INTERNALIZATION AS A MEDIATOR OF THE RELATIONSHIP BETWEEN CONFORMITY TO MASCULINE NORMS AND BODY IMAGE ATTITUDES AND BEHAVIORS AMONG YOUNG MEN IN SWEDEN, US, UK AND AUSTRALIA

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Highlights

1. Internalization mediates between sociocultural messages and body image in men.

2. Cross cultural differences were found in mediation effects.

3. Consider conformity to masculine norms and internalization in etiological models.

Abstract

We examined whether internalization of sociocultural body ideals mediated the relationship between conformity to masculine norms and drive for muscularity, leanness, and thinness in a sample of males from Sweden, US, UK, and Australia. Over six hundred young men [*n* = 142 (Sweden); *n* = 192 (US); *n* = 141 (UK); *n* = 160 (Australia)] completed an online survey that included assessments of masculine role norms, body image, and internalization of sociocultural body ideals. Path analyses confirmed internalization as a mediator between greater conformity to masculine norms and body image measures (drive for thinness, desire for leanness, and desire for muscularity) across the sample. However, significant cross-country differences in the strength of these mediation effects were found. Mediation effects among U.S., Australian, and Swedish males were comparable, whereas these effects were weaker in the UK sample. Findings confirmed the importance of internalization of sociocultural body ideals in the tested models.

Internalization as a mediator of the relationship between conformity to masculine norms and body image attitudes and behaviors among young men in Sweden, US, UK and Australia

Interest in men's body image has heightened in recent years, resulting in a substantial literature documenting body dissatisfaction and desire for muscularity in both boys and young men (Karazsia & Crowther, 2009; Nowell & Ricciardelli, 2008; Rodgers, Ganchou, Franko, & Chabrol, 2012). Typically, body dissatisfaction in men takes the form of a desire for less body fat and more muscularity. Models that include the effects of both these pathways on risk for developing body image disturbances have been developed and tested (Jones & Crawford, 2005; Rodgers et al., 2012; Tylka, 2011). The tripartite influence model (Thompson, Coovert, & Stormer, 1999) proposes that internalization of sociocultural body ideals serves as a mediator between sociocultural messages about appearance and body image, and this model has been supported in empirical investigations with young men in the U.S. (Halliwell & Harvey, 2006; Karazsia & Crowther, 2009; Tylka, 2011).

To more fully understand additional risk factors that may influence the development of body image concerns in men, researchers have investigated the extent to which endorsement of cultural definitions of masculinity might explain additional variance. Traditional hegemonic (dominant) masculinity includes a number of norms surrounding behavior, such as competitiveness or aggressiveness (Levant & Wimer, 2014). In recent years, in Western culture, the body shape associated with hegemonic masculinity has become increasingly lean and muscular (Leit, Pope, & Grey, 2001; Oehlhof, Musher-Eizenman, Neufeld, & Hauser, 2009). Men who endorse conformity to masculine norms might be likely to display greater body dissatisfaction and engage in unhealthy behaviors aiming to bring their appearance closer to this muscular ideal. Although conformity to masculine norms has not been previously conceptualized as a predictor in existing etiological models (Thompson et al., 1999; Tylka, 2011), a substantial literature indicates its value with respect to male body

image (Cella, Iannaccone, & Cotrufo, 2013; Hunt, Gonsalkorale, & Murray, 2013). In a meta-analysis of 15 studies, Blashill (2011) explored the relationship between body and muscle dissatisfaction and gender roles among men, and found that for trait measures of masculinity (e.g., Bem Sex Role Inventory), greater conformity to masculine norms was associated with lower muscle dissatisfaction, whereas for multidimensional measures (e.g., Conformity to Masculine Norms Inventory), higher scores were associated with greater muscle dissatisfaction. It is not clear why the two types of measures were associated with different outcomes but may be explained by the fact that multidimensional measures provide a more comprehensive assessment of masculinity.

Research to date on this topic has been limited largely to samples of men from the US. Given that expressions of masculinity are highly culturally dependent, examining differences across countries would provide important additional information about potential cultural meanings of masculinity in relation to male body ideals and appearance. Given this, our group recently examined the relationship between conformity to masculinity norms (CMN) and several measures of body image in Australia, Sweden, the UK, and the US (Holmqvist Gattario et al., in press), finding that higher CMN was not only associated with higher drive for muscularity, as reported in the literature (Mahalik, Talmadge, Locke, & Scott, 2005; Smolak & Murnen, 2008), but also predicted higher drive for leanness and fitness (Smolak & Murnen, 2008).

Although internalization of sociocultural body ideals has been shown to mediate the relationship between societal influences on appearance and both behavioral and attitudinal indicators of body dissatisfaction in men, it is unknown whether internalization mediates the relationship between masculinity and body dissatisfaction (Karazsia, van Dulmen, Wong, & Crowther, 2013). Thus, we were interested in exploring internalization as a mediating variable in a model in which conformity to masculinity norms predicted multiple dimensions

of body dissatisfaction in men. We opted to examine four body image outcome variables: drive for thinness, drive for muscularity (including both attitudes and behaviors), and drive for leanness. Our hypothesis was that the strength of the mediating relationship would vary depending on the extent to which men internalized sociocultural body ideals.

In addition, we investigated whether the hypothesized mediational relationship would be confirmed among young men across four countries. To date, only a few studies examining body image in men have conducted comparisons across multiple countries, finding some differences across countries in relation to the extent to which a larger body size is valued (Holmqvist & Frisen, 2010; McCabe, Waqa, Dev, Cama, & Swinburn, 2013; McCabe et al., 2011). For example, McCabe et al. (2013) reported that Fijian and Tongan adolescents were more likely to value a large body, relative to Indo-Fijians and that Greek males indicated lower levels of body satisfaction than males from 7 other countries (McCabe et al., 2012). Our previous study (Holmqvist Gattario et al., in press) found a number of cross-country differences in the ways that conforming to masculinity norms were related to body dissatisfaction. Thus, the second aim of this study was to examine whether the mediational influence of internalization would vary across a sample of men from four countries in this cross-cultural investigation. Often, when research is done in one Western country, the results are assumed to apply to others. We included a cross-cultural sample in order to confirm whether results would be similar or different across Western countries in order to examine generalizability of findings on men and body image.

Method

Participants

The sample included 142 Swedish, 192 American, 141 British, and 160 Australian male university students. The Australian and Swedish participants were slightly older than UK- and US-based participants; F (3, 629) = 43.53, p <. 001, η^2 = .17. Body mass index

(BMI) also differed across countries, with Australian participants reporting the highest BMI and Swedish participants reporting the lowest BMI; F (3, 629) = 3.06, p = .028, η^2 = .01. Heterosexual orientation was by far most common and did not differ across countries; χ^2 (df = 9; N = 635) = 14.17, p = .12, Cramer's V = .09. For details see Table 1.

Measures

Demographic information. Participants were asked to provide their birthdate and sexual orientation (*heterosexual, homosexual, bisexual, other/rather not say*), as well as height and weight to calculate self-reported BMI, which correlates strongly with objective assessments of BMI (McAdams, Van Dam, & Hu, 2007).

Conformity to Masculine Norms Inventory-46 (CMNI-46; Parent & Moradi, 2009). The original CMNI (Mahalik et al., 2003) was developed to measure endorsement of traditional masculine norms in American culture. We used the short version of the CMNI, which comprises 46 items covering 9 norms: Winning (e.g., "In general, I will do anything to win"), Emotional Control (e.g., "I tend to keep my feelings to myself"), Risk-Taking (e.g., "I frequently put myself in risky situations"), Violence (e.g., "Sometimes violent action is necessary"), Playboy (e.g., "If I could, I would frequently change sexual partners"), Self-Reliance (e.g., "I hate asking for help"), Primacy of Work (e.g., "My work is the most important part of my life"), Power over Women (e.g., "In general, I control the women in my life"), and Heterosexual Self-presentation (e.g., "I would be furious if someone thought I was gay"). Items are answered on a 4-point scale ranging from 0 (*strongly disagree)* to 3 (*strongly agree*), with subscale and total scores derived by summing relevant items. The CMNI-46 shows good internal consistency and concurrent validity with other masculinity-related measures (Parent & Moradi, 2011). In the present study, the CMNI demonstrated good internal consistency for the measure as a whole (alphas ranged from .86 for US to .90 for

Australia), as well as for individual subscales, ranging from .70 to .91. The total score was used in the models tested in this study.

Sociocultural Attitudes Towards Appearance Questionnaire – Version 3 (SATAQ-3; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). The 9-item internalization-general and 5-item internalization-athletic subscales of the SATAQ-3 (male version; Karazsia & Crowther, 2008) were used to evaluate the extent to which participants accept and internalize appearance standards espoused by the media in general (e.g., "I try to look like the people on TV") or with reference to athletes in particular ("I try to look like sports athletes"). Items are rated on a 5-point Likert scale, ranging from 1 (*definitely disagree*) to 5 (*definitely agree*). The SATAQ-3 has strong internal consistency, test-retest reliability, and concurrent validity with other body image measures (Karazsia & Crowther, 2008; Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2004). In the present study, Cronbach's alphas ranged from .88 (Sweden) to .90 (USA) to .93 (UK and Australia) for the internalization-general subscale. For the internalization-athletic subscale the values were .78 (Sweden and Australia), .80 (U.S.), and .84 (UK).

Body image measures. The Drive for Muscularity Scale (DMS; McCreary, 2007) is comprised of a seven-item attitudinal subscale measuring drive for muscularity (e.g., "I wish that I were more muscular") and a seven-item muscularity behaviors subscale (e.g., "I lift weights to build up muscle"). Each item is scored on a six-point scale ranging from 1 (*never*) to 6 (*always*). Total scale scores were calculated by averaging the respective items, with higher scores indicating greater drive for muscularity. As recommended by the authors (McCreary et al., 2004), we excluded a fifteenth item ("I think about taking anabolic steroids") when calculating the total score. The DMS has been shown to be internally consistent, with good test-retest reliability and convergent validity (McCreary, 2007). In the

present study, alphas for the DMS attitudes subscale ranged from .87 (US) to .92 (Australia) and for the DM behaviors subscale ranged from .86 (Sweden) to .90 (Australia).

The six items on the Drive for Leanness Scale (DLS; Smolak & Murnen, 2008) assess attitudes regarding personal desire to be lean (e.g., "My goal is to have well-toned muscles"). All items are rated on a scale ranging from 1 (*never*) to 6 (*always*). Items are summed to create a total score with higher scores indicating greater drive for leanness (Smolak & Murnen, 2008). The original study indicated good stability, reliability, and validity of this measure. In the present study, Cronbach alphas ranged from .82 (US) to .88 (UK).

The Drive for Thinness subscale (DFT) of the Eating Disorder Inventory–2 (EDI-2; Garner, 1991) is a 7-item self-report measure of excessive concern with dieting, preoccupation with weight, and fear of weight gain (e.g., "I am terrified of gaining weight"). Responses range from 1 (*never*) to 6 (*always*). Negatively worded items are reverse coded and then items are summed to produce a scale total, with higher scores reflecting stronger desire for thinness. This scale has demonstrated adequate psychometric properties in prior studies (Stanford & Lemberg, 2012). In the present study, internal consistency estimates ranged from .88 (Sweden) to .91 (USA).

Procedure

All studies were approved by each institution's internal review board and all participants provided consent to participate. The Swedish participants were recruited from a large longitudinal project. These participants were originally recruited to the study when the Swedish research team administered a questionnaire about body image and bullying in 53 fourth grade classes in different socio-economic areas of Gothenburg (Erling & Hwang, 2004; Frisén & Holmqvist, 2010a; Frisén & Holmqvist, 2010b). At the follow-up at age 21 (the focus of the present study), participants were contacted by postal mail or e-mail, the contents of which included information about the study and a link to an online questionnaire.

When the participants had completed the survey, they were offered a movie ticket or a national lottery ticket as compensation for their participation in the study. Sixty-four percent (n = 617) of the original sample at age 10 (n = 960) participated at age 21. Of these, 277 were men. In order for the samples in the four countries to be as comparable as possible, we included only the university students in the present study, n = 142.

The Australian, U.K., and U.S. participants were recruited for the purpose of the present study. Recruitment occurred at universities in the three countries (e.g., by student mailing lists and participant pools), but also through friends and acquaintances, using convenience and snowball sampling techniques. Recruitment also included advertising through posters and flyers distributed on university campuses and via Facebook. Data collection was conducted in both online and paper-based formats, depending on the access available to participants.

In the US and UK, participants recruited through the universities received course credit for their participation. UK and US participants recruited outside of the context of the university participant pool (<5%) had the opportunity to enter a prize drawing for a £30 or a $25 Amazon voucher. In Australia, participants entered in the drawing to win one of ten $30 department store gift vouchers.

Data analytic strategy

The model shown in Figure 1 was tested in AMOS version 21 using a multi-group path analysis, which proceeded in several stages. First, the model was fit simultaneously across the four groups, without imposition of equality constraints. This baseline model permitted estimates of mediation effects for each country separately. Mediation effects were tested for significance using Sobel's z test, which relies on the a (IV → MV) and b (MV→DV, controlling for IV) paths in the model as well as their standard errors. The bias-corrected bootstrap resampling method (Shrout & Bolger, 2002) was implemented with 2000

resamples to more accurately estimate these parameters (MacKinnon, Lockwood, & Williams, 2004). All mediation effects were tested in the same model (Figure 1) rather than running separate mediation models for the two mediators (internalization general and athletic subscales) and the four DVs (desire for leanness, drive for thinness, and attitudinal and behavioral aspects of drive for muscularity), as the latter strategy is likely to over-estimate effect sizes due to model misspecification (Kline, 2005).

Second, equality constraints were placed on the *a* and *b* paths in the model to evaluate whether mediation effects were equivalent (i.e., exhibited structural invariance) across groups. While constraining all parameters in Figure 1 simultaneously would allow for cross-group comparison of the model as a whole, poorer model fit (in the constrained model) based on this approach would be uninformative about which mediation paths actually differed significantly across groups. Therefore, constraints on the *b* paths (MV → DV, controlling for the IV) were undertaken separately for each of the four DVs.

Cross-group equivalence of mediation effects was tested using the χ^2 difference test, which compared the χ^2 values of the baseline and constrained model against the degrees of freedom change across the two (i.e., $df_{\text{constrained}} - df_{\text{unconstrained}}$). Since the unconstrained model in this instance is just-identified, the χ^2 difference test simplifies to an evaluation of the significance of χ^2 in the constrained model. χ^2 is sensitive to sample size and minor departures from normality (Di Stefano & Hess, 2005); hence, the likelihood ratio test was augmented with a test of practical change in fit between the two models (ΔCFI > .010 indicated worse fit from a practical perspective; Cheung & Rensvold, 2002). In cases where the $\chi^2$and CFI approaches disagreed, CFI was preferred because of its stronger statistical properties.

Finally, in the event of a mediation effect producing practically or significantly worse model fit in the constrained model, the constrained model was retested with pairs

of countries to identify the source of misfit. In these comparisons, the US group was used as a reference group to determine whether it differed against any of the other three countries.

Data screening and preparation. Data were screened for each of the four groups separately to ensure they met the assumptions of path analysis (Tabachnick & Fidell, 2007). As missing data accounted for less than 5% of data points in total, and exhibited an MCAR pattern (Little's MCAR test $p > .05$ for all groups), expectation maximization was used for data imputation. All variables had acceptable absolute skew and kurtosis values, negating the need for transformation (Curran, West, & Finch, 1996). While several outliers were identified, they were retained in the analysis as: (1) they were within the possible range of scores for their respective variables, and (2) the bootstrapping approach used reduces their impact on model parameters (Byrne, 2011).

Results

Demographic data and means (SDs) for variables

Demographic data are provided in Table 1. Means and standard deviations for all groups on all variables are provided in Table 2.

Mediation effects

As shown in Table 3, internalization of sociocultural body ideals (general and athletic, in combination) mediated the relationship between masculinity norms and desire for leanness for each of the groups except for UK participants. Further inspection revealed that the mediation effect was due primarily to internalization of athletic ideals. An identical pattern of results was obtained for the behavioral subscale of the drive for muscularity measure, with all countries except the UK exhibiting a significant mediation effect, driven by the athletic rather than general subscale of internalization. Similarly, in combination, the internalization subscales significantly mediated the masculine norms-drive for muscularity attitudes

relationship for all groups except for the UK participants. The athletic internalization subscale was the greater contributor for the Australian and US groups, whereas the general internalization subscale was a stronger mediator for the Swedish sample. Finally, the internalization subscales were less consistent mediators of the relationship between masculinity norms and drive for thinness: the general internalization subscale was a significant mediator for both the Australian and Swedish groups, and the combined effects of the general and athletic subscales were also a significant mediator for the Swedish group.

Multi-group path analysis

Equality constraints were placed on each of the mediation paths in the model separately (as shown in Table 4). These constraints produced worse fit to the data than the unconstrained models for drive for thinness ($\Delta\chi^2 = 32.91$, $p = .005$, Δ CFI = .014) and drive for muscularity-behaviors subscale ($\Delta\chi^2 = 33.18$, $p = .004$, Δ CFI = .014), whereas fit of the constrained model was acceptable for desire for leanness ($\Delta\chi^2 = 22.17$, $p = .103$, ΔCFI = .005) and drive for muscularity-attitudes subscale ($\Delta\chi^2 = 24.77$, $p = .053$, Δ CFI = .007). Follow-up testing with pairs of the four groups (using US as the reference group) for the two worsened models (drive for thinness and drive for muscularity –behaviors) showed that the US group differed from the UK group for the mediation models involving drive for muscularity ($\Delta\chi^2 = 18.68$, $p = .002$, ΔCFI = .021) and for drive for thinness ($\Delta\chi^2 = 22.69$, $p <$ .001, ΔCFI = .027). In conjunction with information in Table 3, it is clear that the mediation effects were stronger for the US cohort than for UK counterparts. Furthermore, the US and Swedish groups differed for mediation paths involving both drive for thinness ($\Delta\chi^2 = 12.11$, $p = .033$, Δ CFI = .012) and drive for muscularity behaviors ($\Delta\chi^2 = 15.17$, $p = .010$, ΔCFI = .017). In general, the mediation effects were slightly stronger for the Swedish group than for males in the US. The US and Australian groups did not reliably differ on any of the mediation pathways tested. All pairwise comparisons are shown in Table 5.

Discussion

In this cross-country sample, internalization of the muscular body ideal was found to mediate the relationship between conformity to masculine norms and both drive for leanness and drive for muscularity behaviors and attitudes, except in the UK sample. Moreover, internalization of athletic ideals was a more powerful mediator than general internalization for the Australian and US samples, although the reverse was true for the Swedish sample. The role of internalization in regard to drive for thinness was less consistent across the four samples, although the general internalization scale was a significant mediator in the model for both the Australian and Swedish groups.

These findings are broadly consistent with our hypotheses and provide further evidence of the usefulness of including conformity to masculinity norms in integrative models of body image in men. Endorsing social constructions of masculinity may lead to greater pursuit of societal body ideals for men, as a central part of masculinity. However, although internalization was a significant mediator in all models for three of the four countries, the results differed somewhat by outcome variable, type of internalization, and country of origin, suggesting that internalization may operate differently across different domains and cultures.

Interestingly, internalization of athletic ideals proved to be a more powerful mediator than general internalization with regard to drive for leanness (US, Australian, and Swedish samples) and drive for muscularity for the Australia and US samples. This result is a unique contribution to the literature, which has generally not examined different types of internalization. As athletes and sports figures are often a primary viewing focus for many men, it is not surprising that they internalize the body types and physical prowess of these sports stars (Dour & Theran, 2011). Our data would suggest that one of the mechanisms accounting for the association between conformity to masculinity and body image concerns is

through the extent to which these athletic figures have been internalized by young men. This would suggest, perhaps, that the men in this study view athletes as an excellent representation (prototype) of masculinity and the male body. Further, if masculine norms such as competitiveness, risk-taking, and winning are viewed as part of masculinity, one can understand equating sports with masculinity, and hence the relationship between internalization of athletic ideals as a key contributor to body image concerns.

Implications for the prevention and treatment of excessive attitudes and behaviors around leanness and muscularity suggest that a focus on the 'sports-hero culture' may be a useful target (Ricciardelli, 2012; Yager & O'Dea, 2014). The highest drive for muscularity was reported among American and Australian men. Indeed, the US may be one of the most body-dissatisfied nations worldwide, and is often used as a reference group in cross-national comparisons (Holmqvist & Frisén, 2010). For example, professional football is the most popular sport in the US. National Football League players are massively muscular and comprise important male role models in US society, encouraging many young men to strive for a muscular body. Likewise, in Australia, the muscular body is highly visible and valued in several social contexts, e.g., in gyms, in sports, and on the beach; indeed, the ideal of the strong lifesaver is often referred to as an Australian icon (Mahalik, Levi-Minzi, &Walker, 2007). Future research might focus more on young men's identification with sports figures and the ways to utilize this connection in prevention efforts.

One consistent finding was that internalization was not a significant mediator for UK participants. We thought that methodological issues might explain this finding and thus response bias and sample characteristics were explored across the entire sample. However, upon examination, response bias was ruled out, as the groups did not differ in their tendency to endorse extreme responses (at either end of the response continuum) or middle response options for any of the scales used in the present study (data available upon request).

Moreover, while there was some variability in sample characteristics, the UK sample did not differ significantly from the other groups on age, BMI, or sexual orientation. It is possible then, that the differences found in the UK sample are instead related to other factors that may differentiate British men from men in the other three countries (Swami et al., 2013). UK depictions of masculinity may be less clearly related to the internalization of body ideals (Jankowski, Fawkner, Slater, & Tiggemann, 2014). It has previously been reported that, among British males, the embodiment of masculinity was associated with resistance to conformity and the rejection of vanity or conscious and discernible efforts to improve physical appearance (Gill, Henwood, & McLean, 2005). Moreover, Gough (2006) noted upon review of UK newspaper articles on men and food and diet that focusing on one's diet was often construed as un-masculine and often "trivialized and mocked" in the media (p. 335). It may be that conformity to masculinity norms, among British men, is therefore less strongly associated with desire to emulate body shapes promoted by mainstream culture, or at least willingness to admit to it. Future research might examine these questions more closely in samples of men from the UK to increase our understanding of body image concerns in this group.

Interestingly, internalization was a less consistent mediator between masculinity norms and drive for thinness, perhaps because drive for thinness is a less salient variable for males in general, relative to females (Brunet, Sabiston, Dorsch, & McCreary, 2010). Studies suggest that drive for muscularity and leanness are more relevant constructs with regard to male body image, which may explain this finding (Stanford & Lemberg, 2012; Tod, Hall, & Edwards, 2012; Tod, Morrison, & Edwards, 2012).

Given the variability in our findings, both with respect to the differences across countries with regard to what type of internalization (if at all) functioned as a mediator and the strength of these relationships, our data suggest that internalization is not a construct that

can be viewed unilaterally or that can be applied universally or even across Western cultures. Instead, our findings indicate that both aspects of internalization (general and athletic) should be examined in etiologic models, at least for men, and further, that research should investigate additional sample characteristics (e.g., ethnicity), as such differences may be important in understanding the extent to which internalization plays a role with regard to body dissatisfaction in men. Using gender role and internalization measures that have been developed and normed in countries other than the US would also be an important consideration in future research.

Strengths of our study include the cross-country sample, the response rate, and the ability to examine mediational models. Limitations include the cross-sectional nature of the data that does not allow for comment on causal or longitudinal questions. It is important to remember that mediation should not be inferred to mean causation given the study design. Further, our sample was comprised primarily of university students, which limits generalizability to other groups.

In conclusion, our findings confirm the importance of internalization of sociocultural body ideals in understanding the development of body image concerns in men from the US, Australia, and Sweden. Conformity to masculine norms and internalization should be considered in etiological models of the development of such concerns.

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Table 1

Demographic data by country

	Australia (n = 160)	UK (n = 141)	US (n = 192)	Sweden (n = 142)
Variable	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*
Age	21.88 (3.55)	20.50 (2.60)	19.21 (1.38)	21.25 (0.49)
BMI	24.11 (3.15)	23.53 (3.96)	23.46 (3.44)	22.92 (3.10)
Sexual orientation	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Heterosexual	141 (88.1)	127 (90.1)	167 (87)	133 (93.7)
Homosexual	11 (6.9)	4 (2.8)	16 (8.3)	1 (0.7)
Bisexual	6 (3.8)	7 (5)	5 (2.6)	6 (4.2)
Other/rather not say	2 (1.3)	3 (2.1)	4 (2.1)	2 (1.4)

Table 2

Descriptive statistics and ANOVA results

	AUS	UK	USA	SWEDEN	*F*	Eta^2
DFL	24.22^{b,c,d}	22.64^{a,c}	25.96^{a,b,d}	21.65^{a,c}	19.941***	.087
	(5.43)	(5.74)	(5.07)	(5.61)		
DFM Total	3.05^{d}	2.88^{c,d}	3.22^{b,d}	2.57^{a,b,c}	14.107***	.063
	(1.07)	(0.94)	(0.92)	(0.76)		
DFM	3.62^{d}	3.51^{c,d}	3.76^{b,d}	3.14 ^{a,b,c}	8.770***	.040
Attitudes	(1.25)	(1.10)	(1.08)	(1.03)		
DFM	2.47 ^{d}	2.25^{c,d}	2.67^{b,d}	1.99^{a,b,c}	11.627***	.052
Behaviors	(1.22)	(1.15)	(1.11)	(0.84)		
DFT	18.17^{d}	16.46^{c,d}	19.08^{b,d}	12.88^{a,b,c}	19.365***	.084
	(7.88)	(7.59)	(8.90)	(5.85)		
SATAQ	26.21^{d}	25.16^{d}	26.73^{d}	22.62^{a,b,c}	8.295***	.038
General	(8.45)	(7.99)	(7.54)	(7.54)		
SATAQ	17.73^{b,d}	16.00^{a,c,d}	17.77^{b,d}	14.72^{a,b,c}	20.594***	.089
Athletic	(4.13)	(4.22)	(3.78)	(4.16)		
CMNI_Total	58.84^{c}	60.98^{c}	66.32^{a,b,d}	59.54^{c}	11.550***	.052
	(13.82)	(12.42)	(12.93)	(14.04)		

DFL = Drive for Leanness; DFM = Drive for Muscularity; DFM Attitudes = Drive for Muscularity Attitudes subscale; DFM Behaviors = Drive for Muscularity Behaviors subscale; SATAQ General = Sociocultural Attitudes toward Appearance Questionnaire-3 General Internalization subscale; SATAQ Athletic = Sociocultural Attitudes toward Appearance Questionnaire-3 Athletic Internalization subscale; CMNI Total= Conformity to Masculine Norms Inventory total score.

Notes: [a]group significantly differs from Australia, [b]group significantly differs from UK, [c]group significantly differs from USA, and [d]group significantly differs from Sweden (all tested at $p<.05$).

*$p<.05$, **$p<.01$, ***$p<.001$.

Table 3

Unstandardized mediation effects by country

Model	Australia	USA	UK	Sweden
CMNI→SATAQ→DFL				
Combined	0.076***	0.077***	0.034	0.065***
SATAQ General	0.010	0.003	0.015	0.011
SATAQ Athletic	0.066**	0.074***	0.019	0.054**
CMNI→SATAQ→DFT				
Combined	0.033	0.012	0.028	0.035*
SATAQ General	0.038*	0.042	0.017	0.044*
SATAQ Athletic	-0.005	-0.030	0.011	-0.009
CMNI→SATAQ→DFM Attitudes				
Combined	0.014**	0.011**	0.004	0.007**
SATAQ General	0.003	0.003	0.001	0.004*
SATAQ Athletic	0.011**	0.009**	0.003	0.003
CMNI→SATAQ→DFM Behaviors				
Combined	0.009*	0.008**	0.004	0.007**
SATAQ	-0.002	0.001	-0.001	-0.003

General SATAQ Athletic	0.011*	0.007*	0.004	0.009**

Note: *p<.05, **p<.01, ***p<.001.

CMNI = Conformity to Masculine Norms Inventory; SATAQ = Sociocultural Attitudes toward Appearance Questionnaire-3; DFL = Drive for Leanness; SATAQ General = Sociocultural Attitudes toward Appearance Questionnaire-3 General Internalization subscale; SATAQ Athletic = Sociocultural Attitudes toward Appearance Questionnaire-3 Athletic Internalization subscale; DFT = Drive for Thinness; DFM = Drive for Muscularity

Table 4

Tests for cross-cultural equivalence in mediation effects

Mediation Path	χ^2	df	χ^2/df	CFI	ΔCFI
CMNI→SATAQ→DFL	22.067	15	1.471	.995	.005
CMNI→SATAQ→DFT	32.912**	15	2.194	.986	.014
CMNI→SATAQ→DFM Attitudes	24.772*	15	1.651	.993	.007
CMNI→SATAQ→DFM/Behaviors	33.176**	15	2.212	.986	.014

Notes: *$p < .05$, **$p < .01$. χ^2 represents the difference between the unconstrained (saturated model; i.e., $\chi^2 = 0$) and constrained models.

CMNI = Conformity to Masculine Norms Inventory; SATAQ = Sociocultural Attitudes toward Appearance Questionnaire-3; DFL = Drive for Leanness; DFT = Drive for Thinness; DFM Attitudes = Drive for Muscularity Attitudes subscale; DFM Behaviors = Drive for Muscularity Behaviors subscale.

Table 5 Missing DFM Attitudes (this is different from submitted version – check)

Tests for cross-cultural equivalence in mediation effects

Mediation Path	χ^2	df	χ^2/df	CFI	ΔCFI
USA v AUS					
CMNI→SATAQ→DFT	7.535	5	1.507	.997	.003
CMNI→SATAQ→DFM Behaviors	6.505	5	1.301	.998	.002
USA v UK					
CMNI→SATAQ→DFT	22.688***	5	4.538	.973	.027
CMNI→SATAQ→DFM Behaviors	18.682**	5	3.736	.979	.021
USA v SWEDEN					
CMNI→SATAQ→DFT	12.105*	5	2.421	.988	.012
CMNI→SATAQ→DFM Behaviors	15.170**	5	3.034	.983	.017

Notes: *$p < .05$, **$p < .01$, ***$p < .001$. χ^2 represents the difference between the unconstrained (saturated model; i.e., $\chi^2 = 0$) and constrained models.

CMNI = Conformity to Masculine Norms Inventory; SATAQ = Sociocultural Attitudes toward Appearance Questionnaire-3; DFT = Drive for Thinness; DFM Attitudes = Drive for Muscularity Attitudes subscale; DFM Behaviors = Drive for Muscularity Behaviors subscale.

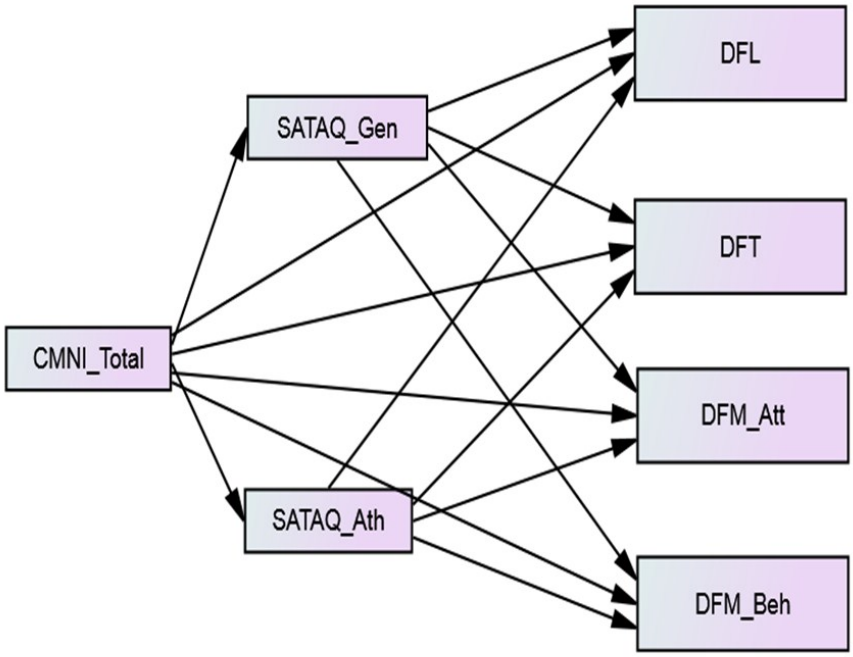
DFL
SATAQ_Gen
DFT
CMNI_Total
DFM_Att
SATAQ_Ath
DFM_Beh

Figure 1
The full mediation model tested across cultural groups