Psychobehavioral Attributes of Body Image in College Freshmen and Seniors: Implications for Long-Term Health

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Abstract

Introduction: Understanding and assessing behavioral risk factors, particularly among college populations, is challenging for health educators. Similarly, issues affecting mental health remain unclear in terms of how body image evolves year to year in college students. A better understanding of how students perceive their bodies and to what extent it affects behavior is needed. Purpose: This study assessed psychobehavioral aspects of body image perception and discrepancy in college students to better identify risk behaviors. Methods: Two surveys (Body Image Questionnaire and Behavior Assessment Questionnaire) were administered to college freshmen and seniors (N = 170). Results: Students engaged in unhealthy body management strategies an average of 1-2 times per week. There was a strong correlation between discrepant body image and risky behavioral management strategies. Females had higher body image discrepancy scores (although non-significant), and educational level was not a significant factor in risk behaviors. Finally, desire for ideal muscle tone and definition, weight, physical coordination, and facial features were the strongest predictors of risk behaviors. Discussion: Body image dissatisfaction, risky management strategies, and risk behaviors did not differ between freshman and seniors. There is a continuing need for addressing body image perceptions and related negative behaviors in college students regardless of education level and age.

Introduction

Body image has been formally defined as, "…the internal, subjective representations of physical appearance and bodily experience" (Phillips, 1998, p. 199). Body image also is a multidimensional phenomenon that plays a vital role in dramatically influencing quality of life (Cash & Fleming, 2002; Cash & Pruzinsky, 2002). There is a continuing trend regarding body image dissatisfaction in the United States and abroad (Hrabosky et al., 2009) where billions of dollars are spent each year with hopes of addressing body image concerns such as overweight, fatness, muscularity, and cosmetic beauty among others (Leit, Gray, & Pope, 2002; Sarwer et al., 2005). One researcher notes, "…supplement industries and the media have made billions by capitalizing on our insecurities with our bodies" (Pope, Phillips, & Olivardia, 2000, p. 242).

Limited studies have sought to assess college student perceptions of their bodies and body image (discrepancy) and behavioral risk, such as 'body image' drug use. For example, Hoyt and Kogan (2001) examined college student body image perception and relationship satisfaction. In the latter study, it was noted that both male and female college students idealized different body parts, yet dissatisfaction with three or more body parts had a higher correlation to overall relationship dissatisfaction (Hoyt & Kogan, 2001). It also has been reported that younger college-aged men (and some women) in particular are seeking treatment for reported instances of body dissatisfaction with muscular ideals generally termed muscle dysmorphia (a sub-type of body dysmorphic disorder) (Murray, Reiger, Touyz, & De la Garza Garcia, 2010).

With over half of the world's population under twenty years old, (Population Reference Bureau, 2009) there is potential for body image disorders to increase. Research findings suggest adolescents are most vulnerable and impressionable toward their body image between the ages of 13 and 14 (Hallsworth, Wade, & Tiggeman, 2005; Kostanski, Fisher, & Gullone, 2004; McCabe & Ricciardelli, 2004; Morrison, Kalin, & Morrison, 2004). However, body image dissatisfaction and discrepancies between real and perceived body ideals often carry over into young adulthood, particularly in college populations (Grossbard, Lee, Neighbors, & Larimer, 2009; Hoyt & Kogan, 2001). Dissatisfaction with one's body has been found to be a normative component for women in Western society, whereas men, once thought to be unaffected, are now believed to share an equal concern for developing such disorders (Kostanski et al., 2004). Concern for body image is correlated with various risk factors such as disordered eating (i.e. restrictive eating patterns, skipping meals, overeating), eating disorders (i.e. anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified), and/or the use of performance-enhancing drugs and supplements (e.g., anabolic steroids) (Kanayama, Pope, & Hudson, 2001) Despite the long history of research on body image, there is still a dearth of literature as to what

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role it plays in substance abuse, body dysmorphic disorder (an obsessive preoccupation with a perceived or minor flaw of the body), and other psychobehavioral attributes and characteristics (Phillips, 1998).

Therefore, it was the purpose of this investigation to assess the psychobehavioral attributes of freshman and senior male and female college students with respect to body image and subsequent risk behaviors. The study was particularly concerned with similarities and differences of body image discrepancy and relationships with behavioral risk components in a collegiate sample using two assessment tools (Behavior Assessment Questionnaire [BAQ] and Body Image Questionnaire [BIQ]). The research questions posed were: (a) Do statistically significant differences in perceived body image exist between college freshmen and senior students? (b) Is there a statistically significant difference in perceived body image between male and female college students? (c) What body image perceptions account for the greatest amount of unique variance in body image-related behaviors? and (d) Is there a statistically significant difference in body image discrepancy between college freshman and seniors? The study aims to further the body of knowledge on the topic with future hopes of developing possible age/level specific and appropriate intervention strategies for enhancing body image and reducing negative body image management (risk) behaviors (e.g., body image drug use, excessive exercise) for young adults.

Methods

Participants

One-hundred-seventy male and female college-age participants were recruited for this study. In compliance with the Human Subjects Committee Institutional Review Board (IRB) procedures, all participants were required to read and sign an informed consent document prior to participation. Demographic and descriptive data are presented in Table 1.

Procedures

Following IRB approval, course instructors were contacted across disciplines at a large midwestern university to ask permission to distribute two surveys to their students. A letter describing the details of the study was provided to each instructor. Consenting instructors scheduled a class time for the surveys to be distributed, administered, and collected by the researchers. One of three research team members administered the Behavior Assessment Questionnaire (BAQ) and Body Image Questionnaire (BIQ) after informed consent was obtained from the participants. All survey responses were anonymous. Both surveys were distributed by the proctor followed by brief verbal instructions. Specific age groupings (i.e., 18-19 and 21-24 years) were defined so as to solicit college freshmen and seniors. Therefore, a preliminary

Table 1

Participant Demographics (N = 170)

Characteristics	n	(%)	Characteristics	Mean	(SD)
Gender			Age[a]		
Male	106	(62.4)	Males	20.35	(±1.72)
Female	64	(37.5)	Females	20.39	(±1.72)
			Total sample	20.36	(±1.71)
Ethnicity					
White/Caucasian	133	(78.2)	Height[b]		
Black/African-American	25	(14.7)	Males	71.83	(±2.67)
Asian	7	(4.1)	Females	65.71	(±2.96)
Hispanic/Latino	5	(2.9)	Total sample	69.51	(±4.07)
College level			Weight[c]		
Freshman	71	(41.8)	Males	185.36	(±35.26)
Senior	78	(45.9)	Females	151.44	(±29.42)
Other	21	(12.3)	Total sample	172.51	(±36.97)
Family status					
Both parents	126	(74.1)			
Single parent—mother	27	(15.9)			
Single parent—father	5	(2.9)			
Grandparents	2	(1.2)			
Other	10	(5.9)			

[a]Age in years. [b]Height in inches. [c]Weight in pounds.

survey of the participants in each class was taken prior to the distribution of consent forms and surveys (that is, students were verbally asked their level in college by a show of hands). Those not meeting the purposeful age sampling criteria were asked not to participate. The two surveys were administered and participants were asked to place each completed survey in an envelope at the front of each classroom. Time for completion of both surveys was approximately 20 minutes. Once all surveys were submitted, the envelope was sealed by the research proctor and returned to the researchers for coding and analysis.

Measures

Two surveys, the BAQ and the BIQ were used to assess participant attitudes and behaviors as they relate to body image. The BAQ is a 33-item attitudinal and behavioral assessment concerning body image risk behaviors. The BAQ includes three subscales: the behavioral risk scale (BR), body concern (BC), and the body image management strategies (MS) subscale. Respondents are asked to indicate how frequently they experience and engage in specific body image-related attitudes and behaviors on a 5-point Likert-type scale (0 = Never, 1 = Rarely, 2 = Often, 3 = Frequently, 4 = Daily) as well as level of agreement (0 = Strongly Disagree, 1 = Disagree, 2 = Neutral, 3 = Agree, 4 = Strongly Agree). The last subscale, body management (BM), assesses risk behaviors using a three-item option (yes, no, no opinion). An example of an item from the BAQ is, "How often do you talk about your appearance?" Seven additional items ascertain demographic data, and one question is designed to identify self-exploration affect (i.e., the first physical feature students notice about themselves). In pilot data, results from the BAQ had acceptable overall reliability (α = .77). The BAQ also has been noted to have good internal consistency among items and scales (α = BR = .83; BC = .67; MS = .84) as well as high face, convergent, and discriminant validity. Face validity was established by review by two psychologists, three health educators, and one psychometrician. Convergent validity is similar to that of measures of body image practices noted by Pope, Phillips & Olivardia (2000). Lastly, it was demonstrated that discriminant validity among questions and subscale were dissimilar by the previously described panel of reviewers.

The BIQ has 11 items with two subscales per question and is used to measure personal body image. Respondents are asked to rate their perception of their body on various factors and also how important each body factor is to them specifically. An example of a question from the BIQ is "(part a) My ideal body proportion is: [0 = Exactly as I am, 1 = Almost as I am, 2 = Fairly unlike me, 3 = Very unlike me] and (part b) How important to you are your ideal body proportions? [0 = Not Important, 1 = Somewhat Important, 2 = Moderately Important, 3 = Very Important]." When applied to body image, this perspective maintains that a person's physical self-evaluations (actual) are based on the extent of congruence/discrepancy between self-perceived physical attributes and internalized standards or ideals (Cash & Szymanski, 1995). Initial validation of the BIQ found reliability to be acceptable (α = .79) (Cash & Szymanski, 1995). In the present sample, reliability was high (α = .88), which confirms the survey's good internal consistency. The surveys were selected for their unique abilities to assess the various psychobehavioral aspects of body image. Because body image is a psychological construct and is thus difficult to measure, the BAQ was used to determine participant attitudes and risk behaviors. Conversely, in order to correlate data from the BAQ, the BIQ was used to assess for the congruence or discrepancy between perception of physical attributes and internalized body ideals and standards.

Data Analysis

Using the Statistical Package for Social Sciences (v. 16.0, Chicago, IL), descriptive statistics were calculated for the sample (Table 1) and data were analyzed to answer the four research questions. Correlations among variables for the BAQ and BIQ were calculated using Pearson product moment correlations. A 2 x 2 between-subjects factorial ANOVA was used to compare BIQ scores for males and females who reported being freshmen or seniors in college. Lastly, a linear regression analysis was performed to identify which individual questions on the BIQ served as predictor variables for the dependent variables in the BAQ. All levels of statistical significance were set a priori at $p < .05$.

Results

Descriptive and demographic statistics are reported in Table 1. Participants were 170 college students (males = 106; females = 64) sampled from a large midwestern university. There were 71 freshmen and 78 seniors, while 21 participants identified themselves as being in a different academic class, but still either freshmen or senior levels credit-wise and were included in the full analysis based on credit classification. The sample was predominantly Caucasian (n = 133), with African-American (n = 25), Asian (n = 7), and Hispanic (n = 5) ethnicities also represented. The average BAQ question score was 1.30 (SD = .48), meaning that participants engaged in body image management techniques on average between one and two times per week. The average BIQ score was 1.53 (SD = 1.52; *Range* = 0-3), which was consistent with reported BIQ norms (X = 1.53, SD = 1.37; *Range* = 0-3 [higher scores = greater discrepancy]) (Cash & Fleming, 2002), that is, there exists some discrepancy in actual and perceived body image. The sample self-reported an average height of 69.5 inches and an average weight of 172.5 pounds.

Correlations were calculated using a Pearson product moment correlation and are shown in Table 2 (gender was coded as males = 1; females = 2). Several significant correlations were noted, including the relationship between the BAQ and BIQ scores, indicating a relationship between body image perception and body image management behaviors.

Table 2

Correlations Among the Variables

	1	2	3	4	5	6
BAQ score (1)	--					
Gender (2)	.21**	--				
BIQ score (3)	.40**	.12	--			
Height in inches (4)	-.15*	-.73**	-.02	--		
Weight in pounds (5)	-.01	-.45**	-.01	.53**	--	
BMI (6)	.08	-.06	-.02	-.02	.83**	--

* $p < .01$. ** $p < .001$.

To examine the first two research questions ("Does a difference in perceived body image exist between college freshmen and senior students?" and "Is there a significant difference in perceived body image between males and females?"), a 2 x 2 (classification in school and gender) between-subjects factorial ANOVA was calculated, comparing BIQ scores for males and females who reported being either freshmen or seniors in college. Although females reported higher levels of body image perception discrepancy ($x = 1.76$) than males ($x = 1.38$), the main effect for gender was not significant [$F(1, 145) = 2.30$, $p > .05$, *n.s.*]. The main effect for education level also was not significant [$F(1, 145) = .457$, $p > .05$, *n.s.*]. Finally, the interaction was not significant [$F(1, 145) = .021$, $p > .05$, *n.s.*]. Thus, it appears that neither gender nor classification in school has any significant effect on BIQ scores.

To examine the third research question ("What body image perceptions account for the greatest amount of unique variance in body image-related behaviors?"), a linear regression analysis was performed. Discrepancy scores on the individual questions of the BIQ served as predictor variables, while the BAQ subscale scores were the dependent variables.

The combined effect of the predictor variables was significant, $F(4, 164) = 13.82$, $p < .001$, and explained 25.2% of the variance. With respect to independent contributions to body image-related risk behaviors, four predictor variables accounted for a significant amount of unique variance: BIQ question 5 ("My ideal muscle tone and definition is:"), $t = 3.71$, $p < .001$, $R^2 = .17$, $\beta = .31$; BIQ question 7 ("My ideal weight is:"), $t = 2.60$, $p < .01$, $R^2 = .02$, $\beta = .22$; BIQ question 10 ("My ideal physical coordination is:"), $t = -2.98$, $p < .01$, $R^2 = .03$, $\beta = -.22$; and BIQ question 4 ("My ideal facial features are:"), $t = 2.41$, $p < .05$, $R^2 = .03$, $\beta = .178$. The remaining BIQ questions did not account for significant amounts of unique variance. The reported R^2s were adjusted for the number of predictors (n =11) on the BIQ so as not to inflate results from the base number of predictor items on the scale. Additionally, the regression ANOVA against the standardized predicted values showed no obvious pattern, confirming that the assumptions of linearity and homogeneity of variance had been met. Lastly, research question four, "Is there a statistically significant difference in body image discrepancy between college freshman and seniors?" was examined. There was no statistically significant difference between freshmen and seniors in college, ($t = -.369$, $p = .712$, *n.s.*).

Discussion

This study assessed the psychobehavioral aspects of body image perception and discrepancy in a cross-sectional survey of college students ($N = 170$) using two instruments. Two reliable and valid instruments (the BIQ and BAQ) were used to measure how college students perceive their body image and what methods they use to address body image discrepancies, if any. The sample was assumed to be fairly representative of other academic institutions in the midwest region in terms of demographics and demonstrated a good distribution of true freshmen (41.8%) and senior (45.9%) college students in addition to those classified by credits (12.3%). Students were asked to report their family status, that is, what was their family life growing up. Previous research has shown parental connectedness (or lack thereof) may play a role in the development of body image dissatisfaction (Boutelle, Eisenberg, Gregory, & Neumark-Sztainer, 2009; Morrison et al., 2004; Palladino-Green & Pritchard, 2003). Our study yielded a sample where 74.1% ($n = 126$) grew up in households with two parents present, suggesting that body image dissatisfaction may have been moderated by this factor.

In terms of ethnicity, 78.2% ($n = 133$) identified as Caucasian. Body image dissatisfaction has been shown to be higher in Caucasian samples than in minority groups (e.g., African-Americans), particularly younger females (Grilo & Masheb, 2005; Miller et al., 2000). Thus, since more than 75% of this sample self-identified as Caucasian, the body

image discrepancies and resultant behaviors may have been over-represented. Participants also were asked to report height and weight. Average body mass indices (BMI) for males, females, and the overall sample were calculated. The total sample BMI was slightly in the overweight category (x = 25.08) compared to the referent values of 18.5-24.9 for normative values (Pribis, Burtnack, McKenzie, & Thayer, 2010). Males in the sample had a mean of 25.28 whereas females had a mean value of 28.53, which is consistent with previous research (Pribis et al., 2010). Higher levels of BMI have been shown to correlate with greater body fat percentages, which may affect self-esteem and overall global body image satisfaction (Kakeshita & Almeida, 2008; McCabe & Ricciardelli, 2004). Females tended to have more body image management behaviors (risk) (x = 2.43; SD = 0.69) as measured in the BM subscale of the BAQ than did males (x = 1.23; SD = 0.79; t = 2.44, p = .002). It also should be noted that BMI should be judiciously interpreted due to the fact it does not routinely account for levels of muscularity (Heymsfield, Gallagher, Mayer, Beetsch, & Pietrobelli, 2007; Pribis et al., 2010).

Females reported higher levels of body image discrepancy than did males on the BIQ; however, findings were not statistically significant. The effect size for the former, however, was small [R^2 = .32]. It is not surprising that females were more sensitive regarding their perceived versus actual body image. Trends over the past 30+ years of body image research have largely supported the notion that women in the Western world and some in Asian cultures, such as Japan, are more critical of their bodies (Cash, Morrow, Hrabosky, & Perry, 2004). The term "normative discontent" has been proposed as an adaptive cultural phenomenon, whereby it is normal and expected for women in these cultures to be critical of their bodies and the bodies of others (Kostanski et al., 2004; Rodin, Silberstein, & Striegel-Moore, 1984). The role and impact of media messages and popular culture have been presented as possible contributory factors to these findings (Giant & Vartanian, 2001).

A moderate and statistically significant correlation (r = .40) between scores on the BIQ and the BAQ instruments (Table 3) was found. This finding suggests that perceived body image in participants showed consistency in the self-reported body image management risk behaviors (i.e., excessive dieting, exercise dependence, supplement, and drug use). This research is consistent with findings from other studies and populations, such as those measuring adolescent body image satisfaction and extreme body change behaviors (McCabe & Ricciardelli, 2004). Moreover, various studies have attempted to explore which variables, such as diet pills and androgenic-anabolic steroid use, predicted body change behaviors, (Cash, Phillips, Santos, & Hrabosky, 2004; Leone et al., 2011); however; to our knowledge, no studies have assessed discrepancies in perceived body image and the direct body image change behaviors and strategies in college freshmen and seniors as distinct groups.

It was postulated that lower levels of body image satisfaction and greater discrepancy scores would be found in freshmen females as compared to senior females. No statistically significant associations between gender and classification in college (the first two research questions), and results on the BIQ were found. This is an interesting finding since research suggests lower levels of body image satisfaction and self-esteem in females when they enter college at younger ages compared to older women (Cash, Morrow et al., 2004; Izgic, Akyüz, Doğan, & Kuğu, 2004). College health and wellness programs as well as health

Table 3

Psychobehavioral Body Image Instrument Measures

	Mean	*SD*	Minimum	Maximum
Descriptive statistics for total sample				
BIQ	1.53	1.52	-2.00	6.00
BAQ	28.53	10.60	3.00	58.00
BMI	25.08	4.57	17.96	44.03
Descriptive statistics for males				
BIQ	1.38	1.43	-2.00	5.00
BAQ	26.77	10.08	3.00	56.00
BMI	25.28	4.40	18.17	44.03
Descriptive statistics for females				
BIQ	1.76	1.66	-2.00	6.00
BAQ	31.42	10.87	10.00	58.00
BMI	28.53	4.84	17.96	40.14

Note. BIQ = Body Image Questionnaire; BAQ = Behavior Assessment Questionnaire; BMI = Body Mass Index (weight in kilograms / height in meters^2).

educators should be addressing the fact that body image discrepancy appears to not differ based on freshmen and senior classifications. Findings from this study indicate that there are no differences across classification for males either. Data for males are not as abundant; therefore, it is difficult to determine if trends found in this research are consistent with other findings.

The third research question attempted to ascertain whether specific body image perceptions predicted body imaged-related behaviors and management strategies. Four statistically significant predictor variables were found based on the linear regression model. Ideal muscle tone and definition, ideal weight, ideal physical coordination, and ideal facial features collectively, were the strongest predictors accounting for 25.2% of the model variance. Essentially, this means that people who valued these traits exhibited riskier behavioral body image management strategies. These findings are consistent with previous research that showed that people with concern for their muscle tone and definition are commonly preoccupied with body weight as well (Hallsworth et al., 2005; Hoyt & Kogan, 2001; Hrabosky et al., 2009; Leit et al., 2002; Murray et al., 2010). The way people manage their body image discrepancy often follows a familiar pattern whereby men seek to get lean and muscular, or "ripped" (Giant & Vartanian, 2001; Hallsworth et al., 2005; Kanayama et al., 2001; Murray et al., 2010; Sarwer et al., 2005), whereas women attempt to lose body weight in terms of fat, while hoping to improve muscle definition rather than add bulk (Giant & Vartanian, 2001; Grossbard et al., 2009; Miller et al., 2000; Sarwer et al., 2005). Therefore, findings from this study support the importance of ideal muscle tone and definition and ideal body weight in predicting body management behaviors and strategies which are consistent with existing literature.

The third predictor variable, physical coordination is generally associated with athletic and physical prowess (Cash & Szymanski, 1995). A general college population as opposed to athletes was sampled in this study; therefore, it would be expected that participants would most likely desire (and not necessarily already possess) the physical coordination that generally accompanies a physically fit body. This discrepancy can be seen in the negative correlation between the BIQ score and BAQ score (β = -.22), meaning greater discrepancy in body image perceptions yielded riskier health behaviors with the opposite holding true. As previously addressed, the sample in the present study had a slightly overweight classification in terms of BMI, with female values higher than males (Table 3). Therefore, body-image-related management behaviors and strategies such as exercise may have been higher in the female sample because of concern for being slightly overweight. It is possible that the desire for physical coordination is a desirable indirect benefit from becoming more physically fit overall.

The final statistically significant predictor variable, desire for ideal facial features, has been commonly studied in body image literature (Cash & Pruzinsky, 2002; Phillips, 1998). For example, Park, Buunk, and Wieling (2007) found that attractive facial features predicted athleticism and physical prowess. They also identified a strong correlation between athleticism and heritable fitness with ideal facial features such as strong jaw lines in males and higher cheek bones in females. The face is one of the foremost physical features people attend to, such as with cosmetic procedures, make-up, and even exercise to lose weight (Cash & Pruzinsky, 2002; Phillips, 1998); therefore, it was not a surprising finding that participants' perceptions of their facial features contributed significantly to body management behaviors and strategies.

Finally, to answer the fourth research question, it appears body image discrepancy was not significantly different between college freshman and seniors. Although not statistically significant, these data still show higher discrepancy values and greater body image-related management strategies in female students. These findings are partially supported by a similar cross-sectional investigation by Cash, Morrow, et al. (2004), who examined trends in body image from 1983-2001. They found non-Black women's preoccupation with body image dissatisfaction was prevalent until the mid 1990s; however, body image tended to improve thereafter. Contrary to the present study's findings, Cash, Phillips, et al. (2004) found a reduction over time in women's investment in their appearance; however, because this study was conducted as a cross-sectional survey using two distinct cohorts, we cannot comment on changes as they may have occurred over time in this study. Additional longitudinal studies could further an understanding of how body image may or may not change from freshman year to senior year in college populations. They also found men's overall body image satisfaction was relatively stable over the 19-year period (Cash, Morrow, et al., 2004). No significant difference in either men or women's body image satisfaction between freshmen and seniors was found in this collegiate sample. Thus, it appears time does not moderate body image satisfaction in these data as postulated and based on findings by Cash, Morrow, et al. (2004). There may have been a cultural change, however, in data from Cash's study in 2001 (Cash, Morrow, et al., 2004) versus data in the present study. Additionally, body image-related behaviors appeared to remain constant in both men and women, suggesting that time does not affect body image management behaviors either. These findings are cross-sectional, rather than longitudinal, which limits the generalizability of this study. Future studies may want to frame the context of these findings using a longitudinal study design.

As with any study, results should be judiciously evaluated based on methodological limitations. First, cross-sectional survey designs do not allow for causality to be established; therefore, it is not possible to determine whether body image discrepancies lead to negative body image-related management strategies or if the opposite holds true. Second, several possible forms of bias may have affected meaning. Honesty of respondents is a common limitation in any survey research, with socially desirable responses often given. To control for this participants were assured their responses were anonymous and could not be traced

to them. Response bias and non-response bias also may have occurred, with those who were comfortable answering questions pertaining to their body participating and others who were not comfortable opting out of the study. Finally, a convenient sample was used at one university in the midwest. This non-random sample may not be representative of all college students with respect to body image and the various psychobehavioral attributes studied.

In conclusion, an unexpected trend was noted in both college males and females in that body image dissatisfaction and discrepancy as well as body image-related management strategies and behaviors did *not* differ between freshmen and seniors. Moreover, gender was not a significant factor in terms of satisfaction or behaviors either.

Translation to Health Education Practice

Body image affect predicts various health-related behaviors (both positive and negative). Findings from this study demonstrate a continuing need for addressing body image perceptions and related negative risk behaviors, such as excessive dietary supplement use, exercise dependence, and compulsive exercise in college populations. College and university health and wellness programs should examine their current programming content addressing body image and related concerns. Programming should be developed to guide students from freshman year throughout the lifespan to encourage healthy body image practices. Health educators are well positioned for taking an active role in this process based on their experience as holistic health experts.

References

Boutelle, K., Eisenberg, M. E., Gregory, M. L., & Neumark-Sztainer, D. (2009). The reciprocal relationship between parent-child connectedness and adolescent emotional functioning over 5 years. *Journal of Psychosomatic Research, 66*(4), 309-316.

Cash, T. F., & Fleming, E. C. (2002). The impact of body image experiences: Development of the Body Image Quality of Life Inventory. *International Journal of Eating Disorders, 31,* 455-460.

Cash, T. F., Morrow, J. A., Hrabosky, J. I., & Perry, A. A. (2004). How has body image changed? A cross-sectional investigation of college women and men from 1983-2001. *Journal of Consulting and Clinical Psychology,72,* 1081-1089.

Cash, T. F., Phillips, K. A., Santos, M. T., & Hrabosky, J. I. (2004). Measuring "negative body image." Validation of the body image disturbance questionnaire in a non-clinical population. *Body Image, 1,* 363-372.

Cash, T. F., & Pruzinsky, T. (2002). *Body Image: A handbook of theory, research, and clinical practice.* New York: The Guilford Press.

Cash, T. F., & Szymanski, M. L. (1995). The development and validation of the Body-Image Ideals Questionnaire. *Journal of Personality Assessment, 64,* 466-477.

Giant, C. L., & Vartanian, L. R. (2001). "Ally McBeal versus Arnold Schwarzenegger": Comparing mass media, interpersonal feedback and gender as predictors of satisfaction with body thinness and muscularity. *Social and Behavioral Personality, 29,* 711-724.

Grilo, C. M., & Masheb, R. M. (2005). Correlates body image dissatisfaction in treatment-seeking men and women with binge eating disorder. *International Journal of Eating Disorders, 38,* 162-166.

Grossbard, J. R., Lee, C. M., Neighbors, C., & Larimer, M. E. (2009). Body image concerns and contingent self-esteem in male and female college students. *Sex Roles, 60*(3-4), 198-207.

Hallsworth, L., Wade, T., & Tiggeman, M. (2005). Individual differences in male body image: An examination of self-objectification in recreational bodybuilders. *British Journal of Health Psychology, 10,* 453-465.

Heymsfield, S. B., Gallagher, D., Mayer, L., Beetsch, J., & Pietrobelli, A. (2007). Scaling of human body composition to stature: New insights into body mass index. *American Journal of Clinical Nutrition, 86,* 82-91.

Hoyt, W. D., & Kogan, L. R. (2001). Satisfaction with body image and peer relationships for males and females in a college environment. *Sex Roles, 45,* 199-215.

Hrabosky, J. I., Cash, T. F., Veale, D., Neziroglu, F., Soll, E. A., Garner, D. M., . . . Phillips, K. A. (2009). Multidimensional body image comparisons among patients with eating disorders, body dysmorphic disorder, and clinical controls: A multisite study. *Body Image, 6*(3), 155-163.

Izgic, F., Akyüz, G., Doğan, O., & Kuğu, N. (2004). Social phobia among university students and its relation to self-esteem and body image. *Canadian Journal of Psychiatry, 49,* 630-634.

Kakeshita, I. S., & Almeida, S. S. (2008). The relationship between body mass index and body image using a new figure rating scale. *Psychology and Neuroscience, 1*(2), 33-36.

Kanayama, G., Pope, H. G., & Hudson, J. I. (2001). "Body image" drugs: A growing psychosomatic problem. *Psychotherapy Psychosomatics, 70,* 61-65.

Kostanski, M., Fisher, A., & Gullone, E. (2004). Current conceptualization of body image dissatisfaction: Have we got it all wrong? *Journal of Child Psychology and Psychiatry, 45,* 1317-1325.

Leit, R. A., Gray, J. J., & Pope, H. G. (2002). The media's representation of the ideal male body: A cause for muscle dysmorphia? *International Journal of Eating Disorders, 31,* 334-338.

Leone, J. E., Fetro, J. V., Kittleson, M. J., Welshimer, K. J., Partridge, J. A., Robertson, S. L. (2011). Predictors of adolescent male body image dissatisfaction: Implications for negative health practices and consequences from a regionally representative sample. *Journal of School Health, 81,* 174-184.

McCabe, M. P., & Ricciardelli, L. A. (2004). A longitudinal study of pubertal timing and extreme body change behaviors among adolescent boys and girls. *Adolescence, 39,* 145-166.

Miller, K. J., Gleaves, D. H., Hirsch, T. G., Green, B. A., Snow, A. C., & Corbett, C. C. (2000). Comparisons of body image dimensions by race/ethnicity and gender in a university population. *International Journal of Eating Disorders, 27,* 310-316.

Morrison, T. G., Kalin, R., & Morrison, M. A. (2004). Body image evaluation and body image investment among adolescents: A test of sociocultural and social comparison theories. *Adolescence, 39,* 571-592.

Murray, S. B., Rieger, E., Touyz, S. W., & De la Garza Garcia, L. Y. (2010). Muscle dysmorphia and the DSM–V conundrum: Where does it belong? A review paper. *International Journal of Eating Disorders, 43*(6), 483-491.

Palladino-Green, S., & Pritchard, M. E. (2003). Predictors of body image dissatisfaction in adult men and women. *Social Behavior and Personality, 31,* 215-222.

Park, J. H., Buunk, A. P., & Wieling, M. B. (2007). Does the face reveal athletic flair? Positions in sports teams and facial attractiveness. *Personality and Individual Differences, 43,* 1960-1965.

Phillips, K. A. (1998). *The Broken Mirror: Understanding and treating body dysmorphic disorder*. New York: Oxford University Press.

Pope, H. G., Phillips, K. A., & Olivardia, R. (2000). *The Adonis Complex: The secret crisis of male body obsession*. New York: The Free Press.

Population Reference Bureau. (2009). *World Population Data Sheet*. Washington, D.C.: 1-19. Retrieved from http://www.prb.org/pdf09/09wpds_eng.pdf

Pribis, P., Burtnack, C. A., McKenzie, S. O., & Thayer, J. (2010). Trends in body fat, body mass index and physical fitness among male and female college students. *Nutrients, 2*(10), 1075-1085.

Rodin, J., Silberstein, L. R., & Streigel-Moore, R. H. (1984). Women and weight: A normative discontent. In T.B. Sondregger (Ed.), *Psychology and gender. Nebraska Symposium on Motivation*. Lincoln: University of Nebraska.

Sarwer, D. B., Cash, T. F., Magee, L., Williams, E. F., Thompson, J. K., Roehrig, M., . . . Romanofski, M. (2005). Female college students and cosmetic surgery: An investigation of experiences, attitudes, and body image. *Plastic and Reconstructive Surgery, 115*(3), 931-938.