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## Masculinity Ideology Among Male Workers and Its Relationship to Self-Reported Health Behaviors

*This study examines the association between masculinity ideology and health-promoting behaviors (HPB) among male workers. In total, 669 participants completed the Male Role Norms Inventory and the Health Promoting Lifestyle Profile II, which measures six HPBs (nutrition, physical activity, stress management, interpersonal relations, health responsibility, and spiritual growth). Results show that masculinity ideology was associated with HPBs, controlling for socioeconomic characteristics. Men who consider themselves poor and have low education endorsed masculinity norms more strongly and adopted fewer HPBs. Restrictive Emotionality was negatively associated with all HPBs, while Negativity Toward Sexual Minorities was negatively associated with physical activity and interpersonal relations. Avoidance of*

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*Femininity and Toughness were positively associated with physical activity. This study suggests that men's endorsement of masculinity norms should be considered in health promotion programs.*

*Keywords:* masculinity, health behaviors, socioeconomic status

In Canada, men's life expectancy is four years shorter than women's (79 vs. 83 years) (Statistics Canada, 2012). This difference may be due in part to the fact that men are less inclined to adopt healthy behaviors. Men smoke more, consume fewer fruits and vegetables but more high-fat foods, abuse alcohol and drugs more often, and sleep fewer hours per night than do women (Anderson, Winett, & Wojcik, 2007; Pinkhasov et al., 2010; Sánchez-López, Cuellar-Flores, & Dresch, 2012; Soffer, 2010). Men are less likely to consult physicians than are women and perform less preventive self-examination, such as testicular self-examination or melanoma self-detection (Evans, Brotherstone, Mile, & Wardle, 2005; Pinkhasov et al., 2010). Physical activity is the only healthy life habit that is more common among men than women (Soffer, 2010). However, men rarely perceive engaging in sports and other physical activities as healthy behavior; rather, sports are seen as a way to "look good" and be a man (Robertson, 2003b). Furthermore, men have more difficulty adopting behaviors that protect psychological health, such as establishing and maintaining fulfilling interpersonal relationships and managing stress (Callaghan, 2006; Fuhrer & Stansfeld, 2002; Nolen-Hoeksema, 2012). In particular, men have smaller and less supportive social networks than do women (Fuhrer & Stansfeld, 2002) and tend to use harmful coping strategies at difficult times in their lives, such as abusive consumption of alcohol and social withdrawal, rather than positive strategies, such as asking for help (Nolen-Hoeksema, 2012). It is essential to develop a better understanding of what prevents men from adopting health-promoting behaviors, including the potential role of adherence to traditional norms of masculinity.

### MASCULINITY AND HEALTH BEHAVIORS

Current norms of masculinity in North American culture suggest that men should be self-sufficient, in power, in control of their emotions, and physically strong, and should avoid activities perceived as feminine (Courtenay, 2000; Evans, Frank, Oliffe, & Gregory, 2011). Among men working in male-dominated industries (for example, construction, metallurgy, aerospace, and transportation), physical labour, strength, endurance, capacity to cope with discomfort, and even danger are part of the dominant masculine ideology (Ness, 2012; Thiel, 2007). Physical fitness is a way of earning respect from co-workers and the larger community (Thiel, 2007). A similar emphasis on physical strength, action orientation, and control over dangerous situations is found among police officers (McCarthy, 2013; Westmarland, 2001). In some industries, men define their self-identity based on the dislike of other gender constructs (Iacuone, 2005). For example, in the construction industry, homosexual references are used as a form of insult (Iacuone, 2005).

Adherence to these norms leads men to neglect their health, at times compromising health through unnecessary risks (Courtenay, 2000; O'Brien, Hunt, & Hart, 2005; Mahalik, Burns, & Syzdek, 2007). Studies have shown that men's need to be in control and not appear weak

or vulnerable often induces them to hide suffering and not consult health professionals (Hooker, Wilcox, Burroughs, Rheaume, & Courtenay, 2012; Jeffries & Grogan, 2012). Moreover, men adhering to norms of masculinity perceive healthy behaviors such as healthy eating, walking, and aerobic exercise as feminine and therefore not appropriate (Hooker et al., 2012; Jeffries & Grogan, 2012). A need to appear strong and daring leads men to adopt risky behaviors, such as smoking, drinking excessive alcohol, or not eating well; some men believe that these behaviors are necessary to prove their masculinity (Hooker et al., 2012). According to Sloan, Gough, and Connor (2010), even men who adopt health-promoting behaviors deny having a direct interest in their health, especially if these behaviors are perceived as excessive or feminine. Furthermore, men tend to justify adopting health-promoting behaviors as a desire to attain sports objectives, look good, or be independent.

While traditional norms of masculinity are generally seen as having a negative impact on health, they can also be protective buffers (Levant & Wimer, 2014). For example, a qualitative study of men who experienced severe depression with suicidal ideation suggests that some men used their role as father and protector of the family to justify asking for help as a rational and appropriate means of regaining control of their lives (Oliffe, Ogrodniczuk, Botorff, Johnson, & Hoyak, 2012). Similarly, a qualitative study by Hooker et al. (2012) indicates that participants who perceived themselves as responsible for their families adopted more health-promoting behaviors (diet, rest, physical activity) to be able to care for their families better and serve as role models.

Numerous studies, described below, have investigated the associations between masculinity ideology and health behaviors, but these studies have limitations. Either the focus is too general in scope (e.g. use of global scores for endorsement of masculinity norms and/or health behaviors) or too narrow (e.g. only one or two health behaviors investigated). Furthermore, results are not consistent across studies. Finally, the samples are often homogeneous (e.g. college students, young fathers, African American, office-based workers), which undermines the generalizability of findings.

One study that was general in scope is that of Mahalik, Burns and Syzdek (2007). They recruited 140 men aged 18-78 from 27 internet listservs of potential interest to men, and showed that masculinity (as assessed by subjects' total score on the Conformity to Masculinity Norms Inventory, CMNI; Mahalik et al., 2003) predicted significant unique variance in health behaviors (as measured on an index summing eight health behaviors, such as using a seatbelt at all times when riding in a car, exercising at least 30 min a day three times a week, and eating at least five servings of fruits and vegetables per day). Similar results have been reported by Mahalik and colleagues, using a modified version of the Health Behavior Inventory (from Courtenay, 1998; Courtenay, McCreary, & Merighi, 2002), among Kenyan and U.S. male college students (Mahalik, Lagan, & Morrison, 2006), as well as among Australian men recruited in university and community settings (Mahalik, Levi-Minzi, & Walker, 2007). In one of their analyses, Mahalik et al. (2007) identified specific masculinity norms that were associated with their global index of health behaviors: men who more strongly endorsed the norms of Playboy, Self-Reliance, and Violence from the CMNI engaged less in health behaviors. However, as they relied on total scores for either masculinity or health behaviors (or for both), these studies by Mahalik and colleagues do not provide an understanding of the specific contributions of individual masculinity norms to each of the several health behaviors measured.

In contrast, Monk and Ricciardelli (2003) conducted a study that was narrower in scope,

with alcohol and cannabis use being the only health-related behaviors examined. They recruited 160 Australian men aged between 18 and 25 years. They found that higher scores on a Restrictive Emotionality measure (a subscale from the Gender Role Conflict Scale, GRCS; O'Neil, Helms, Gable, David, & Wrightsman, 1986) were associated with more alcohol-related problems and cannabis use.

A relatively small number of studies, using a more comprehensive approach, have considered the specific associations between diverse masculinity norms and health behaviors. They have found that the relationship between masculinity and health-promoting behaviors varies according to the masculinity norm being examined and the health behavior being predicted (Levant & Wimer, 2014; Levant, Wimer, & Williams, 2011, Sloan, Conner, & Gough, 2014). Some aspects of masculine ideology seem to act as risk factors, while others appear to play a protective role.

Based on a sample of 208 African American men, Wade (2009) reported for example that norms of Self-Reliance and Aggression (measured using the Male Role Norms Inventory, MRNI; Levant et al., 1992) were associated with emotional management, as well as with sexuality and social awareness. Gordon et al. (2013) found that the Toughness norm (measured using the Masculine Role Norms Scale, MRNS; Thompson & Pleck, 1986) was related to several negative health behaviors in a sample of 296 young fathers (mean age 21 years), while the Status norm was protective against substance use and associated with the consumption of more fruits and vegetables. Endorsement of the Antifemininity norm was negatively linked with exercise.

Another study, conducted by Sloan and colleagues (2014) among 182 male and 274 female office-based workers (mean age 35;  $SD = 11$ ), has examined the association between multiple measures of masculinity (the MRNS; the Masculine Gender Role Stress Scale, MGRSS, Eisler & Skidmore, 1987; and the Extended Personal Attributes Questionnaire, EPAQ, Spence, Helmreich, & Holahan, 1979) and seven health behaviors (consumption of saturated fat, unsaturated fat, fruit, and fiber; physical activity; alcohol consumption; and smoking). Fruit consumption was negatively associated with Toughness (MRNS). Physical activity was positively associated with Agency (i.e., being independent; EPAQ) and negatively with Performance Failure stress (MGRSS). Antifemininity (MRSN) was not associated with physical activity, in contrast to findings by Gordon et al. (2013).

As seen above, associations are not entirely consistent across studies. This is exemplified by the work of Levant and Wimer (2014), which tried to replicate earlier findings of Levant and colleagues (2011) concerning the relationships between specific masculinity constructs and a set of health behaviors. As stated in their article, only 32.6% of the findings occurred in both studies. Among the results that were replicated, Emotional Control (measured using a short version of the CMNI; Parent & Moradi, 2009) served as a protective buffer for avoiding anger and stress, while the Playboy norm (CMNI) and the Restrictive Emotionality norm (GRCS-Short form, Wester, Vogel, O'Neil, & Danforth, 2012) were implicated as risk factors with regard to avoiding substance use. The divergence of results was partly attributed to the lack of internal consistency of two subscales of the Health Behavior Inventory-20 (alphas  $< 0.65$ ) and to differences in sample characteristics (Levant & Wimer, 2014). The first study (Levant et al., 2011) was conducted exclusively among college students, while the second also included community-dwelling adults (20% of the study sample) recruited through Internet websites and listservs of interest to men (Levant & Wimer, 2014). The generalizability of the findings of these two studies is limited by the socioeco-

conomic and cultural characteristics of the participants, who were predominantly young (mean age  $\leq 23$  years old) and unattached men.

Sociodemographic profile is an important consideration when examining the influence of masculinity ideology on men's health-promoting behaviors. As there is a greater push toward patient-centered care and tailoring of interventions for specific populations, it is important to unpack the multifaceted construct that is masculinity and establish how specific aspects of masculinity are related to positive and negative health behaviors. To understand the influence of sociodemographic characteristics on adherence to norms of masculinity, relationships need to be studied in a diverse sample of men, whereas most studies to date have focused on young men (Gordon et al., 2013; Levant et al., 2011, Levant, & Wimer, 2014; Mahalik et al., 2006; Monk & Ricciardelli, 2003). The aim of the present study was to confirm and expand existing knowledge on the associations between masculinity ideology and health-promoting behaviors by recruiting a diverse sample of working adult men and using a comprehensive and well-validated measure of health behaviors: the Health Promoting Lifestyle Profile II (HPLPII). Based on Pender's Model of Health Promotion (Pender, 1996; Pender, Murdaug, & Parsons, 2002), this widely-used instrument evaluates six behaviors: nutrition, physical activity, health responsibility, stress management, interpersonal relations, and spiritual growth.

The objectives of this study were to: (1) examine the relationships between sociodemographic characteristics (age, years of education, economic circumstances, civil status, and country of birth) and endorsement of masculinity norms in a diverse sample of working men; and (2) explore the association between masculinity ideology and health-promoting behaviors, controlling for sociodemographic variables.

## METHOD

### Participants

A total of 671 participants answered the questionnaire (20.8% response rate), but two were deleted from the sample due to an excessive amount of missing data. Thus the final sample contained 669 male workers. Participants' ages varied from 19 to 71 years, with a mean of 46.7 years ( $SD = 11.0$ ). Participants had 12.3 years of education on average ( $SD = 11.9$ ), which in Canada is equivalent to a high school diploma. Three participants out of four ( $n = 506$ , 75.6%) were married or in a civil partnership. A minority of participants ( $n = 61$ , 9.1%) self-reported as poor or very poor, and an even smaller minority were born outside Canada ( $n = 25$ , 4.2%).

### Sampling Procedures

Once ethical approval for the study was obtained from the Human Research Ethics Committee, participants were recruited through central labor unions for workers active in construction (CSD Construction), metallurgy (Syndicat des Metallos), the aerospace and transportation industry (Unifor), and police services (Fédération des policiers et des policières municipaux du Québec). A random sample of 3,234 men, aged 18 years and over, was selected from a list of members of partner trade unions. The men received a personalized letter by mail providing background information on the study and its goal, as well as a self-

administered questionnaire and a postage-paid envelope to return the completed questionnaire. To maximize the response rate, a reminder postcard was mailed out one week after the initial mailing, and another copy of the questionnaire was sent to everyone who had not responded after two weeks. The second mailing included a pen with the study's logo. Participants could also complete the questionnaire online if they preferred. To maintain confidentiality, each participant was identified by a numerical code.

## Measures

**Masculinity ideology.** Participants' views on how men ought to behave were assessed using the Male Role Norms Inventory–Short Form (MRNI-SF; Levant, Hall, & Rankin, 2013). This 21-item questionnaire assesses levels of endorsement of seven different norms of masculinity (3 items per sub-scale): (1) Restrictive Emotionality (e.g. “Men should be detached in emotionally charged situations”); (2) Self-reliance Through Mechanical Skills (e.g. “Men should be able to fix most things around the house”); (3) Negativity Toward Sexual Minorities (e.g. “Homosexuals should never kiss in public”); (4) Avoidance of Femininity (e.g. “Boys should prefer to play with trucks rather than dolls”); (5) Importance of Sex (e.g. “A man should always be ready for sex”); (6) Dominance (e.g. “A man should always be the boss”); and (7) Toughness (e.g. “I think a young man should try to be physically tough, even if he's not big”). Responses are given to each item using a 7-point Likert-type scale (1 = *strongly disagree*, 7 = *strongly agree*). Higher scores indicate stronger adherence to norms of masculinity. For the purposes of this study, the questionnaire was back-translated (into French and then back to English) following guidelines for cross-cultural adaptation proposed by Guillemin, Bombardier, and Beaton (1993).

This inventory tool allows researchers to use both the total score (an average of the 21 items) and the individual sub-scale scores in subsequent analyses (Levant et al., 2013). In prior studies, in which the longer 53-item form (MNRI-R) was used, researchers had to use only the total score due to multicollinearity problems (Levant & Wimer, 2014; Wimer & Levant, 2013). In the present study using the 21-item MNRI-SF (which comprises the three highest-loading items of each subscale of the longer form), none of the correlations between the masculinity subscales exceeded 0.70, and the VIF (variance inflation factor) indices were all below 2.5, indicating no multicollinearity (Tabachnick & Fidell, 2007). Furthermore, the internal consistency indices for each three-item subscale of the translated instrument were satisfactory. Cronbach's alphas were between 0.62 and 0.85. Values below 0.70 for two of the subscales were considered acceptable, especially because alpha is likely to be lower when the number of items is small (Wasserman & Bracken, 2012). Indeed, for these subscales, the mean inter-item correlation (which is unaffected by the number of items) was between 0.35 and 0.41, which is indicative of satisfying reliability according to Briggs and Cheek's (1986) criterion. It was therefore possible to use the score obtained on each subscale to study the relationship between norms of masculinity and health-promoting behaviors more precisely.

**Health-promoting behaviors.** Six health-promoting behaviors were measured using the HPLPII (Walker, Sechrist, & Pender, 1987): (1) Health Responsibility (9 items, e.g. “Ask for information from health professionals about how to take good care of myself”); (2) Physical Activity (8 items, e.g. “Exercise vigorously for 20 or more minutes at least three times

a week”); (3) Nutrition (9 items, e.g. “Eat 2-4 servings of fruit each day”); (4) Interpersonal Relations (9 items, e.g. “Spend time with close friends”); (5) Stress Management (8 items, e.g. “Practice relaxation or meditation for 15-20 minutes daily”); and (6) Spiritual Growth (9 items, e.g. “Feel I am growing and changing in positive ways”). Participants were asked to indicate on a 4-point scale how often they engaged in different behaviors (0 = *never*; 1 = *sometimes*; 2 = *often*; 3 = *very often*). The analyses used the average score, from 0 to 3, on each subscale. This instrument was also back-translated from French to English (Guillemain et al., 1993). The internal consistency indices of the six subscales of the translated version were deemed satisfactory ( $\alpha = 0.67$  to  $0.86$ ).

**Sociodemographic variables.** Age was calculated using participants’ dates of birth. Participants were asked to indicate their perceived economic circumstances on a 4-point scale (financially comfortable, sufficient income, poor, very poor). A dichotomous variable was created by combining participants with poor or very poor economic circumstances in one group (1) and participants who had sufficient income or were financially comfortable in another (0). Lastly, participants were asked to enter their number of years of education, country of birth (1 = born in Canada; 0 = born outside Canada), and civil status (1 = married or civil partnership; 0 = single).

## RESULTS

### Data Cleaning and Descriptive Statistics

There were minimal data missing from the questionnaires. The number of missing data items per variable was between 0 and 8. Since these data were randomly distributed and their percentages were small (from 0% to 1% per variable), they were not imputed (Tabachnick & Fidell, 2007). Initially, descriptive analyses were performed to obtain the frequency or the average and standard deviation of each variable in the study. Averages and standard deviations of the dependent and independent variables are presented in Table 1. Norms of masculinity that men in this sample felt most strongly about included Self-reliance Through Mechanical Skills, Importance of Sex, and Toughness. In contrast, Dominance was the norm they adhered to the least. With regard to health-promoting behaviors, participants adopted Health Responsibility and Physical Activity less often (on average, “sometimes”), and adopted Spiritual Growth and Interpersonal Relations more often (on average, between “sometimes” and “often”).

### Relationship Between Sociodemographic Variables and Adherence to Norms of Masculinity

Correlations and *t*-tests were calculated to assess the relationships between the participants’ sociodemographic characteristics and norms of masculinity. Bivariate correlations, presented in Table 2, indicate that endorsement of the Negativity Toward Sexual Minorities norm ( $r = 0.09, p < 0.05$ ) increased with age, while the reverse association was observed with the Toughness norm ( $r = -0.11, p < 0.01$ ). In contrast, endorsement of the Restrictive Emotionality ( $r = -0.11, p < 0.01$ ), Negativity Toward Sexual Minorities ( $r = -0.13, p < 0.01$ ), and Dominance ( $r = -0.09, p < 0.05$ ) norms decreased with years of education. Compared



Table 1  
*Descriptive Statistics (N = 669)*

Variables	<i>M (SD)</i>
<i>Masculinity ideology (MRNI-SF)</i>	
Self-reliance through mechanical skills	3.68 (1.82)
Importance of sex	3.49 (1.60)
Toughness	3.23 (1.50)
Avoidance of femininity	2.93 (1.54)
Negativity toward sexual minorities	2.64 (1.61)
Restrictive emotionality	2.44 (1.26)
Dominance	1.74 (1.16)
<i>Health-promoting behaviors (HPLPII)</i>	
Spiritual growth	1.75 (0.50)
Interpersonal relations	1.70 (0.44)
Nutrition	1.66 (0.50)
Stress management	1.32 (0.44)
Physical activity	1.07 (0.70)
Health responsibility	1.06 (0.49)

to single men, those in a conjugal relationship were less likely to adhere to the Toughness ( $t = -2.24, p < 0.05$ ) and Dominance ( $t = -2.09, p < .05$ ) norms. Men who saw themselves as poor or very poor obtained higher scores for the Negativity Toward Sexual Minorities norm ( $t = -2.59, p < 0.05$ ). Lastly, men born in Canada were not statistically different from those born in another country in terms of adherence to norms of masculinity.

**Predictors of Health-Promoting Behaviors**

Hierarchical multiple regression analyses were performed to examine associations between norms of masculinity and health-promoting behaviors, controlling for age, number of years of education, perceived economic circumstances, civil status, and country of birth. We took a hierarchical approach, entering control variables as a first group, and then norms of masculinity as a second group. Norms of masculinity that did not have a statistically significant ( $p > 0.05$ ) association with the dependent variables were removed by backward elimination until we obtained a model in which all independent variables met a 5% threshold level of statistical significance.

Table 3 presents results obtained from the hierarchical regression analyses. The analyses reveal that adherence to norms of masculinity contributes significantly to explaining the variances observed for each health-promoting behavior, taking control variables into account. The two behaviors with the highest percentage of variance explained were Physical Activity (14%) and Interpersonal Relations (11%), even when only norms of masculinity were taken into account (4% and 7% respectively). However, masculinity ideology explained only 1% of the variance observed in Nutrition, Stress Management, and Spiritual Growth.

Table 2

*Bivariate Correlations Between MNRI-SF Subscales, Age, and Years of Education (N = 669)*

Variables	Age	Years of education
Restrictive Emotionality	.07	-.11**
Self-reliance Through Mechanical Skills	-.01	-.02
Negativity Toward Sexual Minorities	.09*	-.15**
Avoidance of Femininity	-.08	-.02
Importance of Sex	.03	-.07
Dominance	-.07	-.09*
Toughness	-.11**	-.02

Note. \* $p < 0.05$  (two-tailed). \*\* $p < 0.01$  (two-tailed)

Endorsement of norms of masculinity was more often negatively than positively associated with health-promoting behaviors. Restrictive Emotionality was the dimension of masculinity ideology that was the most consistently (and negatively) linked with all the health-promoting behaviors. Negativity Toward Sexual Minorities was negatively associated with Physical Activity and Interpersonal Relations. Toughness and Avoiding Femininity were positively linked with Physical Activity. Lastly, Self-reliance Through Mechanical Skills, Importance of Sex, and Dominance had no statistically significant association with health-promoting behaviors.

Sociodemographic characteristics were important in predicting health behaviors. Perceiving oneself as poor or very poor was negatively associated with all health-promoting behaviors (except for Health Responsibility). In contrast, number of years of education was positively associated with engaging in Physical Activity and Nutrition. Age was positively associated with Health Responsibility, but negatively associated with engaging in Physical Activity, Nutrition, Interpersonal Relations, and Spiritual Growth. Being in a conjugal relationship was positively associated with Spiritual Growth. Lastly, being born outside Canada was not associated with health-promoting behaviors.

## DISCUSSION

Confirming the conclusions of prior studies conducted on samples of younger men (Levant et al., 2011; Levant & Wimer, 2014; Sloan et al., 2014), this study reveals a significant association between masculinity ideology and health-promoting behaviors, even when controlling for sociodemographic variables such as age, years of education, civil status, and perceived economic status. By using a comprehensive measure of health-promoting behaviors, the present study expands previous knowledge on their association with masculinity ideology and confirms that this association varies across the behaviors and norms examined. We found that, among male middle-aged workers, masculinity ideology appeared to be most often a risk factor for health, rather than a protective factor, a conclusion similar to that already formulated by Levant and Wimer (2014). Among the 11 significant links between norms of masculinity and health-promoting behaviors, 9 indicate that endorsement

Table 3  
Regression Model for Masculinity as Predictor of Health and Risk Behaviors while Controlling for Demographic Variables

	Health Responsibility			Physical Activity			Nutrition			Stress Management			Interpersonal Relations			Spiritual Growth		
	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β	B	SEB	β
<b>Step 1: Control variables</b>																		
Age	.01	.00	.11**	-.01	.00	-.14**	-.00	.00	-.09*	-.01	.00	-.16**	-.00	.00	-.09*			
Years of education			.07	.02	.19**	.03	.01	.12**										
Perceived economic status (poor or very poor)			-.38	.09	-.16**	-.19	.07	-.11**	-.13	.06	-.09*	-.16	.06	-.10**	-.29	.07	-.17**	
Marital status (married or civil partnership)															.14	.05	.12**	
Country of birth (Canada)																		
<i>R</i> <sup>2</sup> control variables (step 1)		.02*		.10**			.05**		.02		.04**		.07**					
<b>Step 2: Masculinity</b>																		
Restrictive Emotionality	-.06	.02	-.16**	-.06	.03	-.10*	-.05	.02	-.11**	-.04	.01	-.11*	-.06	.02	-.18**	-.04	.02	-.09*
Self-reliance Through Mechanical Skills																		
Negativity Toward Sexual Minorities			-.07	.02	-.16**										-.04	.01	-.13**	
Avoidance of Femininity			.05	.02	.11*													
Importance of Sex Dominance																		
Toughness			.06	.02	.12*													
<i>R</i> <sup>2</sup> control variables & masculinity (step 2)		.05**		.14**			.06**		.03**		.11**		.08*					

Note. Only significant results are reported. \**p* < 0.05, \*\**p* < 0.01.

of norms of masculinity is negatively linked to health-promoting behaviors, and only 2 appear to indicate that adherence to norms of masculinity can act as a protective factor.

Restrictive Emotionality seems to be the most important norm of masculine ideology when we consider influence on health-promoting behaviors, because it is the only norm to have been negatively associated with each behavior under study. This means that the more a middle-aged male worker endorses the ideology that men should avoid admitting their feelings and tries to be detached in emotionally charged situations, the less he will report following a healthy diet, exercising, managing stress, being involved in interpersonal relationships, taking responsibility for his health, and experiencing spiritual growth.

How Restrictive Emotionality is related to good nutrition and engaging in physical activity is not clear. Sloan and colleagues' (2014) study had not found this association between emotional inexpressiveness and diet or physical activity. The unexpected association that we observed is probably indirect, possibly due to some men's fear of appearing vulnerable if they value taking care of their health. Qualitative evidence suggest that some men place less value, at least overtly, on their health. Some men report lacking interest in healthy food choices (Levi, Chan, & Pence, 2006). Others report that exercise is a means of avoiding getting fat, rather than of getting healthy (Grogan & Richards, 2002). Further research would be required to better understand the role of Restrictive Emotionality.

The associations between Restrictive Emotionality and Stress Management, Interpersonal Relationships, Spiritual Growth, and Health Responsibility are easier to interpret. Firstly, it has been found previously that Restrictive Emotionality is associated with a particular difficulty in identifying and describing feelings, known as alexithymia (Wong, Pituch, & Rochlen, 2006). Men who strongly adhere to the norm that "real men" shouldn't talk about their emotions might have difficulty in recognizing that they are stressed or might not be aware that some specific health-promoting behaviors (such as relaxing, getting enough sleep, balancing time between work and play) could help relieve their stress. They might instead use alcohol and drugs as means of coping with stress (Uy, Massoth, & Gottdiener, 2014), as suggested by past studies showing that restrictive emotionality is related to alcohol and drug use (Levant et al., 2011; Levant & Wimer, 2014; Monk & Ricciardelli, 2003). At first look, our finding concerning Stress Management seems to contradict that of Levant and Wimer (2014). They found that Emotional Control (a masculine norm similar to Restrictive Emotionality) is protective for avoiding anger and stress, while we found that Restrictive Emotionality is a risk factor for stress management. However, the difference between the measures used in their study and the present one limit the meaning of any comparison. Avoiding stress and being able to manage it effectively when it occurs are two different abilities, a distinction that may explain the apparent contradiction in findings.

Secondly, just as Restrictive Emotionality has previously been found to be associated with discomfort in close interpersonal relationships and greater fear of intimacy (Good et al., 1995), we observed that it was associated with a lower frequency of contact with significant others. This suggests that men who are reluctant to express their emotions have a tendency to spend less time sustaining fulfilling relationships with significant others. Thus, they probably benefit less from the demonstrated positive impact of such relationships on health and mortality (Barger, 2013; Wang, Wu, & Liu, 2003).

Thirdly, we reported a negative association between Restrictive Emotionality and Spiritual Growth. Mahalik and Lagan (2001) have reported a similar association between Restrictive Emotionality and spiritual well-being of undergraduates. Inhibition of emotional

expression seems to be particularly detrimental to men's spiritual growth and resiliency (Galligan, Barnett, Brennan, & Israel, 2010), preventing them from connecting with their inner self and living a life in harmony with their personal values and strengths (Neuger, 2003).

Finally, reluctance to talk about emotions is related to a lower level of Health Responsibility, i.e., men's tendency to become aware of unusual signs or symptoms and to proactively seek professional services when needed. Previous studies have reported a negative association between Restrictive Emotionality and attitudes toward psychological help-seeking (Berger, Levant, McMillan, Kelleher, & Sellers, 2005; Tsan, Day, Schwartz, & Kimbrel, 2011) or proper use of healthcare (Levant et al., 2011). A recent study has also shown that participants who believed that "real men" should keep their concerns private and their emotions out of view went for fewer routine health examinations (Hammond, Matthews, & Corbie-Smith, 2010). Men who adhere to the Restrictive Emotionality norm might avoid seeking professional help because they feel uncomfortable admitting to or sharing their health worries.

Since Restrictive Emotionality seems to be the most harmful norm for the adoption of health-promoting behaviors, it is essential to provide interventions that aim to reduce men's endorsement of that particular aspect of masculine ideology. Few such interventions have been evaluated. A four-session group preventive intervention focusing on risk and protective factors related to dating violence was shown to be associated with a significant reduction in restrictive emotionality among 28 undergraduates (Schwartz, Magee, Griffin, & Dupuis, 2004). Similarly, a six-session manualized psychoeducational group intervention led to a reduction in male alexithymia and endorsement of traditional masculinity ideology from pre-test to post-test (Levant, Halter, Hayden, & Williams, 2009). A Small Groups Norms-Challenging Model (SGNM) that both educates participants and challenges their perceptions of normative behavior was found to be effective in reducing restrictive emotionality among the participants ( $n = 24$ ), as compared to a control group ( $n = 47$ ) (Beatty, Syzdek, & Balkum, 2006). However, a brief psychoeducational intervention aimed at promoting emotional acceptance in men was ineffective in lowering restrictive emotionality (Grasso, 2014). Further studies are needed to evaluate the efficacy of promising interventions among larger samples, with longer follow-up periods and in different settings, such as in male-dominated work environments. In particular, psychoeducational groups specifically and simultaneously targeting the endorsement of masculinity ideology and health behaviors are promising for future interventional research (Murphey & Shillingford, 2012).

In the present study, the second most important norm of masculinity related to health-promoting behaviors was Negativity Toward Sexual Minorities, which was negatively associated with Physical Activity and Interpersonal Relations. In "Masculinity as homophobia", Kimmel (1994) argues that "homophobia is more than the irrational fear of gay men, more than the fear that we might be perceived as gay. [...] Homophobia is the fear that other men will unmask us, emasculate us, reveal to us and the world that we do not measure up, that we are not real men" (p. 147). Homophobic masculinity is perpetuated by the fear of being perceived as too feminine (Kimmel, 1994).

At first glance, the negative relationship that we observed with physical activity appears to contradict the strong association between sport and macho culture (Robertson, 2003a). However, a careful examination of the items included in the Physical Activity subscale of the HPLP-II revealed the absence of typically masculine activities, such as weight training

or team sports (e.g. hockey, football), and the presence of sports that could be considered more feminine (e.g. going for a walk, aerobics, and stretching). Men endorsing the statement that all homosexual bars should be closed down or that homosexuals should never marry or kiss in public (the three items of the Negativity Toward Sexual Minorities Subscale of the MNRI-SF) might avoid typically feminine physical activities in order not to appear effeminate and to distance themselves from homosexuality. This feminine bias of the HPLPII might explain our results. The designers of this questionnaire are encouraged to consider including in their instrument more typically masculine physical activities.

The negative association between Negativity Toward Sexual Minorities and Interpersonal Relations can be explained by the fact that men who fear being identified as gay are less inclined to cultivate intimate relationships with family members and friends, a behavior that is considered more typical of women. This interpretation is consistent with a previous finding that homophobia negatively influenced self-disclosure and relational quality in men's same-sex friendships (Morman, Schrodt, & Tornes, 2012). Furthermore, anti-gay/lesbian attitudes have been associated with reluctance to express affection to others (Brantley-Hill & Brinthaup, 2014).

Physical activity may be the sole behavior for which masculinity ideology acts as a protective buffer. The Toughness norm was positively associated with physical exercise in our sample, a finding already reported by Gordon et al. (2013) in a sample of young fathers. Exercising seems to be a way for men to feel in shape and stronger, conforming to the ideal of robustness conveyed by the masculinity ideology. However, the influence of Antifemininity is inconsistent across studies: the present study shows a positive relationship with physical activity, while Gordon et al. (2013) observed a negative one and Sloan et al. (2014) found no association. The differences may be due to the populations sampled, but more research is needed to better understand this inconsistent association.

In our sample, Self-reliance Through Mechanical Skills, Importance of Sex, and Dominance norms were not significantly related to health-promoting behaviors. The Dominance norm deals with men's power and supremacy over women, with items such as "Men should be the leader in any group" or "A man should always be the boss". This is the least endorsed norm in our sample ( $M = 1.74$ ,  $SD = 1.16$ ), with a mean score much lower than that reported by Levant et al. (2013) in an American sample ( $M = 3.05$ ,  $SD = 1.39$ ). This may be due to the fact that, in the province of Quebec (where the participants were recruited), gender equality is a core value imbedded in numerous public policies, including the Pay Equity Act, a low-cost public day care system, a five-week paternal leave following the birth of a child, as well as a one-year parental leave that can be shared by both parents (Beaujot, Du, & Ravanera, 2013). Thus, studies need to take into account that the concept of masculinity varies among subcultures and evolves with each generation.

It is important to highlight that although masculinity ideology contributed in a statistically significant way to explaining variances for each health-promoting behavior, its contribution is modest. This was expected, given that health behaviors are known to be influenced by a wide array of both individual and structural variables (Cohen, Scribner, & Farley, 2000). Indeed, based on our analyses, it was the participants' socioeconomic characteristics that contributed the most. In particular, perceiving oneself as poor was negatively associated with all health-promoting behaviors except health responsibility. It is well established that low-income populations adopt fewer health-promoting behaviors and have higher morbidity and mortality rates (Shaw, McGeever, Vasquez, Agahi, & Fors, 2014). A

social gradient of health is even reported among employees in the same workplace, wherein those occupying lower social positions adopt fewer health behaviors and are in poorer health than those at the top of the hierarchy (Marmot et al., 1991; Marshall, Chevalier, Garillon, Glodberg, & Coing, 1999). Men of low socioeconomic status and/or who are financially insecure are particularly vulnerable (Ferrie, Shipley, Stansfeld, Smith, Marmot, 2003; Levant et al., 2003; Melchior et al., 2005; Williams, 2003; Young, 2009). In the present study, besides adopting health behaviors less frequently, men who considered themselves poor and those with less education endorsed masculinity ideology more strongly. As posited by Courtenay (2000), this stronger endorsement may be related to limited social resources for proving masculinity; conforming to these norms allows such men to compensate for their subordinate social status and feel like “real men”. Since this study focused on a group of unionized workers, it would be important to examine whether the results could be replicated with participants from more vulnerable populations, such as the unemployed, men receiving public assistance, and non-unionized workers. More intersectional research is needed to understand barriers to health behaviors among men with low socioeconomic status (Griffith, 2012), and health promotion interventions should target them more specifically.

In addition to years of education and perceived economic circumstances, age is an important correlate of health behaviors, but, surprisingly, being married or in a civil partnership is not. As men get older, they report less frequent behaviors of healthy eating, exercising, cultivating interpersonal relations, managing stress, and spiritual growth. This finding is counterintuitive, as older men probably have more free time to take care of themselves (e.g. they have no young children to look after), as well as more financial resources (e.g. better salary, lower mortgage) to engage in health-promoting behaviors. On the other hand, it is possible they have other stressors that impede positive health behaviors, such as heavier work responsibilities, greater difficulty in adapting to a changing workplace, or worries about retirement (Calasanti, Pietilä, Ojala, & King, 2013). While more research is needed to understand this phenomenon, based on the results of the present study, older male workers deserve particular attention.

Some limitations should be considered when interpreting the results of this study. First, we used a cross-sectional design, which does not allow us to reach conclusions on cause and effect. Second, as the participating unions did not provide sociodemographic statistics for their members, we could not compare our final sample to the 3,234 randomly-selected original sample. However, with a mean age of 46.7 years, our sample was certainly older than the general unionized male population. Despite this limitation, our study was conducted among a more diverse sample than the one studied by Levant and Wimer (2014), which was mostly composed of young ( $M$  age = 23.01), unattached men. Our sample was more varied in terms of age, with a standard deviation of 11.19 years (in comparison with 1.13 for Levant and Wimer, 2014), and our study expands knowledge by providing original data on middle-aged male workers who are married or in a civil relationship. Third, as mentioned previously, some items on the Physical Activity subscale of the HPLPII refer to activities that can be perceived as more typically feminine. Different results might have been obtained if we had used items that were typically more masculine. The HPLPII also focuses only on behaviors that promote health, thus excluding health-damaging behaviors, such as using alcohol, tobacco, or illicit drugs. Since several previous studies have found that these risky behaviors are linked to endorsement of male role norms, it would be valuable to use a more comprehensive questionnaire, including health-damaging behaviors, in future trials

to replicate our findings.

A fourth limitation is the possibility of bias toward socially desirable responses. Participants' wish to appear more masculine or to portray themselves in the best light may have influenced their questionnaire responses and led them to under-report health-promoting behaviors or fail to recall them. In future research, it would be useful to add a social desirability scale and a more objective measure of health behaviors instead of relying solely on self-reported data. Finally, although one of the strengths of this study was its sample size, the sample was nevertheless not representative of all Canadian men. The participants were all French-speaking, unionized workers, and there was limited cultural diversity in the sample. We did not collect data regarding participants' sexual orientation, so it was impossible to control for this variable in the analyses. Also, our sample may not have been sufficiently diverse in terms of socioeconomic status, since only a minority (9.1%) of participants perceived themselves as poor or very poor. Thus, although we found that perceived economic circumstances were significantly correlated with five out of six health-promoting behaviors, this finding should be interpreted with caution. It would be appropriate to try to replicate these results with more economically vulnerable groups of men, such as unemployed or non-unionized men.

In summary, this study found that, among the different dimensions of the masculinity ideology, endorsement of the restrictive emotionality norm had the strongest and most consistent deleterious relationship with health-promoting behaviors. Evidence for the protective role of masculinity ideology is weak; toughness and avoidance of femininity norms were associated with a higher frequency of physical activity. Men's sociodemographic characteristics, particularly age and economic status, explained more variance in health-promoting behaviors than did masculinity ideology, except in the case of maintaining interpersonal relations. As men are not a homogeneous group, health promotion initiatives may be more effective if their actions are tailored to specific subgroups of men based on their masculinity ideology and socioeconomic characteristics.

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