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Change in First-Year Women's Body Dissatisfaction in Relation to Drive for Thinness and Social Body Comparison

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**CHANGE IN FIRST-YEAR WOMEN'S BODY DISSATISFACTION IN RELATION TO
DRIVE FOR THINNESS AND SOCIAL BODY COMPARISON**

By

Marie L. Chardon

A Proposal Submitted to the Honors Council

For Honors in Psychology

Date

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Table of Contents

Acknowledgments.....ii

Table of Contents.....iii

List of Figures.....iv

Abstract.....v

Introduction.....1

 Introduction

 Body Dissatisfaction

 Risk Factors for Body Dissatisfaction

 Aims of the Present Study

 Hypotheses

Methods.....9

 Participants

 Measures

 Procedure

 Analysis

Results.....13

 Hypothesis 1: Drive for Thinness, Social Body Comparison and Body Dissatisfaction

 Hypothesis 2: Drive for Thinness, Social Body Comparison and Ideal Body

 Hypothesis 3: Body Dissatisfaction and Ideal Body

Discussion.....17

 Hypothesis 1: Drive for Thinness, Social Body Comparison and Body Dissatisfaction

 Hypothesis 2: Drive for Thinness, Social Body Comparison and Ideal Body

 Hypothesis 3: Body Dissatisfaction and Ideal Body

 Limitations

 Future Research

 Implications

References.....24

Figures28

Appendices.....36

- Appendix A: Demographic Information
- Appendix B: Body Image Assessment Scale-Body Dimension
- Appendix C: Eating Disorder Inventory-3-Referral Form
- Appendix D: Physical Appearance Comparison Scale
- Appendix E: Communication to Participants

List of Figures

Figure 1. Model of study variables.....28

Figure 2: Participant flow-chart29

Figure 3. Body dissatisfaction of high and low drive for thinness.....30
women at baseline and follow-up.

Figure 4. Body dissatisfaction of high and low social body comparison.....31
women at baseline and follow-up.

Figure 5. Body dissatisfaction of high and low drive for thinness.....32
women at baseline and follow-up.

Figure 6. Body dissatisfaction of high and low social body comparison.....33
women at baseline and follow-up.

Abstract

Drive for thinness (DT) and social body comparison (SBC) have been highly correlated with body dissatisfaction, a robust risk factor for eating disorders; however, there is little understanding of how these two variables relate to increases in body dissatisfaction over time. In the present study, I investigated how high initial levels of DT and SBC correlate with changes in body dissatisfaction and ideal body by surveying 110 first-year women at the beginning and end of their first semester. There was no significant relationship between high initial DT and SBC and changes in either body dissatisfaction or ideal body. However, high initial SBC was almost significantly correlated with change in ideal body due to women with low SBC choosing larger bodies at follow-up. In addition, women with high initial DT and SBC had higher body dissatisfaction than women with low initial levels of both variables. Women with high initial SBC chose thinner ideal bodies than women with low initial SBC. Lastly, change in body dissatisfaction was negatively correlated with change in ideal body. If replicated, I would hope these findings could contribute to a better understanding of how women's perception of their bodies changes over the course of their first semester in college and inform interventions to address this potential risk factor for disordered eating.

Introduction

Introduction

Bulimia Nervosa is an eating disorder marked by a pattern of uncontrollable consumption of a large amount of food over a discrete period of time (binging) followed by compensatory behaviors to avoid weight gain (purging), such as vomiting or excessive exercise (Stice, 2002). Bulimia nervosa can develop at any age and bulimic symptoms are present in all age groups; however, onset is most prevalent during late adolescence and early adulthood (Drewnowski, Yee & Krahn, 1988; Rand and Kuldau, 1990). Rand and Kuldau (1990) found that the prevalence of bulimia nervosa in 18-30 year old individuals was 4.1% compared to 1.1% in the general population. Furthermore, significantly more college women within this age group are clinically classified as bulimic than same age college-men and same age non-college women (Rand & Kuldau, 1990; Stice, Killen, Hayward & Taylor, 1998).

Due to the high rates of bulimia nervosa, researchers have conducted a plethora of research investigating its risk factors. Stice (2002) defines a risk factor as “a variable that has been shown to prospectively predict some subsequent pathology outcome” (p. 825). There are multiple types of risk factors. A causal risk factor is one that, if found among individuals free of clinical levels of the disorder, elevate or reduce symptoms. A proxy risk factor is a variable that only has prospective power due to its correlation with a true causal risk factor (Stice, 2002). In addition, maintenance factors predict the presence of symptoms over time rather than remission in initially diagnosable individuals (Stice, 2002).

Body Dissatisfaction

One of the most robust risk and maintenance factors for bulimia is *body dissatisfaction* (Stice, 2002). Myers & Crowther (2009) define body dissatisfaction as dysfunctional, negative feelings and thoughts about one's weight and shape. In the past 20 years, researchers have become concerned with the widespread prevalence of body dissatisfaction (Petrie, Greenleaf & Marin, 2010). Stice & Whitenton (2002) found that in a sample of 11-15 year-old adolescents, 24% reported being dissatisfied with their bodies. Though body dissatisfaction has been reported in both males and females, a significantly higher proportion of women suffer from body dissatisfaction than men. Neighbors & Sobal (2007) found that women were significantly more dissatisfied with their bodies than men, and that they expressed significant discrepancies between their current and desired weight. This discrepancy was especially prevalent among women who wanted to lose weight (Neighbors & Sobal, 2007). Myers & Crowther (2009) found over 80% of women in college report body dissatisfaction, while Cooley and Toray (2001) found that 94% of the 225 first-year college-women they surveyed reported that they would ideally like to weigh less than their current weight. This widespread prevalence of body dissatisfaction in college-age women is why I chose to focus on this group in my study.

Furthermore, body dissatisfaction has been associated with other health and psychological issues (Anton, Perri, & Riley, 2000; Johnson & Wardle, 2005). Anton, Perri and Riley (2000) found that higher levels of body dissatisfaction were associated with lower levels of consumption of healthy foods and lower levels of leisure-time physical activity. In addition, Johnson and Wardle (2005) found in a sample of 1,777 adolescent girls (between the ages of 13- and 15) that body dissatisfaction significantly predicted increases in disordered eating symptoms, stress, low self-esteem, and depression over a 10-month period. Thus, body dissatisfaction was a

strong causal risk factor in their study. This evidence, revealing negative impact of body dissatisfaction on psychological and physical health, has led researchers to investigate body dissatisfaction in its own right, independent of its causal influence in the development of eating disorders.

The Self-Discrepancy Theory. One of the most researched explanations for body dissatisfaction is the *self-discrepancy theory* (Neighbors & Sobal, 2007; Strauman, et al., 1991). The self-discrepancy theory investigates the roles of the different selves: the *actual self* (a representation of the attributes that the individual believes he or she actually possess), the *ideal self* (a representation of the attributes that the individual would ideally like to possess), and the *ought self* (a representation of the attributes that the individual believes that they should possess) (Higgins, 1987). The self-discrepancy theory postulates that any incongruities between these selves contribute to negative emotional-motivational states (Higgins, 1987). People whose selves do not match are motivated to strive for congruency; however, if they feel that they will never obtain their ideal or ought self, they are vulnerable to dejection (i.e. shame, embarrassment, or feeling downcast) (Strauman et al., 1991). These feelings are often referred to as dissatisfaction (Higgins, 1987).

In the context of body image, the self-discrepancy theory can be applied to physical attributes such as body shape and body weight (Neighbors & Sobal, 2007; Thompson et al., 1999). This application of the self-discrepancy theory suggests that individuals strive to match their perceived actual body to their perceived ideal body (Thompson et al., 1999). If these perceived bodies do not match, then the individual is at risk for body dissatisfaction. Cooley & Toray (2001) illustrated this relationship in their study which found that greater discrepancies

between ideal and actual body perceptions are correlated with negative body image, greater body dissatisfaction, and disordered eating.

This actual: ideal body discrepancy is measured most frequently through the use of figure rating scales (Gardner, Jappe & Gardner, 2009). Figure rating scales consist of line drawings depicting bodies that represent different *body mass indexes* (BMI), an index for assessing overweight and underweight. BMI is obtained by dividing body weight in kilograms by height in meters squared. In studies using figure rating scales, participants choose two drawings: one that they feel most accurately represents their actual body and another that most closely represents the body they would ideally like to be (Cooley & Toray, 2001; Gardner et al., 2009). The discrepancy on figure rating scales is used to quantify body dissatisfaction, such that larger discrepancy indexes between the actual and ideal bodies indicate a greater level of body dissatisfaction (Gardner et al., 2009). In the present study, I used the Body Image Assessment Scale-Body Dimensions (BIAS-BD), which will be explained in further detail in the methods section (Gardner et al., 2009; see Appendix A).

Risk Factors for Body Dissatisfaction: Social Body Comparison and Drive for Thinness

Through multiple studies, researchers have investigated how body dissatisfaction develops and have identified risk factors for body dissatisfaction, such as social body comparison and drive for thinness (see Figure 1 for a diagram of risk factors in this study). In researching these factors, there have been many theories regarding how risk factors interact to result in body dissatisfaction. One of the most supported theories is the *sociocultural perspective* which tries to account for how social and cultural values influence individual attitudes and behaviors. This

perspective accounts for both how the individual is perceived by the society, and how the individual perceives him or herself (Neighbors & Sobal 2007).

Social body comparison. One way that women create their perception of themselves is through comparing themselves with other women. This self-perception is best explained through Leon Festinger's (1954) *theory of social comparison*. This theory postulates that in order for individuals to evaluate their attributes, they need to compare themselves to other people. These attributes can be both physical (e.g. body shape, facial features) and abstract (e.g. intelligence, social behavior). However, it has also been found that depending on the characteristics in question, individuals chose to compare themselves with different cohorts of people (Heinberg & Thompson, 1992).

Heinberg and Thompson (1992) asked undergraduate students to rate the importance of six groups (family, friends, classmates, other university students, celebrities, and average U.S. citizens) to whom people make individual comparisons on seven attributes (both appearance-based and non-appearance-based). They found that women compared themselves with friends for appearance, while they compared themselves with both friends and family on non-appearance subjects (Heinberg & Thompson, 1992). These findings suggest that there are different forms of social comparisons that operate under different systems.

In the context of body image, social comparison in general has been highly correlated with body dissatisfaction, particularly in women (Myers & Crowther, 2009). This finding suggests that women who compare themselves more to others on a variety of attributes are more likely to have higher body dissatisfaction. More specifically, researchers have identified *social body comparison* (SBC) as a subgroup of social comparison in general. SBC is an individual's tendency to compare his or her physical appearance with another's physical appearance (Petrie et

al., 2010). This variable has been highly correlated with body dissatisfaction (Myers & Crowther, 2009). For example, Thompson et al. (1999) found that individuals who frequently compare their bodies to others or to an ideal body had higher levels of body dissatisfaction than those who compared themselves less frequently. These findings parallel the body discrepancy theory to explain body dissatisfaction, because women who compare themselves and do not match up with their ideal experience more body dissatisfaction than those that compare themselves less frequently to an ideal (Higgins, 1987; Thompson et al., 1999). This higher body dissatisfaction is due to the larger discrepancy between the actual and ideal bodies.

Despite these studies which link SBC to body dissatisfaction, there is a lack of research concerning how SBC influences change in body dissatisfaction over time. This social body comparison should be easily accessible and potentially influential in a university setting. This environment offers a large population of the group identified as most often compared with for physical features. Plus the transition to a new environment affords a fundamental shift in a student's comparison group upon arrival on campus (Heinberg & Thompson, 1992).

Drive for thinness. In addition to physical comparisons with other people, Thompson et al. (1999) found that individuals compared themselves with an ideal body, and that this comparison was correlated with increases in body dissatisfaction. Today, media in the United States portray the ideal female body shape as slim and fit. Yet, over 60% of American adults are now considered overweight or obese (Neighbors & Sobal, 2007).

Clearly the average American woman's body does not meet the thin ideal. Consequently, a large number of women are at risk for developing body dissatisfaction due to the incongruence between their current body shape and what society says is desirable (Neighbors & Sobal, 2007). This conclusion is supported by the above-described self-discrepancy theory of body

dissatisfaction that posits that women who most strongly endorse the thin ideal will experience the most body dissatisfaction as their perceived ideal body will be small, while their actual body remains an average weight (Cooley & Toray, 1996; Higgins, 1987; Stice & Whitenton, 2002).

A year-long prospective study done by Stice and Whitenton (2002) with 11-15 year old girls further supports this theory. Their findings indicated that two of the strongest predictors for increases in body dissatisfaction, along with BMI, are pressure to be thin (the amount of pressure an individual feels to be thin) and an individual's thin-ideal internalization (the degree to which a woman personally endorses the thin body ideal) (Stice & Whitenton, 2002). These findings suggest that women who believed that thinner bodies were ideal experienced more dissatisfaction. As few women in the study were overweight, this larger discrepancy could be attributed to those women comparing their healthy-sized bodies to a smaller, unrealistic ideal body (Stice & Whitenton, 2002). As a result, the discrepancy between their current body and their ideal body, the quantification of body dissatisfaction, was larger than the other girls in the study due to their ideal body being smaller than those of the other women (Stice & Whitenton, 2002). This variation in the BMI of the women's perceived ideal body in this study rather than a variation in the BMI of their actual body is why I am investigating change in ideal body in this study. This focus will allow us to better understand what component of the discrepancy score is changing, if any, when women enter college.

In order to reduce this discrepancy and obtain their ideal weight, women will frequently engage in restricted eating, such as dieting (Stice, Fisher & Lowe, 2004). Johnson and Wardle (2004) found in their prospective study of adolescent girls that restriction of dietary intake and body dissatisfaction were highly correlated at both baseline and follow-up. However, despite the

strong link between the two variables, there is a dearth of research pertaining to the predictive power of restriction on body dissatisfaction.

A measure that accounts for both an individual's desire to be thin and his or her restricting tendencies is the *drive for thinness* (DT) subscale of the Eating Disorder Inventory -3 (EDI-3; Garner, 2004). This scale measures participants' extreme desire to be thinner, concern with dieting, preoccupation with weight and their intense fear of weight gain (Garner, 2004). Ahern, Bennett and Hethington (2008) found DT to be significantly correlated with ideal internalization and restriction. In addition, they found that the scale was significantly correlated with body dissatisfaction; however, they did not assess its prospective power. Hence, this scale will allow the present study to investigate both the predictive value of a woman's initial levels of a combination of internalization of the thin-ideal and restriction on body dissatisfaction.

Aims of the Present study

In this study, I examined change in body dissatisfaction over women's first semester in college. Specifically, I investigated the ability of baseline levels of DT and SBC to predict body dissatisfaction scores at follow-up. I expected that greater levels of DT and SBC at baseline would be associated with greater levels of body dissatisfaction at follow-up. I also expected that a thinning of the ideal body would be correlated with higher levels of DT and SBC at baseline. Finally, I expected that when body dissatisfaction levels were increasing, they would be correlated with a thinning of women's ideal body while their actual body remained constant.

Hypotheses

1. High initial levels of DT and SBC at the beginning of women's first semester will be correlated with increases in body dissatisfaction at the end of the semester.
2. High baseline levels of DT and SBC will be associated with a greater thinning of the ideal body, as defined by a figure rating scale over women's first semester.
3. Increases in women's body dissatisfaction over the first semester will be inversely related to a thinning of their ideal body, as defined by a figure rating scale. I expect their ideal body will become thinner as the semester progresses while their actual body remains constant.

Method

Participants

There were 185 first-year women who completed the baseline questionnaire at the beginning of the semester, and 172 women completed the follow-up questionnaire at the semester's end (see Figure 2). Of these women, 124 first-year women completed both questionnaires. Of the 124, thirteen women were omitted because they were under the age of 18 at baseline and one woman was omitted because she failed to mark her ideal body on the baseline questionnaire. Thus, the final sample was 110 first-year women. The sample was 87.3% Caucasian, 1.8 % African American, 1.8 % Hispanic, 2.7 % Asian/Asian-American and

6.4% women who specified "other." The age of the sample was 95.5% 18 years of age and 4.5% 19 years of age.

Measures

Demographic information. Participants completed a set of demographic questions, which included age and race (see Appendix A).

BMI. Body Mass Index (BMI) was based on self-report measures of the participant's current weight and height found at the end of the DT scale. BMI was calculated by $BMI = \text{weight (lb)} / [\text{height (in.)}]^2 \times 703$ (Gardner et al., 2009). I used English units (feet, inches, and pounds) for measuring height and weight. Categories for BMI's are: underweight < 18.5 , normal = $18.5 - 24.9$, overweight = $25.0 - 29.9$ and obese > 30.0 .

Body dissatisfaction. The Body Image Assessment Scale-Body Dimensions (BIAS-BD; Gardner et al., 2009; see Appendix B) is a figure rating scale composed of 17 contour line drawings. The original scale has both a male and female version; however, only the female version was used in this study. The BMI values for the female figures range from 16.92, 60% below average, to 39.48, 140% above average. Each figure increases BMI by 5%. Gardner et al. (2009) tested the reliability of the test over a two week period and found that it was reliable for perceived actual body size, ideal body size, and body dissatisfaction. The validity was found to be strong despite participants slightly overestimating their perceived actual body size. For women, the correlation between the BMI values they chose for figural drawings as the participants' perceived actual body size was strongly correlated with the participant's self report BMI, $r = .77, p < .005$. The test-retest reliability for women's body dissatisfaction score (perceived actual BMI – Ideal BMI) was $r = .79$ ($CI_{.95} = .72 < .79 > .84$) (Gardner, et al., 2009).

Drive for Thinness. The Eating Disorder Inventory-3-Referral Form (EDI-3-RF; Garner 2004; see Appendix C) itself contains three subscales: Bulimia, Drive for Thinness and Body Dissatisfaction. Only the Drive for Thinness (DT) subscale was used in this study. The seven-item DT subscale of the EDI-3-RF assesses an extreme desire to be thinner, a concern with dieting, a preoccupation with weight and an intense fear of weight gain. For each question, such as “I think about dieting,” participants are instructed to choose answers on a 6-point, Always to Never scale (Garner 2004). Scores range from 0-28. In this study, DT scores were classified as either Low or High. Scores were dichotomized into low and high groups at the seven-item cumulative score of 17. This separation reflects scores the critical value of below or above clinically significant scores, (25-28 *Elevated Clinical Range* and 17-24 *Typical Clinical Range*) and individuals whose raw score was within the 1st to 24th percentile of the U.S. adult combined clinical sample and occurs in only 16% of bulimic patients (16 and less). Clausen, Rosenvinge, Friberg and Rokkedal (2011) found the EDI-3-RF to have internally consistent subscales and discriminative validity, plus excellent sensitivity and specificity when comparing scores of female eating disorder patients and women from the general population. They found Cronbach's alpha of eating disorder patients on the DT scale was .86 while it was .91 for normal controls (Clausen et al., 2011)

Social body comparison. The Physical Appearance Comparison Scale (PACS; Thompson, Heinberg, Tantleff, 1991; see Appendix D) is a five-item scale that measures an individual's tendency to compare his or her appearance to others. For questions such as “In social situations, I sometimes compare my figure to....,” participants are instructed to indicate the frequency of their comparison on a five-point Likert type scale that ranges from 1 (Never) to 5 (Always). Their total score is the average of the items with higher scores, indicating a stronger

tendency to socially compare themselves to others (Thompson, Heinberg, Tantleff, 1991). Scores were dichotomized into low and high groups based on a median split of 3.4. Individuals whose mean score on the five items was 3.3 and lower were classified as *low SBC* and individuals who scored a 3.4 and higher were classified as *high SBC*. Thompson et al. (1991) found that the PACS had an internal consistency of .78, and a 2-week test retest reliability of .72.

Procedure

All first-year women (n=477) received an email containing a brief description of the study, the approximate time required to complete the questionnaire, and the incentive being offered (two \$50 cash prizes at each time point). The first emails for the baseline questionnaire were sent out the second Tuesday of the semester. Reminder emails were sent out to those who had not yet filled out the questionnaire the following Sunday and Tuesday before closing the survey on Friday (see Appendix E).

Emails for the second, or follow-up, questionnaire were sent out to all first-year women (n = 477) ten weeks after the original baseline questionnaire on the Tuesday three weeks before finals. Reminder emails were sent out the following two Sundays before closing the survey that Thursday. The completion period for the second survey was longer due to the timing of the Thanksgiving holiday and the beginning of finals.

Both the baseline and follow-up questionnaire were administered online. The estimated completion time for each questionnaire was 20 minutes. The recruitment emails had a link at the bottom which, when clicked, took the participants directly to the questionnaire. Questionnaire data collected consisted of responses to the measures listed above. The measures were administered electronically via WebSurveyor, an online survey tool, at each time point.

Participants were able to complete the questionnaire at times and locations of their choosing. Once an online questionnaire was completed, the data from the questionnaire were deposited into a datafile that was stored on a secure server.

Given the need to associate the responses at multiple time points, participation could not be anonymous. A Senior Instructional Technologist with Library & Information Technology was the only individual with access to the datafile with identifying information. He deleted all identifying information prior to releasing the survey responses to me; however, he kept the ID numbers for participants consistent over the two time points. This consistency enabled me to link participants' baseline and follow-up responses for my within subjects design.

Analysis

All analyses were conducted using SPSS version 19. The first and second hypotheses were analyzed using 2x2 repeated measures ANOVAs. Post-hoc independent and paired *t*-tests were used to investigate the direction of ideal body change. The third hypothesis was analyzed using a correlation and a paired *t*-test. All analyses were run at a two-tailed alpha of .05.

Results

Hypothesis 1: Drive for Thinness, Social Body Comparison and Body Dissatisfaction

I used two 2x2 repeated measures ANOVAs to test my first hypothesis, that higher levels of DT and SBC at baseline would be correlated with increases in body dissatisfaction at the end of the semester.

The first 2x2 repeated measures ANOVA compared body dissatisfaction change in low DT and high DT first-year women (see Figure 3). There was a significant main effect of DT grouping and body dissatisfaction scores, $F(1, 108) = 13.33, p < 0.001$. Women who entered college with high DT had higher body dissatisfaction than women who entered college with low DT. There was no significant effect of time on body dissatisfaction scores from baseline to follow-up in the entire sample, $F(1,108) = 0.8, p = .774$. On average, participants with high initial levels of DT ($M = -0.21, SE = 0.87$) had slightly higher body dissatisfaction changes than individuals with low initial levels of DT ($M = -0.07, SE = 0.47$). However, the interaction between initial levels of DT and change in body dissatisfaction over the semester was not significant, $F(1,108) = .02, p = .884$. Therefore, having higher DT scores did not significantly increase body dissatisfaction over the semester.

A second 2x2 repeated measures ANOVA compared body dissatisfaction change in low SBC and high SBC first-year women (See Figure 4). This 2x2 repeated measures ANOVA showed a significant effect of initial levels of SBC on body dissatisfaction scores, $F(1,108) = 16.73, p < 0.001$. There was no significant effect of time on change in body dissatisfaction scores for the entire sample, $F(1,108) = .04, p = .846$. Participants with high initial levels of SBC ($M = -0.15, SD = 0.53$) had slightly higher body dissatisfaction changes than individuals with low initial levels of SBC ($M = -0.03, SE = 0.66$); however, this interaction was not significant, $F(1,108) = .22, p = .638$. Thus, having high initial levels of SBC was not significantly associated with changes in body dissatisfaction over the semester.

Hypothesis 2: Drive for Thinness, Social Body Comparison and Ideal Body Change

I used two repeated measures ANOVAs to test my second hypothesis, that higher levels of DT and SBC at baseline would be correlated with decreases in ideal body at the end of the semester.

The first 2x2 repeated measures ANOVA compared ideal body change in low DT and high DT first-year women (see Figure 5). There was no significant effect of DT category on ideal body, $F(1,108) = .15, p = .698$, nor was there a significant effect of time on ideal body change over the semester in the entire population, $F(1,108) = 1.39, p = .241$. On average, participants with high initial levels of DT had slightly greater decreases in ideal body ($M = -0.57, SD = 0.60$) than individuals with low initial levels of DT ($M = -0.41, SD = 0.43$). This interaction was not significant, $F(1,108) = .04, p = .842$. Hence, higher initial levels of DT were not associated with changes in the Ideal body.

Another 2x2 repeated measures ANOVA compared ideal body change in low SBC and high SBC first-year women (see Figure 6). This 2x2 repeated measures ANOVA revealed a significant effect of SBC category on ideal body, $F(1,108) = 4.06, p = .046$, but no significant effect of time on ideal body when both SBC groups were combined, $F(1,108) = 2.14, p = .146$. There was an almost significant interaction between women with high initial levels of SBC and the thinning of their ideal body, $F(1,108) = 3.44, p = .066$. Participants with high initial levels of SBC ($M = 0.14, SE = 0.39$) had slightly greater decreases in ideal body than individuals with low initial levels of SBC ($M = -1.18, SE = 0.63$).

While the interaction was not significant at the standard alpha-level of .05, the p-value was less than .01, so I used post-hoc *t*-tests to further investigate the relationship between SBC and ideal body. An independent groups *t*-test conducted at a two-tailed alpha level of .05

indicated that ideal bodies for low SBC women ($M = 20.26$, $SD = 3.10$) and high SBC women ($M = 19.79$, $SD = 3.23$) were not significantly different at baseline, $t(108) = .78$, $p = .439$; however, an independent t -test conducted at a two-tailed alpha level of .05 indicated that low SBC women's ideal bodies at follow-up ($M = 21.44$, $SD = 4.41$) were significantly higher than high SBC women's ideal bodies at follow-up ($M = 19.65$, $SD = 3.09$), $t(82.93) = 2.41$, $p = .018$, $d = .46$, 95% CI [.31,3.27]. The Levene's test was significant $F(1, 108) = 5.668$, $p = .019$ so t values and degrees of freedom were adjusted using the "Welch-Satterwaite" solution. I used two paired t -tests to investigate the difference in ideal bodies within groups. There was no significant change from baseline to follow-up in ideal body size for high SBC women $t(60) = -0.36$, $p = .72$. There was an almost significant change in ideal body size for low SBC women $t(48) = 1.88$, $p = .066$. Thus, as illustrated by Figure 6, women in high and low SBC groups did not differ in their perception of the ideal body when they entered Bucknell. In contrast, their perceptions of the ideal body at follow-up were significantly different.

As this result was the opposite of my hypothesis, I conducted post-hoc paired t -tests to investigate BMI change over the semester. A paired t -test conducted at a two-tailed alpha level of .05 indicated that the BMI levels in the whole sample from baseline ($M = 22.34$, $SD = .38$) to follow-up ($M = 22.76$, $SD = 3.31$) were not significantly different, $t(109) = 1.82$, $p = .07$ (see Figure 7 and 8). Another paired t -test conducted at a two-tailed alpha level of .05 indicated that the BMI levels of high SBC women did not significantly change from baseline ($M = 22.83$, $SD = 4.48$) to follow-up ($M = 23.28$, $SD = 3.39$), $t(60) = 1.13$; $p = .26$. However, a paired t -test conducted at a two-tailed alpha level of .05 showed a significant increase in BMI for the low SBC women between baseline BMI score ($M = 21.72$, $SD = 3.21$) and follow-up BMI score ($M = 22.12$, $SD = 3.14$), $t(48) = -2.16$, $p = .036$, $d = .31$, 95% CI [0.3,0.76]. Thus women in the low

SBC category were gaining a significant amount of weight over their first semester, while the high SBC category was remaining constant.

Hypothesis 3: Body Dissatisfaction Change and Ideal Body Change

My third hypothesis, that increases in women's body dissatisfaction over their first semester would be inversely related to a thinning of their ideal body, as defined by the BIAS-BD, was found to be significant. Body dissatisfaction change (body dissatisfaction follow-up - body dissatisfaction baseline) and ideal body change (ideal body follow-up - ideal body baseline) were negatively correlated with body dissatisfaction change, $r = -.43$; p (one-tailed) $< .001$. As the ideal body thinned, body dissatisfaction increased.

In a follow-up test, I used a paired t -test conducted at a two-tailed alpha level of .05 to compare actual body in the first-year women at baseline and follow-up. The paired t -test indicated the actual body scores at baseline ($M = 25.74$, $SD = 5.77$) were not significantly different than actual body scores at follow-up ($M = 25.34$, $SD = 6.06$), $t(109) = 0.97$, $p = .334$. Thus, the actual body was remaining relatively constant over women's first semester in college.

Discussion

Hypothesis 1: Drive for Thinness, Social Body Comparison and Body Dissatisfaction

The first goal of the current study was to investigate if high initial levels of DT and SBC were associated with increases in body dissatisfaction at the end of the semester. Neither women

with high initial levels of DT, nor women with high initial levels of SBC exhibited significant increases in body dissatisfaction over their first semester. There was, however, a significant difference in overall body dissatisfaction scores between women who entered college with initially high levels of DT and women who had initially low levels of DT. Women with high initial levels had significantly higher body dissatisfaction than women with low initial levels. This significant difference is supported by previous research which found that DT was significantly associated with body dissatisfaction (Ahern, Bennett & Hetherinton, 2008). In addition, Stice and Whitenton (2002) found that pressure to be thin and thin ideal-internalization, both related scales to DT, were significantly correlated to body dissatisfaction.

The same significant between-group difference in body dissatisfaction was found between women who had high initial levels of SBC and women with low initial levels of SBC. First-year women with high initial levels of SBC had higher levels of body dissatisfaction while women with low levels had lower levels of body dissatisfaction. This supports previous research that found these scales to be significantly positively correlated (Myers & Crowther, 2009; Petrie, Greenleaf & Martin, 2010). The lack of significance relating to change in body dissatisfaction over the course of the semester could be due to the lack of variability between baseline and follow-up (i.e. very little change) in this scale. The majority of the first-year women had relatively stable levels of body dissatisfaction over the semester.

Hypothesis 2: Drive for Thinness, Social Body Comparison and Ideal Body

The second goal of the current study was to investigate if high baseline levels of DT and SBC were associated with a greater thinning of the ideal body, as defined by the BIAS-BD. High initial levels of DT were not significantly associated with increased thinning of the ideal

body compared to low DT women. It was surprising that I found no significant difference in the size of ideal bodies between high and low DT groups as the DT scale assesses for a preoccupation with restrictive eating, concern about dieting, and fear of gaining weight. Accordingly, women who score higher on this scale are preoccupied with either maintaining their own weight or losing weight (Garner 2004). Consequently, one would expect a preference for thinner ideal bodies.

High initial levels of SBC were close to significance at a two-tailed $\alpha < .05$, and there was a significant difference between the ideal bodies of individuals with low and high initial levels of SBC. Women with high initial levels of SBC chose significantly smaller ideal bodies than did women with low initial levels of SBC overall. Post-hoc tests showed no significant difference between the two groups at baseline, but a significant difference at follow-up. This change suggests that one or both groups were changing their perception of the ideal body over their first semester at Bucknell. However, neither high nor low SBC women significantly changed over the course of the semester when examined independently. Still, there was an almost significant increase in ideal body BMI for women in the low SBC group. This finding was particularly intriguing because I had no a priori hypotheses about which way the ideal bodies of low SBC women would shift over the semester.

In a follow-up test, I found that women in the low SBC group had significant increases in their BMI while the high SBC women had relatively stable BMI's. By definition, women with low SBC compare themselves to other individuals less than the high SBC group; hence, a possible explanation for the increased BMI of their ideal bodies could be that they are basing their preference on their current body rather than a social norm (Thompson, Heinberg, Tantleff,

1991). For that reason, their ideal bodies would be getting larger in proportion to their physical BMI's increasing over the course of the semester (Thompson, Heinberg, Tantleff, 1991).

Cooley and Toray (2001) found a similar change in their 3-year-long study of college women. The college women in their study gained an average of 5.4 pounds over the three years and that both the figures they chose as either a representation of their actual body or the body they would ideally like to be, paralleled the changes in weight. In other words, both figures became heavier in proportion with the women themselves.

Hypothesis 3: Body Dissatisfaction and Ideal Body

The third goal of the current study was to examine the correlation between increases in body dissatisfaction and changes in ideal body. As predicted, these two change scores were found to be highly, negatively correlated. A correlation was to be expected because ideal body is a component of the body discrepancy scale which was used in this study to quantify body dissatisfaction (Gardner et al., 2009). However, the significant negative correlation suggests that the increases in body dissatisfaction over the course of women's first semester in college were largely due to their ideal body getting smaller, rather than their actual body getting larger.

A follow-up paired *t*-test of the first-year women's actual bodies at baseline and follow-up supported this assumption. The test found that the actual bodies women chose at both time points were not significantly different. This stability in actual body could be associated with the fact that BMI's of the full sample from baseline to follow-up did not change significantly (see Figure 7 and 8). This consistency between actual bodies replicates Cooley and Toray's (1996) findings which showed women's choice of the actual body to be quite stable across seven months. This link in my research between the actual body chosen on the BIAS-BD and the

women's BMI is also consistent with another Cooley and Toray (2001) study which found that BMI and women's choice of actual body on a figure rating scale varied equally.

Limitations

I believed the transition into a college environment, which frequently entails a notable shift in freshman students' levels of independence and a shift in the daily living environment from "family" to "peers," would be a large enough adjustment elicit changes in behavior and body perception; however, it is likely that the full scope of the behavioral changes may only be measured over a four-year college career. As a result, a major limitation of this study was its short duration due to the time restriction of writing an Honors Thesis. The testing period was just over 10 weeks, which is not a long period of time for beliefs to change without specific intervention. This brief duration of the study as a limitation is clearly illustrated when comparing it with Cooley and Toray's (2001) 7 month study. Even with the longer data collection period, Cooley and Toray (2001) found that eating and dieting pathologies of first-year women stayed relatively constant.

A second timing limitation was that the baseline survey was sent out 2 weeks after the women had already been in classes and had been through orientation. This delay in initial testing could have resulted in the women already having changed their body perceptions while at Bucknell, prior to the initial testing. If so, this would have reduced the amount of change the study could have observed.

A third limitation was the relative homogeneity of the sample. For example, 87.3% of participants were Caucasian. In addition, though BMI was not a variable in our study, it is associated with several variables measured in the study, and was biased towards normal weight

(see Figures 7 and 8). Only seven women considered underweight at baseline and four at follow-up, while only thirteen women qualified as overweight at baseline and fourteen at follow-up. The results might have been different if the sample had included a more representative distribution of races and weights.

A fourth limitation of the study was the DT scale. This scale might be too broad a scale to assess what the intention was for this study. As a risk factor scale, DT is said to measure an overall investment in thinness, restriction and excessive concern with dieting (Garner 2004). It encompasses many facets of disordered eating pathology as its purpose is to identify women at risk and not to identify their behaviors in particular. Future studies may want to consider the use of a more targeted scale focusing on one of these factors rather than all.

In addition, Clausen, Rosenvinge, Friberg and Rokkedal (2011) found that individuals might score highly on the DT scale due to reasons unrelated to eating disorder pathology. This finding could reflect the widespread belief in the United States that thinner bodies are more desirable. Thus, in this study, it could be that the majority of women already chose ideal bodies on the thinner side of the scale, regardless of their preoccupation with their personal weight.

Future Research

Based on my results and outcomes, I recommend that future studies should extend the time period of the data collection and administer the baseline questionnaire as soon as the first-year women enter college. In addition, rather than the DT scale, researchers should use a more targeted scale to individually investigate the specific components of the DT scale, rather than all aspects of the scale in a holistic fashion. Finally, if possible future studies should look at the effects of these variables in a more heterogeneous sample.

Implications

The differences between body dissatisfaction levels of women with low and high initial DT and low and high initial SBC demonstrate that these variables are closely correlated with body dissatisfaction. In addition, the results showed that women with high levels of SBC chose smaller ideal bodies. These findings suggest that though neither women's body dissatisfaction nor their perception of the ideal body changed significantly over the semester, women with higher initial levels of these two variables did feel more dissatisfied with their bodies. They also liked thinner bodies throughout their semester. This lack of change could be due to a plateau effect of most women today showing some level of body dissatisfaction which resulted in a large group of women with moderate levels of body dissatisfaction.

Moreover, the consistency of body dissatisfaction levels and ideal body perception is also interesting, because it suggests that women are entering college with a well-formed concept of the ideal body and a clearly understood level of satisfaction with their own bodies. The lack of change exhibited in this study when women enter the college environment suggests that the spike in prevalence of eating disorders in college women may not be due to changes in their body dissatisfaction and ideal body concept, but to other sociocultural variables (e.g. pressure to be thin, social environment). It could also be attributed to the gradual change that is usually characteristic of the development of clinically diagnosable eating disorders that usually develop out of less severe disordered eating.

Regardless of the triggers for the development of clinically diagnosable eating disorders in college women, these high initial levels of body dissatisfaction and ideal body make these

women more vulnerable to developing eating disorders during their time in college. This increased risk is due ideal body being a component of body dissatisfaction and body dissatisfaction being a well-documented risk factor for eating disorders. For this reason, a possible preventative strategy would be to screen women entering college to identify those who are most at risk for developing eating disorders while at college. Such identification would allow universities to conduct targeted preventative programs with this specific population. These programs could take on the form of mandatory, individual meetings for all students when they enter school. For individuals who are not at risk, these meetings could be simply for turning in medical forms and answering medical care questions. For the targeted women, such meetings could serve as an opportunity to inform them of their risk assessment and describe resources available to them.

The study's findings that women seem to be entering college with their perception of their body and the ideal body already well-formed implies that there is a need for further research to investigate the changes in body dissatisfaction and the perception of the ideal body in high school or middle school. Though there is research documenting its prevalence in this age group, it would be useful to pinpoint when women start to develop their perceptions of what they believe is attractive physically (Stice & Whitenton, 2002). This research could be accomplished through youth risk behavior assessments in middle school and high school. This knowledge could, in turn, help inform interventions to address these potential risk factors for disordered eating, prior to the development of the distorted body ideal that seems to lead to disordered eating.

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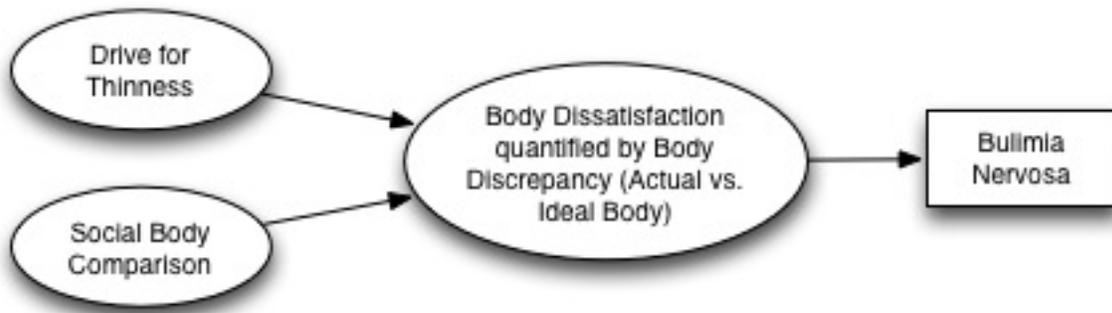


Figure 1. Model of study variables.

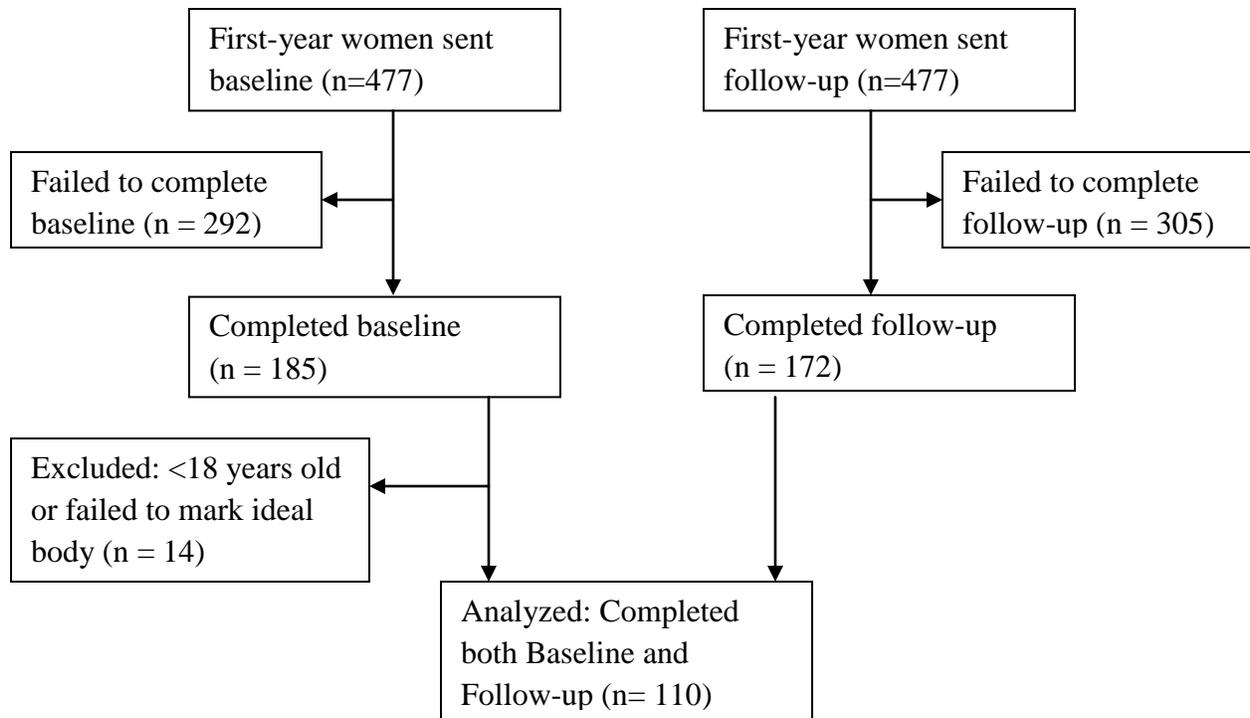


Figure 2. Participant flow-chart.

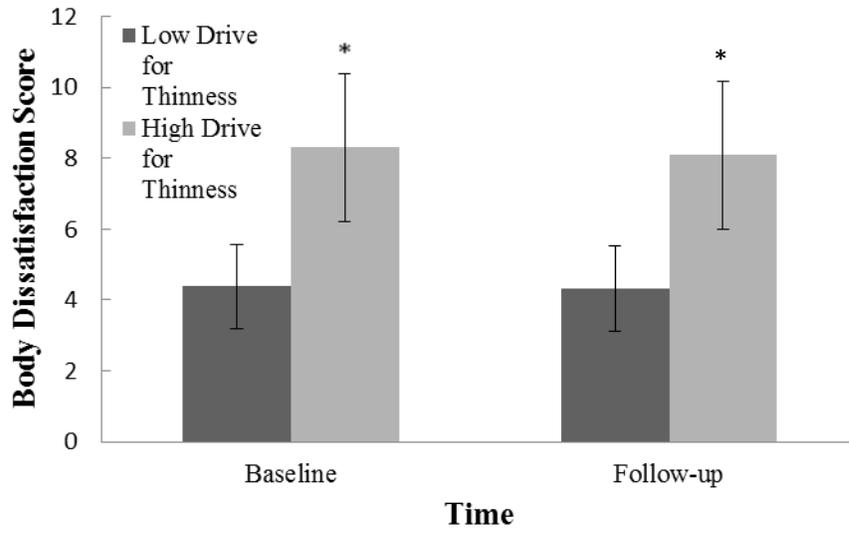


Figure 3. Body dissatisfaction of high and low drive for thinness women at baseline and follow-up. Error bars represent 95% confidence intervals.

* $p < .05$

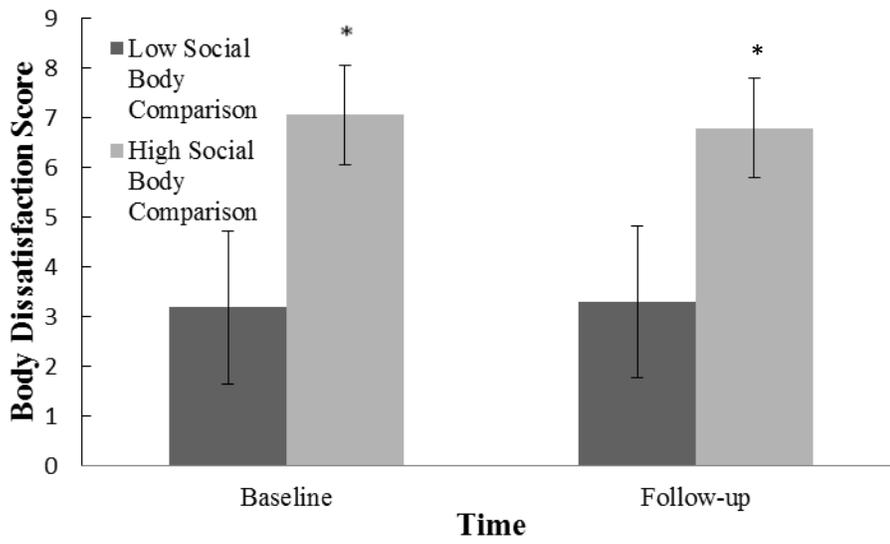


Figure 4. Body dissatisfaction of high and low social body comparison women at baseline and follow-up. Error bars represent 95% confidence intervals.

* $p < .05$

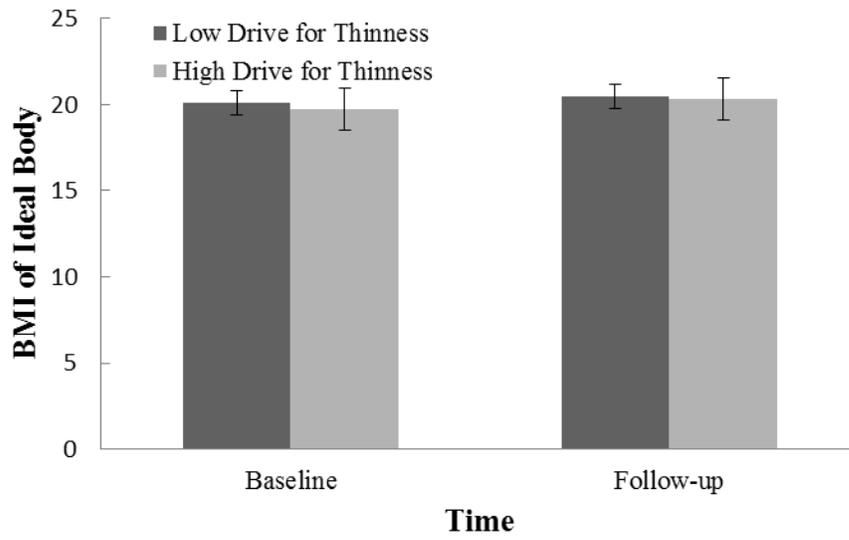


Figure 5. Ideal body of high and low drive for thinness women at baseline and follow-up. Error bars represent 95% confidence intervals.

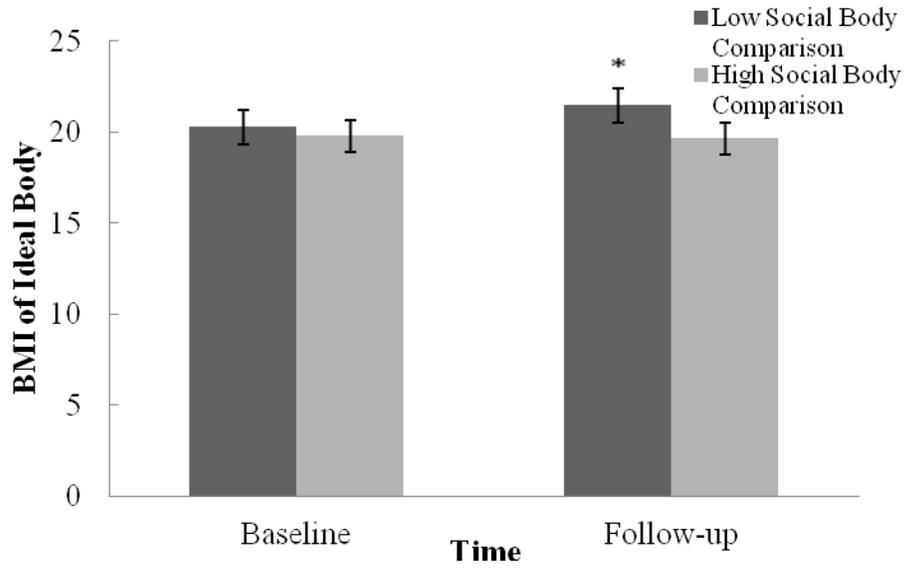


Figure 6. Ideal Body of high and low social body comparison women at baseline and follow-up.

Error bars represent 95% confidence intervals.

* $p < .05$

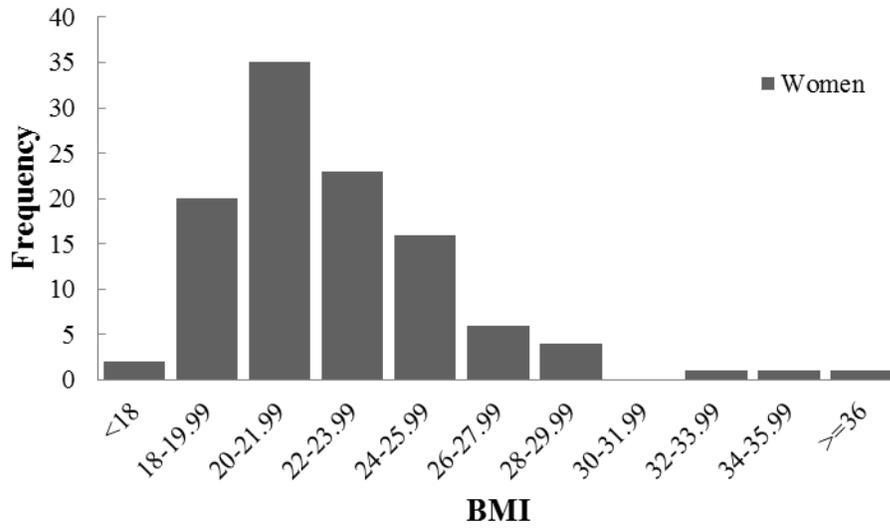


Figure 7. Frequency distribution of first-year women's BMI at baseline.

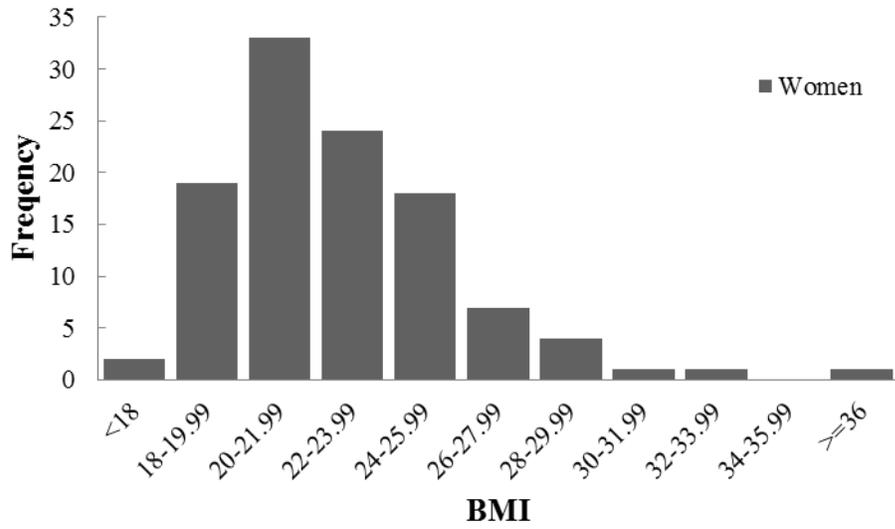


Figure 8. Frequency distribution of first-year women's BMI at follow-up.

Appendix A

Demographic Information

Age (Choose one)

- 17 and younger
- 18
- 19
- 20
- 21
- 22 and older

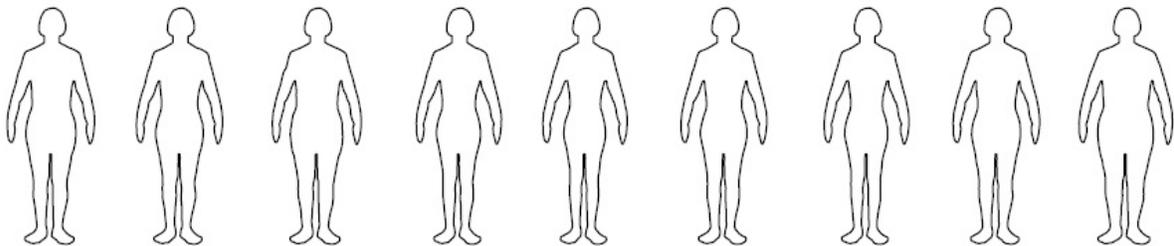
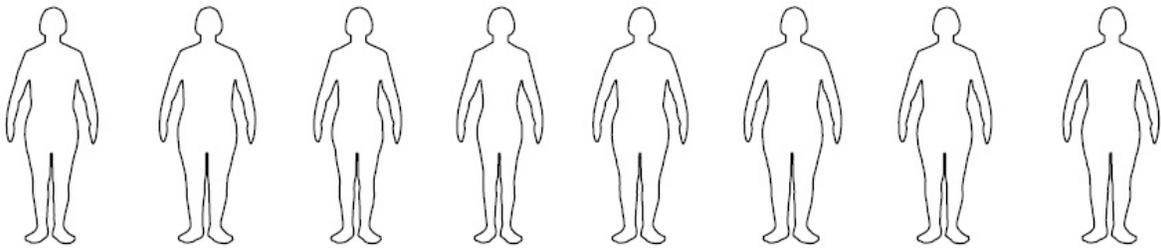
Race/Ethnicity (choose one)

- Caucasian
- African American
- Hispanic
- Asian/Asian-American
- Native American
- Other

Appendix B

Body Image Assessment Scale-Body Dimensions

(BIAS-BD; Gardner et al., 2009)



Female

1. Please indicate which figure you feel best represents your actual body.
2. Please indicate which figure you feel best represents the size you would ideally like to be.

Appendix C

Eating Disorder Inventory-3-Referral Form (EDI-3-RF; Garner 2004)

The EDI-3-RF contains 25 scale questions and 12 follow-up questions. Only shown are the 7 questions which make up the drive for thinness subscale and two follow-up demographic questions

A = Always U = Usually O = Often S = Sometimes R = Rarely N = Never

Part A

- | | |
|--|-------------|
| 1. I eat sweets and carbohydrates without feeling nervous. | A U O S R N |
| 2. I think about dieting. | A U O S R N |
| 3. I feel extremely guilty after overeating. | A U O S R N |
| 4. I am terrified of gaining weight. | A U O S R N |
| 5. I exaggerate or magnify the importance of weight. | A U O S R N |
| 6. I am preoccupied with the desire to be thinner. | A U O S R N |
| 7. If I gain a pound, I worry that I will keep gaining. | A U O S R N |

Part B

What is your height? _____

What is your current weight? _____

Appendix E

Communication to Participants

CONCENT FORM

Human Participant Research Bucknell University

Project Title: Changes in first-year college women's body image and eating behavior

Purpose of the Research: I understand that the purpose of this study is to obtain a better understanding of the effect of entering college on first-year women's body image and health behaviors. I also understand that the study is concerned with understanding perceived body image, ideal body image, perception of others and eating behavior.

General Plan of the Research: I understand that if I consent to participate in this study, I will be asked to complete a questionnaire which will ask me a series of questions about (but not limited to) my perception of my own body, my perception of others and my own eating behaviors. I will then be asked to give my email address to be entered into a drawing for the opportunity to win one of two \$50 prizes. I will also be contacted in 3 months by e-mail and asked to complete a follow-up questionnaire on my body perception and another chance to win a \$50 prize. My answers to all of the questionnaire questions will be completely anonymous. I will not be asked to reveal any information that could be used to identify me as a participant in this study.

Estimated Duration of the Research: I understand that the questionnaire should take me approximately 25 minutes to complete.

Estimated Total Number of Participants: I understand that the experimenters expect to collect questionnaire data from approximately 135 participants.

Questions? If I have questions or concerns, I understand that I may contact the Principal Investigator, Marie Chardon, mlc039@bucknell.edu, 804-380-1609. For general questions about the rights of human participants in research, I may contact Abe Feuerstein, Chair, Institutional Review Board, Office of Institutional Research, afeuerstein@bucknell.edu, 577-3293. In addition, a debriefing will be included following completion of the second questionnaire regardless of whether I choose to submit my results or not.

Voluntary Participation: I understand that my participation in this research project is completely voluntary. If I agree to participate, I may change my mind at any time and for any reason. I may refuse to answer any questions and/or withdraw from the study at any time without penalty, and if I choose, my results will not be saved.

Benefits of Participation: I understand that I will have the option to enter into a drawing for a chance to win one of two \$50 prizes for participating in this research at the end of each questionnaire. It is also possible that I will benefit from the opportunity to reflect on these questions, and I may find the exercise useful. In addition, I may also benefit from learning about psychological research from participating in this study.

Anonymity: I understand that my answers to all of the questionnaire questions will be completely anonymous, meaning there is no way that my answers will be able to be connected to my identity at the end of the questionnaire. I will not be asked to reveal any information that could be used to identify me as a participant in this study. All of the information that I provide will be stored in a secure datafile access to which is limited to the Principal Investigator and professional staff members of L&IT. The questionnaire datafile will be stored separately from the file containing my email address, which will be randomized. This eliminates any possibility that I could be identified with my answers.

Discomforts: I understand that it is possible that considering some of the questions on the questionnaire could cause me to become upset, ashamed or embarrassed. However, in order to conserve confidentiality, I also understand that I can complete this questionnaire on any computer that uses Microsoft Windows software and that is either directly or wirelessly connected to the university server (however, hardwired connections are encouraged to ensure that the questionnaire software runs properly).

Risks: I understand that, aside from the risk of discomfort as indicated above, there are no other known risks to me from participating in this research. I also understand that, in the event that I become uncomfortable or upset by any of the questions, and feel the need to speak with someone about my reactions, I may contact Psychological Services (577-1604).

I understand that I will be given additional information about this research in a debriefing after I have finished participating in this study, and before I leave this online session.

I have read the above description of the research.

By clicking this box I agree to participate in this research, and I acknowledge that I am 18 years of age or older.

EMAIL TIME 2

Dear [participant],

As you recall you are currently participating in a study conducted by Marie Chardon called "Changes in first-year college women's body image and eating disorders." It is now time for you to complete the second study of the questionnaire. This questionnaire is again looking at your perception of your own body and of others. Please click on the link below that will take you to the questionnaire. It will take you approximately 25 minutes to complete, and then you will have the opportunity to enter your email into a drawing for a chance to win one of two \$50 prizes for participating.

Please remember that your participation in this study is entirely confidential and that any identifying information will only be accessible to L&IT personnel. After data collection is complete, your identifying information will be deleted prior to analysis by the principal investigator. If you have any questions regarding the questionnaire or this procedure, please contact the principal investigator, Marie Chardon, mlc039@bucknell.edu, or the IRB chair, Prof. Abe Feuerstein, abe.feuerstein@bucknell.edu.

Sincerely,

Marie Chardon

DEBRIEFING (Time 1)

You have now completed the questionnaire. We now invite you to enter your email into a drawing for a chance to win one of two \$50 prizes. If you would like to participate, please click on the box at the bottom of this page. Your email address will be stored in a secure file, randomized, and be stored separately from your questionnaire data. Please do not attempt to enter your email twice to increase your chances of winning, as the program will only accept your email address once. We encourage you to read the following information.

We want to express our sincere thanks for your help with this research. The kinds of questions asked in this type of research are not always easy to answer, and we appreciate that you were willing to do this. We also want to remind you that your answers to all of these questions will be kept strictly confidential. There is no way that you can be identified as the person who has given these answers. All reports of this research will include results based solely on group averages, never on information by any single individual.

We also want to tell you that we are conducting research to examine the way in which first year women view their own bodies and those of others over the course of their first semester and their health behaviors. We are interested in what the results of this study will tell us, most importantly, because we think that the Bucknell community needs to be aware of health issues facing first-year women.

If you find that answering any of these questions has led to undue stress or other significant concerns with which you are having difficulty, please consider contacting one of the counselors at our Psychological Services Center on campus (call 577-1604 to schedule an appointment). Needing to talk with a professional counselor is not uncommon. A majority of college students seek counseling and there is research evidence that talking with someone about these kinds of problems can help a great deal.

Again, thank you very much for the information you have provided, and for your help with our research.

DEBRIEFING (after Time 2)

You have now completed the questionnaire. We now invite you to enter your email into a drawing for a chance to win one of two \$50 prizes. If you would like to participate, please click on the box at the bottom of this page. Your email address will be stored in a secure file, randomized, and be stored separately from your questionnaire data. Please do not attempt to enter your email twice to increase your chances of winning, as the program will only accept your email address once. We encourage you to read the following information.

We want to express our sincere thanks for your help with this research. The kinds of questions asked in this type of research are not always easy to answer, and we appreciate that you were willing to do this. We also want to remind you that your answers to all of these questions will be kept strictly confidential. All reports of this research will include results based solely on group averages, never on information by any single individual.

We also want to tell you that we are conducting research to examine factors leading to the increased probability of developing eating disorders during the first few months of college among first year women. We are interested in what the results of this study will tell us, most importantly, because we think that the Bucknell community needs to be aware of factors during first-year year that lead first year women to be at increased risk of developing eating disorders. Eventually, we expect that this information will lead to improvements in the scientific understanding of psychological factors involved in the development of disordered eating and in the University's efforts at keeping its students healthy. We sincerely apologize for not informing you of the link to eating disorders; however we did not want this knowledge to alter your answers to the questionnaire.

If you find that answering any of these questions has led to undue stress or other significant concerns with which you are having difficulty, please consider contacting one of the counselors at our Psychological Services Center on campus (call 577-1604 to schedule an appointment). Needing to talk with a professional counselor is not uncommon. A majority of college students seek counseling and there is research evidence that talking with someone about these kinds of problems can help a great deal.

Again, thank you very much for the information you have provided, and for your help with our research.