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META–ANALYSES OF THE EFFECTS OF MEDIA IMAGES ON MEN'S BODY–IMAGE CONCERNS

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Two meta–analyses were conducted to determine the extent to which pressure from the mass media to conform to the muscular "ideal" male body affects men's self–images (i.e., body satisfaction, body esteem, and self–esteem). A total of 25 studies contributing 93 effect sizes were included in two meta–analyses, which revealed that pressure from the mass media was significantly related to men feeling worse about their own bodies. The effect size from the meta–analysis of the correlational studies (Study 1) was significantly negative, $d = –0.19$, $p < .001$. The effect size from the meta–analysis of the experimental studies (Study 2) was also significantly negative, $d = –0.22$, $p < .0001$. Results from both Study 1 and Study 2 suggest that as men felt pressure from the mass media (in correlational and experimental designs) they felt worse about their bodies. Results showed that pressure from the mass media was related to body satisfaction, body esteem, self–esteem, psychological disorders (e.g., depression), and behavioral outcomes (e.g., excessive exercising).

> "*It's [a muscular ad] so obviously aimed at the American culture. The American way of thinking—Everything BIG.*"
>
> (Elliot & Elliot, 2005, p. 13)

Contemporary American culture heavily emphasizes the human body and its appearance. The mass media often uses sexual images and scantily clad models to sell their products. For example, beer commercials use barely dressed women to sell their beer, while gym equipment commercials sell their products by displaying muscular

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and shirtless men using pieces of that machinery (Harris, Cady, & Barlett, 2007). Overall, these types of commercials attempt to persuade the male viewer that if he uses certain gym equipment then his body will look like that of the man in the commercial, even though those particular images, as well as others, are practically unattainable (Turkel, 1998). The phenomenon of using scantily clad female models or muscular shirtless male models to sell products is not restricted to television ads, as cover models of certain magazines and many celebrities are either unrealistically skinny or muscular. The body types of such male and female models are known as the ideal body images. For women, the ideal body image is that of a skinny woman, while for men, the ideal body image consists of a muscular man (Furnham, Badmin, & Sneade, 2002), that is "characterized by well–developed chest and arm muscles, with wide shoulders tapering down to a narrow waist" (p. 30), such as Jean–Claude van Damme, Sylvester Stallone (Pope, Phillips, & Olivardia, 2000), or Brad Pitt in *Troy*. Research has shown that male participants do think that muscular images are more ideal than skinnier body images (Salusso–Deonier, Markee, & Pedersen, 1993).

NEGATIVE SELF–IMAGES

Many individuals have concerns about how their bodies look. These concerns are related to negative self–images, which are related to unhealthy behaviors such as excessive amounts of exercising and an increased probability to develop a negative self–image (e.g., Ricciardelli & McCabe, 2004). Negative self–images are defined as "a way of thinking and feeling about one's body that negatively influences the person's self–esteem, body esteem, and body satisfaction" (Barlett, Harris, Smith, & Bonds–Raacke, 2005, p. 877). This definition incorporates the three constructs that have been shown to be significantly related to negative self–images. The first is self–esteem, defined as an overall evaluation of the self (Rosenberg, 1965). The second is body satisfaction, defined as how one thinks about his/her body (see Baranowski, Jorga, Djordjevic, Marinkovic, & Hetherington, 2003). The third is body esteem, defined as how one feels about his/her own body (Franzoi & Herzog, 1986).

Body esteem differs from body satisfaction by emphasizing the difference between thoughts and feelings, such that the former empha-

sizes feelings about their body while the latter emphasizes thoughts about their body. Furthermore, body esteem and body satisfaction differ from self–esteem by specifically focusing on the body. Even though self–esteem may be affected by evaluation of the body, this construct is more global. Research that has examined all three constructs has shown that body satisfaction and body esteem are significantly correlated with self–esteem (Barlett et al., 2005). This research also found that body esteem and body satisfaction are not correlated with each other (Barlett et al., 2005), however this may be a function of the measures used to assess these variables, as other research has found a significant positive relationship between body satisfaction and body esteem (Duggan & McCreary, 2004; Muris, Meesters, van de Blom, & Mayer, 2005). For the purposes of the current meta–analyses, body esteem and body satisfaction will be treated as different constructs.

BODY IMAGE AND WOMEN

The predominant focus of the research between negative self–images and media has been on women. This research has shown that women who were exposed to thin "ideal" media representations had decreased self–esteem (Smith, 2000), body satisfaction (Hargreaves & Tiggeman, 2002), and body esteem (Ogden & Mundray, 1996) compared to those women who were not exposed to the same ideal images. A correlational study found that the negative self–image attained by viewing slender female models was significantly related to negative behavioral factors, such as eating disorder symptomatology, which was mediated by the internalization of the ideal body shape (Stice, Schupak–Neuberg, Shaw, & Stein, 1994). Objectification Theory (Fredrickson & Roberts, 1997) posits that women will have a negative self–image after viewing thin female models. This effect occurs because women are socialized to be cognizant of the emphasis on the thin female body and being evaluated based on their appearance. For example, when a woman is exposed to a thin female model that woman may feel shame and anxiety about not looking as similar to the model (Fredrickson & Roberts, 1997).

In order to gain a more comprehensive understanding of the research, Groesz, Levine, and Murnen (2002) conducted a meta–analy-

sis to examine the effect that thin media images had on the self–image of females. Their meta–analysis included 25 studies that yielded 43 effect sizes and showed a significant effect size estimate, $d = –0.31$, which suggests that there is a significant relationship between viewing images of thin women and the development of a negative self–image in women.

BODY IMAGE AND MEN

There has been increasing interest in the effect that ideal media images have on negative self–images in men. The present pop culture of the United States puts heavy emphasis on muscularity for men, which is represented in multiple ways. Leit, Gray, and Pope (2001) measured the reported muscle size of centerfolds of *Playgirl* magazine across three decades and found that the male models have been steadily increasing in muscularity. Additionally, Pope, Olivardia, Gruber, and Borowiecki (1999) showed that more modern action figures, which are often played with by boys, are growing substantially in muscle size across the past three decades. Consequently, some, but not all, research has shown that males who feel pressure from the mass media have decreased self–esteem (Muris, Meesters, van de Blom, & Mayer, 2005), decreased body satisfaction (Agliata & Tantleff–Dunn, 2004), and decreased body esteem (Barlett et al., 2005). Pressure from the mass media can be assessed by either showing male participants stimuli consisting of muscular men or being asked questions about how much pressure they felt from the mass media to increase their muscles or decrease their weight. These ideal images have been presented through multiple media formats including magazines (Grogan, Williams, & Connor, 1996; Hausenblas, Janelle, Gardner, & Hagan, 2003; Humphreys & Paxton, 2004; Grogan, Williams, & Conner, 1996; Murnen, Smolak, Mills, & Good, 2003), television commercials (Agliata & Tantleff–Dunn, 2004), and action figures (Barlett et al., 2005).

Research has shown these negative feelings and thoughts that are obtained from pressure from the mass media are significantly related to engaging in severely negative behaviors, which could lead to later health problems or even death. These negative behaviors may include increased steroid usage (Blovin & Goldfield, 1995), increased food supplement intake (McCabe & Ricciardelli, 2003), and an in-

creased probability to develop an eating disorder, such as bulimia or anorexia nervosa (Botta, 2003).

Despite the research which has shown that males will have lower self–images after viewing muscular ideal images, some research has shown that pressure from the mass media has not influenced every negative self–image construct (e.g., McCabe & Ricciardelli, 2003; Ricciardelli, McCabe, & Banfield, 2000). Barlett et al. (2005) found that after handling extremely muscular action figures, males had decreased body esteem, but not self–esteem or body satisfaction. Kalodner (1997) found that men who viewed magazine pictures of male models did not differ from men who viewed magazine pictures of older males (not models) on measures of body satisfaction and body esteem. McCabe and Ricciardelli (2003) found that the pressure from the mass media was negatively correlated with strategies to increase muscles, suggesting that the number of hours spent viewing the mass media did not make boys want to increase their muscles. Therefore, inconsistencies regarding the reported effects of pressure from the mass media on body image concerns in men exist in the literature, which need to be resolved.

THEORETICAL FRAMEWORKS

Only recently have researchers and the public become concerned about negative self–images and their consequences on the pursuit of muscularity and disordered eating in men. The tripartite influence model (Shroff & Thompson, 2006; Smolak, Murnen, & Thompson, 2005) posits that three primary sociocultural influences (parents, peers, and the mass media) directly impact body image dissatisfaction, which has a direct effect on behavioral outcomes (e.g., bulimia and steroid usage). The three sociocultural factors also have an indirect link to body image dissatisfaction via two mediated processes: internalization of societal standards and appearance comparison. Thus, the reason why the mass media negatively influences self–image is because people will often compare their own body to the image they are viewing (appearance comparison process) or internalize the standards of "beauty" that the stimuli represent (internalization of societal standards). Independent of which mediated path the psychological mechanisms are traveling, males who feel pressure from the mass media to change their body or view muscular male media

depictions will have lower body satisfaction and will compare their own body to these depictions and feel bad about their body. The negative self–image that is manifested (either directly or through the previously described mediated processes) will lead to behavioral consequences of feeling bad about one's body (e.g., steroid usage, excessive exercising). Research testing this model has shown that all three sociocultural factors predict body image dissatisfaction in men (e.g., Smolak et al., 2005).

The Cafri et al. model (Cafri, Thompson, Ricciardelli, McCabe, Smolak, & Yesalis, 2005) provides similar predictions about the role that that pressure from the mass media has on negative self–images and the behavioral consequences associated with poor body image. This model posits that sociocultural pressure (e.g., mass media pressure) leads to a social body comparison process, in which males will compare their body to that of the muscular image presented in the media format. This social comparison process directly leads to body dissatisfaction, which predicts negative behavioral consequences (e.g., steroid usage, dieting to increase muscularity). Thus, conceptually, this model makes similar predictions to the tripartite model. However, the Cafri et al. (2005) model differs from the tripartite model in a variety of ways. First, the Cafri et al. (2005) model posits that biological factors (e.g., puberty timing) directly predicts how males will be impacted by sociocultural factors, and research has found that males who reached puberty quickly, were more likely to build their muscles than those males who had not yet reached puberty (O'Dea & Abraham, 1999). Also, these biological factors moderate the relationship between sociocultural factors and social comparison processes and the relationship between the social comparison and body dissatisfaction. Thus, the age of the males is an important variable in the relationship between sociocultural factors and negative behavioral consequences. Second, this model predicts a reciprocal relationship between negative behavioral consequences and psychological functioning (e.g., self–esteem, depression). For example, if a male begins to use steroids after feeling bad about his body, this model predicts that this male will also have lower self–esteem, which is going to further increase the probability of using steroids.

Using the aforementioned theoretical frameworks and based on the results from the primary literature, meta–analyses are needed in

order to gain an understanding of the impact that the mass media has on the negative self–image of males. There is a need in the literature to synthesize the research on this area across the discipline for men, as there has been a meta–analysis on women (Groesz et al., 2002). Meta–analyses will test links in both of the aforementioned models by synthesizing the relevant research which specifically investigated these links. Further, meta–analyses will synthesize what researchers do and do not know about the predictions these theoretical models posit by resolving any discrepancies that exist in the literature. Finally, the results from meta–analyses are useful for suggesting future research in this area because both the overall results and the results from moderator analyses will highlight areas of research that need further elaboration.

These goals will be accomplished by synthesizing the primary literature which has investigated the effects that the mass media has on negative self–images and behavioral and psychological outcomes associated with having body image concerns from the mass media. We will examine the predictions of both the tripartite influence model and the Cafri et al. model by meta–analyzing the correlational (Study 1) and experimental studies (Study 2) which have examined the relationship between pressure from the mass media and male body image. Also, moderators predicted by these models (e.g., age of participants, muscularity of the muscular male depictions) will be explored when appropriate.

STUDY 1

The purpose of Study 1 was to meta–analyze the relevant literature on the relationship(s) between media exposure and negative body image concerns. Thus, the current study focused only on studies that were correlational. The results from the correlational studies offer insight into what variables are theoretically related to one another by the previously stated models. It is important to only meta–analyze the correlational studies because the results from these studies, although theoretically important, only show relationships, and, hence, causal conclusions cannot be made. The majority of the correlational studies had males complete measures associated with either the amount of time spent viewing the mass media or the amount of pressure males felt from the mass media to alter their body (e.g., gain

muscles, decrease weight) and correlated those responses with measures of negative self–images and behavioral and psychological consequences (e.g., steroid usage and depression, respectively).

METHOD

PsycINFO was the database used to obtain the relevant studies. This search was conducted over the time period between 1806 to September 2005 and only included published studies written in English. The specific search terms used were: "body image and males," "body image and boys," "body esteem and males," "body esteem and boys," "body esteem and media," "body satisfaction and males," "body satisfaction and media," "body satisfaction and boys," "self–esteem and males," "self–esteem and boys," "self–esteem and media and men," "media and body image and boys," and "muscularity."

The main purpose of the meta–analyses was to determine the relationships between exposure to muscular ideals and the negative self–images of males. Therefore, the inclusionary criteria specified that studies must: (1) use male participants, (2) measure at least one of the negative self–image constructs or outcomes (e.g., depression, eating disorders), (3) be a study that correlated the amount of pressure from the mass media and self–image variables, and (4) include enough statistical information to calculate an overall effect size for the relationship between pressure from the mass media and negative self–image variables for male participants. Using these criteria, 15 studies were identified for inclusion in the meta–analysis.

These studies contributed 60 effect sizes and included 4,324 male participants. Effect sizes were extracted from each study using the statistical information provided. The Hedges and Olkin (1985) procedure was used to calculate the effect sizes for each study using the DSTAT computer program (Johnson, 1993). In the current study, frequencies, correlation coefficients, and percentages were transformed into effect size estimates for each dependent variable. Any studies that reported nonsignificant findings, but failed to report information to use for effect sizes were assigned values of $p = .50$. This was done in order not to bias the overall effect size by using $p = 1.00$ because this would underestimate the overall effect size. This technique is also preferable to using $p = 1.00$ because this assumes that

there is no effect, which can influence the effect size estimates (Rosenthal, 1995).

Study 1 meta–analyzed only the correlational studies and Study 2 meta–analyzed only the experimental literature, which is why the effect sizes were calculated using both Pearson's r and Cohen's d. Because both types of effect sizes were computed, the reader is able to visually compare the results from the two studies using the same effect size estimates. Correlation coefficients were transformed to the *d* statistic using Cohen's (1988) equations.[1] Often, one study produced more than one effect size. This occurred when more than one scale was used to measure a construct of negative self–images. Often studies would report results for two of the underlying constructs of negative self–images (e.g., self–esteem and body satisfaction), or all three. This produced multiple effect size estimates from one study.

CODING FOR MODERATORS

In order to examine potential moderators, the first and second authors coded the studies independently. Coders rated the average age as a continuous variable and the reliability coefficient was calculated using the interrater correlations, with the Spearman–Brown effective reliability correction for multiple coders, and results showed that the rating was reliable, $r = 1.00$, $R = 1.00$.

The categorical variables that were coded for each study included the specific dependent measures used to indicate self–image (body satisfaction, body esteem, and self–esteem) which was coded based on the name of the scale that was provided. Also, the type of outcomes (psychological or behavioral) was coded based on the variable measured in the studies. Psychological disorders were defined as outcomes that could be classified by the *DSM–IV-TR* (American Psychiatric Association, 2000), which included certain clinical disorders, such as depression, anxiety, bulimia, and anorexia. Behavioral outcomes included variables that were not specific clinical diseases in

1. Cohen's *d* was used instead of Hedge's *g* because Hedge's *g* is not standardized for sample sizes, and Cohen's *d* uses the unbiased population effect size derived by multiplying a correction formula to Hedge's *g* (see Groesz et al., 2002). Inspections of the effect size estimates revealed that the results produced using Hedge's *g* were virtually identical to those produced using Cohen's *d*.

the *DSM–IV-TR*, but could be possible symptoms and were physical actions, such as number of hours exercising, strategies to increase muscle tone, taking food supplements, strategies to decrease weight, and strategies to increase weight.[2,3] The first variables reliability for the first variable was assessed using Cohen's Kappa and these codings were reliable for the dependent measure(s) in a study, $\kappa = 1.00$. The phi coefficient was used to measure the reliability between the two coders for the type of outcome measures and these codings were reliable ($\varphi = 1.00$).

RESULTS

Negative effect sizes indicate that pressure from the mass media was related to negative self–image attainment, while positive effect sizes indicate that pressure from the mass media was related to positive self–image attainment. This meta–analysis included only the correlational studies ($\kappa = 15$) in order to determine the relationship between exposure to mass media that depicted ideal male bodies and negative self–images. However, because these studies were correlational, a direct causal relationship cannot be concluded.

The results from the meta–analysis showed that the overall effect size was $d = –0.19$, $p < .0001$; CI: –0.21 to –0.17, suggesting that pressure from the mass media was significantly related to negative

2. Two independent raters coded each theoretically relevant questionnaire used in each study, which was the basis for the reliability estimates for each dependent measure used. Then, the first author classified each questionnaire into the dependent variable that it measured (i.e., body esteem, body satisfaction, self–esteem, psychological outcomes, and behavioral outcomes). Recall that we operationally defined body esteem to be how one feels about his/her own body, while body satisfaction was operationally defined as how one thinks about his/her body. Thus, any questionnaire that assessed internalization, for example (SATAQ; Tiggemann, 2005), was classified as body satisfaction because internalization is related to how one processes and thinks about his/her body. Any variable assessed via the Body Esteem Scale, for example (BES; Franzoi & Herzog, 1986), was coded as body esteem because that measure assesses how one feels about parts of their body. This classification was only pertinent for the distinction between body esteem and body satisfaction, and the results showed that there was no difference in the relationship between pressure from the mass media and body esteem and body satisfaction.

3. Strategies to increase weight could be defined as wanting to either gain weight or increase weight (i.e., bulk up). Researchers have used this variable to suggest the latter; however, according to Cafri and Thompson (2004), it may be unclear to the participants which one is meant. Therefore, results using this variable should be interpreted cautiously.

self–images. The test for heterogeneity was statistically significant, $Q_W(59) = 737.74$, $p < .0001$, indicating that it is possible that moderators could explain the variability among the effect sizes. Table 1 lists all effect size estimates.

Due to the possible violation of the assumption of independence of effect sizes, we calculated one effect size per study using a weighted averaging procedure. The overall analysis showed effect sizes that were comparable to the initially calculated effect size, $d = –0.25$, $p < .0001$; CI: –0.29 to –0.20,[4] which according to Cohen's (1988) conventions is a small to medium effect size.[5] Furthermore, there was again significant heterogeneity for this analysis, $Q_B(14) = 95.87$, $p < .0001$, suggesting the potential presence of moderators. Overall, these results suggest that a relationship exists between pressure from the mass media and negative self–images in males.

The file drawer problem is a common problem in meta–analyses, and is defined as the possibility that unpublished research may exist that would change the effect sizes from the published studies due to their noninclusion. In order to estimate the extent of this problem with the current meta–analysis, the *fail–safe N* was calculated. The *fail–safe N* estimates the number of studies with null results that need to exist in order to make the overall effect size nonsignificant (Sterling, 1959). Using the Rosenthal (1991) equation, the *fail–safe N* for the current meta–analysis was 300 studies. This suggests that the overall effect is robust to the file drawer problem. However, we cannot say with certainty that the effect would remain the same if all unpublished studies were included in the main analyses, but the large *fail–safe N* would suggest that the findings from the current meta–analysis are robust to not including the unpublished work.

The current meta–analysis utilized the random effects model

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4. The results suggest that the confidence intervals for the two overall statistics do not overlap, which would suggest that these are significantly different from one another, hence possibly violating the assumption of nonindependence. However, because the overall trend, direction, and interpretation of the results do not change, the significant difference between these two estimates of effect size is less consequential.

5. Researchers have often made the claim that small effect sizes are important as long as they can be interpreted (Abelson, 1985; Prentice & Miller, 1992). Additionally, large effect sizes are not hypothesized because the theoretical models state that other factors contribute to negative self–images beyond the mass media. Therefore, the small–obtained effect size estimates are expected and interpretable.

TABLE 1. Effect Size Estimates for Correlational Studies

Study	*d*	95% CI	*r*	*p*	Measure	Avg. Age
Botta (2003)	–0.17	(–0.37, 0.03)	–0.08	0.09487		
Body Satisfaction	–0.19	(–0.40, 0.03)	–0.09	0.09040	Own	18.94
Body Esteem	–0.20	(–0.42, 0.02)	–0.10	0.06877	DFT	18.94
Anorexia	–0.15	(–0.37, 0.06)	–0.07	0.16773	Own	18.94
Bulimia	–0.17	(–0.38, 0.05)	–0.08	0.13102	Own	18.94
Body Esteem	–0.16	(–0.38, 0.06)	–0.08	0.14976	Own	18.94
Duggan & McCreary (2004)	–0.79	(–1.24, –0.34)	–0.37	0.00024		
Body Esteem	–0.58	(–0.92, –0.23)	–0.28	0.00114	SPAS	Not specified
Body Satisfaction	–0.92	(–1.27, –0.56)	–0.42	0.00001	DMS	Not specified
Body Satisfaction	–0.63	(–0.98, –0.28)	–0.30	0.00047	EAT	Not specified
Body Esteem	–0.45	(–0.97, 0.08)	–0.22	0.10310	SPAS	Not specified
Body Satisfaction	–0.98	(–1.52, –0.43)	–0.44	0.00070	DMS	Not specified
Body Satisfaction	–1.28	(–1.85, –0.72)	–0.54	0.00001	EAT	Not specified
Hatoum & Belle (2004)	–0.61	(–0.91, –0.31)	–0.29	0.00008		
Weight Concerns	–0.24	(–0.53, –0.06)	–0.12	0.11264	# of diets	19.46
Body Esteem	–0.84	(–1.15, –0.53)	–0.39	0.00001	PAM	19.46
Body Satisfaction	–0.87	(–1.17, –0.56)	–0.40	.00001	DFM	19.46
Hours Exercising	–0.49	(–0.79, –0.19)	–0.24	0.00133	Amt/Week	19.46
Jones (2001)	–0.60	(–0.80, –0.40)	–0.29	0.00001	EAT	Not specified
Jones, Vigfusdottir, & Lee (2004)	–0.28	(–0.43, –0.13)	–0.14	0.00025		
Body Satisfaction	–0.32	(–0.47, –0.17)	–0.16	0.00002	SATAQ	12.60
Body Satisfaction	–0.02	(–0.17, 0.13)	–0.01	0.79287	EAT	12.60
Body Satisfaction	–0.51	(–0.67, –0.36)	–0.25	0.00001	SATAQ	12.60
McCabe & Riciardelli (2003)	–0.23	(–0.37, –0.09)	–0.11	0.00088		
Body Satisfaction and Muscle Gain	–0.47	(–0.61, –0.34)	–0.23	0.00001	BIBCI	13.92
Decrease Weight Strategies	–0.72	(–0.86, –0.58)	–0.34	0.00001	BIBCI	13.92
Increase Muscles Strategies	0.65	(0.51, 0.79)	0.31	0.00001	BIBCI	13.92
Gain Weight Strategies	–0.41	(–0.54, –0.27)	–0.20	0.00001	BIBCI	13.92

McCabe & Ricciardelli (2003)	0.01	(–0.19, 0.21)	0.01	0.92099		
Binge Eating and Decrease Weight	0.34	(0.15, 0.54)	0.17	0.00068	BIBCI	14.02
Binge Eating and Increase Muscles	–0.43	(–0.63, –0.23)	–0.21	0.00003	BIBCI	14.02
Food Suppliments	–0.39	(0.19, 0.58)	0.19	0.00014	BIBCI	14.02
McCabe, Ricciardelli, & Finemore (2002)	–0.07	(–0.18, 0.04)	–0.03	0.23148		
Body Satisfaction and Exercise	0.24	(0.07, 0.41)	0.12	0.01200	BIBCI	13.22
Body Satisfaction and Weight Loss	0.34	(0.17, 0.52)	0.17	0.00009	BIBCI	13.22
Body Satisfaction and Weight Gain	0.02	(–0.15, 0.19)	0.01	0.81970	BIBCI	13.22
Body Satisfaction and Muscle Gain	0.14	(–0.03, 0.31)	0.07	0.10380	BIBCI	13.22
Body Satisfaction and Exercise	–0.34	(–0.52, –0.17)	0.17	0.00010	BIBCI	13.22
Body Satisfaction and Weight Loss	–0.26	(–0.43, –0.09)	–0.13	0.00292	BIBCI	13.22
Body Satisfaction and Weight Gain	–0.02	(–0.19, 0.15)	–0.01	0.81970	BIBCI	13.22
Body Satisfaction and Muscle Gain	–0.32	(–0.50, –0.15)	–0.16	0.00024	BIBCI	13.22
Body Satisfaction and Exercise	–0.10	(–0.25, 0.05)	–0.05	0.20368	BIBCI	13.22
Body Satisfaction and Weight Loss	0.04	(–0.11, 0.19)	0.02	0.61132	BIBCI	13.22
Body Satisfaction and Weight Gain	–0.02	(–0.17, 0.13)	–0.01	0.79944	BIBCI	13.22
Body Satisfaction and Exercise	–0.16	(–0.31, –0.01)	–0.08	0.04177	BIBCI	13.22
Body Satisfaction and Weight Loss	–0.32	(–0.48, –0.17)	–0.16	0.00004	BIBCI	13.22
Body Satisfaction and Weight Gain	–0.02	(–0.17, 0.13)	–0.01	0.70044	BIBCI	13.22
Body Satisfaction and Muscle Gain	–0.24	(–0.40, –0.09)	–0.12	0.00221	BIBCI	13.22
Muris, et al. (2005)	–0.69	(–0.92, –0.46)	–0.33	0.00001		
Body Satisfaction	–0.63	(–0.85, –0.40)	–0.30	0.00001	BCS	13.60
Body Esteem	–0.72	(–0.95, –0.49)	–0.34	0.00001	BCI	13.60
Self–esteem	–0.72	(–0.95, –0.49)	–0.34	0.00001	ChEAT	13.60
Murnen, et al. (2003)†	–0.73	(–1.11, –0.35)	–0.34	0.00019		
Body Satisfaction	–1.18	(–1.58, –0.79)	–0.51	0.00001	SATAQ	Not specified
Body Esteem	–0.12	(–0.48, 0.24)	–0.06	0.50821	BES	Not specified

TABLE 1. (continued)

Study	*d*	95% CI	*r*	*p*	Measure	Avg. Age
Ricciardelli & McCabe (2003)	–0.18	(–0.29, –0.07)	–0.09	0.00213		
Body Satisfaction Gaining Muscles	–0.12	(–0.23, –0.01)	–0.06	0.04000	BIBCI	13.22
Body Esteem	–0.16	(–0.27, –0.05)	–0.08	0.00613	BIBCI	13.22
Body Satisfaction Decrease Weight	–0.54	(–0.65, –0.42)	–0.26	0.00001	BIBCI	13.22
Body Satisfaction and Weight Gain	0.40	(–0.07, 0.15)	0.02	0.49396	BIBCI	13.22
Muscle Increase Strategies	–0.34	(–0.46, –0.23)	–0.17	0.00001	BIBCI	13.22
Decrease Weight Strategies	–0.30	(–0.42, –0.19)	–0.15	0.00001	BIBCI	13.22
Ricciardelli & McCabe (2001)	–0.39	(–0.51, –0.27)	0.19	0.00001	BIBCI	13.22
Ricciardelli, McCabe, & Banfield (2000)	0.47	(0.03, 0.91)	0.23	0.04386	Own	Not specified
Tiggemann (2005)	–0.08	(–0.19, 0.03)	–0.04	0.14948		
Body Satisfaction	–0.22	(–0.33, –0.11)	–0.11	0.00007	SATAQ	14.37
Body Esteem	–0.08	(–0.19, 0.03)	–0.04	0.14916	ASI	14.37
Body Satisfaction	–0.06	(–0.17, 0.05)	–0.03	0.27939	EAT	14.37
Body Satisfaction	0.02	(–0.09, 0.13)	0.01	0.71848	DFM	14.37
Vartanian, Giant, & Passino (2001)	–0.69	(–0.97, –0.42)	–0.33	0.00000	DDFRQ	22.60

Note. Underlined values, in the table, represent the overall effect size for each study, RSE = Rosenberg Self–Esteem scale, DFM = Drive for Muscularity, PAM = Positive Attitudes Toward Muscularity, SPAS = Social Physique Anxiety Scale, DMS = Drive for Muscularity Scale, EAT = Eating Attitudes Test, BCS = Body Comparison Scale, BCI = Body Change Inventory, ChEAT = Children's Version of the Eating Attitudes Test, BSC = Body Self–Consciousness Questionnaire, BIS = Body Image Scale, VAS = Visual Analog Scale, BES = Body Esteem Scale, SATAQ = Sociocultural Attitudes Toward Appearance Questionnaire, BIBCI = Body Change Inventory, SCCS = Self–Concept Clarity Scale, BA = Body Assessment Scale, DFT = Drive for Thinness, ASI = Appearance Schemas Inventory, DDFRQ = Dual Dimension Figure Rating Questionnaire, Own = researcher created. † This study did expose male participants to pictures, however the statistics required for classification into the experimental study category (e.g., means and standard deviations, *F*–test, *t*–test) were not provided. Rather, the statistics used to calculate effect sizes were correlation coefficients between each self–image variable (body esteem and body satisfaction) and responses regarding how much the participants liked to look like the images in the pictures, how much they wanted to look like the images in the pictures, and the importance of looking like the images in the pictures. Thus, because the statistical information provided are correlation coefficients, and a test of the difference between muscular compared to non–muscular media images was not conducted, the study was coded as a correlational study, rather than an experimental study.

(Hedges, 1983; Hedges & Olkin, 1985), suggesting that moderators could potentially influence the overall effect size estimate. Both overall analyses showed significant heterogeneity, which justified conducting moderator analyses (Rosenthal & Rubin, 1979). Analysis of the overall effect size calculations revealed that 8 of the 15 studies (53% of the sample) would have been needed to be eliminated in order to achieve homogeneity. See Table 2 for effect size estimates for the levels of each moderator to assess how the relationship differs for all studies.

Moderator analyses were conducted to examine the effect that each variable had on the relationship between exposure to muscular ideal images and negative self–image development in males, and to examine specific comparisons within each moderator. First, in order to estimate an overall difference of the impact pressure from the mass media had on the three self–image constructs and outcome variables, an overall effect size was calculated for each construct. For the following moderator analyses the effect sizes were averaged for each study. This is appropriate because using more than one effect size within a given study may give too much weight to the results of that study, arbitrarily inflating the sample size of the meta–analysis which would make the error estimate less influential increasing the probability of making a Type 1 error (Wolf, 1986). Since self–image is a multivariate construct, it is appropriate to subgroup and combine each unique construct, which would not inflate the sample size while still providing the effect size estimate of the overall relationship (Rosenthal & DiMatteo, 2001). In many studies, not all three constructs that measure body image were represented, and/or an effect was found for one construct but not the other (e.g., body esteem, but not body satisfaction). In order to estimate an effect size estimate for each self–image construct while not increasing the probability of making a Type 1 error, we averaged effect size estimates for each construct across studies.

We synthesized the effect size estimates (and weighted it by the sample size) for each negative self–image construct to assess the effect for each specific construct. For example, all of the effect size estimates that assessed body esteem were statistically aggregated in order to determine the extent to which body esteem is affected by exposure to the ideal male image. This process was repeated for body satisfaction and self–esteem.

TABLE 2. Effect Size Estimates for Moderators for Correlational Studies

				95% CI		
Moderator	**Variable**	***k***	***d***	**Lower**	**Upper**	***r***
Body Image	Body Esteem	11	–0.22	–0.27	–0.16	–.11
Construct	Body Satisfaction	35	–0.19	–0.21	–0.16	–.10
	Self–esteem	1	–0.72	–0.95	–0.49	–.002
	Outcomes	12	–0.16	–0.20	–0.12	–.08
Specific	Behavioral	9	–0.18	–0.23	–0.13	–.17
Outcomes	Psychological	3	–0.10	–0.19	–0.01	–.01

The results consisted of significant negative effect sizes indicating that pressure from the mass media was associated with negative effects for each of the dependent variables: body esteem, $d = –0.22$, $\kappa = 11$, CI: –0.27 to –0.16, $r = –.11$, body satisfaction, $d = –0.19$, $\kappa = 35$, CI: –0.21 to –0.16, $r = –.10$, and outcomes, $d = –0.16$, $\kappa = 12$, CI: –0.20 to –0.12, $r = –.08$. Self–esteem was also significantly related to exposure to the ideal media image, $d = –0.72$, $\kappa = 1$, CI: –0.95 to –0.49, $r = .002$, although this may be a function of having only one study in this analysis.

Using the same rationale and procedures used for analysis of the negative self–image variables, all of the effect size estimates for the outcome variables (operationally defined as a behavioral representation of having a negative self–image) were categorized into psychological disorders or behavioral consequences and were statistically aggregated to determine the behavioral component of muscular male image exposure. Analyses of these effect sizes showed that there was a negative relationship between pressure from the mass media and behavioral outcomes, $d = –0.18$, $\kappa = 9$, CI: –0.23 to –0.13, $r = –.17$, suggesting that behavioral outcomes are more likely for those with higher levels of media exposure (i.e., pressure). The results from the psychological outcomes suggest that pressure from the mass media did not influence the probability of these outcomes, as the confidence interval includes zero, $d = –0.10$, $\kappa = 3$, CI: –0.19 to 0.01, $r = –.01$, but trends in this analysis would suggest that exposure to the ideal image are related to these outcomes.

Overall, these findings suggest that body esteem is the most affected outcome variable, which provides evidence that the way

males feel about their body is related to pressure from the mass media. Further, the majority of effect sizes were negative indicating that there is a relationship between pressure from muscular media and negative self–images.

To determine if there is a relationship between pressure from the mass media and negative self–images varies by participant age, a moderator analysis was conducted. The results show that there was a significant relationship between the mean age of the participants and the negative self–image obtained, $Z = -2.64$, $p < .01$. The direction of this result suggests that the college–aged participants had a stronger relationship between pressure from the mass media and negative self–images. As evidenced by the Z statistic, as the age of the participants increases, the overall d value decreases. Thus, as the participants got older, they had a higher negative relationship between pressure from the mass media and their self–image. This result is important because this suggests that even though males may develop a negative self–image due to mass media pressure, the relationship becomes stronger into early adulthood.

DISCUSSION

The purpose of Study 1 was to synthesize the relevant literature on the relationship between media pressure and negative body image in males. Results showed an overall negative effect size estimate, suggesting that mass media pressure is related to body image concerns in male participants. Specifically, pressure from the mass media was related to more negative body esteem, body satisfaction, and self–esteem and a greater probability of psychological and behavioral outcomes associated with having a negative body image. Finally, age moderated the relationship between media pressure and negative body image, such that there was a negative relationship between the effect size estimate and age: older participant males had a stronger relationship between body image concerns and pressure from the mass media.

STUDY 2

The purpose of Study 2 was to meta–analyze the relevant literature of the experimental studies which investigated the effect that expo-

sure to a stimulus had on the body image of male participants. One limitation to Study 1 was that the primary literature synthesized was correlational. Thus, a causal connection between pressure from the mass media and negative body image cannot be made from the results of Study 1, although the results do provide an impetus for such a relationship. Study 2 sought to make a closer approximation of a causal relationship between exposure to muscular images and negative self–images by synthesizing only experimental studies. A typical experimental study consisted of randomly assigning males to view either a muscular or a nonmuscular male media depiction and then having these males complete measures associated with their negative self–image.

The same inclusionary criteria and search terms used in Study 1, with the exception that the literature synthesized in Study 2 had to include the presentation of a media image of a muscular male. Using these criteria, 10 studies were identified for inclusion in the meta–analysis. These studies contributed 33 effect sizes and included 755 male participants.

CODING OF MODERATORS

Identical to Study 1, the average age of the participants and the construct to assess self–image were independently coded for each study by the first and second authors, and all reliabilities were acceptable ($r = 1.00$, $r = 1.00$ for age, $\kappa = 1.00$ for negative self–image construct measured, and $\varphi = 1.00$ for outcome measured). Two additional moderators were coded for the purpose of Study 2. The first moderator was the type of media format (television, magazines, action figures, or none) used. Action figures were included as acceptable stimuli for multiple reasons. One was to add more studies and effect size estimates, hence increasing the statistical power of the results. Another was because the majority of the public sees professional wrestlers either on television or in magazines, and thus, action figures of these wrestlers are just another representation of the images. Theoretically, action figures would be a sociocultural representation in both the tripartite model and the Cafri et al. model because wrestling action figures are often extremely muscular (Pope et al., 1999) and provide males with another stimulus for social body comparison. The reliability of this moderator was acceptable, $\kappa = .97$.

Finally, the coders reported dichotomous codings for the muscularity of the stimuli (athletically or extremely). Athletically muscular stimuli were images of a body that was muscular, but attainable (e.g., Ken doll from Barlett et al., 2005), while extremely muscular images were images of bodies that cannot be realistically attained without steroid usage (e.g., the Hulk from Barlett et al., 2005). The results show that the two coders had acceptable reliabilities, assessed using the phi coefficient, for the muscularity of the stimuli, $\varphi = .91$. All discrepancies were resolved by discussion between the two coders.

RESULTS

The results from the meta–analysis using only the experimental studies showed that the overall effect size was $d = -0.22$, $p < .0001$; CI: –0.30 to –0.14, suggesting that after males were exposed to muscular ideal images, they had a higher negative self–image. The test for heterogeneity was nonsignificant, $Q_W(32) = 47.58$, n.s., suggesting that the effect that the exposure to muscular ideal images has on negative self–images may be consistent across the male population. Table 3 lists all effect size estimates. Due to the possible violation of the assumption of independence of effect sizes, we calculated one effect size per study using a weighted averaging procedure. The overall analysis conducted showed effect sizes were, according to Cohen's (1988) conventions, a small to medium effect size. Furthermore, there was again nonsignificant heterogeneity across these effect sizes, $Q_B(9) = 11.29$, n.s., suggesting that the overall relationship was not influenced by moderators. The relationship between exposure to the mass media and negative self–images in males is consistent across the literature. The *fail–safe N* for the experimental studies was 280 studies, which indicates that this was a robust effect given the absence of unpublished literature.

The results consisted of significant negative effect sizes indicating that the exposure to the ideal body image was associated with negative effects for each of the dependent variables: body esteem, $d = -0.40$, $\kappa = 7$, CI: –0.54 to –0.26, body satisfaction, $d = -0.25$, $\kappa = 14$, CI: –0.32 to –0.17, and outcomes, $d = -0.24$, $\kappa = 12$, CI: –0.36 to –0.12. Self–esteem was not significantly related to exposure to the ideal media image, $d = -0.03$, $\kappa = 7$, CI: –0.14 to 0.18, as the confidence interval for the effect size estimate included zero. Examining the relationship

TABLE 3. Effect Size Estimates for Experimental Studies

Study	*d*	95% CI	*r*	*p*	Measure	Stimuli	Avg. Age
Agliata & Tantleff–Dunn (2004)	–0.26	(–0.57, 0.05)	–0.13	0.10701			
Body Satisfaction	–0.32	(–0.63, 0.00)	–0.15	0.04814	SATAQ	Videos**	21.80
Depression	–0.43	(–0.74, –0.12)	–0.21	0.00796	VAS	Videos**	21.80
Anxiety	–0.02	(–0.34, 0.29)	–0.17	0.88383	VAS	Videos**	21.80
Barlett et al. (2005, Study 1)	–0.25	(–0.83, 0.33)	–0.12	0.39839			
Self–esteem	0.10	(–0.48, 0.67)	0.05	0.74266	RSE	AF**	18.90
Body Esteem	–0.62	(–1.21, –0.04)	–0.30	0.03783	MBIES	AF**	18.90
Body Satisfaction	–0.23	(–0.81, 0.34)	–0.12	0.42841	BSQ (adjust)	AF**	18.90
Barlett et al. (2005, Study 2)	–0.33	(–0.79, 0.13)	–0.16	0.15036			
Body Esteem	–0.60	(–1.14, –0.05)	–0.29	0.03563	MBIES	AF**	19.39
Body Satisfaction	–0.15	(–0.68, 0.39)	–0.07	0.59822	BSQ (adjust)	AF**	19.39
Self–esteem	–0.23	(–0.77, 0.30)	–0.12	0.40045	RSE	AF**	19.39
Body Esteem	–0.86	(–1.41, –0.30)	–0.39	0.00300	MBIES	AF**	19.39
Body Satisfaction	–0.06	(–0.59, 0.47)	–0.03	0.82109	BSQ (adjust)	AF**	19.39
Self–esteem	–0.08	(–0.60, 0.45)	–0.04	0.78021	RSE	AF**	19.39
Barlett et al. (2005, Study 3)	–0.10	(–0.63, 0.43)	–0.05	0.71862			
Body Esteem	–0.15	(–0.68, 0.38)	–0.08	0.58096	MBIES	AF*	18.90
Body Satisfaction	–0.37	(–0.90, 0.17)	–0.18	0.18120	BSQ (adjust)	AF*	18.90
Self–esteem	0.21	(–0.32, 0.74)	0.11	0.43906	RSE	AF*	18.90
Grogan, Williams, & Conner (1996)	–0.82	(–1.41, –0.23)	–0.38	0.00744	BIS	Pictures*	Not specified
Hausenblas et al. (2003)	–0.49	(–1.16, 0.18)	–0.24	0.16529			
Anxiety	–0.36	(–1.09, 0.36)	–0.18	0.33524	VAS	Slides**	20.80
Depression	–0.30	(–1.02, 0.42)	–0.15	0.42862	VAS	Slides**	20.80
Body Satisfaction	–0.33	(–1.05, 0.39)	–0.17	0.37820	VAS	Slides**	20.80
Anxiety	–0.26	(–0.87, 0.34)	–0.13	0.40367	VAS	Slides**	20.80
Depression	–0.49	(–1.10, –0.12)	–0.24	0.12435	VAS	Slides**	20.80
Body Satisfaction	–1.19	(–1.85, –0.54)	–0.52	0.00044	VAS	Slides**	20.80

Humphreys & Paxton (2004)	–0.09	(–0.48, 0.30)	–0.04	0.65779			
Body Satisfaction	0.13	(–0.25, 0.52)	0.07	0.50464	BIBCI	Magazine**	15.60
Body Satisfaction	0.17	(–0.23, 0.56)	0.08	0.41075	SATAQ	Magazine**	15.60
Body Satisfaction	–0.01	(–0.50, 0.29)	–0.05	0.60907	BCS	Magazine**	15.60
Self–esteem	–0.09	(–0.48, 0.31)	–0.04	0.66786	RSE	Magazine**	15.60
Self–esteem	0.03	(–0.36, 0.43)	0.02	0.86456	SCCS	Magazine**	15.60
Depression	–0.10	(–0.49, 0.29)	–0.05	0.61577	VAS	Magazine**	15.60
Kalodner (1997)	–0.43	(–1.42, –0.18)	–0.21	0.18423			
Body Satisfaction	–0.44	(–1.05, 0.17)	–0.22	0.16817	BSC (private)	Magazines*	18.97
Body Esteem	–0.45	(–1.05, 0.17)	–0.22	0.16817	BSC (public)	Magazines*	18.97
Body Esteem	–0.41	(–1.02, 0.21)	–0.20	0.20020	BSC (self)	Magazines*	18.97
Leit, Gray, & Pope (2001)	–0.55	(–0.99, –0.11)	–0.26	0.01637	SM	Slides**	19.80
Lorenzen, Grieve, & Thomas (2004)	–0.28	(–0.55, –0.01)	–0.14	0.04686	BA	Pictures**	20.20

Note. Underlined values, in the table, represent the overall effect size for each study, MBIES = Male Body Image Esteem Scale, BSQ (adjust) = Body Shape Questionnaire (adjusted), RSE = Rosenberg Self–Esteem scale, BSC = Body Self–Consciousness Questionnaire, VAS = Visual Analog Scale, SATAQ = Sociocultural Attitudes Toward Appearance Questionnaire, BIBCI = Body Change Inventory, SM = Somatomorphic Matrix, **Extremely Muscular Rating, *Athletically Muscular Rating, AF = Action Figure.

between exposure to muscular images and the psychological disorders showed that there was a negative relationship between exposure to ideal images and psychological disorders, $d = –0.25$, $\kappa = 7$, CI: –0.36 to –0.12. No behavioral outcomes were assessed in the experimental studies. Overall, these findings suggest that body esteem is the most affected, which provides evidence that the way males feel about their body is related to exposure to muscular male depictions, but not significantly more affected than their body satisfaction and self–esteem.

To determine the relationship between exposure to the ideal body image and negative self images as a function of media type and body type of the stimuli, a moderator analysis was conducted. The results show that the muscularity rating of the stimulus was not a significant moderator, $Q_B(1) = .40$, *n.s*. Both effect size estimates for the extremely muscular, $d = –0.29$, $\kappa = 7$, CI: –0.44 to –0.14, and athletically muscular male images, $d = –0.17$, $\kappa = 3$, CI: –0.50 to 0.16, were negative, although the confidence interval for the athletically muscular males included zero. Therefore, these results suggest that only the extremely muscular male images are related to negative self–images in males. It should be noted, however, that these confidence intervals overlap indicating that the effect sizes are not significantly different.

Moderator analyses indicated that the form of media image presentation did not moderate the relationship between exposure to the ideal body image and negative self–image development, $Q_B(2) = 0.09$, *n.s*. This may be a function of the low number of studies in each media format. However, this suggests that relationships between the mass media and negative self–images are similar for television, $d = –0.26$, $\kappa = 1$, CI: –0.57 to 0.05, magazines, $d = –0.28$, $\kappa = 6$, CI: –0.46 to –0.11, and action figures, $d = –0.23$, $\kappa = 3$, CI: –0.53 to 0.06. See Table 4 for these results.

To assess the size of relationships between media exposure to the ideal male image and negative self–images for men and women, the overall effect size estimate of this meta–analysis was compared to the overall effect size estimate of the meta–analysis conducted by Groesz et al. (2002). The current meta–analysis examined the influence of the mass media on men, while the meta–analysis by Groesz et al. (2002) examined women. Also, the current meta–analysis included experimental studies that emphasized the muscular ideal male image while the Groesz et al. (2002) meta–analysis used only experimental

studies that included a thin ideal female image. A high degree of similarity would suggest that males and females are both prone to feeling worse about their bodies after viewing media images of their particular ideal to similar degrees. Caution in the interpretation of the proceeding results is warranted, as we did not use a specific statistical test to compare the effect size estimates between the Groesz et al. (2002) and the current meta–analysis. Rather, examination of the confidence intervals and effect sizes estimates were conducted. Ninety–five percent confidence intervals represent an estimate of population variance of an effect size (Aron & Aron, 2003). The extent to which overlap occurs between the confidence intervals of different effect sizes provides an indirect test to see if the estimated parameters for the populations differ. If there is overlap, this suggests that the samples used to produce the parameter estimates may have been taken from the same population distribution of effect sizes (i.e., having the same effect sizes). If there is no overlap that suggests the samples may have been taken from different population distributions of effect sizes (i.e., having different effect sizes).

Upon comparing the overall effect size estimate for the meta–analysis for experimental studies, d = –0.22, CI: –0.30 to –0.14, and the Groesz et al. (2002) meta–analysis, d = –0.31, CI: –0.40 to –0.23, one can see that the effect size estimates are similar. This shows that media depictions of ideal bodies is related to negative self–images in both men and women, as evident by the similar confidence intervals from the Groesz et al. (2002) study and the current study. The great deal of overlap in the confidence in these two meta–analyses suggest that negative self–image concerns produced by the mass media are not specific to women as once thought (Cohane & Pope, 2001).

DISCUSSION

Similar to the findings from Study 1, results from the current study showed an overall negative effect size estimate, suggesting that after exposure to muscular media stimuli, male participants had more negative body images. The results also showed that body satisfaction and body esteem were both negatively affected, and psychological outcomes (e.g., depression) were likely to be increased, after exposure to muscular stimuli. No moderators were statistically significant. The results from Study 2 offer a closer approximation of

TABLE 4. Effect Size Estimates for Moderators for Experimental Studies

				95% Confidence Interval	
Moderator	**Variable**	***k***	***d***	**Lower**	**Upper**
Body Image Construct	Body Esteem	7	–0.40	–0.54	–0.26
	Body Satisfaction	14	–0.25	–0.32	–0.17
	Self–esteem	7	–0.03	–0.14	0.08
	Outcomes	7	–0.24	–0.36	–0.12
Specific Outcomes	Behavioral	0	0.00	0.00	0.00
	Psychological	7	–0.24	–0.36	–0.12
Media Form	TV	1	–0.26	–0.57	0.05
	Magazine	6	–0.28	–0.46	–0.11
	Action Figures	3	–0.23	–0.53	0.06
Stimuli Body	Extremely Muscular	7	–0.29	–0.44	–0.14
	Athletically Muscular	3	–0.17	–0.50	0.16

causality because of the experimental nature of the studies synthesized. We are not arguing that the mass media is the only variable that influences body image; however, these results suggest that the mass media is an important factor in how males think and feel about their bodies.

GENERAL DISCUSSION

The current meta–analyses were conducted in order to determine the relationship between viewing muscular male images presented by the mass media and negative self–images. Overall, these results strongly suggest that exposure to these ideal images are associated with males feeling worse about their bodies. Exposure to muscular ideals were associated with lower levels of body esteem and body satisfaction and with increased levels of negative behavioral and psychological outcomes.

The results from the meta–analyses also showed that these effects are shown in both correlational and experimental designs. Both meta–analyses showed a similar pattern of results, and the confidence intervals for both effect size estimates overlap. Interestingly, the age of the participants did moderate the relationship between ideal male exposure and negative self–image variables in the correlational studies. College–aged males had a stronger relationship between pressure from the mass media and negative self–im-

ages (assessed using experiments or correlations) than did adolescent males.

For the experimental studies, results showed that the types of media format and types of muscular stimuli (extremely or athletically) did not moderate the overall relationship. This suggests that the stimuli presented in experimental studies do not have to be extremely muscular to produce negative self–images. Theoretically, this suggests that any muscular stimulus that is shown to males will initiate the predicted social comparison process and internalize society's standards of muscularity, which is predicted to increase negative self–images. Finally, the overall effect size was comparable to the effect size from a previous meta–analysis looking at women. The 95% confidence interval around the overall effect size estimates from the current meta–analysis (Study 2) and the one from Groesz et al. (2002) overlapped, which suggests that both men and women had a similar relationship between exposure to the ideal body in the mass media and feeling worse about their bodies.

These findings contribute to the literature in multiple ways. The first contribution is that it helps to dispel any controversy in the literature about what the effects are shown between pressure from the mass media and negative self–image in men, by synthesizing those studies that did (e.g., Grogan, Williams, & Conner, 1996; Hausenblas, Janelle, Gardner, & Hagan, 2003; Humphreys & Paxton, 2004; Murnen, Smolak, Mills, & Good, 2003) and did not (e.g., McCabe & Ricciardelli, 2003; Ricciardelli, McCabe, & Banfield, 2000) support the hypothesis that pressure from the mass media produced negative self–images. Another contribution is that these meta–analyses demonstrate the extent to which each of the three factors and specific outcomes is affected. In other words, these meta–analyses offer empirical evidence to the extent to which body esteem, body satisfaction, self–esteem, and behavioral outcomes are affected by mass media pressure.

Although the results from both meta–analyses suggest that the relationship between pressure from the mass media and each of the previously mentioned variables were similar, it is important to emphasize that this result does not suggest that these constructs are interchangeable. Each construct (body esteem, body satisfaction, and self–esteem) is defined and measured differently, and the results

from the meta–analyses do not suggest convergent validity between these variables.

The results from the current meta–analyses offer support for the tripartite influence model (Smolak et al., 2005). The results highlight a strong link between sociocultural factors (specifically pressure from the mass media) and psychological factors (specifically negative self–image concerns). Further, the results from the two meta–analyses support the indirect link between pressure from the mass media and behavioral and psychological outcomes. However, to fully test the predictions of this model, future meta–analyses should synthesize the relevant literature that has provided evidence for a relationship between pressure from the mass media and internalization and social comparison, which are the two proposed mediating variables. Although the focus of the current meta–analyses was on the relationship between the mass media and negative self–images in males, future meta–analytic work could synthesize the relevant literature on how peers and parents (along with the mass media) influence negative self–images. Although parents and peers are important sociocultural influences in both the tripartite influence model and the Cafri et al. model, the current meta–analyses did not focus on these influences, because we were interested in the impact that pressure from the mass media had on negative self–images, not parents or peers.

Results also support the predictions posited by the Cafri et al. model, which states that pressure from the mass media is related to negative self–images and negative behavioral outcomes. Results from the meta–analysis of correlational studies showed that age did moderate the overall relationship between pressure from the mass media and negative self–image. The results from the meta–analysis of experimental studies do not show similar effects. It is predicted that this is the case because there is more age range variation in the correlational studies than in the experimental studies. However, these results do suggest that age is an important moderating variable, as suggested by the Cafri et al. model.

These meta–analyses are not without limitations. For instance, in Study 1, all of the studies were correlational, and exposure to the muscular male image cannot be confirmed to have negatively affected the self–image of these participants because it is unclear what image the participants were retrieving in memory at the time the scales were administered. In other words, perhaps the males were

thinking of nonmuscular images and felt better, or worse, about their bodies. Given the frequency that muscular images are used in the mass media (Pope et al., 1999), it is likely, but not certain, that participants were retrieving images that were idealized, however this is probably not the only message the participants retrieved. For instance, muscular male images in the mass media (i.e., via magazines, videos, and action figures) are complex and may also convey cues about aggression and/or masculinity.

Another limitation is that the meta–analysis for the correlational studies (Study 1) synthesized literature which used different methods for assessing pressure from the mass media. The media scales used in the primary literature either specifically ask if viewing the mass media provides viewers with the idea of increasing muscles or decreasing weight (McCabe, Ricciardelli, & Finemore, 2002; Ricciardelli & McCabe, 2003), or just by asking participants how many hours of media (i.e., television, magazines, movies) the participants watch and by having participants indicate how often they view specific "male–directed magazines" (Hatoum & Belle, 2004, p. 400). Thus, there are multiple methods for assessing how often participants view the media which is correlated with negative self–image variables. The limitation is that there is a difference between the amount of exposure to the mass media and the contents of such stimuli, and, unfortunately, both types of questions were synthesized. However, there has not been much work done, and we have to synthesize the literature available. Future research needs to make a clear distinction between these two types of measures.

A final limitation is that the current meta–analyses did not include any unpublished studies. The goal of a meta–analysis is to synthesize all of the relevant literature in a domain, and not including unpublished studies is a limitation. However, the current meta–analyses had a *fail safe N* of 300 correlational studies and 280 experimental studies, which leads us to believe that these effects would be robust if unpublished work would have been included.

The main finding from the current meta–analyses is that there is a significant relationship between exposure to muscular media images and negative self–images in males. These meta–analyses sufficiently showed that males and females are similarly affected after exposure to idealized images, the type of media format and type of stimulus did not significantly moderate the overall relationship

(Study 2), and older males are more negatively influenced by muscular media images than younger males (Study 1). It is speculated that older participants are more affected by pressure from the media for multiple reasons. First, older males have seen more media than younger males (as shown in correlational studies), and, thus, have seen more pictures, movies, and television shows involving muscular men. Second, older, college–aged participants have gone through puberty at the time of testing, which younger participants (aged 13 to 14; Muris et al., 2005) may not have gone through puberty. Research has shown that puberty timing is related to negative self–image in males (see Cafri et al., 2005), therefore, older participants who have gone through puberty may be more impacted by pressure from the mass media than younger participants.

Furthermore, the findings from these meta–analyses are robust to differences in research designs, as the effect sizes from the two meta–analyses, with correlational and experimental studies, are similar. Overall, our results combined with the literature on women, indicate that both men and women are affected by exposure to idealized images in the mass media, which is often associated with negative feelings and thoughts about their bodies. This suggests that the use of muscular male models or skinny female models in the mass media is potentially damning to "every–body."

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