

BRIEF  
REPORT

## Change in eating and body related behaviors during the first year of university

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**ABSTRACT.** Significant changes in BMI, disordered eating, and body image dissatisfaction occur during the first year of university. However, previous research has not yet isolated the key factors that lead to these changes. This study sought to add to the body of research in this area by investigating students' eating attitudes, behaviors, body image, and weight at the beginning and the end of the first year of university. Participants were initially 64 male and female university students from two universities: one rural and one urban. Twenty-eight percent of the participants completed assessments at two time points. These included a series of questionnaires designed to measure disordered eating, body image dissatisfaction and weight. These changes were different for males and females. Substantial changes in eating behaviors, attitudes, body image and BMI occur during the first year of university. Concrete knowledge about these changes might help students adapt to university life.

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## INTRODUCTION

Approximately two-thirds of American adults are now either overweight or obese (1) and the prevalence of both obesity and disordered eating continues to rise. This pattern represents the highest rate of obesity in the developing world (2). As American adults become increasingly heavy, the number of individuals who regularly diet and show evidence of disordered eating patterns is also growing. Although the percentages of women meeting actual diagnostic criteria for clinical eating disorders are fairly low (3), the number of women who regularly engage in behaviors that can be classified as disordered eating (i.e. abnormal eating patterns that may or may not reach diagnostic threshold for a clinical eating disorder) is quite significant (4). Studies have indicated that up to 60% of university women report either occasionally using unhealthy measures such as fasting, diuretics, appetite suppressants, or purging as a means of controlling their weight (5-7).

Given the severe health consequences that can be caused by disordered eating and obesity, researchers have begun to investigate behaviors and actions that could give rise to unhealthy eating patterns. Since changes in eating habits often occur during changes in lifestyle, it can be useful to

examine how eating behaviors change during certain lifestyle alterations (8). One of the most commonly researched lifestyle changes has been the transition from high school to university. The transition from living at home to living on a university campus involves changes in a student's daily social and physical environments; and can include cognitive and behavioral changes which may lead to alterations in diet and physical activity (8). Research has demonstrated that there is both an increased consumption of high fat foods (9) and a corresponding decrease in physical activity (8) during the first year of university. This may reflect the fact that adolescents are now responsible for regulating their caloric intake and physical activity (10).

It is hypothesized that given the competitive atmosphere of universities, the increased freedom to make autonomous food choices, and the fact that campus organizations and dormitory living may promote adherence to the social and cultural standards for weight, many young adults face a strong pressure to diet (5). Research has indicated that up to 80% of university-aged women experience discontent with their body size and many profess a strong desire to lose weight (7, 11, 12) despite falling into a normal weight range. In order to minimize negative feelings about their

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bodies, many young women engage in some form of weight control behavior. Over half of university age women report being on a diet to lose or maintain weight (12), and almost two-thirds of university women have a history of dieting (5). This strong pressure to diet may cause some individuals to engage in unhealthy dieting behaviors; and engaging in dieting can actually promote weight gain (13, 14).

In order to better understand how weight, eating behaviors, and body image may change during the course of the first year of university, several researchers have conducted prospective studies examining these variables. The most common variable analyzed was weight change from the beginning of the academic year to the end of the academic year. First year university students typically have significant increases in BMI, fat mass, weight, and rates of obesity (8-10, 15-21).

Because the emphasis on slender ideals is prevalent among university women, changes in disordered eating during the first year of university was also frequently measured (15, 23-25). Results regarding changes in disordered eating have not been as conclusive as those on weight gain, as there is some evidence that levels of disordered eating remained constant from secondary education (25), whereas other studies reported increase in disordered eating patterns (23). Many of the studies that did examine changes in disordered eating used only women participants (e.g., 15, 25) and most did not observe changes in body image during the course of the year. The latter may be particularly important to measure as decreases in body image satisfaction could predict later changes in disordered eating and a worsening in quality of life (26).

Studies examining prospective changes in disordered eating and weight during the first year of university also examined whether other variables could predict these changes (10, 16, 17, 19-21). If consistent weight change predictors for university student populations could be identified, the prevention of weight gain and eating disorders might be enhanced, since at risk individuals could be identified (and intervention might occur) before the changes occur. However, few studies investigating variables that predict weight or disordered eating have been replicated.

The present study attempted to examine how weight, disordered eating, and body image dissatisfaction changed during the first year of university for both men and women. It also sought to identify predictor variables of these changes with widely used questionnaires that measure behaviors associated with changes in

weight or disordered eating. Since these questionnaires are commonly used in eating disorder and diet/weight gain literature, deepening the understanding of how they may relate to changes during the first year of university will be useful. The current study was, therefore a preliminary study (in a planned series) aimed at determining which of these common variables may be most useful for future exploration.

## METHODS

### *Participants*

Data were collected from 64 first year undergraduates (42 females and 22 males) at a large urban and small rural university at the beginning of the academic year and 18 undergraduates (11 females and 7 males) at the end of the academic year. This represents a 28% retention rate. Participants for the study were recruited via announcements in classes and flyers posted on campus.

### *Materials and Procedure*

Participants were asked to complete a series of measures presented in a standardized order at the beginning and end of the academic year. Specifically, participants were asked to provide demographic information and to complete the following measures: the Body Shape Questionnaire (BSQ, 27), Eating Attitudes Test (EAT-26, 28), Power of Foods Scale (PFS, 29), Eating Inventory (EI, 30), and the Sociocultural Attitudes Towards Appearance Scale (SATAQ-3, 31).

At Time 1 ( $T_1$ ), participants were able to pick up and return questionnaire packets at various points around campus. The second packet was sent via mail at the end of the school year ( $T_2$ ) with a self-addressed stamped envelope for them to return. The students were then entered into a raffle for \$50 if they returned both the initial and the second questionnaire. The study was approved by the appropriate review board at each university.

## RESULTS

$T_1$  data were explored to identify differences between male and female students. Differences were found between males and females in levels of disordered eating ( $t(62)=-2.12$ ,  $p<0.05$ ), body image dissatisfaction ( $t(62)=-3.14$ ,  $p<0.05$ ), dietary restraint ( $t(62)=-1.86$ ,  $p<0.05$ ), and internalization of the thin ideal ( $t(62)=-2.43$ ,  $p<0.05$ ). In order to check for differential attrition rates,  $t$ -tests were conducted comparing non-com-

pleters to completers on relevant baseline characteristics. No differences were found between the two groups on any relevant baseline characteristics (all  $p>0.05$ ).

At  $T_1$ , 19% of the women in the sample were currently dieting to maintain weight and 19% were currently dieting to lose weight. When asked whether they were concerned about gaining weight during their first year of university, 66.7% reported that they were concerned, and 22.5% believed that their parents were likely concerned about their weight gain during the academic year. For female students, BMI was significantly different between the two times points; and the average weight gain was 3.18 pounds ( $SD=5.26$ ). Females showed a marked decrease in scores on the EAT-oral subscale. All other variables measured did not show a significant change during the two times points. See Table 1 for a summary.

At  $T_1$ , 9.1% of the men in the sample were currently dieting to maintain weight and 4.5% were currently dieting to lose weight. A third of men (31.8%) reported that they were concerned about gaining weight during their first year of university; and 9.1% believed that their parents were likely concerned about their weight gain during the academic year. BMI did not significantly differ between  $T_1$  and  $T_2$ ; although male students reported an average weight gain of 5.42 pounds ( $SD=8.81$ ), suggesting that weight gain may occur in male students as well. Flexible control and internalization of sociocultural ideals also had a non-significant trend towards improvement. All other

variables measured did not significantly change over the course of the academic year. See Table 2 for a summary.

### Regression Analyses

Simple regression analyses to determine which variables at  $T_1$  predicted change in BMI for women were conducted. Of the variables included, only rigid control ( $B=-0.30$ ,  $t=-2.45$ ,  $p<0.05$ , 95% CI: -0.57 to -0.02), body dissatisfaction ( $B=-0.03$ ,  $t=-2.648$ ,  $p<0.05$ , 95% CI: -0.04 to -0.004), and internalization of the thin ideal ( $B=-0.08$ ,  $t=-2.94$ ,  $p<0.05$ , 95% CI: -0.14 to -0.01) predicted changes. That is, low levels of rigid control, body dissatisfaction, and internalization of sociocultural attitudes towards appearance at the beginning of the year predicted greater weight gain for female students. In addition to these variables, both EAT-total scores and EAT-diet scores showed a trend towards significantly predicting weight change ( $B=-0.09$ ,  $t=-1.93$ ,  $p=0.08$ , 95% CI: -0.18 to 0.01 and  $B=-0.10$ ,  $t=-2.17$ ,  $p<0.05$ , 95% CI: -0.21 to 0.005, respectively) suggesting that lower levels of disordered eating lead to higher weight gain. Given that there was not a significant change in BMI for men, regressions were not calculated for the male sample.

## DISCUSSION

Though the sample in this study was small, the pattern of results revealed that the impact of the transition to university on body image,

**TABLE 1**  
Means and Standard Deviations for all variables at Time 1 and Time 2 for women ( $N=11$ ).

Variable	Time 1		Time 2		t	df	p	Cohen's d
	M	SD	M	SD				
BMI	23.19	5.40	23.85	5.64	-2.39	10	0.03	0.11
BSQ	70.30	25.48	73.90	27.35	-0.74	10	0.47	0.13
EAT:T	5.27	5.91	4.36	4.80	0.58	10	0.62	0.18
EAT:D	2.27	5.21	2.09	3.04	0.16	10	0.86	0.04
EAT:O	3.00	2.04	1.45	1.43	2.83	10	0.01	0.08
EAT:BN	0.00	0.00	0.81	1.94	-1.39	10	0.19	0.59
PFS	13.18	4.33	14.45	6.71	-0.59	10	0.56	0.22
EI:CR	3.77	2.22	3.55	1.74	0.24	10	0.81	0.11
EI:RC	2.54	1.96	2.36	2.06	0.21	10	0.83	0.08
EI:FC	3.80	1.93	13.00	32.02	-0.91	10	0.38	0.40
EI:DIS	4.72	1.84	5.36	2.61	-1.47	10	0.17	0.28
EI:H	5.09	2.87	5.09	3.01	-0.03	10	0.98	0.01
SATAQ:A	19.36	2.24	26.27	8.17	-1.53	10	0.15	0.13
SATAQ:I	26.27	8.17	26.36	6.94	-0.097	10	0.92	0.03

**TABLE 2**  
Means and Standard Deviations for all variables at Time 1 and Time 2 for men (N=7).

Variable	Time 1		Time 2		t	df	p	Cohen's d
	M	SD	M	SD				
BMI	26.13	5.70	27.43	6.49	-1.71	6	0.13	0.10
BSQ	67.85	21.97	65.42	25.88	0.55	6	0.60	0.21
EAT:T	7.42	8.810	9.14	7.49	-4.33	6	0.68	0.29
EAT:D	4.42	5.56	6.0	6.80	-0.57	6	0.58	0.09
EAT:O	2.14	3.23	2.42	2.69	0.23	6	0.82	0.10
EAT:BN	0.85	1.46	0.71	1.25	-0.21	6	0.83	0.39
PFS	14.28	5.05	12.57	3.40	-1.10	6	0.31	0.32
EI:CR	3.83	2.13	4.5	1.97	-1.58	6	0.17	0.11
EI:RC	2.83	2.40	3.16	3.18	-0.59	6	0.57	0.79
EI:FC	2.33	1.75	4.83	3.18	-2.52	6	0.05	0.08
EI:DIS	4.83	3.12	4.66	3.26	0.41	6	0.69	0.27
EI:H	4.00	2.36	21.00	3.91	1.0	6	0.36	0.62
SATAQ:A	21.00	2.23	19.00	2.23	-1.53	6	0.18	0.25
SATAQ: I	26.71	8.45	24.57	8.24	1.94	6	0.09	0.21

disordered eating, and weight are complex and differ according to gender. It appears as if low levels of rigid restraint, high body satisfaction and less internalization of the thin idea lead to weight gain in women. Given there was no change in body satisfaction or disordered eating observed in women during the first year of university, weight gain may be due to other variables. There were few men in this study, however, those who did participate at  $T_1$  and  $T_2$  tended to exhibit fairly stable body weight. Despite this, it did appear as if high levels of flexible control upon entry to university may increase the likelihood of weight gain in men. Individuals who are high in flexible control tend to consume all desired types of food (e.g. chocolate), but will do so in moderation or will alter other intake in order to compensate for increased caloric consumption. It may be that the food environment at university offers such a large amount of variety that men who are flexible in their food consumption struggle with adequately compensating for changes in consumption.

Overall, the results of this study indicate that despite stability in body dissatisfaction and disordered eating symptomatology, body weight increased over the course of the first year of university. It appears as if those who have the least amount of concern regarding weight and shape are more likely to gain weight. Those who are less concerned about their weight and shape may be less vigilant regarding food consumption than those who are and may, therefore, be more susceptible to environmental changes. Future research should investigate

these areas as predictors of weight gain in both men and women at university.

There are a number of limitations to the current study; most salient are the small sample size and retention rate and the self-report of weight and height. Given that self-report weight is often under-estimated, it is possible that the data do not accurately represent true weight gain. Given that this study assessed a number of body/weight domains simultaneously in both men and women, the data from this study provides the groundwork from which to frame some interesting questions for future study including the role of the food environment in weight gain during university, the necessity to target healthy individuals for education programming, and the need to educate all students regarding healthy eating patterns.

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