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## Self-Weighing Behaviors in Young Adults: Tipping the Scale Towards Unhealthy Eating Behaviors?

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### Abstract

**Purpose**—This study examined associations between frequency of self-weighing and healthy weight control behaviors, unhealthy weight control behaviors, muscle enhancing behaviors (e.g. steroid use, protein powders), and psychological well-being (i.e., self-esteem, depression, body satisfaction) in a community sample of young adults.

**Methods**—Data were drawn from Project EAT-III (Eating and Activity in Teens and Young Adults), the third wave of a population-based study. Participants included young adults (n=2,287, mean age=25.3) from the Minneapolis/St. Paul metropolitan area.

**Results**—Self-weighing a few times per week or more frequently was reported by 18% of young adult women and 12% of young adult men. Linear regression models, adjusted for body mass index and demographic characteristics, indicated that in both women and men more frequent self-weighing was associated with a higher prevalence of dieting, both healthy and unhealthy weight control behaviors, and muscle-enhancing behaviors. Additionally, young women who reported more frequent self-weighing were more likely to report binge eating. More frequent self-weighing was also associated with more depressive symptoms and lower self-esteem in women and lower body satisfaction in young men.

**Conclusions**—More frequent self-weighing is associated with healthy and unhealthy weight control practices, use of muscle enhancing behaviors, and poorer psychological well-being in young adults. Young adults engaging in self-weighing behaviors should be screened for these health indicators and counseled as appropriate. Prior to recommending self-weighing as a weight-monitoring tool, health care providers should ensure that young adults are not at risk for an unhealthy preoccupation with body weight or shape.

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**Implications & Contributions:** Frequent self-monitoring of weight in young adults is associated with greater use of both healthy and unhealthy weight control practices, use of muscle enhancers and negative psychological conditions. Findings suggest that healthcare professionals should monitor young adults who engage in self-weighing behaviors, and screen for unhealthy weight control practices and poor psychological well-being.

## Keywords

Self-weighing; weight control behaviors; psychological well-being; binge eating; young adults

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## INTRODUCTION

Self-monitoring one's weight is viewed by some healthcare providers and researchers as a beneficial strategy for prompting behavior change in overweight adult patients [1, 2]. However, it remains unclear whether self-weighing should be promoted as a weight control strategy. There is conflicting evidence to suggest that self-weighing behaviors may be harmful; however, few studies have examined the potential for negative outcomes such as increased body dissatisfaction, disordered eating, and depression [3–5].

In a longitudinal study examining the effects of repeated weighing on mood, self-esteem, body image and eating behavior, young adult women (n=30) who weighed themselves every day for two weeks showed deterioration in mood with increases in both anxiety and depression and lowered self-esteem compared to non-weighing subjects [6]. Furthermore, in a large population-based sample of adolescents from Project EAT, frequent self-weighing predicted a higher prevalence of binge eating and other unhealthful weight control practices five years later, but only in females [7]. These same associations, however, were not found for older adult populations and treatment seeking, obese women [3–5]. A recent systematic literature review examining the impact of regular self-weighing in adults further concluded that more research is needed to determine if self-weighing in specific subgroup populations is effective, along with identifying the potential psychological risks associated with frequent self-weighing [8].

Young adults are at high risk for excessive weight gain and are more likely than other age groups to monitor their weight and shape for weight management purposes [9–11]; thus, there is a particular need for additional research to examine the prevalence, frequency, and potential consequences of self-weighing in this population. The few studies that have examined self-weighing behaviors in young adult populations were conducted in small samples lacking diversity in terms of ethnicity/race and socioeconomic status. Research in community-based samples is needed to gain a better understanding as most studies to date have focused on samples of female college students [6, 12, 13] or treatment seeking individuals [14].

Most of the research on correlates and consequences of self-weighing has focused exclusively on weight control behaviors [15, 16] and psychological well-being [3, 5, 13]. Over the last decade, attention to the use of muscle-enhancing substances (e.g., steroids) has increased [17, 18]. The use of such substances is of concern because of their deleterious psychological and physical side effects [17] and the potential for young males and females to continue using these substances into adulthood with unwanted health outcomes. Currently, the associations of self-weighing frequency and use of muscle-enhancing substances that are being used by young adult men and women are not understood. Thus, further examination of associations between self-weighing frequency and the use of muscle enhancing substances is warranted.

The current study was designed to address these gaps in the literature by examining the frequency of self-weighing behaviors in young adults and associations with overall psychological well-being, healthy and unhealthy weight control behaviors, and muscle-enhancing behaviors in a community sample. Findings from this study will provide useful information to healthcare providers working with young adults around weight-related topics.

## METHODS

### Sample and Study Design

Data were drawn from Project EAT-III (Eating and Activity in Teens and Young Adults), the third wave of a population-based study designed to examine eating, activity, and weight-related variables among young adults. At baseline (1998–1999), 4,746 junior and senior high school students from 31 public schools in the Minneapolis/St. Paul metropolitan area completed surveys and anthropometric measurements [19, 20]. Ten years later (2008–2009), original participants were mailed a letter inviting them to complete an online or paper version of the Project EAT-III survey. A total of 1,030 young men and 1,257 young women completed the Project EAT-III survey, representing 66.4% of participants who could be contacted (48.2% of the original school-based sample). Most participants were in their mid-20's (mean age  $25.3 \pm 1.6$  years). All study protocols were approved by the University of Minnesota Institutional Review Board Human Subjects Committee. Additional details of the study design have been reported elsewhere [21].

### Survey Development and Measures

The original Project EAT survey [22] that was used to assess correlates of eating, activity, and weight-related behaviors among adolescents was modified at follow-up to improve the relevance of items for young adults. New items were also added to the Project EAT-III survey to allow for investigating areas of growing research interest such as self-weighing and muscle-enhancing behaviors. A new measure of self-weighing was included on the EAT-III survey to better assess the frequency of this behavior. The previous measure assessed level of agreement with a cognitive perception variable statement (“I weigh myself often”), while the revised question used for Project EAT-III was a behavioral measure and assessed the frequency of self-weighing. The revised survey was pre-tested by 27 young adults in focus groups and test-retest reliability over a period of one to three weeks was examined in a sample of 66 young adults. Additional details of the survey development process are described elsewhere [23].

**Self-weighing**—To assess the frequency of self-weighing behaviors, participants were asked “How often do you weigh yourself?” on a 7-point scale. Responses included the following: less than 1 time per month, every month, a few times per month, every week, a few times per week, every day, and more than 1 time per day. This question was adapted from a previous study to include additional response options based on pilot group feedback [1]. For analysis, responses were categorized into three groups: 1) Rarely: self-weigh less than 1 time per month; 2) Sometimes: self-weigh every month or a few times per month; and 3) Often: self-weigh a few times per week or more (test-retest agreement = 91%).

**Dieting Behavior**—Dieting was assessed with the question “How often have you gone on a diet during the last year? By ‘diet’ we mean changing the way you eat so you can lose weight?” with responses being never, 1 to 4 times, 5 to 10 times, more than 10 times and I am always dieting. Participants reporting any dieting in the past year were categorized as dieting (test-retest agreement = 92%).

**Current Weight Management Practices**—To determine current weight control practices, participants were asked “Are you currently trying to: a) lose weight, b) stay the same weight c) gain weight, d) I am not trying to do anything about my weight” (test-retest agreement=92%). Participants who responded as “stay the same weight” and “I am not trying to do anything about my weight” were recoded as “neither trying to lose or gain weight”.

**Healthy Weight Control Behaviors**—Healthy weight control behaviors were assessed by asking participants how frequently they had done any of the following behaviors in the past year in order to lose weight or keep from gaining weight: `exercised', `ate more fruits and vegetables', `ate less high-fat foods', `ate less sweets', `drank less soda pop', `watched portion sizes'. Responses for each were never, rarely, sometimes, or on a regular basis. Participants who reported using one or more of these healthy weight control behaviors sometimes or on a regular basis were categorized as using healthy weight control behaviors (test-retest agreement=95%).

**Unhealthy and Extreme Weight Control Behaviors**—Unhealthy weight control behaviors were assessed by asking participants if they had done any of the following behaviors in order to lose weight or keep from gaining weight in the past year: `fasted', `ate very little food', `used food substitutes', `skipped meals', and `smoked cigarettes' with responses being yes or no. If participants responded yes to one or more of these behaviors they were categorized as engaging in unhealthy weight control behaviors (test-retest agreement = 83%).

Extreme weight control behaviors were assessed by asking participants if they had done any of the following behaviors in order to lose weight or keep from gaining weight in the past year: `taking laxatives', `taking diuretics', `using diet pills' and `self-induced vomiting' with responses being yes or no. If participants responded yes to one or more of these behaviors they were categorized as using extreme weight control behaviors (test-retest agreement = 97%).

**Binge Eating**—Participants were categorized as having engaged in binge eating if they answered yes to the following two questions: “In the past year, have you ever eaten so much food in a short period of time that you would be embarrassed if others saw you binge eating?” and “During the times when you ate this way, did you feel you couldn't stop eating or control what or how much you were eating?” (test-retest agreement = 92% [first question] and 84% [second question]) [24].

**Muscle Enhancing Behaviors**—Muscle-enhancing behaviors were assessed with the question: “How often have you done each of the following things in order to increase your muscle size or tone during the past year? Five behaviors followed this question. Behaviors categorized as general muscle-enhancing behaviors included `changed my eating' and `exercised more'. Behaviors categorized as unhealthy included: `used protein powder or shakes', `used steroids,' and `used any other muscle-building substance (such as creatine, amino acids, hydroxyl methylbutyrate, DHEA, or growth hormones)'. Response options for each behavior were: never, rarely, sometimes and often. This question was adapted from previous instruments [25–27]. Participants who reported using these behaviors sometimes or often were categorized as having used general (test-retest agreement = 89%) and unhealthy muscle-enhancing (test-retest agreement = 100%) behaviors, respectively.

**Depression**—Depression was assessed by asking participants over the past 12 months, how often they have been bothered or troubled by six different symptoms of depression (e.g., hopelessness, worry) with responses being not at all, somewhat and very much. This a scale was adapted from Kandel and Davies [28]. Higher scores indicate greater depression (range: 10 to 30, Cronbach's alpha=0.83, test-retest r=0.73).

**Self-Esteem**—Self-esteem was assessed by asking participants to indicate how strongly they agreed with six statements (e.g., “At times I think that I am no good at all.”) that were adapted from the Rosenberg Self-Esteem scale [29]. Responses for each statement ranged on

a 4-point scale from strongly agree to strongly disagree. All items were summed for an overall score with higher scores indicating higher self-esteem (range: 6 to 24, Cronbach's alpha=0.83, test-retest r=0.85).

**Body Satisfaction**—Body satisfaction was measured with the question: “How satisfied are you with your height, weight, body shape, waist, hips, thighs, stomach, face, body build, shoulders, muscles, chest and overall body fat” with responses ranging on a 5-point scale from very dissatisfied to very satisfied. This scale was adapted and modified from the Body Shape Satisfaction Scale [30]. All items were summed for an overall score with higher scores indicating higher body satisfaction (range: 13 to 65, Cronbach's alpha=0.93, test-retest r=0.89).

**Sociodemographics and Covariates**—Age, gender, socioeconomic status, and ethnic/racial identity (White, Black or African American, Hispanic or Latino, Asian American, American Indian/Native American, Multi-racial/other) were self-reported. Additionally, participants self-reported their height and weight, which were used to calculate body mass index (BMI). Cut-points developed by the Centers for Disease Control and Prevention were used to categorize participants into those who were underweight (BMI < 18.5), normal weight (18.5 ≤ BMI < 25), overweight (25 ≤ BMI < 30) and obese (BMI ≥ 30) [31]. Self-reports of height and weight were validated in a subsample of 63 male and 62 female study participants for whom height and weight measurements were completed by trained research staff; high correlations were found between self-reported BMI and measured BMI in males (r=0.95) and females (r=0.98). Socioeconomic status (SES) was determined by asking participants whether they currently receive public assistance (yes/no, or don't know) and the highest level of education they have completed (e.g., high school, some college).

## Data Analyses

All analyses were stratified by gender. First the frequencies of self-weighing were examined. The frequencies of self-weighing were also trichotomized into “Rarely” (less than once per month), “Sometimes” (a few times per month), and “Often” (a few times per week or more). Cross tabulations of self-weighing with sociodemographic characteristics used for adjusting later regressions (race/ethnicity, highest education achieved, receiving public assistance, age in years) and current weight status were examined. For each sociodemographic characteristic, analysis of variance was used to test for differences in prevalences across the three categories of self-weighing frequency yielding a Chi-square test; however, for age the mean differences were tested by an F-test. For each of the eleven dependent variables (follows a diet, current weight control, any healthy weight control behavior, any unhealthy weight control behavior, any extreme weight control behavior, binge eating, use of general muscle-enhancing behaviors, use of unhealthy muscle-enhancing behaviors, depressive symptoms, self-esteem, and body satisfaction), analysis of covariance across three categories of self-weighing frequency were carried out, adjusted for age, BMI, race/ethnicity, and highest educational level. For the “current weight control” outcome testing was carried out only for responses of those “trying to lose weight” because of the dependency of three weight control responses. Direct modeling of the dichotomies by linear regression provided readily interpretable adjusted prevalences; testing is by F-statistics for all models. If the F-statistic for each outcome showed statistical significance, post-hoc tests with Bonferroni adjustment for three comparisons were used to evaluate differences in prevalences or in means between specific self-weighing categories. Statistical significance was set at 5%. All analyses were conducted in PASW Statistics 19.0 SPSS.

Because attrition from the baseline sample (1998–1999) did not occur at random, in all analyses, the data were weighted using the response propensity method [32]. Response

propensities (i.e., the probability of responding to the Project EAT-III survey) were estimated using a logistic regression of response at EAT-III on a large number of predictor variables from the baseline Project EAT survey. Weights (inverse to the response propensity) were additionally calibrated so that the weighted total sample sizes used in analyses accurately reflect the actual observed sample sizes for men and women. This weighting method resulted in estimates representative of the demographic make-up of the original school-based sample, thereby allowing results to be more fully generalizable to the population of young people in the Minneapolis/St. Paul metropolitan area. The weighted sample was 48% white, 19% African American, 20% Asian, 6% Hispanic, 3% Native American, 4% mixed or other race/ethnicity.

## RESULTS

### Frequency of self-weighing behaviors

In general, women reported weighing themselves more frequently than men. Among young adult women, 47% reported weighing themselves less than once a month, 35% weighed themselves every month, or a few times per month or every week, and 18% weighed themselves a few times per week or more (Table 1). In contrast, among young adult men, 54% reported weighing themselves less than once a month, 34% weighed themselves every month, or a few times per month or every week, and 12% weighed themselves a few times per week or more.

Frequency of self-weighing by ethnic/racial identity, education level, receiving public assistance and weight status reveal significant differences in both genders (Table 2). However, there were no significant differences of mean age by self-weighing groups. Post-hoc tests revealed few significant differences of self-weighing frequency groups by sociodemographic characteristics.

### Associations of self-weighing frequency with weight control and muscle-enhancing behaviors

After controlling for BMI and sociodemographic characteristics, more frequent self-weighing was found to be associated with a higher prevalence of dieting, trying to lose weight, healthy weight control behaviors, unhealthy and extreme weight control behaviors, muscle-enhancing behaviors (general and unhealthy) in both women and men, and binge eating in women (Table 3). As examples, the percent of unhealthy weight control behaviors among women differed significantly across the self-weighing frequency groups (rarely=47.0%; sometimes=54.5%; often=67.2%,  $p<0.001$ ); and in young adult men, the percent of unhealthy muscle-enhancing behaviors differed significantly across the self-weighing frequency groups (rarely=15.8%; sometimes=29.5%; often=33.9%,  $p<0.001$ ). Additionally, post-hoc tests revealed that participants who rarely weigh themselves were less likely to diet, try to lose weight, use healthy weight control behaviors, use unhealthy and extreme weight control behaviors, and use muscle-enhancing behaviors (general and unhealthy) than participants who sometimes or often weigh themselves.

### Associations of self-weighing frequency with psychological well-being

More frequent self-weighing was found to be associated with lower self-esteem and more depressive symptoms among women in analyses that adjusted for BMI and sociodemographic characteristics (see Table 3). Among young adult men, frequency of self-weighing was inversely associated with body satisfaction. In determining significant differences between self-weighing frequency groups, post-hoc analyses for depressive symptoms in women and body satisfaction in men revealed significant differences between

participants who often weigh themselves compared to participants who sometimes or rarely weigh themselves.

## DISCUSSION

This study examined self-weighing frequency behaviors in a diverse, population-based sample of young adults and found significant positive associations with healthy and unhealthy weight control behaviors, binge eating, muscle-enhancing behaviors, and depressive symptoms, and inverse associations with self-esteem and body satisfaction, with some differences across gender. Additionally, follow-up tests revealed significant differences between most or all self-weighing frequency groups, suggesting that even a moderate frequency of self-weighing may be associated with these behaviors and conditions. The frequency of self-weighing behaviors observed among young adults in this sample were similar to previous estimates of self-weighing frequency among healthy, middle-aged adults [33] with 18% of young women and 12% of young men reporting they weighed themselves a few times per week or more.

Associations were found between frequency of self-weighing and unhealthy weight control practices, even though levels of self-weighing were not high for the majority of the participants. These findings support previous research in adolescents where more frequent self-weighing longitudinally predicted unhealthy weight control behaviors [7]. On the other hand, positive associations between more frequent self-weighing and healthy weight control behaviors were also found in this current study, which has been reported in the literature [1, 34]. Thus, self-weighing appears to be associated with both healthy and unhealthy weight control behaviors.

A novel finding of this study was that more frequent self-weighing was associated with a higher prevalence of unhealthy muscle-enhancing behaviors such as steroid use, and general muscle-enhancing behaviors such as exercising more, in both women and men. In general, men were more likely to use muscle-enhancing behaviors than women, which is consistent with previous research [35]. Currently, the associations of self-weighing frequency and muscle-enhancing behaviors are not understood. However, based on findings from this study, young adult men and women who use unhealthy or general muscle-enhancing behaviors may be more likely to weigh themselves frequently, possibly as a measure in self-evaluating their successes in losing, maintaining or gaining weight. Men, in particular, may use both general and unhealthy muscle-enhancing behaviors because they aim to achieve the idealized male body type of a muscular physique that is moderate in weight and low in body fat [36]. Thus, the co-occurrence of using general and unhealthy muscle-enhancing behaviors in young adults seems to parallel the associations between self-weighing and unhealthy weight control behaviors.

Furthermore, post-hoc tests used to examine significant differences between self-weighing frequency groups suggest that young adults who weigh themselves at least a few times per week, or even just a few times per month are significantly more likely to binge eat and use unhealthy and healthy weight control behaviors as well as muscle-enhancing behaviors compared to young adults who weigh themselves less than one time per month. Additionally, young adults who monitored their weight a few times per week or more reported significantly more depressive symptoms (in women) and poorer body satisfaction (in men) compared to young adults who monitored their weight less often. These findings suggest that young adults should be monitored and screened for unhealthy weight control practices, depressive symptoms, and body satisfaction when they report engaging in self-weighing behaviors.

Results from the present study and previous research [6, 7, 13, 37] suggest that self-weighing may be part of an unhealthy cycle. Young adults may attempt weight loss or muscle-enhancement, evaluate their success by self-weighing, then continue or increase their body change behaviors based on this feedback. Prior work indicates that behaviors in this cycle may become increasingly frequent or severe over time [6, 7], and the current study introduces muscle-enhancing behaviors into this relationship. Further research, including qualitative work with young adults who self-weigh frequently, is warranted to more fully understand the role self-weighing plays in the development or continuation of unhealthy body change behaviors.

### Strengths and Limitations

Strengths of this research include the availability of multiple measures of body change behaviors and psychological well-being, permitting a robust investigation into this phenomenon. This study also was able to examine associations between frequency of self-weighing and muscle-enhancing behaviors that are currently not well understood in the literature. The cross-sectional nature of this study is a limitation as temporal ordering between self-weighing frequency and both behavioral and psychological outcomes cannot be determined. Nevertheless, findings from this study capture a snapshot of weight control behaviors commonly practiced by young adults in association with self-weighing frequency, an aspect currently lacking in the literature which may have important implications worth pursuing in follow-up longitudinal studies.

### CONCLUSION

Frequent self-monitoring of weight in young adults may or may not pose health risks. As found in this study, more frequent self-weighing behaviors are associated with greater use of both unhealthy and healthy weight control practices, the use of muscle-enhancing behaviors, and negative psychological conditions. Thus, it is recommended that healthcare professionals closely monitor young adults engaging in self-weighing behaviors, as they may be practicing unhealthy weight control behaviors and be suffering from depression and body dissatisfaction. Healthcare professionals should also take the time to counsel young adults engaging in self-weighing behaviors on appropriate weight control behaviors for gaining, maintaining or losing weight.

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**Table 1**

Frequency of self-weighing in young adult women and men

Characteristic	All (N=2287)	Women (N=1257)	Men (N=1030)
	% (N)	% (N)	% (N)
Self-Weighing Frequency *			
Rarely			
<i>Less than once a month</i>	49.9 (1141)	46.8 (588)	53.6 (553)
Sometimes			
<i>Every month</i>	11.3 (259)	11.4 (144)	11.2 (115)
<i>A few times per month</i>	13.5 (309)	13.9 (175)	12.9 (133)
<i>Every week</i>	10.2 (233)	10.0 (126)	10.3 (106)
Often			
<i>A few times per week</i>	10.2 (234)	11.2 (141)	9.0 (93)
<i>Every day</i>	3.9 (88)	5.0 (62)	2.5 (26)
<i>More than once a day</i>	0.8 (19)	1.4 (17)	0.2 (2)

\* Self-weighing groups were categorized as follows: Rarely=less than 1 time per month; Sometimes=every month, a few times per month or weekly; Often=a few times per week or more.

**Table 2**

Frequency of self-weighting by sociodemographic characteristics of young adult women and men

Characteristic	Women (N=1257) Frequency of Self-Weighting			Men (N=1030) Frequency of Self-Weighting			p-value <sup>§</sup>	p-value
	Rarely* (n=588) % (N) <sup>‡</sup>	Sometimes (n=445) % (N)	Often (n=221) % (N)	Rarely* (n=553) % (N)	Sometimes (n=445) % (N)	Often (n=121) % (N)		
<b>Race/Ethnicity</b>							<0.001	<0.001
White	43.8 (252) <sup>‡,a</sup>	35.4 (204) <sup>ab</sup>	20.8 (120) <sup>b</sup>	53.8 (278)	32.6 (168)	13.6 (70)		
Black or African American	53.6 (142) <sup>a</sup>	33.6 (89) <sup>ab</sup>	12.8 (34) <sup>b</sup>	47.1 (73)	43.9 (68)	9.0 (14)		
Hispanic or Latino	47.8 (32)	35.8 (24)	16.4 (11)	65.7 (44) <sup>a</sup>	19.4 (13) <sup>b</sup>	14.9 (10) <sup>ab</sup>		
Asian American	44.4 (106)	36.4 (87)	19.2 (46)	55.9 (113)	35.1 (71)	8.9 (18)		
Native American	48.8 (20)	41.2 (17)	9.8 (4)	58.8 (20SS)	32.4 (11)	8.8 (3)		
Multi-racial/other	53.7 (36) <sup>a</sup>	35.8 (24) <sup>ab</sup>	10.4 (7) <sup>b</sup>	44.4 (24)	44.4 (24)	11.1 (6)		
<b>Highest Education Received</b>							<0.001	<0.001
Some high school or less	49.8 (245) <sup>a</sup>	35.8 (176) <sup>ab</sup>	14.4 (71) <sup>b</sup>	56.9 (298)	32.4 (170)	10.7 (56)		
Some college	46.0 (160)	34.5 (120)	19.5 (68)	51.9 (112)	36.6 (79)	11.6 (25)		
Bachelor degree or higher	44.7 (182)	35.6 (145)	19.7 (80)	48.6 (135)	37.1 (103)	14.4 (40)		
<b>Receives Public Assistance</b>							<0.001	<0.001
Yes	57.8 (137) <sup>a</sup>	30.0 (71) <sup>b</sup>	12.2 (29) <sup>b</sup>	64 (34) <sup>a</sup>	32.1 (17) <sup>ab</sup>	3.8 (2) <sup>b</sup>		
No	44.6 (448) <sup>a</sup>	36.5 (367) <sup>b</sup>	18.8 (189) <sup>b</sup>	52.9 (509) <sup>a</sup>	34.7 (334) <sup>ab</sup>	12.4 (119) <sup>b</sup>		
<b>Current Weight Status</b>							<0.001	<0.001
Underweight (BMI <18.5)	61.6 (29) <sup>a</sup>	33.2 (16) <sup>ab</sup>	5.2 (2) <sup>b</sup>	41.1 (4)	47.5 (5)	11.3 (1)		
Normal weight (BMI 18.5 to <25)	49.6 (293)	32.9 (194)	17.4 (103)	61.5 (265) <sup>a</sup>	28.4 (122) <sup>b</sup>	10.0 (43) <sup>b</sup>		
Overweight (BMI 25 to <30)	42.4 (127)	37.7 (113)	19.9 (60)	47.0 (170)	39.8 (144)	13.2 (48)		
Obese (BMI ≥30)	43.8 (134)	38.9 (119)	17.4 (53)	48.1 (101)	38.1 (80)	13.8 (29)		
	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Mean±SD</b>		
<b>Age (years)</b>	25.24±1.8	25.3±1.7	25.3±1.5	25.4±1.6	25.4±1.7	25.4±1.6	0.671	0.918

\* Rarely=less than 1 time per month; Sometimes=every month, a few times per month or weekly; Often=a few times per week or more.

<sup>‡</sup> N's may differ slightly because of missing data among self-reported behaviors.

<sup>§</sup> P-values are from Chi-square analyses, except for the variable 'Age' (F-statistic).

† Estimates with different superscript letters indicate significant differences ( $p < 0.05$ ) were found between self-weighting frequency groups in post-hoc tests.

Table 3

Adjusted prevalence of weight control behaviors (WCBs), muscle-enhancing behaviors, psychological well-being and body satisfaction by frequency of self-weighting in young adult women and men

Behaviors <sup>†</sup>	Women (N=1257) Frequency of Self-Weighting				Men (N=1030) Frequency of Self-Weighting					
	Rarely* (n=588)	Sometimes (n=445)	Often (n=221)	F <sup>#</sup>	P	Rarely* (n=553)	Sometimes (n=355)	Often (n=121)	F <sup>#</sup>	P
<b>Follows a diet (%)</b>	9.7 <sup>§</sup>	15.2 <sup>b</sup>	24.3 <sup>b</sup>	23.5	<0.001	4.9 <sup>a</sup>	12.3 <sup>b</sup>	13.1 <sup>b</sup>	17.9	<0.001
<b>Current Weight Control (%)</b>										
Trying to Lose Weight	48.4	60.6	69.6	27.0	<0.001	25.2	38.7	56.5	25.9	<0.001
Trying to Gain Weight <sup>‡</sup>	3.8	4.0	3.7			10.5	12.8	13.4		
Neither Trying to Lose or Gain Weight <sup>‡</sup>	47.8	35.3	26.6			64.3	48.6	30.1		
<b>Healthy WCBs (%) (e.g., ate less sweets)</b>	87.9 <sup>a</sup>	91.6 <sup>ab</sup>	94.6 <sup>b</sup>	8.18	0.017	70.3 <sup>a</sup>	82.8 <sup>b</sup>	87.2 <sup>b</sup>	27.8	<0.001
<b>Unhealthy WCBs (%) (e.g., fasting)</b>	47.0 <sup>b</sup>	54.5 <sup>b</sup>	67.2 <sup>c</sup>	26.3	<0.001	24.5 <sup>a</sup>	37.5 <sup>b</sup>	49.7 <sup>b</sup>	33.0	<0.001
<b>Extreme WCBs (%) (e.g., used laxatives)</b>	17.3 <sup>a</sup>	19.7 <sup>a</sup>	34.3 <sup>b</sup>	28.6	<0.001	3.4 <sup>a</sup>	11.6 <sup>b</sup>	17.0 <sup>b</sup>	29.5	<0.001
<b>Binge Eating (%)</b>	11.9	17.1	19.3	7.73	0.021	6.3	6.7	11.5	4.16	0.125
<b>General Muscle-Enhancing behaviors (%) (e.g., exercise more)</b>	54.8 <sup>a</sup>	69.3 <sup>b</sup>	69.6 <sup>b</sup>	24.9	<0.001	64.5 <sup>a</sup>	79.8 <sup>b</sup>	84.6 <sup>b</sup>	31.4	<0.001
<b>Unhealthy Muscle-Enhancing behaviors (%) (e.g., used steroids)</b>	7.6 <sup>a</sup>	12.2 <sup>ab</sup>	15.4 <sup>b</sup>	11.5	0.003	15.8 <sup>a</sup>	29.5 <sup>b</sup>	33.9 <sup>b</sup>	26.3	<0.001
	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Mean±SD</b>		<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	<b>Mean±SD</b>	
<b>Depressive Symptoms</b>	19.3±5.2 <sup>a</sup>	18.9±4.8 <sup>a</sup>	20.3±4.2 <sup>b</sup>	7.30	0.001	17.7±5.0	17.1±4.9	17.2±4.7	2.07	0.126
<b>Self-Esteem</b>	18.3±3.5 <sup>a</sup>	17.9±3.3 <sup>ab</sup>	17.5±3.2 <sup>b</sup>	3.79	0.023	18.7±3.6	19.0±3.3	19.1±3.2	0.56	0.574
<b>Body Satisfaction</b>	38.6±12.9	37.6±11.8	35.8±10.6	2.47	0.085	44.8±12.6 <sup>a</sup>	44.6±11.4 <sup>a</sup>	41.2±12.0 <sup>b</sup>	5.54	0.004

\* Rarely=less than 1 time per month, Sometimes= every month, a few times per month or weekly; Often=a few times per week or more.

<sup>†</sup> N's may be different because of missing data among self-reported behaviors.

<sup>#</sup> Analysis of covariance with age, BMI, race and SES as covariates among self-weighting groups; F statistic with 2df in numerator.

<sup>‡</sup> Not tested.

<sup>§</sup> Estimates with different superscript letters indicate significant differences (p<0.05) were found between self-weighting frequency groups in post-hoc tests.