

**PARENT, PEER, AND MEDIA INFLUENCES  
ON BODY IMAGE  
AND STRATEGIES TO BOTH INCREASE AND DECREASE  
BODY SIZE AMONG ADOLESCENT BOYS AND GIRLS**

**Marita P. McCabe and Lina A. Ricciardelli**

**ABSTRACT**

This study investigated the nature of body image and body change strategies, as well as the sociocultural influences on these variables, among a group of 1,266 adolescents (622 males, 644 females). In particular, it investigated weight gain and increased muscle, as well as weight loss. It was found that females were less satisfied with their bodies and were more likely to adopt strategies to lose weight, whereas males were more likely to adopt strategies to increase weight and muscle tone. Respondents with higher body mass index (BMI) evidenced greater body dissatisfaction and more weight loss strategies, but there were no differences between BMI groups in weight gain or strategies to increase muscles. Weight gain and strategies to increase muscles were more likely to be undertaken by older adolescents, but there were no grade level differences in weight loss. Media influences to alter weight, as well as feedback from mother, father, and both male and female peers, were greater for females. There were few grade level or BMI differences in regard to any of the sociocultural influences. The importance of these findings in terms of providing a better understanding of factors which may lead to a disturbed body image and body change disorders, particularly among adolescent boys, is discussed.

Researchers and clinicians have recently recognized that there has been an inadequate conceptualization and assessment of body image and associated behavioral problems among males. By focusing on the same areas that concern females, many problem areas for males have been neglected. In particular, the literature has focused on weight loss, with little research on weight gain or strategies to increase muscle tone. Although disorders that may develop from a preoccupation with restrictive food practices are now recognized (Keel, Fulkerson, & Leon, 1997; Stice, 1998), there is little information on the impact, among males, of binge eating, excessive exercise, or other behaviors associated with disturbed body image (Middleman, Vazquez, & Durant, 1998;

Lina A. Ricciardelli, School of Psychology, Deakin University, Australia.

Reprint requests to Marita P. McCabe, School of Psychology, Deakin University, 221 Burwood Highway, Burwood, Victoria 3125, Australia. Electronic mail may be sent to maritam@deakin.edu.au.

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Moore, 1993). In addition to disturbed eating and exercise patterns, which may lead to significant health problems, males with a poor body image may develop psychological problems, such as depression, low self-esteem, and anxiety disorders (Braun, Sunday, Huang, & Halmi, 1999).

The lack of focus on the determinants of body image disturbance among males may be due to the finding that eating disorders, such as anorexia nervosa and bulimia nervosa, affect a substantially smaller percentage of adolescent males than females (Braun et al., 1999; Sharp, Clark, Dunan, Blackwood, & Shapiro, 1994). However, research has largely failed to examine other consequences of disturbed body image; for example, binge eating, excessive exercise, and steroid use. Therefore, the extent of disturbed body change activities adopted by males has probably been underestimated.

Dieting is the main form of weight regulation used by females (Huon, 1994), but is less likely to be used by males (Drewnowski, Kennedy, Kurth, & Krahn, 1995; Fox, Page, Armstrong, & Kirby, 1994; Moore, 1993; Tiggemann, 1994). The conclusion drawn from this finding is that males engage in fewer behaviors to alter their body size and shape. However, dieting usually takes males further away from their ideal body. Perhaps a more accurate interpretation of this finding is that the measures to assess body change techniques have been designed for females and thus do not focus on techniques used by males (Fox et al., 1994). In fact, there has been little assessment of strategies to increase body bulk, although research has demonstrated that males are fairly evenly divided between those who want to lose weight and those who want to gain weight (Cohn & Alder, 1992; Drewnowski & Yee, 1987; Raudenbush & Zellner, 1997). Further, few studies have evaluated the influence of family, peers, or the media on weight gain or strategies to increase muscles. Some research suggests that parents play a role in body image disturbances among girls (Wertheim, Paxton, Schultz, & Muir, 1997), but we know little about the role of parents in the development of body image among boys.

Parents appear to play an important role in transmitting sociocultural messages regarding the ideal body to adolescents (Stice, 1994). For females, the sociocultural ideal of a thin body is very clear (Cash & Henry, 1995; Monteath & McCabe, 1997; Slade, 1994; Wertheim et al., 1997). While mothers have a strong influence on adolescent females' attitudes and behaviors (Moreno & Thelen, 1993; Mukai, 1996), less is known about the role of fathers, although one study (Moreno & Thelen, 1993) found that mothers and fathers did not differ in the dieting encouragement given to their daughters. Although most of

these studies have focused on females, a study by Schwartz, Phares, Tantleff-Dunn, and Thompson (1999) found that, among both adult males and females, parents were perceived to be more likely to provide feedback to daughters than to sons regarding their appearance. There was no difference between males and females on the perceived level of feedback received from mothers, but females were likely to report receiving feedback from their fathers. However, the study did not investigate feedback on eating patterns or other strategies to either increase or decrease weight.

Our own research has indicated that fathers are perceived to have a greater influence on their daughters' attitudes, and mothers are perceived to have a greater influence on their sons' attitudes (Vincent & McCabe, 1999). In a subsequent study of adolescent males, we found that mothers were seen to have had a strong influence on body image, whereas fathers were seen to have had a strong influence on levels of exercise and eating (Ricciardelli, McCabe, & Banfield, 1999). Mothers' influence was through positive comments, whereas fathers' influence was through criticism.

Our findings highlight the importance of both same-sex and opposite-sex role models. For girls, research has focused on the influence of same-sex models on weight loss behaviors. Similarly, our research has shown that same-sex role models encourage boys to exercise more in order to change their body shape and size (Vincent & McCabe, 1999).

Most of the research on role models has focused on adolescent girls. For example, Levine, Smolak, Moodey, Shuman, and Hessen (1994) found that a substantial number of adolescent girls talked with their female friends about weight, shape, and dieting at least sometimes. In contrast, Paxton, Wertheim, Gibbons, Szmukler, Hillier, and Petrovich (1991) found that few adolescent girls indicated that their friends encouraged them to diet. These findings demonstrate the importance of obtaining specific information about the nature of the feedback provided by peers. It is also important to determine whether the feedback is from male or female peers, and whether such feedback is relevant to adolescent boys as well as girls.

The role of opposite-sex role models has been largely neglected in the study of body image among both girls and boys. However, opposite-sex role models are likely to play an important role during adolescence, as this is the time when adolescents' bodies are changing and an interest in the opposite sex develops (Swarr & Richards, 1996).

Research has consistently demonstrated that the media, particularly magazines, play an important role in body image and disturbed eating among adolescent girls (Levine, Smolak, & Hayden, 1994; Paxton et

al., 1991). The extent to which media messages also impact male body image and behaviors directed at weight gain and increased muscles has yet to be determined. Kalodner (1997) found that looking at thin models resulted in feelings of anxiety and body dissatisfaction among females, but not males. However, the images of thin models may not have been relevant to the male participants. If the male images had focused on muscle tone, different results might have been obtained.

These results highlight the importance of investigating sociocultural pressures to lose weight, gain weight, and increase muscle, using measures that are applicable to both males and females. The present study sought to identify differences in disturbed body image and body change strategies between adolescent boys and girls. It explored gender, age, and body mass index (BMI) in relation to strategies to increase weight and muscles, as well as to decrease weight. BMI was included because research has demonstrated that girls of average weight often are dissatisfied with their bodies and engage in dieting to reduce their weight (Nelson-Steen, Wadden, Foster, & Anderson, 1996; Rodin, 1993), whereas overweight boys are less likely to engage in weight loss behavior (Nelson-Steen et al., 1996). In addition, this study examined the nature of the messages from peers, family, and the media in regard to increasing weight and muscles, as well as reducing weight.

## METHOD

### *Participants*

The participants were 1,266 adolescents (622 males, 644 females) enrolled in grades 7–10. The mean age was 13.94 years ( $SD = 1.14$ ) for males and 13.78 years ( $SD = 1.09$ ) for females (range = 12 to 16 years). They were drawn from ten coeducational high schools in Melbourne, Australia. Seventy-seven percent were Anglo-Saxon, with the remainder being primarily from European countries and a minority from Asian countries.

### *Materials*

All adolescents completed the Body Image and Body Change Inventory (Ricciardelli & McCabe, 1999) and the Sociocultural Influences on Body Image and Body Change Questionnaire (McCabe & Ricciardelli, 2001). The Body Image and Body Change Inventory assesses body image satisfaction (ten items), body image importance (ten items), body change strategies to decrease weight (ten items), body change strategies to increase weight (ten items), body change strategies to increase

muscle tone (six items), binge eating (nine items), and food supplements (six items). The Sociocultural Influences on Body Image and Body Change Questionnaire assesses the influence of father, mother, best male friend, and best female friend (three items each): general feedback, feedback to gain weight and increase muscles, and feedback to lose weight and increase muscles. Feedback to increase muscles was combined with both feedback on weight loss and weight gain because both exploratory and confirmatory factor analyses on two adolescent samples have demonstrated that feedback on developing muscle tone does not occur on its own, but is linked with feedback on either weight loss or weight gain (McCabe & Ricciardelli, 2001). This questionnaire also assesses the influence of the media (nine items): the extent to which television and magazines give adolescents the idea that they should lose weight, gain weight, and improve muscle size. All items are rated on a 5-point Likert scale, and total scores are obtained by summing responses. Both of these instruments have demonstrated high levels of reliability ( $\alpha > .77$  for all scales), have been subject to both exploratory and confirmatory factor analysis, and have demonstrated good reliability and validity with a number of adolescent populations (McCabe & Ricciardelli, 2001; Ricciardelli & McCabe, 1999).

### *Procedure*

Permission was received from the Department of Education to solicit the participation of high schools within the State of Victoria in a study of body image and body change techniques among adolescent males and females. Both parental and student consent were obtained. Ninety-eight percent of those who were approached to take part in the study agreed to participate. The instruments were completed during a single class period.

## RESULTS

This study was designed to investigate gender, grade level, and BMI differences in body image and body change strategies, as well as socio-cultural influences on body image and body change strategies, among adolescents. The participants were divided into three groups on the basis of their BMI:  $>15\%$  overweight ( $n = 201$ ), within normal range ( $n = 849$ ), and  $>15\%$  underweight ( $n = 216$ ) (Must, Dallal, & Dietz, 1991). Must et al. (1991) based these groupings on anthropometric data available on 20,839 individuals between 6 and 74 years of age.

### *Body Image and Body Change Strategies*

Multivariate analyses of variance were conducted to determine gender, grade level, and BMI differences in body image satisfaction, body image importance, strategies to decrease weight, strategies to increase weight, strategies to increase muscle tone, extreme weight loss practices, and food supplements. Means and standard deviations are shown in Table 1.

The analyses demonstrated that there were significant multivariate effects for gender,  $F(7, 1258) = 78.11, p < .001$ ; BMI,  $F(14, 2516) = 5.29, p < .05$ ; and grade,  $F(21, 3774) = 2.77, p < .05$ . None of the interaction effects were significant.

Univariate analyses demonstrated that females evidenced significantly less body satisfaction than did males,  $F(1, 1263) = 118.76, p < .001$ ; placed greater importance on body size and shape,  $F(2, 1263) = 6.75, p < .01$ ; adopted more strategies to decrease weight,  $F(1, 1263) = 114.01, p < .001$ ; and adopted more restrictive eating practices,  $F(1, 1263) = 15.79, p < .001$ . Males evidenced significantly more strategies to increase weight,  $F(1, 1263) = 22.17, p < .001$ , and increase muscle tone,  $F(1, 1263) = 53.45, p < .001$ .

Levels of satisfaction with body varied for the different BMI groups,  $F(2, 1263) = 15.60, p < .001$ , with respondents from the highest BMI group showing less satisfaction than those in the normal group, who, in turn, showed less satisfaction than those in the underweight group. Further, strategies to decrease weight differed significantly for the three BMI groups,  $F(2, 1263) = 20.07, p < .001$ , with respondents from the highest BMI group adopting more strategies to decrease weight than either of the other two groups, and normal weight respondents adopting more strategies than underweight respondents. Extreme weight loss practices also differed for the three BMI groups,  $F(2, 1263) = 3.60, p < .05$ , with respondents from the highest weight group showing higher levels of bulimic types of behavior compared with either of the other two groups, which were not different from one another.

There was no grade level difference in importance of body, strategies to decrease weight, or restrictive eating. Grade level differences centered on body satisfaction,  $F(3, 1263) = 4.61, p < .01$ ; strategies to increase weight,  $F(3, 1263) = 3.01, p < .05$ ; strategies to increase muscle tone,  $F(3, 1263) = 3.19, p < .05$ ; and food supplements,  $F(3, 1263) = 5.91, p < .001$ . Post hoc tests revealed that adolescents in grade 7 showed significantly higher levels of body satisfaction than did those in grades 8, 9, and 10, who were not different from one another. Grade 9 students engaged in activities to increase weight and muscle tone significantly more than did grade 7 students, but there were no

Table 1. Means and Standard Deviations for Body Image and Body Change Strategies

	Grade										Gender			Body Mass Index	
	7		8		9		10		Male		Female		Underweight	Average weight	Overweight
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Body Image Satisfaction	10.55	3.40	11.61	3.50	11.41	3.42	11.31	3.34	10.00	2.84	12.60	3.53	10.12	11.41	11.90
													3.28	3.43	3.35
Body Image Importance	10.66	3.41	10.68	3.67	10.97	3.26	10.66	3.13	11.09	3.34	10.43	3.38	10.98	10.68	11.07
													3.44	3.40	3.12
Decrease Weight	24.60	6.06	22.82	7.75	24.88	6.25	24.24	7.02	21.60	7.28	26.58	5.18	23.22	23.68	26.92
													6.52	6.99	5.02
Increase Weight	26.41	5.34	26.49	4.05	27.47	4.12	26.52	4.96	27.22	3.38	26.35	5.10	26.78	26.83	23.22
													4.29	5.06	4.40
Muscle Tone	24.34	6.14	24.99	6.56	26.22	5.26	25.53	4.68	26.52	5.11	24.80	6.14	25.54	25.67	25.33
													5.46	5.86	5.50
Extreme Weight Loss	35.83	6.92	35.17	7.07	35.55	6.64	34.94	6.63	34.70	7.14	36.26	6.32	34.32	35.67	37.83
													7.25	6.80	5.95
Food Supplements	26.67	3.09	26.50	4.33	27.66	2.97	27.07	3.96	27.58	3.37	27.23	3.57	27.86	27.37	26.96
													3.11	3.38	4.38

significant differences between the other grade levels. Grade 9 students also showed significantly higher use of food supplements than did grade 8 students, but the other grade levels were not different from one another.

### *Sociocultural Influences on Body Image and Body Change Strategies*

Multivariate analyses of variance were conducted to determine differences in the influence of father, mother, best male friend, and best female friend (general feedback, feedback to gain weight and increase muscles, and feedback to lose weight and increase muscles), and influence of the media. Means and standard deviations for each of the sociocultural variables are shown in Table 2.

Multivariate analyses of variance were conducted to evaluate grade, gender, and BMI differences for each of the sociocultural variables. A significant multivariate effect was found for gender,  $F(9, 1234) = 8.75$ ,  $p < .001$ ; BMI,  $F(18, 2470) = 2.56$ ,  $p < .001$ ; and grade,  $F(27, 3708) = 2.03$ ,  $p < .01$ . None of the interaction effects were significant.

A closer examination of these differences demonstrated that females stated that they were significantly more influenced by the media than were males,  $F(1, 1264) = 7.30$ ,  $p < .01$ . There were no significant differences by BMI, gender, or grade level for the three father influences, except for father feedback to lose weight and increase muscle tone, which was significantly greater for the highest BMI group,  $F(2, 1263) = 3.79$ ,  $p < .001$ . General mother feedback was significantly greater for females than for males,  $F(2, 1263) = 12.26$ ,  $p < .001$ , as was mother feedback to lose weight and increase muscle tone,  $F(2, 1263) = 36.01$ ,  $p < .001$ . Mother feedback to lose weight and increase muscle tone was also significantly greater for the highest BMI group compared with the other two BMI groups (which were not different from one another),  $F(2, 1263) = 4.39$ ,  $p < .05$ . General feedback from best male friend was significantly greater for females than for males,  $F(1, 1263) = 6.56$ ,  $p < .01$ , as was feedback from best male friend to lose weight and increase muscle tone,  $F(1, 1263) = 6.13$ ,  $p < .05$ . Feedback from best male friend to lose weight and increase muscle tone was significantly greater for the highest BMI group compared with the other two BMI groups,  $F(2, 1263) = 3.11$ ,  $p < .05$ , which were not significantly different from one another. General feedback from best female friend was significantly greater for females than for males,  $F(1, 1263) = 13.54$ ,  $p < .001$ , and for adolescents in grade 10 than in the other grade levels,  $F(3, 1263) = 12.92$ ,  $p < .01$ . Best female friends were significantly more likely to encourage females rather than males to lose weight and increase muscle tone,  $F(1, 1263) = 7.35$ ,  $p < .01$ .



Table 2. Means and Standard Deviations for Sociocultural Influences

		Grade				Gender		Body Mass Index		
		7	8	9	10	Male	Female	Underweight	Average weight	Overweight
Father Feedback	<i>M</i>	8.70	8.56	8.94	9.37	9.27	8.68	8.99	8.94	9.29
	<i>SD</i>	2.38	2.79	2.69	3.18	2.88	2.69	3.06	2.69	3.04
Father Gain	<i>M</i>	27.40	27.30	27.45	27.79	27.94	27.09	27.96	27.51	27.29
	<i>SD</i>	3.54	3.79	3.73	3.03	3.02	3.92	3.47	3.60	3.31
Father Loss	<i>M</i>	18.24	18.46	17.96	18.19	17.98	18.47	17.62	18.24	18.37
	<i>SD</i>	1.85	1.91	1.97	1.99	1.78	2.04	1.96	1.97	1.43
Mother Feedback	<i>M</i>	9.21	8.53	8.53	8.14	8.10	9.13	8.89	8.60	8.51
	<i>SD</i>	3.42	2.80	2.88	2.57	2.85	3.04	3.40	2.86	3.10
Mother Gain	<i>M</i>	28.25	27.65	28.14	27.79	28.51	27.54	27.67	28.10	27.92
	<i>SD</i>	2.95	3.84	3.63	3.39	2.70	4.01	3.21	3.49	3.90
Mother Loss	<i>M</i>	18.72	18.99	18.73	18.71	18.24	19.39	18.15	18.90	19.12
	<i>SD</i>	2.05	2.37	1.84	1.87	1.61	2.27	1.75	2.07	2.05

Table 2 Continues

Table 2 Continued

	Grade				Gender		Body Mass Index		
	7	8	9	10	Male	Female	Underweight	Average weight	Overweight
Male Friend	9.77	9.02	8.94	8.62	8.57	9.60	9.44	8.98	9.49
Feedback	<i>SD</i> 3.07	2.96	2.61	2.58	2.76	2.81	3.18	2.74	2.74
Male Friend	27.17	26.58	27.30	26.42	26.74	27.22	27.23	27.07	26.41
Gain	<i>SD</i> 3.83	4.05	3.89	4.36	4.46	3.38	3.46	3.94	4.46
Male Friend	17.20	17.14	17.22	16.75	17.03	17.21	16.75	17.19	17.32
Loss	<i>SD</i> 2.03	2.07	1.82	1.91	1.90	1.99	2.16	1.88	2.00
Female Friend	8.31	8.70	8.83	9.59	8.16	9.59	8.99	8.71	9.26
Feedback	<i>SD</i> 2.38	3.06	2.77	3.42	2.90	2.91	3.06	2.90	2.90
Female Friend	27.93	27.41	28.17	27.11	27.57	28.00	27.29	27.82	27.96
Gain	<i>SD</i> 3.57	4.40	3.65	3.96	4.06	3.66	3.31	3.97	3.47
Female Friend	18.24	18.46	18.27	18.05	17.99	18.58	17.62	18.36	18.37
Loss	<i>SD</i> 1.79	1.65	1.53	1.76	1.38	1.89	1.96	1.73	1.43
Media	26.17	27.17	27.43	29.05	26.40	28.57	27.17	27.46	28.13
	<i>SD</i> 6.13	7.02	7.03	7.37	5.66	7.93	7.72	6.70	7.81

Interestingly, there were no significant differences between males and females, different grade levels, and different BMI groups in feedback to gain weight and increase muscles for any of the sociocultural influences.

## DISCUSSION

This study was designed to evaluate gender, BMI, and age differences in strategies to lose weight, gain weight, and increase muscle size. It was also designed to determine the impact of sociocultural influences on these body change strategies. The novel aspect of the research was that it investigated weight gain and strategies to increase muscle tone, as well as weight loss. As expected, adolescent females reported less body satisfaction as compared with males, and the appearance of their bodies was more important than it was for males. They were also more likely than males to engage in strategies to decrease weight. In contrast, males were more likely to adopt strategies to increase weight and muscle tone. There were no gender by grade interactions; thus, these findings held true for adolescents from age 12 to 16.

These results are consistent with behaviors that adolescents would adopt in order to conform with the societal ideal of a thin body for females and a muscular body for males (Cusumano & Thompson, 1997; Kalodner, 1997; Levine et al., 1994). It is of interest that these behaviors are being adopted by adolescents as young as 12 years of age. The results also suggest that past research indicating that males are less likely to engage in weight loss behaviors does not mean that males have fewer problems with body change strategies. The problem areas for males center on strategies to increase weight and muscle tone. Both the exact nature of these strategies and the extent to which they are associated with physical and psychological health problems for males require further investigation.

Consistent with previous studies, respondents with high BMI demonstrated the most dissatisfaction with their bodies (Middleman et al., 1998; Moore, 1993). They were also more likely to engage in dieting and extreme weight loss behaviors. Interestingly, respondents with low BMI did not engage in more behaviors to increase weight or muscle tone. Given the focus among adolescent females, regardless of their weight, to lose weight, this is not surprising. However, there was no significant interaction between gender and BMI, so this finding was also true for males. Since males with low BMI are deviating from the

cultural ideal for males, one would expect them to adopt strategies to increase weight and muscle tone. In fact, Trajillo (1995) has suggested that there is substantial pressure on males to conform to a muscular ideal, and this pressure would seem to be greatest for males with low BMI. Perhaps the sociocultural messages regarding the ideal body form are not being identified by such males. Future studies need to further explore how males in various BMI groups at different ages evidence body satisfaction and body change strategies. In this way, greater understanding of the relationship between BMI and weight loss, weight gain, and strategies to increase muscle tone will be achieved.

An interesting finding was that, for both boys and girls, body dissatisfaction, the use of food supplements, and strategies to increase both weight and muscle tone tended to increase with age (grade level). This would suggest that body dissatisfaction increases as adolescents develop the fat deposits that are associated with puberty. Previous studies have focused on weight, but the findings here would suggest that the shape of an adolescent's body may also be of importance, and future studies should focus on satisfaction with body tone and shape as well as weight. Shape, rather than weight, would seem to be particularly relevant for adolescent boys, with the increasing focus in the media on the muscular ideal. Further, food supplements may be used differently by girls and boys, with girls using supplements which lead to weight loss (e.g., laxatives) and boys using supplements for weight gain (e.g., Sustegen). The findings that males were more likely to be engaged in strategies to gain weight and increase muscle tone, whereas females were more focused on losing weight, support this notion. Clearly, the specific types of food supplements used by adolescents need to be explored further.

In terms of sociocultural influences, adolescents with the highest BMI most strongly perceived that their mothers encouraged them to lose weight and increase muscle tone. Girls in particular perceived that their mothers were sending this message, as well as providing general feedback on their bodies. Boys and girls did not significantly differ in the perception that their mothers encouraged them to gain weight and increase muscle tone. These results demonstrate that adolescent girls, more so than boys, perceive that their mothers are encouraging them to adopt strategies that would move their bodies closer to the societal ideal. These results are consistent with past findings on the role of mothers in shaping the body image and weight loss strategies adopted by daughters (Moore, 1993; Mukai, 1996; Rodin, 1993). In contrast, fathers were not perceived by adolescent boys and girls to

be providing different messages about their bodies. Thus, adolescents are not detecting gender relevant messages about their bodies from their fathers. In fact, the only difference in perception of a particular message from fathers was for adolescents with the highest BMI, who indicated that their fathers were more likely to encourage them to lose weight and increase muscle tone, compared with the other two BMI groups.

Media influence was perceived to be greater for adolescent girls than for boys. The media have generated a very clear image of the societal ideal for females, and this is consistent among the various forms of media outlets (Cusumano & Thompson, 1997; Kalodner, 1997). In contrast, the ideal body type for males is not so clearly presented in the media; thus, males may not perceive strong pressure from the media to adopt body change strategies to conform to a prescribed ideal. However, this may change in the next few years.

As for the other sociocultural influences, both male and female peers were perceived to provide greater feedback to girls rather than to boys, specifically in regard to general feedback on the adolescent body and encouragement to lose weight and increase muscle tone. Interestingly, there were no differences in the feedback they provided to boys and girls on increasing weight and muscle tone. Thus, peers were perceived to pressure girls to move closer to the societal ideal, but the same pressure was not seen to be operating on boys to encourage them to increase muscle size or shape. Within this age group, clear peer messages regarding the ideal male body may not yet have been developed and transmitted.

Male peers were perceived to encourage respondents with low BMI to gain weight and increase muscle tone. This was not found for feedback from female peers, with there being a high level of encouragement to lose weight and increase muscle tone for all respondents. The differential messages between male and female peers are clear if the adolescents have a low BMI: male peers are perceived to encourage them to increase bulk, whereas female peers encourage weight loss regardless of BMI.

These findings support past research regarding sociocultural influences on body image and weight loss among adolescent girls (e.g., Levine et al., 1994; Paxton et al., 1991). Mothers, peers, and the media are perceived to encourage females to lose weight, whereas fathers are perceived to provide different feedback to girls and boys. An interesting finding from the present study is that although adolescent boys were more likely than girls to be adopting strategies to increase weight and muscle tone, they were not more likely than girls to perceive that the

various sociocultural forces were encouraging them to engage in these behaviors. The reasons for adopting these strategies, and any potential health risks connected with the associated behaviors, require further investigation.

Respondents in the highest BMI category perceived more sociocultural pressure to alter their weight. This perceived pressure was associated with increased dieting and extreme weight loss strategies among this group of respondents. However, respondents in the lowest BMI group did not perceive more pressure to gain weight or increase muscle tone, and this group was not more likely than the other BMI groups to engage in these behaviors. Clearly, this finding needs to be explored further with other adolescent groups. In addition, it needs to be determined whether these messages are different among older age groups.

This study has provided a comprehensive investigation of body image and body change strategies to both increase weight, decrease weight, and increase muscle tone. It has also explored the sociocultural influences on these variables. These findings have implications for health-related behaviors adopted by adolescent boys and girls. A substantial body of literature has demonstrated the association between weight loss strategies and the development of disordered eating (e.g., Andersen & Holman, 1997; Patton et al., 1997), yet little is known about the health risks associated with behaviors designed to gain weight or increase muscle size. Not only is it important to further understand problems in these areas, it is also essential for the development of intervention programs to determine the factors which may precipitate body change disorders.

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