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Masculine Gender Role Stress 
and the Pursuit of Muscularity

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The relationship between masculine gender role stress and body change was examined in 129 men, aged between 18 and 40 years ($M = 24.38; SD = 6.04$), who completed the Masculine Gender Role Stress scale (MGRS), the Drive for Muscularity Scale, the Eating Disorder Inventory, and the Eating Disorder Examination-Questionnaire. Significant relationships were observed between MGRS and drive for muscularity and, to a lesser extent, drive for thinness and disordered eating symptomatology. These relationships were mediated by body dissatisfaction, and several of the relationships were positively moderated by self-reported affective problems and personal ineffectiveness. Although interpretation of the results is limited by the cross-sectional design employed, the results are consistent with the proposition that a fear of deviating from the masculine gender role, particularly in men who feel ineffective and who have difficulty controlling and accessing their emotions, is related to concern with, and pursuit of, muscularity and leanness.

Keywords: masculine Gender Role Stress, body image, muscularity, body change, disordered eating

Through a combination of behavioural modeling, rewards and punishments, women and men are socialized to conform to gender-stereotyped roles (e.g., Pleck, 1981). These roles differentially shape women and men’s attitudes, preferences, emotional and physiological reactions, and behaviours (e.g., Moore & Stuart, 2004). It has been suggested that the confining nature of gender roles, and the obligations inherent in these roles, can serve as gender-specific stressors. There is evidence that women and men do indeed differ in their cognitive and emotional appraisal of situations and events as potentially stressful (Eisler, Skidmore, & Ward, 1988). For men, appearing physically inadequate, expressing emotions, being subordinate to women, being intellectually inferior, and failing to perform in their work and sex life, are interpreted as particularly

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stressful (these five factors comprise the Masculine Gender Role Stress scale (MGRS; Eisler & Skidmore, 1987)). For women, being in an unemotional relationship, being unattractive, being victimized, behaving assertively, and not being nurturant or perceived as nurturant, are interpreted as particularly stressful (these five factors comprise the Feminine Gender Role Stress scale (FGRS; Gillespie & Eisler, 1992)).

The concept of gender role stress suggests not only that women and men will appraise different scenarios/events as stressful, but that they will also adopt different strategies to cope with these stressors. With men, the focus on status, physical dominance and the need to repress characteristics associated with femininity (e.g., Brannon, 1976; Thompson & Pleck, 1986; Thompson, Pleck, & Ferrera, 1992), is consistent with the observation that men are more prone to women to anger, violence, risk-taking, and antisocial behaviours in general (these characteristics correlate with scores on the MGRS scale); with women, the focus on being attractive, nurturant, and avoiding confrontation, is consistent with the observation that women are more prone to depression, agoraphobia, and appearance concerns (these characteristics, as well as symptoms of disordered eating, correlate with scores on the FGRS scale; Bekker & Boselie, 2002; Eilser et al., 1988; Martz, Handley, Eisler, 1995; Noar, 2002).

Given that attractiveness is associated with femininity, and that dieting, and a drive for thinness in general, are more typical of female concerns than male concerns (Grogan & Richards, 2002), it is not surprising that little research has explored the impact of gender identity and gender role stress on male body image. Research on men is complicated by the observation that men who are dissatisfied with their appearance and engage in body change behaviours do not necessarily desire a reduction in body weight and/or size. Many men actually desire a larger body, with more muscle (Bottamini, 2006; Cafri, Strauss, & Thompson, 2002; Gruber, Pope, Borowiecki, & Cohane, 1999; Kimmel & Mahalik, 2004; Phillips, 1996; Ricciardelli & McCabe, 2001, 2004; Spitzer, Henderson, & Zivian, 1999).

The pursuit of masculinity has implications beyond the desire to appear attractive. Physical bulk, particularly muscle, implies strength, virility, and dominance, all of which are consistent with the male gender role. Among the most widely accepted criteria for masculinity is an absence of feminine characteristics (Holbrook, Andersen, & Cohn, 2000), and is has been suggested that as growing numbers of women have taken on and excelled in traditionally male roles in western societies, men have turned to muscle development as one of the few means available to them to affirm and display their masculinity (Leit, Pope, & Gray, 2001). In support of this idea, it has been observed that men with an elevated drive for masculinity are more likely to identify with traditional male-stereotyped roles (McCreary, Saucier, & Courtenay, 2005).

Although research has confirmed a link between masculinity and masculinity, the psychological processes underlying this link are unclear. The present study was conducted to explore the psychological bases of this link in the context of gender role stress. There is good reason to suspect that stress might motivate men to engage in body change, particularly muscle development: Not only is muscle associated with masculinity, but lack of muscle and excess adiposity imply weakness, make a man vul-
nable to ridicule, and call into question his masculinity (e.g., Grogan & Richards, 2002). Men are likely to be vulnerable to these pressures as society shows less tolerance to men, compared to women, who deviate from their gender role (e.g., O’Neil, 1982). Therefore, some men might pursue a lean and muscular body in an attempt to manage the stress associated with deviating from male norms, either improving their body to ensure that it does not fall short of the male physical ideal, or as a means of compensating for other aspects of their life in which they feel inadequate. Men’s self-reported reasons for desiring the muscular ideal do in fact include enhancing one’s physical/athletic abilities, health, popularity among peers, attractiveness to women, and overall sense of masculinity (e.g., Morrison, Morrison, & Hopkins, 2003).

The aim of the present study was to test whether stress associated with meeting cultural norms of masculinity is related to body change attitudes and behaviours. Therefore, a questionnaire was administered to participants to evaluate level of masculine gender role stress, body dissatisfaction, drive for masculinity and drive for thinness. Since men, as well as women, can suffer from disordered eating (Drummond, 2002), the present study also included measures of disordered eating symptomatology.

**Hypothesis 1.** On the basis of previous research linking male stereotypes with a drive for leanness and masculinity (e.g., McCreary, Saucier, & Courtenay, 2005) it was hypothesized that MGRS score would correlate positively both with drive for masculinity and with drive for thinness.

**Hypothesis 2.** Of particular interest was the extent to which body dissatisfaction mediates these relationships. In the dual-pathway model of disordered eating (Stice & Agras, 1998), internalization of the thin ideal, coupled with perceived social pressures to conform to this ideal, contribute to body dissatisfaction which in turn promotes disordered eating. In men, it is the lean and muscular ideal that is promoted and internalized. This correctly predicts that body dissatisfaction can reflect either a concern with being overweight and/or insufficiently muscular, even that reducing adiposity can be used as a strategy for enhancing masculinity (Jones, 2005). If pressures to conform to the lean and muscular ideal are felt more acutely by men who are afraid of deviating from the masculine gender role, then elevated MGRS should be related to increased drive for muscle and thinness through its effects on body dissatisfaction.

Although the MGRS scale evaluates anticipated stress associated with particular scenarios, it does not predict which individuals will be predisposed to adopt potentially hazardous coping strategies (such as over-exercising, fasting, or purging) in relation to this stress. Therefore, in the present study various psychological traits were assessed as potential moderators of the relationship between masculine gender role stress and body change attitudes and behaviours. Since the focus of the MGRS is on the need for power and dominance and on the suppression of emotions, the traits tested in hypotheses 3 and 4 were personal ineffectiveness and problems controlling, accessing, and interpreting emotions.

**Hypothesis 3.** Previous research has confirmed that exposure to idealized female bodies can contribute to a sense of personal ineffectiveness in women, and that these
two traits in turn can predispose women to engage in disordered eating (Bruch, 1962; Harrison & Cantor, 1997; McCaulay, Mintz, & Glenn, 1988; Silberstein, Striegel-Moore, & Rodin, 1987). There is also evidence that similar associations exist in terms of the desire for muscularity in men (Olivardia, Pope, Borowiecki, & Cohane, 2004). The pursuit of leanness and muscularity as means of enhancing self-esteem is consistent with evidence that male competitive bodybuilders report elevated levels of self-esteem (Pickett, 2002). In the present study it was hypothesized that strategies such as dieting and bodybuilding would be particularly appealing to men who are anxious concerning their ability to meet societal expectations of masculinity. On this basis it was hypothesized that the relationship between elevated MGRS and the pursuit of leanness and muscularity would be more pronounced in men who report a sense of personal ineffectiveness.

Hypothesis 4. Both women and men can experience negative affect in response to idealized bodies (e.g., Hausenblas, Janelle, Gardner, & Hagan, 2003). And pre-existing negative affect can predispose both women and men to experience negative emotional reactions to idealized bodies (Cahill & Mussap, 2007; Durkin & Paxton, 2002). Interestingly, while many women who are dissatisfied with their body report negative mood (Womble et al., 2001), the association between dissatisfaction and mood is less pronounced in men (Hargreaves & Tiggemann, 2004). In men, negative mood is more closely associated with public attacks on body image, such as that experienced from teasing, rather than with body dissatisfaction per se (Womble et al.). Perhaps this reflects the male imperative to appear competent and receive public approval rather than on being attractive, per se. On these bases it was hypothesized that affective problems, particularly problems related to regulating and accessing one’s emotions, would positively interact with (i.e., amplify) the relationships between MGRS body change attitudes and behaviours associated with the pursuit of leanness and muscularity.

Method

Participants

A sample of 129 men from the Melbourne region, aged between 18 and 40 years ($M = 24.38; SD = 6.04$), participated in the study. Other than age (> 17 years) and gender there were no exclusion criteria. The locations targeted for recruitment were chosen to maximize the probability of obtaining adult men with appearance concerns. In particular, copies of the questionnaire package, containing a plain-language ethics statement, instructions, questionnaire booklets (see below), and a reply-paid envelope, were placed in gymnasium foyers (with permission of the gym manager). Copies were also placed in university lecture theatres (with permission of the lecturer), and were also distributed by research assistants employed by the author. Flyers inviting participants to contact the research assistants for copies of the questionnaire package were also placed in lecture theatre and gymnasium foyers. Note that the level of appearance concern was determined not by location of recruitment, but by responses to appearance-
concern items within the questionnaire. Of the 300 questionnaires taken by prospective participants, 129 were returned. Participation was voluntary and anonymous, and no financial or academic inducements were offered. NIH guidelines were applied to interpret body mass index (BMI) scores: 2.3% of this sample were “underweight” (BMI < 18.5), 61.3% were “normal weight” (BMI 18.5-24.9), 30.2% were “overweight” (BMI 25.0-29.9), and 6.2% were “obese” (BMI ≥ 30.0). For the overall sample, average BMI was 24.47 (SD = 3.4).

Materials and Procedure

The following materials were used in this study.

**Body Mass Index (BMI).** BMI was calculated as the ratio of self-reported weight (kg) to self-reported height squared (m²). Individuals who are of most interest to body image researchers and clinicians are those who tend to be most self-conscious about their appearance. Therefore, participants were allowed to estimate these body dimensions anonymously and in private to reduce the disincentive for self-conscious individuals to participate in the present study. (In comparisons of self-reported body measurements (including waist and hip circumference) made by women against measurements taken by a ‘professional’ (a person trained to take body measurements), correlations greater than .85 typically have been obtained; Radke-Sharpe, Whitney-Saltiel, & Rodin, 1990).

**Masculine Gender Role Stress (MGRS).** The MGRS is a 40-item, self-report questionnaire (Eisler & Skidmore, 1987) that assesses participants’ perceptions of various scenarios as stressful. Participants rated the perceived stress of each scenario on a 7-point scale that ranged from 1 = “not at all stressful” to 7 = “extremely stressful.” There are five subscales of the MGRS, corresponding to fear of physical inadequacy (PHY), Intellectual inferiority (INF), subordination to women (SUB), performance failure (FAIL), and emotional expressiveness (EMOT). The scales have adequate reliability and validity (Eisler & Skidmore, 1987). In the present study internal consistency (Cronbach’s alphas are reported throughout this paper) of PHY was .76 and the mean response was 3.41 (SD = 1.0); internal consistency of INF was .61 and the mean response was 2.53 (SD=.9); internal consistency of SUB was .84 and the mean response was 2.25 (SD = 1.1); internal consistency of FAIL was .84 and the mean response was 4.53 (SD = 1.3); and internal consistency of EMOT was .64 and the mean response was 2.64 (SD = 1.1).

**Eating Disorder Examination-Questionnaire (EDE-Q).** The EDE-Q is a 36-item self-report questionnaire (Fairburn & Beglin, 1994) derived from the Eating Disorder Examination (Cooper & Fairburn, 1987; Fairburn & Cooper, 1993). Participants used 7-point Likert scales that ranged from 1 = “No days” to 7 = “Every day” to indicate the number of days out of the last 28 that a particular attitudinal, psychological, or behav-
ioural characteristic of disordered eating had manifested in their lives. There are four subscales of the EDE-Q. The restraint subscale (REST) measures frequency with which food restriction, fasting, avoiding foods, and selective eating has been employed; the eating concern subscale (EAT) assesses frequency of calorie-counting, secretive and guilty eating, and obsession with food; the weight concern subscale (WEIGHT) assesses preoccupation with weight, dissatisfaction with weight and desire for weight loss, and the extent to which self-evaluations depend on weight; the shape concern subscale (SHAPE) assesses preoccupation with body shape, the extent to which self-evaluation depends on one’s shape, and level of discomfort with one’s overall body. The EDE-Q subscales have good internal consistency and test-retest reliability, and reported concurrent and discriminant validity support the use of the EDE-Q as a diagnostic tool in clinical practice (Binford, LeGrange, & Jellar, 2005; Cooper, Cooper, & Fairburn, 1989; Mond, Hay, Rodgers, Owen & Beumont, 2004). For the present sample, internal consistency of the restraint items (REST) was .84 and the mean was 2.20 (SD = 1.6); internal consistency of eating concern (EAT) was .73 and the mean was 1.44 (SD = .7); internal consistency of weight concern (WEIGHT) was .79 and the mean was 2.02 (SD = 1.1); and internal consistency of shape concern (SHAPE) was .88 and the mean was 2.40 (SD = 1.2). Since, in the present study, WEIGHT and SHAPE correlated highly, $r = 0.86$, $p < 0.01$, the two were averaged to give an overall measure of body dissatisfaction (DISS), with a mean of 2.22 (SD = 1.2). The EDE-Q also includes a series of items in which the participant is asked to indicate the presence of particular diagnostic symptoms of purging over the last 28 days and to indicate the frequency of occurrence of each symptom over this period. The symptoms include vomiting, laxative use, use of diuretics, and exercising hard (the EDE-Q does not define the term ‘hard’ for respondents). For the statistical analyses, the presence of vomiting, laxative use, use of diuretics, and exercising hard were summed to give a variable that represented a tally of symptoms of purging (i.e., between 0 and all 4 symptoms). In the present study, the mean number of purge symptoms (PURGE) was .38 (SD = .5).

Questionnaire of Eating and Weight Patterns- Revised (QEWP). The QEWP (Spitzer et al., 1992) assesses binge eating disorder. In the present study, 6 items from the QEWP (corresponding to the 6 sub-questions of question number 4) were used to assess the presence of 6 symptoms of binge eating. A single question (“Did you usually have any of the following experiences?”) was followed by 6 statements from the QEWP, each requiring a “yes/no” response. An example statement is: “Feeling disgusted with yourself, depressed, or feeling very guilty after overeating.” Responses to these statements were summed to give a tally of binge symptoms. The QEWP has adequate test-retest reliability and validity (Nangle, Johnson, Carr-Nangle, & Engler, 1994). In the present study the mean number of binge symptoms (BINGE) was 1.09 (SD = 1.5).

Eating Disorders Inventory-3 (EDI-3). Although participants completed the entire EDI-3 (Garner, 2004), only 5 scales (1 subscale and 4 composites) were relevant to hy-
potheses. The drive for thinness (DFT) subscale is a 6-item scale that assesses a range of attitudes and emotions associated with a preoccupation with weight, weight gain, and the desire for weight loss. Participants used 6-point Likert scales that ranged from “never” to “always” to indicate their level of agreement with statements such as, “I am preoccupied with the desire to be thinner.” High scores on DFT indicate a greater drive for thinness, and this scale was used as the weight-counterpart to the drive for masculinity Scale (see below). The ineffectiveness composite (IC) comprises responses to the personal alienation subscale and low self-esteem subscale. These subscales measure level of agreement to 7 statements such as “I feel that I am losing out everywhere,” and 6 statements such as “I have a low opinion of myself,” respectively. High scores on IC indicate a low self-evaluation coupled with poor self-identity. The affective problems composite (APC) comprises responses to the emotional dysregulation and interoceptive deficits subscales. These subscales measure level of agreement with 8 statements such as “Other people would say I am emotionally unstable,” and 9 statements such as “I don’t know what’s going on inside me,” respectively. High scores on APC indicate heightened difficulties in accessing and interpreting one’s own emotions. In the present study internal consistency of DFT was .87 and the mean response was 2.20 (SD = .9); internal consistency of IC was .90 and the mean response was 2.51 (SD = .8); and internal consistency of APC was .89 and the mean response was 2.44 (SD = .7).

**Drive for Masculinity Scale (DMS).** The DMS (McCreary & Sasse, 2000) is a 15-item self-report questionnaire used to assess emotional, attitudinal and behavioural characteristics of a desire for increased muscle. Participants used 6-point Likert scales that ranged from 1 = “not at all like me” to 7 = “very much like me” to indicate level of agreement with statements such as “I lift weights to build up muscle.” To be consistent with the other body change scales, responses to the DMS items were reverse-coded, yielding a scale where a higher score indicates a greater desire for masculinity. The DMS has good reliability and validity (McCreary & Sasse, 2000) and has been shown to be suitable for use with both women and men (McCreary, Sasse, Saucier, & Dorsch, 2004), and both weightlifters and non-weightlifters (Wojtowicz & von Ranson, 2006). For the present sample, internal consistency of the DMS items was .90 and the mean was 2.55 (SD = .9).

Participants completed the scales in private and returned the questionnaire using the reply-paid envelope provided with the questionnaire.

**Results**

Preliminary data screening revealed that fewer than 1% of cases for each variable with missing values. These missing values were distributed randomly across items and participants, and were replaced with mean values. The exceptions to this were BMI, for which median replacement was used because the variable was slightly skewed, and the EDE-Q diagnostic items for which missing values were replaced with a “No” response
(for the presence of a symptom) and a "0" response (for the frequency of occurrence of the symptom). Therefore, in the absence of evidence to the contrary, diagnostic symptoms, such as those of purging and bingeing, were assumed to be absent.

Scales were created from the averaged responses to the internally consistent items (defined as items that possessed item-total correlations greater than .3) which, when averaged, yielded a scale with adequate reliability (the Materials section lists Cronbach’s alpha for each scale; note, all alphas were greater than .70 except for INF and EMOT). All scales were screened for violations from normality. As a result, square-root transformations of REST and BINGE, and a log10 transform of EAT, were conducted (these transformed variables were used in subsequent statistical analyses). Univariate outliers (> ±3 standard deviations from the mean) were identified and replaced with the value that corresponded to 3 standard deviations from the mean. No cases were identified as multivariate outliers.

Before considering the hypotheses it is worth providing an overview of the correlations involving body image and body change. Inspection of Table 1 reveals significant correlations between body dissatisfaction and all measures of body change, including purging and bingeing. As expected, drive for thinness correlates significantly with dietary restraint, eating concern, and purging, but does not correlate with bingeing. Although of smaller magnitude, drive for masculinity also correlates significantly with drive for thinness and the measures of body change (excluding bingeing). This supports the notion that weight and muscle concerns are intrinsically related. It may be that this is because the male ideal requires a combination of decreased adiposity and increased muscularity, but also that achieving low adiposity may be used as a means of enhancing ‘muscle tone’ (Jones, 2005).

**Hypothesis 1.** It was hypothesized that MGRS score would correlate positively with attitudinal and behavioural aspects of body change, including symptoms of disordered eating. Table 1 confirms the presence of significant positive correlations between MGRS, and each of its subscales, with drive for masculinity and drive for thinness, with approximately 10% of the variance in these measures explained (performance failure was the only MGRS subscale to not correlate with drive for thinness). Table 1 also shows significant positive correlations for MGRS (and its subscales, except for fear of performance failure and emotional expressiveness) with restraint and eating concern, with approximately 7% of the variance in these measures explained. MGRS is also correlated with symptoms of disordered eating, with approximately 5% of the variance in binge and purge symptoms explained (closer inspection of Table 1 reveals that these effects depend primarily on the fear of physical inadequacy and fear of intellectual inferiority subscales).

**Hypothesis 2.** It was hypothesized that the relationships between MGRS and both drive for muscle and drive for thinness would be mediated by body dissatisfaction. Inspection of the correlation matrix (Table 1) reveals that body dissatisfaction correlates significantly with MGRS score, as well as with several of the MGRS subscales (fear of physical inadequacy, intellectual inferiority, and subordination to women). To test the
Table 1
Correlations between Measures of Masculine Gender Role Stress, Psychological Traits, Body Image, and Unhealthy Body Change

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*p < .05; **p < .01
mediating effects of body dissatisfaction, Sobel's (1982) product of coefficients test was conducted when the preconditions for mediation were met (Baron & Kenny, 1986). To quantify the size of the mediating effect, two-step hierarchical regressions were conducted in which MGRS score was introduced in the regression equation in step 1, followed by body dissatisfaction, in step 2. The results of these regressions, and of the Sobel tests of mediation, are summarized in Table 2. The table shows that the MGRS unstandardized regression coefficient for drive for muscularity is reduced by 20%, but remains significant, following the inclusion of body dissatisfaction, and that the Sobel test for the MGRS → body dissatisfaction → drive for muscularity path is significant, $t(127) = 2.29, p < .05$. The table also shows that the coefficient for drive for thinness is reduced by 76% and is no longer significant, and that the Sobel test for the MGRS → body dissatisfaction → drive for thinness path is significant, $t(127) = 3.53, p < .01$. This indicates that body dissatisfaction is a significant mediator of the relationships between MGRS and the pursuit of a lean and muscular body.

Hypotheses 3 and 4. It was hypothesized that elevated personal ineffectiveness (IC) and affective problems (APC) would positively moderate the influence of MGRS on drive for muscularity, drive for thinness, and disordered eating symptomatology. Despite being chosen for the present study because they are conceptually related to the fear of inadequacy and fear of emotional expressiveness dimensions of male gender role stress, these two psychological traits do not correlate with MGRS or any of its sub-scales. However, this does not preclude these traits from interacting with MGRS. To test for these interactions a series of moderation analyses were conducted. These involved centering the MGRS variable (throughout this paper, centered variables are denoted by the prefix “c”) and multiplying this centred variable with each of the centred puta-

### Table 2

**Results of Hierarchical Regressions and Mediation Analyses**

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>se</th>
<th>β</th>
<th>t</th>
<th>r</th>
<th>$sr^2$</th>
<th>$ΔB(%)$</th>
<th>Sobel’s t</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGRS → Body Dissatisfaction</td>
<td>.42</td>
<td>.11</td>
<td>.32</td>
<td>3.69**</td>
<td>.34**</td>
<td>.10</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>MGRS → Drive for Muscularity</td>
<td></td>
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<td></td>
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<tr>
<td>Step 1: MGRS</td>
<td>.41</td>
<td>.09</td>
<td>.38</td>
<td>4.48**</td>
<td>.38**</td>
<td>.14</td>
<td>19.51</td>
<td>2.29*</td>
</tr>
<tr>
<td>Step 2: MGRS</td>
<td>.33</td>
<td>.09</td>
<td>.30</td>
<td>3.47**</td>
<td>.38**</td>
<td>.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISS</td>
<td>.20</td>
<td>.07</td>
<td>.24</td>
<td>2.82**</td>
<td>.34**</td>
<td>.05</td>
<td></td>
<td></td>
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<tr>
<td>MGRS → Drive for Thinness</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Step 1: MGRS</td>
<td>.31</td>
<td>.10</td>
<td>.28</td>
<td>3.18**</td>
<td>.28**</td>
<td>.08</td>
<td>77.42</td>
<td>3.53**</td>
</tr>
<tr>
<td>Step 2: MGRS</td>
<td>.07</td>
<td>.08</td>
<td>.06</td>
<td>.94</td>
<td>.28**</td>
<td>.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DISS</td>
<td>.56</td>
<td>.06</td>
<td>.67</td>
<td>9.67**</td>
<td>.69**</td>
<td>.40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

$ΔB(\%) = (B_{\text{Step1}} - B_{\text{Step2}})/B_{\text{Step1}} \times 100$
tive moderators. The resultant ‘interaction’ product was then entered into a standard regression along with the ‘main effect’ variables (cMGRS and the centered putative moderator). Ineffectiveness interacts significantly and positively with cMGRS to explain variance in drive for thinness, $\beta = .21, t(128) = 2.46, p < .05$, and eating concern, $\beta = .26, t(128) = 3.29, p < .01$. Affective problems also interacts significantly with cMGRS to explain variance in restraint, $\beta = .22, t(128) = 2.54, p < .05$, eating concern, $\beta = .19, t(128) = 2.22, p < .05$, and purge symptoms, $\beta = .30, t(128) = 3.73, p < .01$. Figure 1 plots graphs of each of these significant moderation effects. These graphs were produced by plotting the results of the linear regression equations at each extreme combination of cMGRS (which ranged from -2 to +2) and each centered moderator. The graphs reveal a similar pattern of results. For men who score low on ineffectiveness and affective problems, elevated MGRS is not associated with increases in body change attitudes and behaviours. However, for men who score high on these two traits, elevated MGRS is associated with heightened body change attitudes and behaviours. Interestingly, the body change attitudes and behaviours in question are limited measures relating to weight loss, not muscularity.

Discussion

The present study was conducted to investigate the relationship between gender role stress and body change. The results confirmed that stress associated with conforming to the masculine gender role is related to a desire for greater muscularity and, to a lesser extent, a desire for less body adiposity. One interpretation of these relationships is that men who are challenged by the demands and constraints of the masculine gender role are more likely to pursue physical characteristics associated with maleness, such as leanness and muscularity. Although a moderate drive for muscularity is not in itself unhealthy, at more extreme levels it can have harmful physical, behavioural, and psychological consequences particularly relating to excessive exercise and use of chemical supplements, steroids, and prohormones (e.g., Cafri, Thompson, Ricciardelli, McCabe, Smolak, & Yesalis, 2005). In this context, the results have implications beyond body change per se, and include unhealthy aspects of body change and body image in men. For example, an extreme preoccupation with muscularity is a core feature of muscle dysmorphia. In this condition, men experience emotional distress with their current level of muscularity, and engage in extreme and potentially dangerous methods of weight control, including fasting, diuretics and chemical stimulants, and muscle development, including anabolic steroids and various chemical supplements. The preoccupation with muscle development in these men often compromises their normal psychosocial functioning by encouraging social and occupational withdrawal in order to maximize time available for their dieting and bodybuilding regime (Cafri & Thomp-

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1 Only significant interaction effects are described here. Statistics corresponding to non-significant interactions and main effects can be supplied upon request.
Figure 1. Graphs of significant interaction (moderation) effects. Variables are centred, and data are plotted at values corresponding to the minima and maxima of each centred variable.
son, 2004; Olivardia, 2001; Olivardia, Pope, & Harrison, 2000; Olivardia, Pope, & Hudson, 2000). Similarly, the relationships observed between masculine gender role stress and diagnostic signs of bulimia nervosa, namely, bingeing and purging, also suggest that masculine gender role stress may be relevant to clinical levels of disordered eating in men.

Given the cross-sectional design employed, it is impossible to rule out the possibility that gender role stress and body change simply co-occur in men, or stem from a common, underlying psychosocial factor. However, it is interesting to consider the ways in which gender role stress might contribute to body change in men. According to the dual-pathway model of disordered eating (Stice & Agras, 1998), social pressures to conform to unrealistic physical ideals of thinness contribute to body dissatisfaction, which in turn encourages what are considered to be potentially unhealthy weight loss attitudes and behaviours. The feasibility of extrapolating this idea to masculinity and male body image is supported by evidence that exposure to idealized male bodies induces body dissatisfaction and is related to muscle development activities, particularly in men who have internalized the lean and muscular male ideal (Cahill & Mussap, 2007; Lorenzen, Grieve & Thomas, 2004; Ricciardelli & McCabe, 2004; Smolak, Levine, & Thompson, 2001). This prediction was also confirmed in the present study, with levels of body dissatisfaction found to mediate the relationships between masculine gender role stress and body change. The mediating role of body dissatisfaction was particularly pronounced with measures of weight loss (the mediated effect accounted for almost 80% of the contribution of masculine gender role stress), and was significant but substantially lower for drive for masculinity (the mediated effect accounted for only 20% of the contribution of masculine gender role stress).

This pattern of results argues against the possibility that the relationships between masculine gender role stress and body change attitudes and behaviours reflect the involvement of a common, underlying factor. For example, one possibility is that gender role stress and body change co-occur because both stem from elevated levels of trait stress (Bekker & Boselie, 2002). An alternative possibility is that they co-occur simply because sociocultural pressures to conform to a masculine ideal can manifest independently as gender stress and as appearance concerns. However, the evidence that body dissatisfaction serves as a mediator of the relationships between gender stress and body change is more consistent with a causal link between the two (note, the limitations on interpreting causality imposed by the design employed are considered in the next paragraph).

Various psychological traits were also evaluated in the present study as potential moderators of gender role stress. It was observed that the relationships between elevated MGRS and weight loss were most pronounced, and in some cases only evident, in men with self-reported ineffectiveness and/or affective problems. These results suggest that it is not gender role stress per se that is important: this stress must be accompanied by certain psychological factors in order to be relevant to body change. Interestingly, no moderation effects were obtained in relation to drive for masculinity. This may be a consequence of the two psychological traits chosen in the present study: These traits are known to predispose women and men to adopt weight loss strategies, but less is known
about their relationship with muscle development (Cumella, 2006) (perhaps future research could explore potential moderators that are known to be related gender role stress in men, such as anger, dominance, anxiety; Eisler & Skidmore, 1987). It is also the case that mediation effects were larger for measures of weight loss than measures of muscle development. These discrepancies between weight loss and muscle development are consistent with the involvement of independent motivational processes. There is evidence that a drive for masculinity reflects a desire for anticipated social rewards, while a drive for thinness reflects a desire to avoid anticipated social punishments (Mussap, 2006). This does not explain why masculinity, which is a more salient male trait than leanness or thinness (and is more strongly correlated with measures of masculine gender role stress), is less closely related to psychological factors known to be relevant to body image, but it does provide a basis for understanding why the relationships involving drive for muscle and drive for thinness are not the same.

Before concluding, it is important to consider limitations of the study. One limitation is that a non-clinical and self-selected sample was employed. Male participants were selected neither from eating disordered nor muscle dysmorphic groups. Therefore, although the results support the proposition that masculine gender role stress is relevant to types of body change that can be unhealthy, it remains to be seen whether the results can be generalized to hazardous, clinically-relevant levels of body change. Furthermore, as noted earlier, any interpretations of causality are strictly limited by the cross-sectional design and correlational analytic methods employed. Although it is not particularly controversial to suggest that masculine gender role stress precedes body concerns and body change behaviours, it is conceivable that causality is in the other direction: that a lifetime’s exposure to pressures on body image might encourage gender-specific stress.

Conclusion

There is a general consensus (i) that sociocultural pressures on men’s body image are increasing; (ii) that the promotion of an unrealistic male body ideal has encouraged a desire for leanness and masculinity; and (iii) that the greater investment in appearance by many men has led to a stronger sense that deviations from the male ideal are unattractive, unacceptable, and a source of dissatisfaction and distress (Morrison et al., 2003). The results of the present study reveal interesting parallels between the stress experienced in response to deviations from the male physical ideal, and the stress that co-occurs with imagined deviations from masculine social norms. Both forms of stress appear to be related to cognitive and behavioural coping strategies aimed at decreasing adiposity and increasing masculinity. And this is perhaps the most valuable contribution made by the present study: the results demonstrate the importance of evaluating more than an individual’s gender identity, to include the stress they experience as they endeavour to conform to this identity. Previous research has shown that measures of masculinity are uncorrelated with measures of masculine gender role stress (Eisler & Skidmore, 1987). In the same way, the results of the present study go beyond merely confirming an association between masculinity and masculinity – they demonstrate
that concerns with masculinity, in particular, concerns with deviating from the masculine gender role, translate into concerns with leanness and muscularity.

References


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