

# The Influence of Masculine Norms and Occupational Factors on Mental Health: Evidence From the Baseline of the Australian Longitudinal Study on Male Health

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## Abstract

Men employed in male-dominated occupations are at elevated risk of work-related fatalities, injuries, and suicide. Prior research has focused on associations between psychosocial and physical exposures at work and health outcomes. However, masculine norms may also contribute to mental health. We used data from the baseline survey of the Australian Longitudinal Study on Male Health to examine whether: (a) men in male-dominated jobs report greater adherence to masculine norms; (b) being in a male-dominated occupation is associated with poorer mental health; and (c) being in a male-dominated occupation modifies the association between masculine norms and mental health. Masculine norms were measured using the Conformity to Masculine Norms Inventory (CMNI-22). Mental health was assessed using the SF-12. Results of regression analysis (adjusted for covariates) suggest a linear relationship between the extent to which an occupation is male-dominated and endorsement of values on the CMNI-22. Many CMNI-22 subscales were related to poorer mental health. However, the need for self-reliance was identified as the strongest predictor of poorer mental health. The mental health scale did not appear to be patterned by occupational gender composition and we did not find an interaction between the gender ratio of an occupation and the CMNI-22 scale. These findings highlight the need to address harmful aspects of masculinity as a potential cause of mental health problems. More longitudinal research is needed on the social domains in which gender and health are experienced, such as in the workplace.

## Keywords

work disorders, occupational health, mental health

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Similar to other countries around the world, a substantial proportion of men in Australia are employed in male-dominated jobs, such as construction, mining, manufacturing, and emergency services (Australian Bureau of Statistics, 2006). Men in male-dominated industries are at elevated risk of work-related fatalities (Safe Work Australia, 2017b) and injury (Safe Work Australia, 2017a). International evidence also suggests that workers in male-dominated industries have elevated rates of suicide (Milner, Page, & LaMontagne, 2013; Roberts, Jaremin, & Lloyd, 2012) and there is some evidence that these men also have elevated risk of common mental

health problems (Roche et al., 2016). Harmful physical and psychological working conditions (e.g., unsupportive

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workplace relationships, job overload, and job demands) are thought to explain part of the elevated disease burden in male-dominated occupations (Battams et al., 2014).

Masculine norms [defined as those culturally accepted rules and standards that guide and constrain masculine behaviors (Mahalik et al., 2003)], may also contribute to poorer health outcomes in male-dominated occupations. There are two common approaches to the study of masculine norms. The first is the social norms perspective, which views norms as socially learned and transmitted from an individual's environment (Addis, Reigeluth, & Schwab, 2016). In contrast, the social constructivist perspective argues that there are a myriad of individual, microsocial, and macrosocial factors involved in the representation of gender (Addis et al., 2016). The social norms approach is much more commonly used in quantitative studies, as described below. These studies often emphasize the extent to which an individual adheres (or not) to masculine norms and, because of this, is of relevance to the current article.

In Western countries, norms and standards about masculine norms have been described and measured across a number of key domains, including attitudes toward employment, the desire for dominance (e.g., drive to win and be successful, being comfortable with asserting oneself or controlling a situation), importance of emotional control and self-reliance, and willingness to engage in risk-taking behaviors (Mahalik et al., 2003). Endorsement of these norms has been associated with a range of poor health behaviors [e.g., smoking, excessive drinking, or refusing to wear a seatbelt (Mahalik, Burns, & Syzdek, 2007)], stronger personal stigma related to mental health problems (Latalova, Kamaradova, & Prasko, 2014), and avoidance of health services (Latalova et al., 2014). Masculine norms may also influence how an individual perceives and experiences conditions such as depression, which may be manifested through somatic symptoms and externalizing behaviors (McDermott, Schwartz, & Rislin, 2016). Recent research has also linked some aspects of masculine norms to greater risk of thoughts about suicide (Pirkis, Spittal, Keogh, Mousaferiadis, & Currier, 2017).

An individual's adoption of gender norms appears to be particularly related to socialization (Mahalik et al., 2007). For example, a major influence on the development of gender normative behaviors in childhood and adolescence are family, peers in school system, and media (among others) (Adler, Kless, & Adler, 1992; Leaper & Farkas, 2014). At the same time, research has also shown the influence of an occupation on reinforcing gender norms (Arkin & Dobrofsky, 1978; Barrett, 1996). However, the relationships between work and gender norms are likely to be bidirectional. Fouad, Whiston, and Feldwisch (2016) argue that males seek a sense of congruence between gender roles and employment throughout

their working life, beginning when they first consider going into the labor market.

In this study, we seek to examine whether poorer mental health among males in male-dominated occupations is related to harmful gender norms. As a first step in investigating this topic, we assess whether men in male-dominated jobs report greater adherence to masculine norms, as measured using the Conformity to Masculine Norms Inventory-22. We then assess the mental health effects of being a male in a male-dominated occupation. Finally, we examine whether being in a male-dominated occupation modifies the association between masculine norms and male mental health. This study will use the Australian Longitudinal Study on Male Health, which is the largest cohort of its kind. Based on the research above, we hypothesized that (a) males in male-dominated occupations are more likely to endorse masculine norms; (b) masculine norms are associated with poor mental health; and (c) the impact of male-dominated occupations on mental health is greater among men who endorse traditionally masculine gender norms.

## Methods

### Sample

We used data from baseline survey of the Australian Longitudinal Study on Male Health (*Ten to Men*). *Ten to Men* is a national longitudinal study of boys and men aged 10 to 55 years at baseline. The study aims to collect data on a range of life domains, including demographic and socioeconomic characteristics, physical and mental health and well-being, health behaviors, and use and knowledge of health services. Sampling, recruitment, and data collection methods are described elsewhere (Pirkis et al., 2016). For this analysis, males 18 years and older were included ( $n = 13,884$ ) as few males under the age of 17 years were participating in the workforce. This study received approval from the University of Melbourne Human Research Ethics Committee and conformed to the principles embodied in the Declaration of Helsinki.

### Description of Gender Ratio of Occupations

Population data by occupation (sourced from the 2011 Australian census) (ABS, 2016) were used to create a continuous measure representing a ratio of males to females. We were able to extract population data for 44 occupations, corresponding to the two-digit occupation codes of the Australian and New Zealand Standard Classification of Occupations (ABS, 2009).

The continuous measure was skewed as many of the men in the cohort were employed in highly male-dominated occupations. Because of this, we created a

categorical variable based on the ratio of males to females in an occupation: “not male-dominated occupation” (between 0.22 and 1 males to females), “slightly male dominated” (1 to 1.11 males to females), “moderately male dominated” (up to 2.48 males to females), “heavily male dominated” (2.49 to 5.79), and “very heavily male dominated” (5.80 or greater males to females). These categories corresponded to the quintiles of the original continuous variable. The occupations allocated to each of these categories can be seen in Appendix 1.

### Masculine Norms

We used the Conformity to Masculine Norms Inventory (CMNI-22) to assess masculinity. This represents an abbreviated version of the original 94-item CMNI that was designed to measure cognitive, behavioral, and affective conformity to dominant masculine ideologies (Mahalik et al., 2003). The CMNI-22 uses the two highest loading items for each of the 11 factors from the original CNMI study and has a correlation of 0.92 with the full version of the questionnaire (Rochlen, McKelley, Suizzo, & Scaringi, 2008), which had scale reliability scores ranging from 0.44 (pursuit of status) to 0.81 (playboy). The inventory asks respondents to think about their own actions, feelings, and beliefs and indicate how much they personally agree or disagree with each of 22 statements which are scored from 0 (*strongly disagree*) to 3 (*strongly agree*). Some examples of pairs of statements correspond to 11 factors:

- (a) work (the sum of two scales: “My work is the most important part of my life” and “I don’t like giving all my attention to work” [reverse coded]);
- (b) emotional control (the sum of two scales: “I like to talk about my feelings” (reverse scored) and “I tend to share my feelings” (reverse scored))

We used the CMNI-22 as a continuous variable, with low scores indicating nonconformity and higher scores increasing conformity. Given that concerns have been raised about the internal consistency of the total scale (e.g., Rochlen et al. [2008] observed an internal estimate of 0.65), we also inspected each of the subscales of the CMNI-22. The internal consistency of these scales ranged from 0.81 for the playboy subscale to 0.44 for the work subscale.

### Mental Health

Our outcome was the mental health subscale (psychological distress and psychological well-being) from the SF-12, the abbreviated form of the Short Form-36 (SF-36). Evidence suggests that this measure can be used to

assess common mental health conditions (depression and anxiety) (Andrews, 2002; Salyers, Bosworth, Swanson, Lamb-Pagone, & Osher, 2000; Sanderson & Andrews, 2002a, 2002b; Sanderson, Andrews, & Jelsma, 2001) and has acceptable reliability within clinical samples (Salyers et al., 2000). A clinically meaningful decline in the SF-12 would be a reduction of 4.2, which corresponded to 12-month cutoff for depressive illnesses in a large multinational study (Vilagut et al., 2013). In the Australia context, scores below 45 were assessed as being a clinical cutoff for depression, while scores below 50 were indicative of any common mental disorder (Gill, Butterworth, Rodgers, & Mackinnon, 2007).

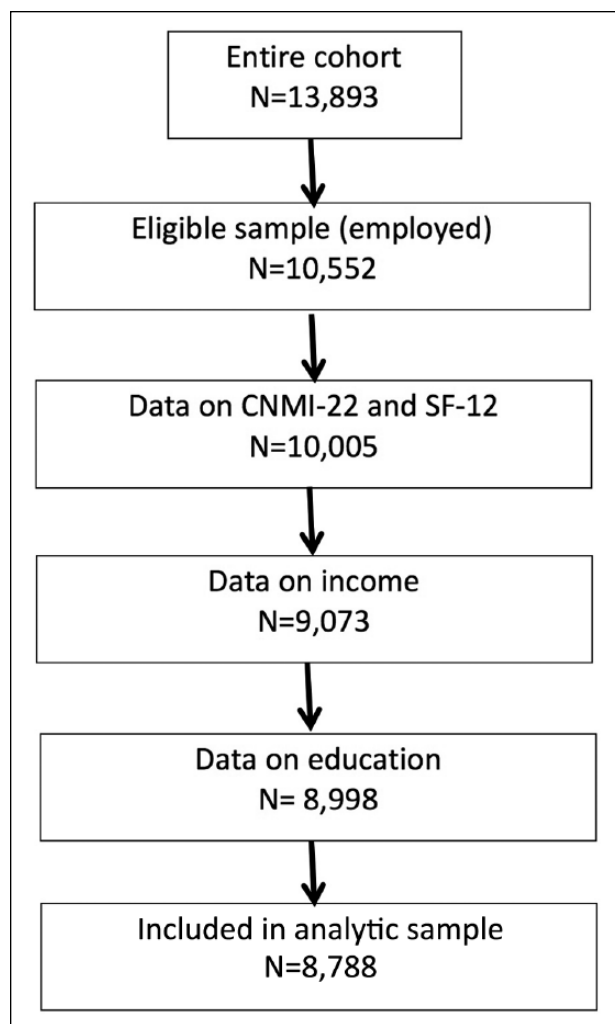
### Covariates

Our covariates included: age (18–24 years, 25–34 years, 35–44 years, 45–54 years, 55 years and over), education (less than 12 years, more than 12 years), relationship status (never married, widowed, divorced, separated but not divorced, married/de facto), and combined household income (scored from 1 representing \$3840 or more per week (\$200,000 or more per year) to 12 representing \$1–\$189 per week (\$1–\$9,999 per year)). These were analyzed as categorical variables.

### Analysis

For hypothesis one, we examined mean levels of the CMNI-22 by the categorical occupation gender ratio variable, with 95% confidence intervals. We graphed the overall mean of the CMNI-22 (and its subscales) by each level of the occupational gender ratio. Following this, we conducted an ordinary least squares (OLS) linear regression (StataCorp, 2017) model with the CMNI-22 (and all subscales) as the outcome and categorical occupation gender ratio variable as the main predictor adjusting for all covariates.

For hypothesis two and three, we conducted an OLS regression model with the mental health subscale of the SF-12 as the overall outcome. We assessed the main effects of the CMNI-22 scale (and all subscales) and the occupational gender ratio on mental health. These variables were included in the model both jointly as well as being considered separately. An interaction term between the occupational gender ratio and the CMNI-22 (and all subscales) was included to assess the possibility of effect modification. The covariates mentioned above were controlled for in the model. A Wald test was used to determine model fit with the covariates—a test statistic of zero strongly suggests that removing them from the model will not substantially reduce the fit of that model. A likelihood ratio test was used to assess the significance of a model with an interaction term compared to one without.



**Figure 1.** Description of the analytic sample.

### Analytic Sample

The process of selecting participants can be seen in Figure 1. Participants were excluded if it was missing on any of the variables. An overall description of the sample can be seen in Table 1.

### Results

The mean score of the CMNI-22 in the analytic sample was 27.37 (95% CI [27.25, 27.48]) (Table 1). As can be seen in Figure 2, there were differences in the CMNI-22 depending on the gender ratio of an occupation. There appears to be a relatively linear relationship between the extent to which an occupation is more heavily male dominated and endorsement of values on the CMNI. There was, however, a slight flattening out of the CMNI in the moderately male-dominated occupations, followed by an increase in the most male-dominated occupations.

Regression models for the relationship between subscales of the CMNI-22 by the gender ratio of an occupation can be seen in Table 2 (after controlling for covariates). As can be seen, there was considerable diversity in the gender ratio of an occupation. There was a clear stepwise gradient (where higher scores of the subscale were associated with a higher male to female gender ratio) for power over women, emotional control, and heterosexual presentation. Those in more male-dominated occupations also tended to endorse the violence subscale. However, there was lower endorsement of the pursuit of status subscale in more male-dominated occupations. Those in only slightly male-dominated occupations had higher scores on the playboy subscale, followed by heavily male-dominated occupations.

Table 3 shows the main effects of each of the CMNI subscales on mental health, after controlling for the occupational gender ratio (which was not independently associated with mental health) and covariates. As can be seen, a greater score on self-reliance was associated with a 1.50 decline in mental health. There were small declines in mental health associated with violence, emotional control, power over women, and the playboy subscale. The only subscales that were not associated with mental health were risk taking, heterosexual presentation, and pursuit of status subscales. The effect of the total CMNI-22 scale was  $-0.17$  (95% CI  $[-0.20, -0.13]$ ,  $p < .001$ ). In regression models with the CMNI subscale\*occupation gender ratio interaction, there was no evidence that the gender ratio of an occupation moderated the effect of total CMNI-22 scale or any subscale on mental health (mental health subscale of the SF-12) (results available on request). The effects of the CMNI on mental health were retained after the occupation gender ratio was removed from the model.

### Discussion

This study has shown that endorsement of masculinity appears to be patterned by occupation in Australia. Men in the most highly male-dominated occupations tended to more strongly adhere to certain masculine gender norms, including those regarding the pursuit of women (the “playboy” subscale), emotional control, the endorsement of violence, heterosexual presentation, and having power over women. Our study suggests that many of these subscales were related to worse mental health. However, the need for self-reliance was identified as the strongest predictor of poorer mental health. The mental health scale did not appear to be patterned by the gender composition of a job and we did not find an interaction between the gender ratio of an occupation and the CMNI-22 scale. As we discuss below, there are a number of possible explanations of this relationship.

**Table 1.** Description of the Sample.

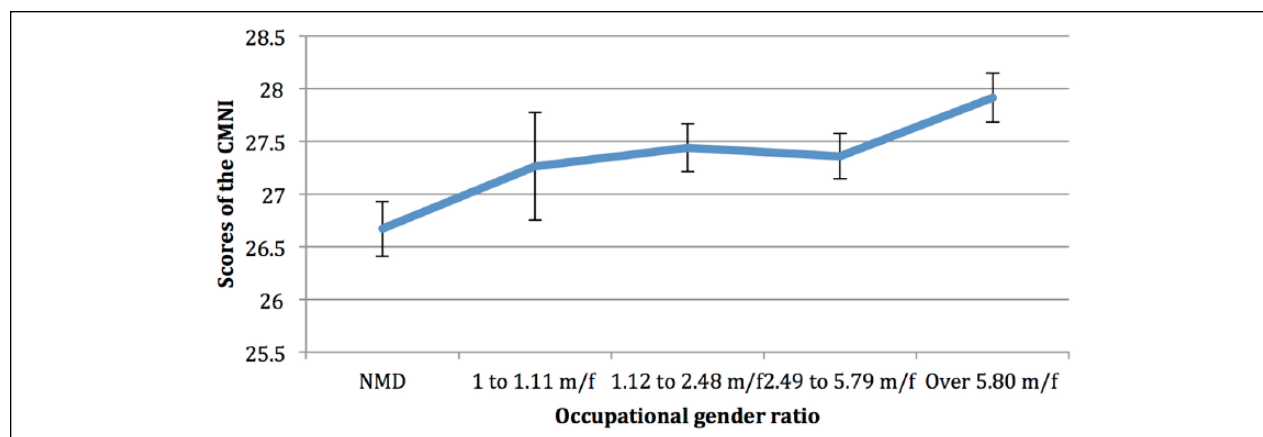
	Mean	95% CI
Mental health (SF-12) (mean, 95% CI)	50.64	[50.46, 50.81]
	<i>n</i>	%
Occupational gender ratio		
Not male dominated	1,756	19.98
1 to 1.11 males to females	413	4.7
1.12 to 2.48 males to females	2,200	25.03
2.49 to 5.79 males to females	2,299	26.16
Over 5.80 males to females	2,120	24.12
Age group		
18–24 years	774	8.81
25–34 years	2,078	23.65
35–44 years	2,872	32.68
45–54 years	2,890	32.89
55 years	174	1.98
Relationship status		
Never married	1,612	18.34
Widowed	26	0.3
Divorced	312	3.55
Separated	202	2.3
Married/de facto	6,636	75.51
Employment arrangement		
Permanent	6,314	71.85
Casual/fixed term	1,116	12.7
Self-employed	1,358	15.45
Occupational skill level		
High	3,510	39.94
Medium–high	2,717	30.92
Medium–low	922	10.49
Low	1,639	18.65
Education		
Under 12 years	3,291	37.45
Over 12 years	5,497	62.55
Income		
\$3,840 or more per week (\$200,000 or more)	933	10.62
\$2,880–\$3,839 per week (\$150,000–\$1,999)	1,161	13.21
\$2,400–\$2,879 per week (\$125,000–\$1,499)	1,063	12.1
\$1,920–\$2,399 per week (\$100,000–\$1,249)	1,427	16.24
\$1,530–\$1,919 per week (\$80,000–\$99,999)	1,328	15.11
\$1,150–\$1,529 per week (\$60,000–\$79,999)	1,214	13.81
\$960–\$1,149 per week (\$50,000–\$59,999)	610	6.94
\$1–\$959 per week (\$1–\$49,999)	1,052	11.97

Note. CI = confidence interval.

### *Masculine Norms in Male-Dominated Jobs*

These results confirm previous research suggesting that men in highly male-dominated environments are more likely to endorse specific gender norms (Arkin & Dobrofsky, 1978; Barrett, 1996). There has been limited previous research examining the subscales of the CMNI-22 by occupational group; hence, it is difficult to find

other studies to compare our research too. However, there have been a number of qualitative and sociological studies that have examined gender within a variety of organizational contexts. This research suggests that in highly male-dominated jobs, males actively participate in reinforcing models around “men’s work” and masculinity as the normative standard (e.g., Acker, 1990; Denissen, 2010; Simpson & Lewis, 2005). For example, in construction,



**Figure 2.** Overall mean (with 95% confidence intervals) of the CMNI by occupation gender ratio, ten to men. Note. NMD = not male dominated; m/f = ratio of males to females in an occupation.

male workers hold each other accountable for doing tasks in “masculine” ways emphasizing the need for characteristics such as strength and roughness, and devaluing perceived “feminine” behaviors (Simpson & Lewis, 2005). As noted by Acker (1990), these performative aspects of gender begin during the hiring and training processes and continue throughout an entire job. Thus, men who are employed in male-dominated jobs may be regularly exposed to gender norms reinforcing the “playboy” stereotype, the need for emotional control, endorsement of violence, heterosexual presentation, and having power over women. It is also important to acknowledge the likelihood of self-selection into gender-dominated or neutral occupations, in that workers who identify more strongly with cultural norms around masculinity/femininity may be drawn to more male/female dominated occupations, respectively (Acker, 1990). This point has also been recognized in vocational research. For example, Holland’s theory (Holland, 1997; Nauta, 2013 cited in Fouad et al., 2016) recognizes that people are likely to seek out work environments that fit with their vocational personalities.

### *Masculine Norms and Mental Health*

As mentioned in this article’s introduction, there is evidence from numerous fields that masculine gender norms are associated with poorer health, including mental health conditions and suicide (Latalova et al., 2014; Pirkis et al., 2017). Our study adds support to this literature. The specific subscales associated with poorer mental health included endorsement of violence, the perception that men should have power over women, and the playboy subscale. However, by and large, we saw the largest reductions in mental health associated with the self-reliance subscale. This finding reinforces a recent study on masculinity and suicidality (Pirkis et al., 2017). The

CMNI-22 assesses self-reliance in terms of behavioral and affective response to help seeking: “I never ask for help” (Item 18) and “It bothers me when I have to ask for help” (Item 22) (Pirkis et al., 2017). Males who endorse these items may therefore be less likely to reach out to support services (including family and friends) when they are experiencing mental health problems. We would note however that the decline we observed was relatively small and unlikely to be clinically meaningful at an individual level.

The occupational gender ratio did have an effect on mental health. This finding differs from a recent study by Caroli and Weber-Baghdiguian (2016), which assessed the relationship between the gender ratio of a job and self-rated health using data from the United States. This found that men working in female- and male-dominated environments reported worse health than men employed in mixed gender environments. However, the extent to which this study can be compared with ours is limited considering the differences in contexts and outcomes under study. It is also possible that the relationship between mental health and occupational gender ratio for men is altogether more complex. For example, there may be other confounders we have not considered or within-person effects. There is substantial research suggesting that suicide rates are higher in male-dominated jobs, but findings regarding mental health are less clear (Roche et al., 2016).

### *Limitations and Strengths*

The weaknesses of this study are that we have limited ability to state a causal relationship about the variables we examined because of the cross-sectional design. Related to this, we are unable to rule out reverse causality (e.g., that poor mental health causes problematic gender norms). We are also unable to establish the

**Table 2.** The Relationship Between the Subscales of the CNMI-22 and Occupational Gender Ratio, Regression Model, Adjusted for Covariates.

Occupational gender ratio	Estimate (95% CI)		p value	Occupational gender ratio	Estimate (95% CI)		p value
Pursuit of status (CNMI-22 subscale)				Winning (CNMI-22 subscale)			
NMD	Ref			NMD	Ref		
1 to 1.11 m/f	0.10	[-0.01, 0.21]	.063	1 to 1.11 m/f	0.12	[0.01, 0.23]	.025
1.12 to 2.48 m/f	0.02	[-0.04, 0.08]	.581	1.12 to 2.48 m/f	0.10	[0.03, 0.16]	.005
2.49 to 5.79 m/f	-0.07	[-0.13, -0.01]	.020	2.49 to 5.79 m/f	0.01	[-0.06, 0.07]	.947
Over 5.80 m/f	-0.10	[-0.16, -0.04]	.001	Over 5.80 m/f	0.02	[-0.05, 0.09]	.561
Playboy (CNMI-22 subscale)				Self-reliance (CNMI-22 subscale)			
NMD	Ref			NMD	Ref		
1 to 1.11 m/f	0.21	[0.06, 0.34]	.005	1 to 1.11 m/f	0.03	[-0.08, 0.15]	.606
1.12 to 2.48 m/f	0.09	[0.01, 0.17]	.023	1.12 to 2.48 m/f	0.09	[0.03, 0.16]	.006
2.49 to 5.79 m/f	0.07	[-0.01, 0.15]	.093	2.49 to 5.79 m/f	0.05	[-0.01, 0.12]	.115
Over 5.80 m/f	0.12	[0.03, 0.20]	.006	Over 5.80 m/f	0.09	[0.02, 0.16]	.013
Heterosexual presentation (CNMI-22 subscale)				Violence (CNMI-22 subscale)			
NMD	Ref			NMD	Ref		
1 to 1.11 m/f	0.06	[-0.11, 0.22]	.496	1 to 1.11 m/f	-0.06	[-0.21, 0.10]	.459
1.12 to 2.48 m/f	0.10	[0.01, 0.20]	.043	1.12 to 2.48 m/f	-0.01	[-0.10, 0.08]	.846
2.49 to 5.79 m/f	0.19	[0.10, 0.28]	< .001	2.49 to 5.79 m/f	0.12	[0.03, 0.21]	.009
Over 5.80 m/f	0.36	[0.26, 0.46]	< .001	Over 5.80 m/f	0.14	[0.06, 0.24]	.002
Dominance (CNMI-22 subscale)				Work (CNMI-22 subscale)			
NMD	Ref			NMD	Ref		
1 to 1.11 m/f	0.02	[-0.09, 0.14]	.674	1 to 1.11 m/f	0.02	[-0.10, 0.14]	.769
1.12 to 2.48 m/f	0.15	[0.08, 0.21]	< .001	1.12 to 2.48 m/f	0.05	[-0.03, 0.12]	.214
2.49 to 5.79 m/f	0.05	[-0.01, 0.12]	.103	2.49 to 5.79 m/f	0.04	[-0.04, 0.11]	.331
Over 5.80 m/f	0.04	[-0.03, 0.11]	.242	Over 5.80 m/f	-0.01	[-0.08, 0.07]	.826
Power over women (CNMI-22 subscale)				Emotional control (CNMI-22 subscale)			
NMD	Ref			NMD	Ref		
1 to 1.11 m/f	0.10	[-0.02, 0.20]	.059	1 to 1.11 m/f	0.07	[-0.08, 0.22]	.354
1.12 to 2.48 m/f	0.13	[0.06, 0.19]	< .001	1.12 to 2.48 m/f	0.14	[0.06, 0.22]	.001
2.49 to 5.79 m/f	0.14	[0.08, 0.20]	< .001	2.49 to 5.79 m/f	0.19	[0.11, 0.27]	< .001
Over 5.80 m/f	0.21	[0.15, 0.28]	< .001	Over 5.80 m/f	0.19	[0.11, 0.28]	< .001
Risk taking (CNMI-22 subscale)				Total CNMI-22			
NMD	Ref			NMD	Ref		
1 to 1.11 m/f	0.10	[-0.02, 0.22]	.109	1 to 1.11 m/f	0.81	[0.23, 1.39]	.006
1.12 to 2.48 m/f	0.06	[-0.01, 0.13]	.078	1.12 to 2.48 m/f	0.95	[0.60, 1.30]	< .001
2.49 to 5.79 m/f	-0.03	[-0.10, 0.04]	.438	2.49 to 5.79 m/f	0.78	[0.44, 1.12]	< .001
Over 5.80 m/f	0.04	[-0.04, 0.10]	.323	Over 5.80 m/f	1.15	[0.79, 1.50]	< .001

Note. Models adjusted for educational level, household income, employment arrangements, age, and relationship status. NMD = not male dominated; m/f = ratio of males to females in an occupation.

extent to which an occupation changes gender norms versus the possibility that specific males holding certain gender norms select into occupations. To some extent, these issues will be able to be resolved when additional waves of data are analyzed and we are able to repeat this study prospectively. Additional waves of data will also mean that we are able to better control for individual sources of variation (e.g., personality) through the use of fixed-effects models, which apply within-person clustering to analysis. Another problem affecting this study is dependent misclassification, as

both the exposure and the outcome were self-reported. We also acknowledge the fact that the measurement of masculinity is highly complex. The scale we used was developed in the United States (Mahalik et al., 2003) and may not have identified aspects of masculinity pertinent to the Australian context. It is also necessary to note that previous studies have shown that the total scale only has a moderate internal consistency, particularly when compared with the full version of the scale consistency (Rochlen et al., 2008). This suggests the importance of assessing the subscales as separate

**Table 3.** Individual Models Describing the Effect of Each Subscale of the CNMI-22 on Mental Health, After Adjusting for Covariates.

Variable	Estimate (95% CI)	p value
Total CNMI-22 scale	-0.17 [-0.20, -0.13]	< .001
Emotional control	-0.42 [-0.57, -0.29]	< .001
Pursuit of status	0.04 [-0.23, 0.14]	.657
Playboy	-0.75 [-0.90, -0.61]	< .001
Heterosexual presentation	0.04 [0.07, 0.16]	.450
Dominance	-0.20 [-0.38, 0.03]	.020
Power over women	-0.41 [-0.60, -0.24]	< .001
Risk taking	-0.02 [-0.18, 0.14]	.830
Winning	-0.36 [-0.52, -0.18]	.010
Reliance	-1.50 [-1.66, -1.33]	< .001
Violence	-0.48 [-0.60, -0.36]	< .001
Work	0.37 [0.22, 0.53]	< .001

Note. Each subscale assessed in separate models, adjusting for occupational gender ratio, educational level, household income, employment arrangements, age, and relationship status.

constructs. This may also explain why we found fewer studies using the CNMI-22.

### Future Work and Implications for Policy

Within public health, there is growing understanding of the role of gender as an important social determinant of health (Krieger, 2003; Phillips, 2005). However, there are still a variety of perspectives on which aspects of gender are the most critical for health (Fikree & Pasha, 2004; Sen & Östlin, 2008). Individually held gendered norms may influence an individual's likelihood to seek treatment, and to receive meaningful and adequate treatment (Latalova et al., 2014; Pirkis et al., 2017). The ways in which gender is constructed within a social group may also be a powerful influence on health outcomes (Caroli & Weber-Baghdiguian, 2016). These myriad of perspectives highlight the need for a greater amount of public-health orientated research on the ways in which gender influences a wide range of health outcomes. This article constitutes one of the first quantitative assessments of the relationship between masculine norms, occupation, and mental health. We would suggest the need for more research in this area, in particular focusing on the social domains in which gender and health are experienced, such as in the workplace.

### Appendix I. Australian and New Zealand Standard Classification of Occupations (ABS, 2009) by the Gender Ratio of the Occupation.

Occupation: Two-digit ANZSCO	Observation	%
<b>Not male dominated</b>		
Carers and aides	111	5.18
Cleaners and laundry workers	127	5.93
Education professionals	364	16.99
Food preparation assistants	80	3.73
General clerical workers	75	3.5
Health professionals	252	11.76
Health and welfare support workers	84	3.92
Hospitality workers	112	5.23
Inquiry clerks and receptionists	1	0.05
Legal, social, and welfare professionals	125	5.84
Numerical clerks	77	3.59
Office managers and program administrators	121	5.65
Other clerical and administrative workers	210	9.8
Personal assistants and secretaries	1	0.05
Sales assistants and salespersons	307	14.33
Sales support workers	1	0.05
Sports and personal service workers	94	4.39
<b>1 to 1.11 males to females</b>		
Business, human resource, and marketing professionals	461	100
1.12 to 2.48 males to females		
Arts and media professionals	87	3.33
Clerical and office support workers	68	2.6
Factory process workers	250	9.57
Food trades workers	180	6.89
Hospitality, retail, and service managers	384	14.7

(continued)



## Appendix I. (continued)

Occupation: Two-digit ANZSCO	Observation	%
Inadequately described	90	3.45
Other technicians and trades workers	157	6.01
Sales representatives and agents	182	6.97
Skilled animal and horticultural workers	188	7.2
Specialist managers	1,026	39.28
<b>2.49 to 5.79 males to females</b>		
Chief executives, general managers, and legislators	128	4.68
Design, engineering, science, and transport professionals	515	18.82
Engineering, Information and communications technology, and science technicians	378	13.82
Farm, forestry, and garden workers	164	5.99
Farmers and farm managers	331	12.1
ICT professionals	312	11.4
Machine and stationary plant operators	244	8.92
Other laborers	213	7.79
Protective service workers	303	11.07
Storepersons	148	5.41
<b>Over 5.80 males to females</b>		
Automotive and engineering trades workers	650	25.02
Construction trades workers	625	24.06
Construction and mining laborers	227	8.74
Electrotechnology and telecommunications trades workers	420	16.17
Mobile plant operators	227	8.74
Road and rail drivers	449	17.28

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