people I am close to	0 1 2 3 4 5 6 7
I had more heartburn than usual	0 1 2 3 4 5 6 7
I had regular headaches	0 1 2 3 4 5 6 7
I had riskier sexual contacts	0 1 2 3 4 5 6 7
I had stomach pains	0 1 2 3 4 5 6 7
I had to work things out by myself	0 1 2 3 4 5 6 7
I had unexplained aches and pains	0 1 2 3 4 5 6 7
I hit someone in anger	0 1 2 3 4 5 6 7
I injured myself deliberately (e.g., burned or cut myself)	0 1 2 3 4 5 6 7
I let work take over my life	0 1 2 3 4 5 6 7
I lost interest in how others were doing	0 1 2 3 4 5 6 7
I needed alcohol to help me unwind	0 1 2 3 4 5 6 7
I needed to gamble more than normal	0 1 2 3 4 5 6 7
I needed to have easy access to alcohol	0 1 2 3 4 5 6 7
I needed to stay in control and be strong	0 1 2 3 4 5 6 7
I overreacted to situations with aggressive behaviour	0 1 2 3 4 5 6 7
I physically attacked someone	0 1 2 3 4 5 6 7
I physically lashed out at others without being provoked	0 1 2 3 4 5 6 7
I preferred to keep quiet about feeling bad	0 1 2 3 4 5 6 7
I refused help for my problems	0 1 2 3 4 5 6 7
I shouted at others	0 1 2 3 4 5 6 7
I sought out drugs	0 1 2 3 4 5 6 7
I spent more time on my computer than usual	0 1 2 3 4 5 6 7
I spent my spare time alone	0 1 2 3 4 5 6 7
I stayed at work longer than I needed to	0 1 2 3 4 5 6 7
I stopped feeling so bad while drinking	0 1 2 3 4 5 6 7
I swore at others	0 1 2 3 4 5 6 7
I thought about drinking alcohol frequently	0 1 2 3 4 5 6 7
I thought about using drugs frequently	0 1 2 3 4 5 6 7

I took my anger out on other people without due cause	0 1 2 3 4 5 6 7
I took risks that might result in injury to myself or others	0 1 2 3 4 5 6 7
I tried my hardest to ignore my feelings	0 1 2 3 4 5 6 7
I tried my hardest to stay in control of my emotions	0 1 2 3 4 5 6 7
I used drugs to cope	0 1 2 3 4 5 6 7
I verbally lashed out at others without being provoked	0 1 2 3 4 5 6 7
I verbally threatened someone	0 1 2 3 4 5 6 7
I wanted to smash things	0 1 2 3 4 5 6 7
I was moody and irritable	0 1 2 3 4 5 6 7
I was more impatient than usual	0 1 2 3 4 5 6 7
I was more reckless	0 1 2 3 4 5 6 7
I was nervous	0 1 2 3 4 5 6 7
I was verbally aggressive to others	0 1 2 3 4 5 6 7
I was worried	0 1 2 3 4 5 6 7
I watched more TV or movies than usual	0 1 2 3 4 5 6 7
I withdrew from responsibilities at home	0 1 2 3 4 5 6 7
I worked to stop myself from crying	0 1 2 3 4 5 6 7
I would become angry very quickly	0 1 2 3 4 5 6 7
I yelled at others	0 1 2 3 4 5 6 7
It helped when I hurt others	0 1 2 3 4 5 6 7
It took more effort than usual to control my temper	0 1 2 3 4 5 6 7
It was difficult to manage my anger	0 1 2 3 4 5 6 7
It was hard to relax	0 1 2 3 4 5 6 7
Others expressed concern about my drinking	0 1 2 3 4 5 6 7
Others expressed concern about my drug use	0 1 2 3 4 5 6 7
Others noticed that I was fidgety, or moved around slower than usual	0 1 2 3 4 5 6 7
People called me a workaholic	0 1 2 3 4 5 6 7
Using drugs provided temporary relief	0 1 2 3 4 5 6 7

Appendix F: Study 5a / 5b Invitation to Participate & Questionnaire

TITLE OF PROJECT: Gender, Social Roles, and Wellbeing
RESEARCHER: Professor Barry Fallon
STUDENT RESEARCHER: Simon Rice



Dear Participant,

You are invited to participate in research being undertaken through the School of Psychology at Australian Catholic University. This research is examining the impact of gender and social roles on wellbeing and is being conducted by PhD student Simon Rice and supervised by Professor Barry Fallon. The purpose of this study is to investigate the relationship between traditional notions of masculinity and femininity, and their relationship to positive and negative mood states and wellbeing, and life events. You are invited to complete a questionnaire that will provide information on your perceptions of gender roles, positive and negative emotions, stress, and your feelings of wellbeing. It will take 15 minutes or so to complete the initial questionnaire.

By volunteering to complete the questionnaire your consent to participate will be inferred. There is an option for you to be involved in a follow-up data collection 12 weeks after completing the initial questionnaire. Participating in both the first and second phase of this research will enable changes in wellbeing over time to be evaluated. If you would like to participate in the second phase, please provide a contact email address and an individual ID code (so that your responses can be matched together) in the fields at the end of the questionnaire. If you provide an email address, the researchers will send you a link to the follow-up questions in 12 weeks time via email. All data submitted, including email addresses and ID codes will be kept confidential. The researchers have no interest in identifying specific individuals, and once data is matched, individual ID codes and email addresses will be deleted to ensure that questionnaire responses cannot be traced back to individuals. It will take 10 minutes or so to complete the follow-up questionnaire.

In time, the results of this important research may be presented at conferences and in scholarly journals. In any case, all reports will refer to aggregated group findings and no individuals will be identifiable. All data collected as part of this project will be securely stored within the School of Psychology, and destroyed after 5 years.

You are free to withdraw from the study at any stage prior to submission of either the first or second questionnaire. You do not need to supply a reason for your withdrawal. You can direct any questions regarding this project to Professor Barry Fallon on 03 9953 3108 within the School of Psychology, St Patrick's Campus, Locked Bag 4115, Fitzroy VIC 3065, barry.fallon@acu.edu.au. If you would like to receive a summary of the results at the conclusion of the study, please contact the student researcher at simon.rice@acu.edu.au.

This study has been approved by the Human Research Ethics Committee of the Australian Catholic University. Completing the questionnaire will provide participants with an opportunity to reflect on traditional social roles and their feelings of wellbeing. While it is very unlikely that the questionnaire items will provoke any distress, in the event that distress is experienced, participants may contact Dr. Barbara Jones, Clinical Psychologist 03 9953 3464 for independent and confidential advice regarding counselling or other relevant support.

In the event that you have any complaint or concern regarding the way you have been treated during the study, or if you have a query that the researcher and student researcher have not been able to satisfy, you may write to: The Chair of the Human Research Ethics Committee, C/O Research Services, Australian Catholic University, Melbourne Campus, Locked Bag 4115, Fitzroy VIC 3065 (tel. 03 9953 3157, fax 03 9953 3305). Any complaint or concern will be treated in confidence and fully investigated with the participants informed of the outcome.

Thank you for your interest. Should you wish to participate, your involvement and support will be most appreciated.

Professor Barry Fallon

Simon Rice

Gender, Social Roles and Wellbeing Research Project**Time 1 Questionnaire**

Please answer the demographic questions below

Please indicate your age: *Free Response*

Please indicate your gender: *Forced choice* (Male/ Female)

Please indicate your ethnicity: *Free Response*

Which continent are you responding from? *Forced choice*

Are you currently in a romantic relationship? *Forced Choice* (Yes/ No)

If yes, What is the gender of your romantic partner? Forced choice (Male/Female)

If yes, Are you currently residing with a partner? Forced choice (Yes/ No)

If yes, are you married to your partner? Forced choice (Yes /No)

Please indicate your place of residence: *Forced choice*(Metropolitan/ Rural / Provincial)

What is your income? *Forced choice* (Under \$50,000, \$51,000 - \$100,000, \$101,000 +)

If you are currently living with a partner, what is your partners income? *Forced choice*
(Under \$50,000, \$51,000 - \$100,000, \$101,000 +)

Please indicate your highest level of education attained: *Forced choice*

(Primary School, High School Pre Year 12, High School Year 12, Trade Qualification,
University Undergraduate, University Postgraduate)

Please indicate your current employment status: *Forced Choice*

(Working full time, Working part time / casually, Looking for work,

Studying full time, Studying part time, Other (please specify): _____)

Have you ever been diagnosed with depression? *Forced Choice* (Yes/No)

If yes, Who provided the diagnosis?

(GP, psychologist, psychiatrist, counsellor, other_____)

Have you ever been treated for depression? *Forced Choice* (Yes/No)

If yes, Which of the following professionals treated you for depression?

(GP, psychologist, psychiatrist, counsellor, other_____)

Is there a history of depression within your family? *Forced Choice* (Yes/No)

(Ruminative Responses Scale - Short Form)

Below is a list of things that people think and do many things when they feel sad, blue, or depressed. For each item below, please indicate if you never, sometimes, often, or always think or do each one when you feel down, sad or depressed. Please indicate what you generally do, not what you think you should do where *1 = Never – 4 = Always*

	<i>Never</i>			<i>Always</i>
Think "what am I doing to deserve this?"	1	2	3	4
Analyse recent events and try to understand why your are depressed	1	2	3	4
Think "Why do I always react this way?"	1	2	3	4
Go away by yourself ad think about why you feel this way	1	2	3	4
Write down what you are thinking and analyse it	1	2	3	4
Think about a recent situation, wishing it had gone better	1	2	3	4
Think "what do I have problems other people don't have?"	1	2	3	4
Think "Why can't I handle things better?"	1	2	3	4
Analyse your personality to try to understand why you are depressed?	1	2	3	4
Go some place alone to think about your feelings	1	2	3	4

(Stressful Life Events Checklist)

Listed below are a number of life events and difficulties. Please indicate “yes” to those events that have occurred for you **IN THE LAST 3 MONTHS**. For any event that you indicate “yes” to, please also respond by indicating the level of stress the event caused where *1 = Minor stress caused – 6 = major stress caused*.

	Occurrence		Minor stress caused			Major stress caused		
	Yes	No	1	2	3	4	5	6
Death of your partner	Yes	No	1	2	3	4	5	6
Death of someone in immediate family (father, mother, brother, sister, son, daughter)	Yes	No	1	2	3	4	5	6
Onset of a serious illness in you or someone in immediate family	Yes	No	1	2	3	4	5	6
Separation or divorce from your partner	Yes	No	1	2	3	4	5	6
Serious car accident or other accident to you or someone in immediate family	Yes	No	1	2	3	4	5	6
Unwanted pregnancy – yours or someone in immediate family	Yes	No	1	2	3	4	5	6
Loss of a job (your or someone in immediate family) that causes you financial problems	Yes	No	1	2	3	4	5	6
You lost a large sum of money	Yes	No	1	2	3	4	5	6
Marital reconciliation with partner	Yes	No	1	2	3	4	5	6
Abortion – you or someone in immediate family	Yes	No	1	2	3	4	5	6
Retirement from work – yours or partner	Yes	No	1	2	3	4	5	6
Relationship difficulties with girlfriend / boyfriend	Yes	No	1	2	3	4	5	6
Permanent break-up with girlfriend / boyfriend	Yes	No	1	2	3	4	5	6
You moved into the city for the first time	Yes	No	1	2	3	4	5	6
You failed an important exam	Yes	No	1	2	3	4	5	6
A serious breaking of the law by you or someone in immediate family	Yes	No	1	2	3	4	5	6
A major disappointment for you (such as being turned down for a job promotion, or for entry into an educational programme ,or an application for a loan being rejected)	Yes	No	1	2	3	4	5	6

You or someone in your immediate family had a child born so prematurely that the baby's life or proper development was endangered	Yes No	1 2 3 4 5 6
List any other unpleasant event that has occurred during the last 3 months	FREE RESPONSE	1 2 3 4 5 6
Serious chronic illness – yours or a household member's	Yes No	1 2 3 4 5 6
Alcoholism – yours or a household member's	Yes No	1 2 3 4 5 6
Severe marital problems	Yes No	1 2 3 4 5 6
Serious financial difficulties	Yes No	1 2 3 4 5 6
Unwanted unemployment – yours or your partner's	Yes No	1 2 3 4 5 6
List any other difficulties you have experienced during the last 3 months	FREE RESPONSE	1 2 3 4 5 6

(The Patient Health Questionnaire – Depression Module; PHQ-9)

Over the *last 2 weeks*, how often have you been bothered by any of the following problems?

	Not at all		Almost every day	
	0	1	2	3
Little interest or pleasure in doing things	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Trouble falling or staying asleep, or sleeping too much	0	1	2	3
Feeling tired or having little energy	0	1	2	3
Poor appetite or overeating	0	1	2	3
Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

	Not difficult at all		Extremely difficult	
	0	1	2	3
If you checked off any problems above, how difficult have these problems made it for your work, take care of things at home, or get along with people?	0	1	2	3

(Experience of Shame Scale – Personal Items)

Please indicate if you have experiences any of the feeling below in the past 12 months

Not at all

Very Much

Have you felt ashamed of the sort of person you are?	1	2	3	4
Have you worries about what other people think of the sort of person you are?	1	2	3	4
Have you tried to conceal from others the sort of person you are?	1	2	3	4

(Male Depression Risk Scale)

Please think back over the last month and respond to each item considering how often it applied to you. Please respond where 0 = *not at all*; 6 = *almost always*.

	Not at all						Almost always
I bottled up my negative feelings	0	1	2	3	4	5	6
I preferred to keep quiet about feeling bad	0	1	2	3	4	5	6
I tried to ignore feeling down	0	1	2	3	4	5	6
I tried my hardest to ignore my feelings	0	1	2	3	4	5	6
I covered up my difficulties	0	1	2	3	4	5	6
I had to work things out by myself	0	1	2	3	4	5	6
I was worried	0	1	2	3	4	5	6
I tried my hardest to stay in control of my emotions	0	1	2	3	4	5	6
I felt under more pressure than usual	0	1	2	3	4	5	6
I felt more tense than usual	0	1	2	3	4	5	6
I found it difficult to mix with others	0	1	2	3	4	5	6
I was moody and irritable	0	1	2	3	4	5	6
I used drugs to cope	0	1	2	3	4	5	6
Using drugs provided temporary relief	0	1	2	3	4	5	6
I sought out drugs	0	1	2	3	4	5	6
I thought about using drugs frequently	0	1	2	3	4	5	6
I craved drugs	0	1	2	3	4	5	6
Others expressed concern about my drug use	0	1	2	3	4	5	6
I needed alcohol to help me unwind	0	1	2	3	4	5	6
I needed to have easy access to alcohol	0	1	2	3	4	5	6
I drank more alcohol than usual	0	1	2	3	4	5	6
I stopped feeling so bad while drinking	0	1	2	3	4	5	6
I thought about drinking alcohol frequently	0	1	2	3	4	5	6
Others expressed concern about my drinking	0	1	2	3	4	5	6
I was verbally aggressive to others	0	1	2	3	4	5	6
I yelled at others	0	1	2	3	4	5	6
I verbally threatened someone	0	1	2	3	4	5	6
I verbally lashed out at others without being provoked	0	1	2	3	4	5	6
It was difficult to manage my anger	0	1	2	3	4	5	6
I overreacted to situations with aggressive behaviour	0	1	2	3	4	5	6

I had unexplained aches and pains	0	1	2	3	4	5	6
I had stomach pains	0	1	2	3	4	5	6
I had regular headaches	0	1	2	3	4	5	6
I had more heartburn than usual	0	1	2	3	4	5	6
I drove whilst over the legal blood alcohol limit	0	1	2	3	4	5	6
I exercised more than is good for my body	0	1	2	3	4	5	6
I drove dangerously or aggressively	0	1	2	3	4	5	6
I took unnecessary risks	0	1	2	3	4	5	6
I stopped caring about the consequences of my actions	0	1	2	3	4	5	6
I needed to gamble more than normal	0	1	2	3	4	5	6
I engaged in sex to distract me from negative thoughts or feelings	0	1	2	3	4	5	6
I had riskier sexual contacts	0	1	2	3	4	5	6
I thought about sex more frequently than usual	0	1	2	3	4	5	6
I had more sex than usual	0	1	2	3	4	5	6

Final Screen of Questionnaire

Thank you for taking the time to be involved in this research. Your participation is appreciated.

Would you like to be involved in the second phase of this research?

An important component of this project looks at how wellbeing changes over time. The second phase of this project involves a questionnaire 12 weeks time. The follow-up questionnaire will take 10 minutes or so to complete.

To participate in the second phase, please create a four digit ID code so that your responses between surveys can be matched. So that this code is easily remembered by you, it is recommended you use the initial of your first and last name, and the last two digits of your birth year (Eg. Jane Smith, born in 1972 would have the code "JS72").

If you would like to participate in phase two, please enter your initials and the last two digits of your birth year here _____

Exit Screen

Thanks again for your time.

You can contact the researcher, Simon Rice at: simon.rice@acu.edu.au .

Lifeline Australia offers 24hr telephone counselling. *Lifeline 13 11 14*

Time 2 Questionnaire

Please enter your four digit individual ID code _____

(It was recommended your ID code was the initial of your first and last name, and the last two digits of your birth year (Eg. Jane Smith, born in 1972 would have the code "JS72").

Please answer the demographic questions below

Please indicate your age:

Please indicate your gender:

In the last 3 months have you begun a new romantic relationship?

(Stressful Life Events Checklist)

Listed below are a number of life events and difficulties. Please indicate “yes” to those events that have occurred for you **IN THE LAST 3 MONTHS**. For any event that you indicate “yes” to, please also respond by indicating the level of stress the event caused where *1 = Minor stress caused – 6 = major stress caused*.

	Occurrence		Minor stress caused			Major stress caused		
	Yes	No	1	2	3	4	5	6
Death of your partner	Yes	No	1	2	3	4	5	6
Death of someone in immediate family (father, mother, brother, sister, son, daughter)	Yes	No	1	2	3	4	5	6
Onset of a serious illness in you or someone in immediate family	Yes	No	1	2	3	4	5	6
Separation or divorce from your partner	Yes	No	1	2	3	4	5	6
Serious car accident or other accident to you or someone in immediate family	Yes	No	1	2	3	4	5	6
Unwanted pregnancy – yours or someone in immediate family	Yes	No	1	2	3	4	5	6
Loss of a job (your or someone in immediate family) that causes you financial problems	Yes	No	1	2	3	4	5	6
You lost a large sum of money	Yes	No	1	2	3	4	5	6
Marital reconciliation with partner	Yes	No	1	2	3	4	5	6
Abortion – you or someone in immediate family	Yes	No	1	2	3	4	5	6
Retirement from work – yours or partner	Yes	No	1	2	3	4	5	6
Relationship difficulties with girlfriend / boyfriend	Yes	No	1	2	3	4	5	6
Permanent break-up with girlfriend / boyfriend	Yes	No	1	2	3	4	5	6
You moved into the city for the first time	Yes	No	1	2	3	4	5	6
You failed an important exam	Yes	No	1	2	3	4	5	6
A serious breaking of the law by you or someone in immediate family	Yes	No	1	2	3	4	5	6
A major disappointment for you (such as being turned down for a job promotion, or for entry into an educational programme ,or an application for a loan being rejected)	Yes	No	1	2	3	4	5	6

You or someone in your immediate family had a child born so prematurely that the baby's life or proper development was endangered	Yes No	1 2 3 4 5 6
List any other unpleasant event that has occurred during the last 3 months	FREE RESPONSE	1 2 3 4 5 6
Serious chronic illness – yours or a household member's	Yes No	1 2 3 4 5 6
Alcoholism – yours or a household member's	Yes No	1 2 3 4 5 6
Severe marital problems	Yes No	1 2 3 4 5 6
Serious financial difficulties	Yes No	1 2 3 4 5 6
Unwanted unemployment – yours or your partner's	Yes No	1 2 3 4 5 6
List any other difficulties you have experienced during the last 3 months	FREE RESPONSE	1 2 3 4 5 6

(The Patient Health Questionnaire – Depression Module; PHQ-9)

Over the *last 2 weeks*, how often have you been bothered by any of the following problems?

Not at all

Almost every day

Little interest or pleasure in doing things	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3
Trouble falling or staying asleep, or sleeping too much	0	1	2	3
Feeling tired or having little energy	0	1	2	3
Poor appetite or overeating	0	1	2	3
Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

Not difficult
at allExtremely
difficult

If you checked off any problems above, how difficulty have these problems made it for your work, take care of things at home, or get along with people?	0	1	2	3
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(Male Depression Risk Scale)

Please think back over the last month and respond to each item considering how often it applied to you. Please respond where 0 = *not at all*; 6 = *almost always*.

	Not at all						Almost always
I bottled up my negative feelings	0	1	2	3	4	5	6
I preferred to keep quiet about feeling bad	0	1	2	3	4	5	6
I tried to ignore feeling down	0	1	2	3	4	5	6
I tried my hardest to ignore my feelings	0	1	2	3	4	5	6
I covered up my difficulties	0	1	2	3	4	5	6
I had to work things out by myself	0	1	2	3	4	5	6
I was worried	0	1	2	3	4	5	6
I tried my hardest to stay in control of my emotions	0	1	2	3	4	5	6
I felt under more pressure than usual	0	1	2	3	4	5	6
I felt more tense than usual	0	1	2	3	4	5	6
I found it difficult to mix with others	0	1	2	3	4	5	6
I was moody and irritable	0	1	2	3	4	5	6
I used drugs to cope	0	1	2	3	4	5	6
Using drugs provided temporary relief	0	1	2	3	4	5	6
I sought out drugs	0	1	2	3	4	5	6
I thought about using drugs frequently	0	1	2	3	4	5	6
I craved drugs	0	1	2	3	4	5	6
Others expressed concern about my drug use	0	1	2	3	4	5	6
I needed alcohol to help me unwind	0	1	2	3	4	5	6
I needed to have easy access to alcohol	0	1	2	3	4	5	6
I drank more alcohol than usual	0	1	2	3	4	5	6
I stopped feeling so bad while drinking	0	1	2	3	4	5	6
I thought about drinking alcohol frequently	0	1	2	3	4	5	6
Others expressed concern about my drinking	0	1	2	3	4	5	6
I was verbally aggressive to others	0	1	2	3	4	5	6
I yelled at others	0	1	2	3	4	5	6
I verbally threatened someone	0	1	2	3	4	5	6
I verbally lashed out at others without being provoked	0	1	2	3	4	5	6
It was difficult to manage my anger	0	1	2	3	4	5	6
I overreacted to situations with aggressive behaviour	0	1	2	3	4	5	6

I had unexplained aches and pains	0	1	2	3	4	5	6
I had stomach pains	0	1	2	3	4	5	6
I had regular headaches	0	1	2	3	4	5	6
I had more heartburn than usual	0	1	2	3	4	5	6
I drove whilst over the legal blood alcohol limit	0	1	2	3	4	5	6
I exercised more than is good for my body	0	1	2	3	4	5	6
I drove dangerously or aggressively	0	1	2	3	4	5	6
I took unnecessary risks	0	1	2	3	4	5	6
I stopped caring about the consequences of my actions	0	1	2	3	4	5	6
I needed to gamble more than normal	0	1	2	3	4	5	6
I engaged in sex to distract me from negative thoughts or feelings	0	1	2	3	4	5	6
I had riskier sexual contacts	0	1	2	3	4	5	6
I thought about sex more frequently than usual	0	1	2	3	4	5	6
I had more sex than usual	0	1	2	3	4	5	6

(Barriers to Help Seeking Scale)

The following questions refer to seeking help from a health professional. If you were to **hypothetically suspect** that you had depression, please indicate how likely you think any of the following reasons would prevent you from getting help from a health professional where, 0 = *not at all*; 4 = *very much*.

	Not at all				Very much
I would think less of myself for needing help	0	1	2	3	4
I don't like other people telling me what to do	0	1	2	3	4
Nobody knows more about my problems than I do	0	1	2	3	4
I'd feel better about myself knowing I didn't need help from others	0	1	2	3	4
I don't like feeling controlled by other people	0	1	2	3	4
It would seem weak to ask for help	0	1	2	3	4
I like to make my own decisions and not be too influenced by others	0	1	2	3	4
I like to be in charge of everything in my life	0	1	2	3	4
Asking for help is like surrendering authority over my life	0	1	2	3	4
I do not want to appear weaker than my peers	0	1	2	3	4
The problem wouldn't seem worth getting help for	0	1	2	3	4
The problem wouldn't be a big deal; it would go away in time	0	1	2	3	4
I wouldn't want to overreact to a problem that wasn't serious	0	1	2	3	4
Problems like this are part of life; they're just something you have to deal with	0	1	2	3	4
I'd prefer just to suck it up rather than dwell on my problems	0	1	2	3	4
I would prefer to wait until I'm sure the health problem is a serious one	0	1	2	3	4
People typically expect something in return when they provide help	0	1	2	3	4
I would have real difficulty finding transportation to a place where I can get help	0	1	2	3	4
I wouldn't know what sort of help was available	0	1	2	3	4
Financial difficulties would be an obstacle to getting help	0	1	2	3	4
I don't trust doctors and other health professionals	0	1	2	3	4
A lack of health insurance would prevent me from asking for help	0	1	2	3	4
Privacy is important to me, and I don't want other people to know about my problems	0	1	2	3	4
This problem is embarrassing	0	1	2	3	4
I don't want some stranger touching me in ways I'm not comfortable with	0	1	2	3	4

I don't like taking off my clothes in front of other people	0	1	2	3	4
I wouldn't want someone of the same sex touching my body	0	1	2	3	4
I don't like to get emotional about things	0	1	2	3	4
I don't like to talk about feelings	0	1	2	3	4
I'd rather not show people what I'm feeling	0	1	2	3	4
I wouldn't want to look stupid for not knowing how to figure this problem out	0	1	2	3	4

(Emotion Regulation Questionnaire)

The questions below involve two distinct aspects of your emotional life. Although some of the following questions may seem similar to one another, they differ in important ways. For each item, please answer using the following scale: 1 (*strongly disagree*) to 7 (*strongly agree*).

	Strongly disagree							Strongly agree
I control my emotions by changing the way I think about the situation I'm in	1	2	3	4	5	6	7	
When I want to feel less negative emotion, I change the way I'm thinking about the situation	1	2	3	4	5	6	7	
When I want to feel more positive emotion, I change the way I'm thinking about the situation	1	2	3	4	5	6	7	
When I want to feel more positive emotion (such as joy or amusement), I change what I'm thinking about	1	2	3	4	5	6	7	
When I want to feel less negative emotion (such as sadness or anger), I change what I'm thinking about	1	2	3	4	5	6	7	
When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm	1	2	3	4	5	6	7	
I control my emotions by not expressing them	1	2	3	4	5	6	7	
When I am feeling negative emotions, I make sure not to express them	1	2	3	4	5	6	7	
I keep my emotions to myself	1	2	3	4	5	6	7	
When I am feeling positive emotions, I am careful not to express them	1	2	3	4	5	6	7	

Appendix G: Deleted MDRS Items

The following items were deleted from the full item pool (e.g., items presented below reflect those *not* included in the MDRS-22).

Any existing pains felt much worse
Everyone seemed to bother me
I am more interested in thinking about sex than most other people
I avoided going home
I avoided talking to others
I craved drugs
I distracted myself from negative thoughts through sports
I drove whilst over the legal blood alcohol limit
I drove whilst under the influence of an illegal substance
I engaged in sex to distract me from negative thoughts or feelings
I exercised more than is good for my body
I experienced problems relating to people close to me
I experienced worsening physical health
I felt more tense than usual
I felt out of control
I felt under more pressure than usual
I found it difficult to mix with others
I got annoyed easily
I got so mad I started a fight
I had a hard time putting my negative feelings into words
I had aggressive thoughts about others
I had arguments with people I am close to
I had riskier sexual contacts
I had trouble sleeping
I hit someone in anger
I injured myself deliberately (e.g., burned or cut myself)
I let work take over my life
I lost interest in how others were doing
I lost my motivation

I needed to gamble more than normal
I needed to stay in control and be strong
I physically attacked someone
I physically lashed out at others without being provoked
I preferred to keep quiet about feeling bad
I refused help for my problems
I shouted at others
I spent more time on my computer than usual
I spent my spare time alone
I stayed at work longer than I needed to
I swore at others
I thought about drinking alcohol frequently
I thought about using drugs frequently
I took my anger out on other people without due cause
I took risks that might result in injury to myself or others
I tried my hardest to ignore my feelings
I tried my hardest to stay in control of my emotions
I verbally threatened someone
I wanted to smash things
I was moody and irritable
I was more impatient than usual
I was more reckless
I was nervous
I was worried
I watched more TV or movies than usual
I withdrew from responsibilities at home
I worked to stop myself from crying
I would become angry very quickly
I yelled at others
It helped when I hurt others
It took more effort than usual to control my temper
It was hard to relax

My appetite or weight changed without actively trying
Others expressed concern about my drinking
Others expressed concern about my drug use
Others noticed that I was fidgety, or moved around slower than usual
People called me a workaholic