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Gender Differences in Population Versus Media Body Sizes: A Comparison over Four Decades[1]

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Mean body mass indices (BMIs, kg/m^2*) of North Americans aged 18 to 24 collected from 11 national health surveys were compared to:* Playboy *centerfold models,* Miss America Pageant *winners, and* Playgirl *models. The survey samples were representative of the mix of different ethnic and racial groups in Canada and the USA. No racial or ethnic information was available for either the* Playboy *women or the* Miss America Pageant *winners. Ninety percent of the* Playgirl *men were white; 10%, black; 1.5%, Hispanic black; and .8%, American Samoan. From the 1950s to the present, while the body sizes of* Miss America Pageant *winners decreased significantly and the body sizes of* Playboy *centerfold models remained below normal body weight, the body sizes of* Playgirl *models and young adult North American women and men increased significantly. The increase in body size of* Playgirl *models appears to be due to an increase in muscularity, whereas the increase in body size of young North American men and women is more likely due to an increase in body fat. Thus, in the 1990s, the body size and shape of the average young adult North American became increasingly different from the ideal being promoted by the media. Furthermore the difference in male and female body sizes depicted by the media in the 1990s was huge, whereas the difference between the body sizes of 18- to 24-year-old North American women and men was actually quite small. These discrepancies are discussed in relation to the different sociocultural expectations for the two genders and the increasing prevalence of body dissatisfaction reported by both women and men.*

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There has been growing concern about body dissatisfaction, particularly in young women. Studies have reported body dissatisfaction prevalence greater than 60 percent for high school aged females (Garner, 1997; Paxton *et al*., 1991; Rosen & Gross, 1987) and higher than 80 percent for women in university (Drewnowski & Yee, 1987; Silberstein, Striegel-Moore, Timko, & Rodin, 1998). A Canadian study reported that a large percentage of younger women feel that their body weight is too high and are trying to lose weight even when their weights are within, or below, the range that is considered healthy (Green *et al*., 1997).

A dramatic increase in the prevalence of eating disorders has paralleled the increased prevalence of body dissatisfaction. The sociocultural pressures that lead women to diet and increase their vulnerability to developing an eating disorder (Cooper, 1995; Mazur, 1986) appear to be the best explanation for the recent increase in body dissatisfaction and the increased prevalence of eating disorders (Raphael & Lacey, 1992; Waller & Shaw, 1994; White, 1992). In particular, the role of the media and the thin standard of attractiveness for women promoted by the media has been shown to lead women to rate their bodies more negatively (Hamilton & Waller, 1993), which, in turn, leads to an increase in eating disorder symptoms (Irving, 1990; Stice & Shaw, 1994).

In their classic study, Garner, Garfinkel, Schwartz and Thompson (1980) analyzed the changes in weights of *Playboy* centerfold models and *Miss America Pageant* contestants from 1959 to 1978. They found a significant decrease in the weights of centerfold models and pageant contestants as a percent of their expected weight based on Society of Actuaries norms for 1959. Contrary to the *Playboy* and *Miss America* women, a comparison of actuarial data from those same years, 1959 to 1979, revealed that the weight of women and men aged 17 to 24 increased rather than decreased. The Garner *et al*. (1980) study was extended by Wiseman, Gray, Mosimann, and Ahrens (1992) to the period 1979 to 1988. Wiseman *et al*. (1992) reported that *Miss America* contestants continued to decrease in weight while *Playboy* centerfold models maintained the low weight reported by Garner *et al*. (1980). (It is interesting to note that *Miss America* contestants work out an average of 14 hours a week, some, as many as 35 hours a week, in order to achieve the current body ideal {Wilfley & Rodin, 1995}). Other researchers have documented corresponding trends towards thinner body sizes for female fashion models (Morris, Cooper, & Cooper, 1989) and women in movies (Silverstein, Perdue, Peterson, & Kelly, 1986). And, compared to the most popular men's magazines, women's magazines contain 10 times the number of diet-promoting articles and advertisements (Andersen & DiDomenico, 1992), further promoting a thin body ideal for women.

Eating disorders and body dissatisfaction have not been studied as extensively in men as in women (Nemeroff, Stein, Diehl, & Smilack, 1993). Most likely because the incidence of anorexia nervosa in males is low and when it does occur, it appears to be related to health and fitness, rather than the desire to attain an ideal body shape. Among young adults, only one male to ten females is diagnosed with anorexia nervosa (Andersen, 1995). Some subgroups of adult males, such as male wrestlers and homosexual males, are more likely to develop an eating disorder, but the incidence of eating disorders even within these special subgroups is still much less than among heterosexual females (Andersen, 1995). As in young boys (Bryant-Waugh, 1994), adult males who develop eating disorders are more likely to be concerned with their health. Most have experienced actual, medically defined premorbid obesity (Andersen, 1995).

Yet a cultural preference for a large, muscular, and mesomorphic body type clearly exists for males. The preference for the mesomorphic body type develops sometime between the ages of six and seven (Staffieri, 1967; Wright & Bradbard, 1980) and increases markedly with age (Lerner, R. M., 1972; Lerner, R. M. & Korn, 1972). At the same time, attitudes toward the thinner, ectomorphic and fatter, endomorphic body types become increasingly unfavorable (Collins, & Plahn, 1988; Lerner, R. M., 1972; Lerner, R. M. & Korn, 1972). These attitudes prevail across differences in intellectual ability (Staffieri, 1968), educational level (Brodsky, 1954), culture (Lerner, R. C. & Jovanovic, 1990; Lerner, R. M., & Pool, 1972), race (Brodsky, 1954), socio-economic class (Brodsky, 1954), and gender (Lerner, R. M., 1969; Lerner, R. C. & Jovanovic, 1990; Staffieri, 1967). The preference for the mesomorphic body type appears to reach its peak during early adolescence (Lerner, R. M., 1969; 1972) and early adulthood (Brodsky, 1954; Collins & Plahn, 1988; Dibiase & Hjelle, 1968). Astonishingly, 100 percent of the male participants in the Dibiase and Hjelle study (1968) desired to look like the mesomorphic body type.

Yet younger men are generally not as dissatisfied with their weight or appearance as women are (Fallon, 1990). It is not until they are in their 40s and 50s that men become as dissatisfied with their body shape as women (Rozin & Fallon, 1988). The change in attitude appears to result from older males holding body image ideals identical to those of younger males as their own bodies become heavier with age (Fallon, 1990). Even so, they, like their younger male counterparts, are much less likely than women to diet or be concerned about their weight (Fallon, 1990; 1994). In contrast to women who do not feel thin until their weight is below 90 percent of their ideal body weight, men feel thin until their weight is as high as 105% of their ideal body weight (Andersen, 1995).

However, apparently as a result of the mesomorphic ideal, between a

fifth and a third of preadolescent (Collins, 1991), adolescent (Cohn *et al*., 1987), and college-age males (Calden, 1959; Cohn & Adler, 1992) would like to be heavier. Approximately one-half of high school boys desire larger biceps, wrists, shoulders, and chests (Huenemann, Shapiro, Hampton, & Shapiro, 1966); and college age men, larger chests and arms (Calden, 1959). Although both over- and underweight males report high body dissatisfaction (Drewnowski & Yee, 1987; Tucker, 1982), the greatest body dissatisfaction appears to occur in thin males (Abell & Richards, 1996; Rosen & Gross, 1987). Underweight college age men are as dissatisfied with themselves as overweight college women (Harmatz, Gronendyke, & Thomas, 1985).

The desire for a larger, more muscular body has been associated with anabolic steroid use (Brower, Blow, & Hill, 1994) which is on the increase in adolescents and among non-body builders (Wroblewska, 1997). Seven percent of 12th grade boys have reported using anabolic steroids to increase their body size (Buckley *et al*., 1988). This is higher than the estimated incidence of anorexia nervosa among high school girls (Andersen, 1983) and similar to the reported incidence of bulimia nervosa (Mizes, 1985). Body dissatisfaction in males has also been associated with a phenomenon labeled "reverse anorexia," an intense fear of thinness which can potentially lead to harmful behaviors (Pope, Katz, & Hudson, 1993).

Like that in females, the current increase in body dissatisfaction, particularly among thin younger males and perhaps among even heavier older males, may be related to the body ideal being promoted by the media. One author notes that male icons have become increasingly muscular over the last 50 years, corresponding to a rise in the "gym culture" and may be leading men to focus on the discrepancies between the media body ideal and their own bodies (Wroblewska, 1997). Others have noted that the media greatly exaggerates gender differences (West & Zimmerman, 1987) and that the body ideal currently being promoted by the media for men is muscular (Mishkind, Rodin, Silberstein, & Striegel-Moore, 1986). Several authors (Davis, Brewer, & Weinstein, 1993; Gross, 1985; Salusso-Deonier, Markee, & Pedersen, 1993) have offered anecdotal evidence of the current muscular male ideal, but there are no studies to date that have quantified this trend.

The present study quantifies current trends in body sizes of men in the media, determines whether body size differences portrayed in the media reflect actual gender differences in the population, and addresses some limitations of the previous research that examined body size trends of women in the media. In their comparison of *Playboy* centerfold models and *Miss America Pageant* contestants with population body size norms, Garner *et al*. (1980) utilized actuarial data reported in 1959. These data actually represented population body size means from the years 1934 to

1953, two different and non-overlapping time periods. The follow-up by Wiseman *et al.* (1992) employed the same method, comparing centerfold and pageant contestant body sizes from 1979 to 1988 with the actuarial body size statistics published in 1979, corresponding to mean population body sizes from 1950 to 1971. Additionally, the studies compared the models' and contestants' weights as a percent of their 'expected' weight over time. This method yields no information about absolute changes in the body weights of the centerfold models and *Miss America* contestants. Thus, it is not clear, if in relation to each other, the weights of the population comparison group had increased or the weights of the centerfold models and *Miss America* contestants had decreased.

The present study (a) determines the body size changes that have occurred in average 18- to 24-year-old Canadian and American men and women and persons in the media over the last 40 years, (b) examines gender differences in media-promoted body ideals, (c) compares the ideal standards of attractiveness, as promoted by the media, with the measurements of average women and men, and (d) compares population and media body sizes with government health officials' recommendations.

METHOD

Data Sources

The present study compares the body sizes of individuals in the media to reported population body sizes, and each of these is then compared against a government recommended standard. The population sample consists of women and men aged 18 to 24 who participated in eleven national health surveys in Canada and the United States from the 1950s to the 1990s (see Table I). In each of the surveys the samples were designed to be representative of the mix of different ethnic and racial groups in Canada and the USA at the time of the survey.

The media sample consists of: (a) women who appeared in *Playboy* centerfolds from 1977 to 1996, (b) *Miss America Pageant* winners from 1953 to 1985, and (c) men who modeled in selected *Playgirl* magazines from 1986 to 1997. Information about race and/or ethnic group was not available for either the *Playboy* centerfold women or the *Miss America Pageant* winners. Of the 130 *Playgirl* men, 117 (90%) were white, 10 (7.6%) were black, 2 (1.5%) were Hispanic black, and 1 (.8%) was American Samoan.

Body Size Data of Health Survey Participants. Average body sizes from the Canadian health surveys were obtained as follows: height and weight

Table I. North American National Health Surveys Included in Study

Health Survey	Method of Obtaining Heights and Weights
Canada	
The 1953 Canadian Survey on Average Weights, Heights and Skinfolds	Measured by trained health officials
The 1970–72 Nutrition Canada Survey	Measured by trained health officials
The 1981 Canada Fitness Survey	Measured by trained health officials
The 1985 Canada Health Promotion Survey	Written self-report
The 1990 Canada Health Promotion Survey	Written self-report
The 1994–95 National Population Health Survey	Verbal self-report over telephone
United States	
The 1955 Household Food Consumption Survey	Measured by trained health officials
The 1960–62 National Health Survey (NHES I)	Measured by trained health officials
The 1971–74 National Health and Nutrition Examination Survey (NHANES I)	Measured by trained health officials
The 1976–80 National Health and Nutrition Examination Survey (NHANES II)	Measured by trained health officials
The 1988–91 Health and Nutrition Examination Survey (NHANES III)	Measured by trained health officials

data for the 1953, 1970–72 and 1981 health surveys were obtained from published reports (Canada Fitness Survey, 1983; Nutrition Division, Department of National Health and Welfare, 1957; Health and Welfare Canada, 1973). Height and weight data for the 1985 health survey, and body mass index (BMI, kg/m^2) data for the 1990 health survey were obtained through the Statistics Canada Data Liberation Initiative (Statistics Canada, 1985; Statistics Canada, 1990). Body mass index data for the 1994–95 health survey were purchased from Statistics Canada (Statistics Canada, 1995).

The average body measurements of the persons who participated in the 1960–62, 1971–74, and 1976–80 U.S. health surveys were obtained from Vital and Health Statistics (U.S. Department of Health and Human Services, 1976–80; U.S. Department of Health Education and Welfare, 1960–62; U.S. Department of Health Education and Welfare, 1971–74). The 1955 survey results were obtained from a published report (Hathaway & Foard, 1960), and data from the 1988–91 survey were obtained from the U.S. National Center for Health Statistics (Data from NHANES III Phase 1: 1988–91, 1995). Not all of the health surveys featured age groups corresponding exactly to the 18 to 24 age group. Where age groups differed from this target group, the closest age groups were chosen for comparison (see Table II).

Table I reveals how body measurements were obtained for each health survey. Some surveys featuring self-reported body measurements were included in the present study. Previous studies have shown that self-reported

Table II. Age Groups Combined as Substitutes for Health Surveys That Did Not Specifically Feature an 18- to 24-Year-Old Age Group

	Age Groups						
Survey	17–19	18	19	20–21	20–24	20–29	22–23
The 1955 Household Food Consumption Survey						X	
The 1970–72 Nutrition Canada Survey		X	X	X			X
The 1981 Canada Fitness Survey		X	X			X	
The 1985 Canada Health Promotion Survey	X				X		
The 1990 Canada Health Promotion Survey	X				X		
The 1994–95 National Population Health Survey					X		

body measurements do not differ greatly from those obtained from measurement by health officials, particularly for low and average body weights (Stewart, Jackson, Ford, & Beaglehole, 1987).

Body Size Data of Men and Women in the Media. Heights and weights for *Playboy* centerfolds were obtained from an Internet on-line file (Dean, Corvin, & Ewell, 1997) for the period September 1977 to November 1996. *Playboy* centerfold data prior to this time period was not available on-line or from *Playboy* magazine. Heights and weights of *Miss America Pageant* winners for the years 1953 to 1978 were obtained from the book *There she is: The life and times of Miss America* (Deford, 1978). Heights and weights of *Miss America Pageant* winners for the years 1980 to 1985 were obtained from the Atlantic City Free Public Library (D. Spitler, personal communication, February 10, 1997). Body sizes of *Miss America Pageant* winners after 1985 were not released by the pageant. Heights and weights of *Playgirl* models were taken from all of the issues of *Playgirl* magazine that could be located for the years 1986 to 1997. Table III presents the mean heights, weights and body mass indices of *Playboy* centerfold models and *Miss America Pageant* winners in five-year periods from 1953 to 1997. Table IV lists the total number of *Playgirl* models in each year whose heights and weights were recovered for the present study and presents mean height, weight, and body mass index of the models per year from 1986 to 1997.

Procedure

Body mass index was used as the body size measurement for the present study, as it is an excellent indicator of body fat (Health and Welfare

Table III. Mean Height, Weight, and Body Mass Index of Playboy Centerfold Models and Miss America Pageant Winners

Years	*n*	Mean Height (m)	Mean Weight (kg)	BMI (kg/m^2)
		Playboy		
1977–1982	66	1.68	51.10	18.12
1983–1988	70	1.73	50.90	17.91
1989–1994	72	1.73	53.80	18.40
1995–1997	23	1.69	51.38	18.03
		Miss America		
1953–1958	6	1.70	56.06	19.35
1959–1964	6	1.67	53.61	19.18
1965–1970	6	1.70	54.92	19.12
1971–1976	6	1.74	55.38	18.36
1977–1982	5	1.69	52.00	18.13
1983–1988	3	1.68	50.76	18.06

Canada, 1988). BMI corresponds less well however to the fat composition of extremely muscular persons for whom high BMI values reflect greater lean muscle tissue rather than fat (Hannan, Wrate, Cowen, & Freeman, 1995). The 1990 and 1994–95 Canadian health surveys, and the 1976–80 and 1988–91 American health surveys included the mean BMI of participants. The remaining health surveys provided only the participants' mean heights and weights. For these surveys, a mean BMI was calculated by dividing the mean weight in kilograms by the mean height in meters squared. One-sample t-tests were used to test the validity of calculating BMI this way. The mean BMIs (and standard deviations) provided by the 1990 and 1994–95 Canadian health surveys, and the 1976–80 and 1988–91 American health surveys were used to compare the BMIs obtained by using the mean heights and weights provided by the same four surveys. The *t*s varied from 0.00 to 0.73; none were significant. BMIs of *Playboy* centerfolds, *Miss*

Table IV. Mean Height, Weight, and Body Mass Index of Playgirl Models

Year	*n*	Mean Height (m)	Mean Weight (kg)	BMI (kg/m^2)
1986	3	1.78	78.33	24.81
1987	5	1.82	76.09	22.91
1989	10	1.80	77.50	23.99
1990	9	1.83	81.46	24.31
1991	19	1.82	82.89	25.07
1992	11	1.82	86.32	25.95
1993	12	1.84	84.02	24.66
1994	32	1.83	86.52	25.93
1995	18	1.82	87.63	26.50
1996	12	1.84	86.48	25.55
1997	2	1.81	89.80	27.69

America Pageant winners, and *Playgirl* models were obtained by dividing their weight in kilograms by their height in meters squared.

Canadian Weight Guidelines. Canadian guidelines for healthy weights, established in 1985, were used to evaluate the health of the population and media samples (Health and Welfare Canada, 1988). The guidelines divide body mass indices into four zones: A, B, C and D. Zone B, which includes BMIs of 20 to 25, is the recommended range. It is associated with the best health and lowest mortality rate for most people, taking into account variations in age group and gender and reported differences in morbidity and mortality data (see Health and Welfare Canada, 1988, p. 26). Zone C, which includes BMIs of 25 to 27, is also acceptable, but is associated with a greater number of health problems in some people. Zone D, which includes BMIs greater than 27, indicates higher body fat and is associated with health problems and higher mortality. Zone A, which includes BMIs of less than 20 is also associated with health problems, including eating disorders. A BMI of 17.5 is used by The World Health Organization as the body size criterion for anorexia nervosa, BMIs between 17 and 18 are used by other authors for the same purpose (Hebebrand, Himmelmann, Heseker, Schafer, & Remschmidt, 1996).

RESULTS

Changes in (a) body sizes of Canadian and American women and men aged 18 to 24 (1950s to 1990s) and (b) body sizes of *Playboy* centerfold models, (1977 to 1996), *Miss America Pageant* winners, (1953 to 1985), and *Playgirl* models (1986 to 1997), were analyzed by regression analyses. BMI was the independent measure and cases were weighted by sample size. In all cases but one (*Playboy* centerfolds), R was significantly different from zero: Canadian women, $R = .84$, $R^2 = .71$, $F(1, 6025) = 42.99$, $p < .0001$; Canadian men, $R = .62$, $R^2 = .38$, $F(1, 5467) = 3373.03$, $p < .0001$; American women, $R = .79$, $R^2 = .62$, $F(1, 5170) = 8314.70$, $p < .0001$; American men, $R = .13$, $R^2 = .02$, $F(1, 4262) = 75.99$, $p < .0001$; *Playboy* centerfolds, $R = .01$, $R^2 = .00$, $F(1, 230) = .009$, *ns*; *Miss America Pageant* winners, $R = .58$, $R^2 = .34$, $F(1, 30) = 15.36$, $p < .005$; and *Playgirl* models, $R = .31$, $R^2 = .09$, $F(1, 131) = 13.55$, $p < .0004$. Although the average BMIs of Canadian women and American men have not increased much, the average BMIs of all the women and men, Canadian and American, aged 18 to 24 have increased significantly since 1950 (see Fig. 1); the BMIs of *Playboy* centerfold models did not change significantly from 1977 to 1996 (see Fig. 2 and Table III); the BMIs of *Miss America Pageant* winners decreased significantly from 1953 to 1985 (see Fig. 3 and Table III); and

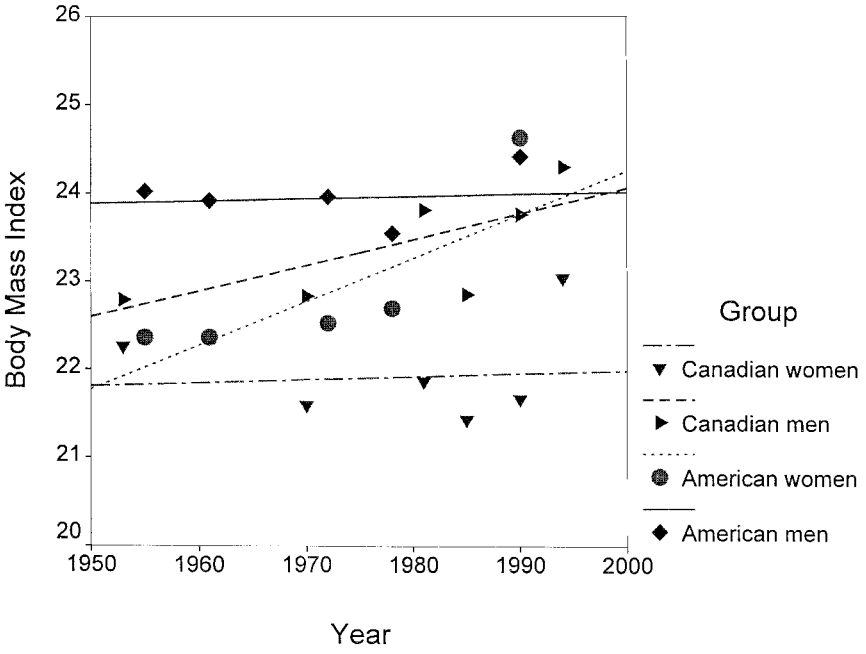

Fig. 1. Body mass indices of Canadian and American women and men aged 18–24. Health survey data points are means.

the BMIs of Playgirl models increased significantly from 1986 to 1997 (see Fig. 4 and Table IV).

A second set of regression analyses were performed to compare changes in the sizes of the *Playboy* centerfold models, *Miss America Pageant* winners, and *Playgirl* models to changes in the sizes of the relevant groups of Canadian and American women and men aged 18 to 24 (see Table V). In all the analyses, the independent variables were Year, Group, and Year × Group, and cases were weighted by sample size. All of the regression models were significantly different from zero: *Playboy* centerfolds/Canadian women, $F(3, 5678) = 6053.69$, $p < .0001$; *Playboy* centerfolds/American women, $F(3, 3412) = 23056.07$, $p < .0001$; *Miss America Pageant* winners/Canadian women, $F(3, 6050) = 431.96$, $p < .0001$; *Miss America Pageant* winners/American women, $F(3, 4395) = 2786.22$, $p < .0001$; *Playgirl* models/Canadian men, $F(3, 1775) = 367.31$, $p < .0001$; and *Playgirl* models/American men, $F(3, 1732) = 529.03$, $p < .0001$ (see Table V). As can be seen in Fig. 2, the BMIs of the *Playboy* centerfold models were lower than the BMIs of the Canadian and American women and did not increase or

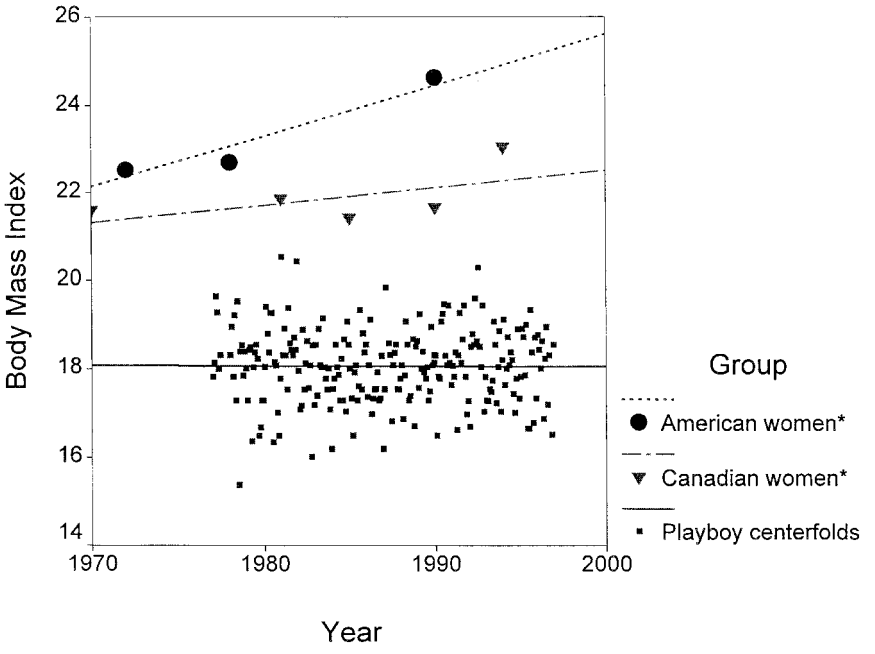

Fig. 2. Body mass indices of Canadian and American women aged 18–24 and *Playboy* centerfold models. *Health survey data points are means.

decrease, whereas the BMIs of the Canadian and American women both increased, those of the American women rather dramatically. From Fig. 3, it can be seen that in contrast to the increasing BMIs of the Canadian and American women, the BMIs of the *Miss America Pageant* winners greatly decreased. And finally, as can be seen from Fig. 4, although the BMIs of the Canadian and American men aged 18 to 24 increased slightly, the BMIs of the *Playgirl* models increased sharply.

Canadian Weight Guidelines

Canadian guidelines for healthy weights were established in 1985. Therefore, the BMIs of *Playboy* centerfolds, *Miss America Pageant* winners, *Playgirl* models, and Canadian and American women and men aged 18 to 24 from periods at, or later, than 1980 were compared to the guidelines. This comparison revealed that all of the mean BMIs for both women and men in Canada and the United States fell into Zone B, the weight associated

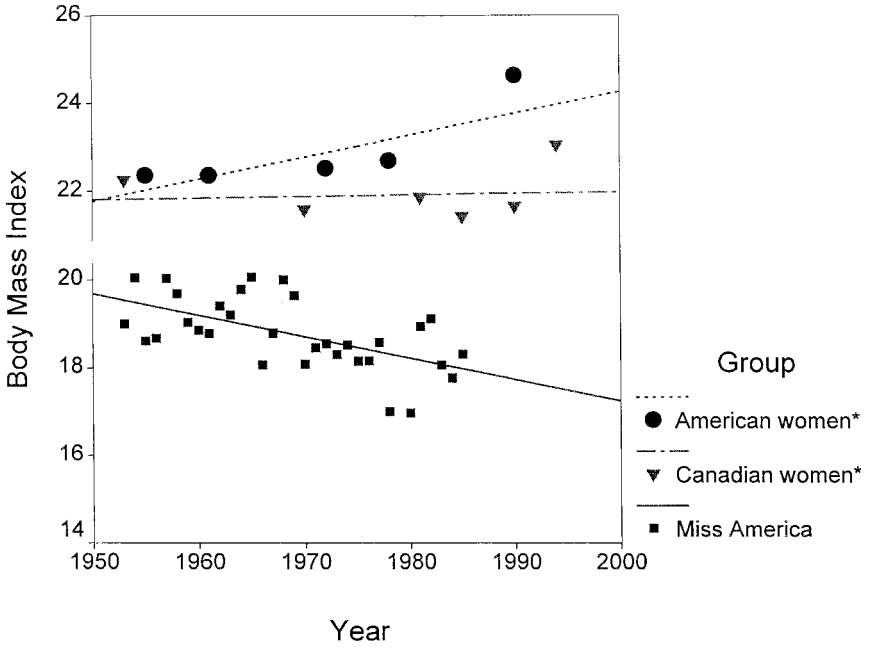

Fig. 3. Body mass indices of Canadian and American women aged 18–24 and *Miss America Pageant* winners. *Health survey data points are means.

with good health according to the Canadian guidelines (Health and Welfare Canada, 1988).

A dramatically different pattern emerged for the *Playboy* centerfold models and the *Miss America Pageant* winners. Ninety-nine percent of the BMIs of *Playboy* centerfolds since 1980 and later fell into Zone A; a weight considered underweight and associated with several health problems, including eating disorders. Additionally, the percentage of *Playboy* centerfolds who had BMIs of 17.5 or less, a criterion for anorexia nervosa according to the World Health Organization (Hebebrand, *et al.*, 1996), increased from 23% to 29%. One-hundred percent of the BMIs of *Miss America Pageant* winners from 1980 to 1985 also fell into Zone A of the Canadian weight guidelines. The percentage of these women with BMIs at or below 17.5 was 17%.

None of the *Playgirl* models fell in Zone A of the Canadian weight guidelines. The percentage of *Playgirl* models in Zone B decreased from 78% to 40%, while the percentage of models in Zone C increased from 19% to 37%. Finally, the percentage of men in the largest group, Zone D, increased more than fivefold from 4% to 23%.

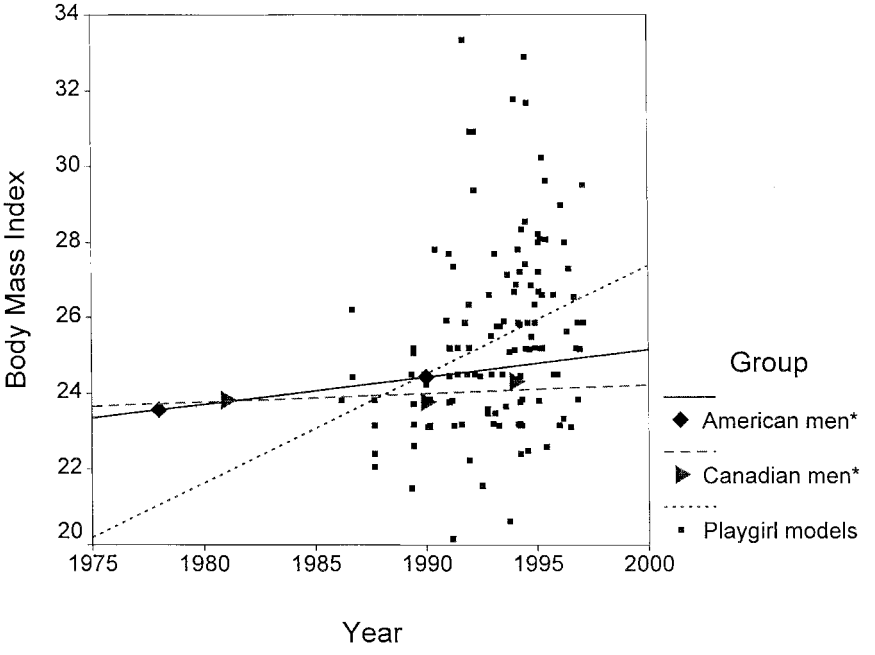

Fig. 4. Body mass indices of Canadian and American men aged 18–24 and *Playgirl* models. *Health survey data points are means.

DISCUSSION

Previous studies (Garner *et al*., 1980; Wiseman *et al*., 1992) documented changes in the female body size promoted by the media and compared them to the body sizes of young American females. In contrast, the present study documents changes in the body sizes of young men, as well as, young women, Canadians, as well as, Americans, and compares them to the male, as well as the female, body size promoted by the media in North America.

Changes in Body Sizes of Canadian and American Men and Women

The body sizes of Canadian and American women aged 18 to 24 increased from the 1950s to the 1990s. This increase was particularly dramatic for the American women. Although the increase of Canadian women was much less dramatic, they too became larger. Between 1985 and 1994, the percentage of young Canadian women who were overweight increased from 6.5 percent to 12 percent. The body sizes of Canadian and American

Table V. Regression Analyses Comparing Body Mass Indices of Playboy Centerfold Models, Miss America Pageant Winners, and Playgirl Models to Canadian and American Women and Men Aged 18–24

Comparison	Independent Variable(s)	β	p
Playboy centerfolds/ Canadian women	Year	−.00083	>.9 (*ns*)
	Group	3.52	<.0001
	Year × Group	.55	<.0001
	$R = .87$	$R^2 = .76$	$p < .0001$
Playboy centerfolds/ American women	Year	−.0009	>.9 (*ns*)
	Group	4.85	<.0001
	Year × Group	1.58	<.0001
	$R = .98$	$R^2 = .95$	$p < .0001$
Miss America/ Canadian women	Year	−.77	<.0001
	Group	3.53	<.0001
	Year × Group	.82	<.0001
	$R = .42$	$R^2 = .18$	$p < .0001$
Miss America/ American women	Year	−.77	<.0001
	Group	4.72	<.0001
	Year × Group	1.46	<.0001
	$R = .81$	$R^2 = .66$	$p < .0001$
Playgirl models/ Canadian men	Year	3.98	<.0001
	Group	1.25	<.0001
	Year × Group	−2.14	<.0001
	$R = .62$	$R^2 = .38$	$p < .0001$
Playgirl models/ American men	Year	3.98	<.0001
	Group	2.75	<.0001
	Year × Group	−3.00	<.0001
	$R = .69$	$R^2 = .48$	$p < .0001$

men also increased over time. For the men however, it was the Canadians whose body size increased dramatically, whereas the American male body size increased only slightly. It should be noted however that in the 1950s, the body sizes of American males were already much larger than those of the Canadian males.

The trends toward increasing body size found in the present study are generally in agreement with those described by Garner *et al.* (1980) who found that young men and women were becoming heavier. Although all of the mean BMIs between 1985 and 1994 for Canadian and American men and women aged 18 to 24 remained in the range associated with good health according to Canadian weight guidelines, the average BMI of the American women approached the upper limit of the weight zone, revealing that a significant percentage of young American women are currently overweight. At least part of the weight increase in young American women may be accounted for by changing demographics in the health surveys.

Larger numbers of Mexican Americans and African Americans are included in the most recent survey (Kuczmarski *et al*., 1994), and the prevalence of obesity is much higher among Mexican American and African American women than among non-Hispanic white women (Kuczmarski, Flegal, Campbell, & Johnson, 1994; Kumanyika, 1993). Nevertheless, comparisons of later to earlier survey results indicate dramatic increases in the prevalence of obesity in all American racial and ethnic groups (Kuczmarski *et al*., 1994).

In addition, the latest Canadian and American health surveys reveal that the BMIs of males and females in each country have become very similar. The mean BMIs of the American men and women differed by only 0.2 kg/m^2 and the mean BMIs of the Canadian men and women differed by just 1.3 kg/m^2.

Changes in Body Sizes of Playboy Centerfold Models, Miss America Pageant Winners, and Playgirl Models

The body sizes of *Playboy* centerfolds decreased but not significantly between 1977 and 1996, a similar result to that found by Wiseman *et al*. (1992). However, the weights of *Playboy* centerfolds had already decreased significantly between 1959 and 1978 (Garner *et al*., 1980). The present plateau is at their lowest weight. Almost all of the *Playboy* centerfolds are underweight according to Canadian guidelines and approximately a third meet the World Health Organization's BMI criterion for anorexia nervosa.

The body sizes of *Miss America Pageant* winners decreased significantly from 1953 to 1985, a finding similar to those of Garner *et al*. (1980) and Wiseman *et al*. (1992). Seventeen percent of the pageant winners meet the World Health Organization BMI criterion for anorexia nervosa. Clearly the North American ideal for female beauty as portrayed in the media is at a weight deemed to be dangerous by Canadian and World Health officials.

In marked contrast to the body sizes of *Playboy* centerfolds and *Miss America Pageant* winners, the body sizes of *Playgirl* models increased sharply from 1986 to 1996. None of the *Playgirl* men were underweight. Conversely, an increasing percentage of the *Playgirl* models fell into the heaviest weight category of the Canadian guidelines, confirming that the body size of men in the media has increased in recent years. It was not possible to obtain chest circumferences or skinfold thickness for the *Playgirl* models, and most of the surveys did not take skinfold measurements of their participants. Thus there is no direct way to determine whether the increases in BMI were due to increases in lean or fat body mass. That being said, the recent increase in body size of males in the media probably does not represent an increase in body fat, but more likely an increase in muscle

and lean body mass. On the other hand, the increase in average BMIs of young American and Canadian males probably does represent an increase in fat body mass (Health and Welfare Canada, 1993; Kuczmarski *et al.*, 1994).

The Gap in Media-Promoted Body Ideals for Males and Females

Unlike the small gender differences in mean BMIs of average American and Canadian men and women, the mean BMIs of the *Playgirl* models were 7.61 kg/m^2 greater than the mean BMIs of *Playboy* centerfolds. This difference is 38 times greater than the difference in mean BMI between average men and women in the U.S.

According to West and Zimmerman (1987), different portrayals of men and women are socially constructed, with the portrayal of gender in the media not necessarily reflecting actual sexual natures, but rather how society would like the genders to be. Cultural gender ideals emphasize differences where, in reality, similarities are more common (Hare-Mustin & Maracek, 1998). This is particularly relevant to how bodies are portrayed in the media. In the present study, while the average BMIs of men and women in the 1990s did not differ a great deal, the body sizes of men and women in the media were found to be hugely different, and becoming more different over time. The two different body ideals reflect different attributes. The thin, ideal, female body is associated with smallness, weakness, and passivity; the large, muscular, ideal male body, with activity and dominance (Winkler & Cole, 1994).

The Gap Between Media and Population Body Sizes

Women. The present study also found that the gap between average women's body size and body sizes in the media is large and getting larger. This discrepancy can have serious implications for women. Women are bombarded daily with images of thin women's bodies and the message that if they aren't thin, they should be. The thin body size has become normalized, resulting in average size women becoming dissatisfied with their bodies (Green *et al.*, 1997; Kilbourne, 1994). The growing discrepancy between women's average and ideal body sizes most likely lies behind the greater body dissatisfaction reported by women in recent studies (Paxton *et al.*, 1991). Furthermore, the intensity of this growing body dissatisfaction is disturbing. In the most recent *Psychology Today* body image survey, 15 percent of women reported that they would sacrifice more than five years

of their life to be the weight they wanted (Garner, 1997). It is no surprise in light of the growing difference between ideal women's bodies and those of average women that the prevalence of eating disorders is increasing (Raphael & Lacey, 1992). Researchers have found that exposing women to a thin ideal leads to heightened body dissatisfaction which, in turn, leads to increased eating pathology (Stice & Shaw, 1994). Today's female body ideal is harmful psychologically and physically.

Men. The meaning of the difference between the average body sizes of men in the population and men in the media is more ambiguous. The body sizes of men in both the population and in the media have increased since the 1950s, and in the 1990s the absolute differences between the body sizes of the two groups do not differ greatly. However, these findings do not necessarily imply that there is little difference between the bodies of men in the population and men in the media. While BMI has been found to correlate highly with the average person's fat composition (Health and Welfare Canada, 1988), it may not as accurately describe the fat composition of persons who are extremely muscular (Hannan *et al*., 1995). The increasing body mass of *Playgirl* models is most likely due to greater muscle mass. Viewing their pictures indicated that this is probably so. On the other hand, the increases in average male body sizes are most probably due to greater body fat (Health and Welfare Canada, 1993; Kuczmarski *et al*., 1994). Future studies examining the body composition of the male media ideal are needed to confirm the implications of the present study: that (a) the body composition of North American men and *Playgirl* models is becoming increasingly different over time, and (b) that the growing discrepancy between the ideal and average male lies behind the high prevalence of body dissatisfaction reported by men in recent studies (Abell & Richards, 1996). The dangers of the muscular ideal have received relatively little attention to date, however it has been shown that poor body image, particularly not feeling large enough, is a risk factor for steroid use in young men (Brower *et al*., 1994; Buckely *et al*., 1988). In addition, the increasing body size of men in the media may also be contributing to the increased prevalence of the disorder described as "reverse anorexia" (Pope *et al*., 1993). Thus, while the media's depiction of body ideals both reflects and perpetuates societal gender differences, these narrowly defined ideals are difficult to attain, restrictive, and potentially harmful for both women and men.

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