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Personal and socio-environmental predictors of dieting and disordered eating behaviors from adolescence to young adulthood: 10-year longitudinal findings

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Abstract

Aim—To identify personal and socio-environmental factors associated with the persistence of dieting or disordered eating from adolescence to young adulthood, as well as factors associated with the initiation of dieting or disordered eating during young adulthood.

Methods—Participants (n= 4,746) completed EAT-I surveys as adolescents; EAT-III surveys were completed 10 years later by 1,902 of the original participants (1082 females and 820 males).

Results—Study results indicate that there are personal factors, including weight concerns, weight importance, depressive symptoms and body satisfaction, present during adolescence that are predictive of an individual's engagement in dieting or disordered eating behaviors ten years later. For example, among both males and females weight importance was found to be predictive of continued dieting and disordered eating from adolescence through young adulthood. For example, 26.1% of males with low levels of weight concern at baseline reported engaging in persistent disordered eating as compared to 60.4% of males with high levels of weight concern at baseline (Prevalence difference: 34.3, 95% CI: 10.5, 58.1; p<0.01). Parental weight concerns, peer dieting and weight teasing at baseline were not found to be predictive of dieting or disordered eating at 10-year follow-up.

Conclusions—Personal factors identified during adolescence were found to be predictive of both persistent dieting and disordered eating from adolescence into young adulthood, as well as initiation of these behaviors during young adulthood. In particular, weight concerns and weight importance were found to be predictive in most models providing support for inclusion of these factors in adolescent health screening.

The use of dieting and disordered eating behaviors, such as purging (by vomiting or laxative use), use of diet pills, fasting, and smoking, to control weight is prevalent during adolescence^{1–3}. A national survey of adolescents in the United States indicated that 21.8

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percent of girls and 11.2 percent of boys self-reported engaging in disordered eating behaviors within the last 30 days⁴. A separate research study conducted within a population-based sample of adolescents revealed that over the past year 45.8 percent of girls and 31.1 percent of boys engaged in dieting, 50.2 percent of girls and 38.1 percent of boys engaged in unhealthy weight control behaviors, and 6.8 percent of girls and 3.9 percent of boys engaged in extreme weight control behaviors⁵. The deleterious effects of dieting and disordered eating include weight gain over time^{6,7}, poorer dietary intake⁸, increased risk of psychiatric issues (e.g. depression, anxiety, suicidality)^{9,10}, as well as the development of clinically significant eating disorders^{11–14}.

Furthermore, research indicates that as youth progress throughout adolescence and into young adulthood the use of dieting and disordered eating often persists¹⁵ or even increases^{16,17}. Engagement in dieting and disordered eating has been found to track within individuals, indicating that individuals who engage in dieting or disordered eating during adolescence are at increased risk for engaging in these harmful behaviors during young adulthood.¹⁷ Thus, it is important to identify risk factors during adolescence that are predictive of persistent engagement in dieting and disordered eating during the transition from adolescence to young adulthood, as well as risk factors during adolescence that are indicative of a young person being at increased risk for initiating dieting or disordered eating behaviors during young adulthood.

Cross-sectional and longitudinal research studies have identified several personal and socio-environmental factors that are predictive of engaging in dieting or disordered eating during adolescence or young adulthood. Low self-esteem, presence of depressive symptoms^{18–20} and body dissatisfaction and weight concerns^{21–24} are significant personal predictors of engaging in disordered eating behaviors during adolescence. Socio-environmental factors associated with the use of dieting and disordered eating during adolescence include parental weight concerns^{18,25–27}, peer dieting norms^{18,20,26,27}, and weight teasing^{28–30}.

Results from this body of literature have highlighted influential personal and socio-environmental predictors of disordered eating behaviors during adolescence and therefore, what factors might be of most use to intervene upon within the context of clinical or public health prevention focused interventions. However, for the most part, the follow-up periods in these studies have been of insufficient length to capture important transitions from one life stage to another; some studies have had follow-up periods of two years or less^{20,21,24,26,27}, whereas others have followed youth from 3–5 years^{18,22,23}.

Two studies to date have assessed predictors of dieting and disordered eating with substantially longer follow-up periods: a study by Heatherton and colleagues¹⁹ that recruited males and females (n=715) upon their matriculation to college (18-years old) and followed up with them 10 years later (28 years old), and a study by Calam and Waller²⁵ which recruited 63 females at age 12 and followed-up with them 7 years later (19 years old). Results from these studies provide preliminary evidence of factors that predict the use of dieting and disordered eating after a considerable follow-up period. Despite the lengthy follow-up time periods these studies boasted, they still failed to capture participants during their transition from adolescence to young adulthood. Further, the composition of both study

populations limits their generalizability; Heatherton and colleagues assessed only young adults attending college¹⁹ and the study by Calam and Waller²⁵ was limited to a small (n=63), female-only sample. Therefore, to build upon and address important gaps in the literature, it is necessary to assess a wide variety of key personal and socio-environmental factors of potential relevance to the use of dieting or disordered eating behaviors over the life course transition from adolescence to young adulthood within large, population-based samples.

This study aims to identify personal and socio-environmental risk factors associated with the persistence of dieting or disordered eating from adolescence to young adulthood, as well as risk factors associated with the initiation of dieting or disordered eating during young adulthood within a racially/ethnically and socioeconomically diverse population-based sample of young people. Based on findings from previously conducted studies, numerous personal and socio-environmental factors will be assessed as potential correlates of dieting and disordered eating at follow-up, including psychosocial factors, weight and health concerns, and peer and family environment factors. Study findings will allow us to better understand, using a life course perspective, if personal and socio-environmental exposures during adolescence have a long-lasting impact, making them useful predictors of dieting or disordered eating behaviors in individuals ten years later. Finally, a better understanding of the types of factors that influence dieting and disordered eating behaviors during this particular life transition (adolescence to young adulthood) can inform the development of more effective intervention efforts, thereby helping young people to navigate this important transition in a healthy way.

Methods

Study Design and Participants

Participants were recruited as part of Project EAT-III, a 10-year prospective, epidemiological study designed to explore dietary intake, physical activity, weight control behaviors, weight status, and factors associated with these outcomes in a diverse sample of young people. In-class surveys (Project EAT-I) were administered and height and weight were assessed during the 1998-1999 school year (baseline) among 4,746 junior and senior high school students (aged 11-18 years) at public schools in Minneapolis/St. Paul.⁶ Approximately 10 years later in 2008-2009 (follow-up), the Project EAT-III survey was administered via mail or online to participants (aged 21-28 years) who completed the baseline survey. The response rate for the 10-year follow-up was 48.2% of the original EAT-I sample and 66.4% of participants for whom we had usable contact information at follow-up. All study protocols were approved by University of Minnesota's Institutional Review Board.

Participants were excluded from analysis if they did not complete measures on dieting or disordered eating at both baseline and follow-up leaving us with a sample of 1,902 participants who met inclusion criteria. The analytic sample was 56.9% female, 67% white, with a mean age of 14.8 years; on average approximately one third of participants fell in each of the low, middle and high socioeconomic categories. Participants included in the final

analytic model were significantly more likely to be female, white, and from a higher socioeconomic category as compared to the original Project EAT-I sample.

Survey Development and Measures

Development of the Project EAT-I survey was based on Social Cognitive Theory, focus groups with adolescents³¹, an extensive literature review, content reviews by multidisciplinary experts, and pilot testing. Key items on the Project EAT-I survey were preserved on the EAT-III survey to enable longitudinal comparisons. Test-retest reliability over a 2-week period was assessed for the bulk of measures at baseline in a diverse sample of 161 adolescents³² and at 10 year follow-up in a diverse sample of 66 young adults³³. All psychometric tests presented are at baseline.

To assess *disordered eating behaviors* participants reported whether they had utilized unhealthy (e.g. fasted, ate very little food, used a food substitute, skipped meals, or smoked more cigarettes) or extreme (e.g. took diet pills, made myself vomit, used laxatives, or used diuretics) weight control behaviors during the past year. Participants who reported any of these behaviors were coded as engaging in disordered eating behaviors. (Test-retest agreement = 85% [unhealthy behaviors] and 96% [extreme behaviors]). *Dieting* was assessed with the question: "How often have you gone on a diet during the last year?"³⁴. Participants who reported any dieting during the past year were coded as engaging in dieting (Test-retest agreement [non-dieter versus dieter] = 82%).

Self-esteem was assessed using six items from the Rosenberg Self-Esteem scale³⁵ (Cronbach's $\alpha = .79$). *Depressive symptoms* were assessed using six items from the Kandel and Davies Depressive Mood Scale³⁶ (Cronbach's $\alpha = .82$). *Body satisfaction* was assessed using items based on the Body Shape Satisfaction Scale. Participants described level of satisfaction related to 10 different body parts using a 5-point Likert scale (Cronbach's $\alpha = .92$). *Weight concerns* were assessed with two items: "I think a lot about being thinner," "I am worried about gaining weight" (4-point Likert scale, strongly disagree to strongly agree) (Cronbach's $\alpha = .87$). *Self-esteem*, *depressive symptoms*, *body satisfaction*, and *weight concern* scales were divided into tertiles for analysis to allow for comparison between three levels of each of these predictors. *Weight importance* was assessed with the question, "During the past six months, how important has your weight or shape been in how you feel about yourself? (not very important, played a part, among the main things, most important things). *Health concern* was assessed with the following questions: "How much do you care about: eating healthy foods, being healthy?" (not at all, a little, somewhat) and "How strongly do you agree with the following statements? Teenagers don't need to be concerned about their eating habits; At this point in my life, I am not very concerned about my health; Teenagers don't need to worry about their health." (strongly disagree to strongly agree) (Cronbach's $\alpha = .67$). The *weight importance* variable and the *health concern* scale were dichotomized at the midpoint of each to allow for a comparison of high to low importance/concern.

Parental concerns about weight were assessed with four questions, "My mother/father diets to lose weight or keep from gaining weight," and "My mother/father encourages me to diet to control my weight" (not at all, a little, somewhat, very much) (Cronbach's $\alpha = .77$). *Peer*

dieting was assessed with the item, “Many of my friends diet to lose weight or keep from gaining weight” (not at all, a little, somewhat, very much, don't know). *Weight teasing* was assessed with the question, “How often do any of the following things happen? You are teased about your weight” (never, less than once a year, a few times a year, a few times a month, at least once a week). *Family communication* was assessed with four questions: “How much do you feel you can talk to your mother (father) about your problems? How much do you feel your mother (father) cares about you?” (not at all, a little, somewhat, very much) (Cronbach's $\alpha = .69$). *Parental concerns about weight, peer dieting, weight teasing and family communication* variables were all dichotomized at the midpoint to facilitate comparisons.

Race/ethnicity, household income level, and parent BMI were based on self-report. *Adolescent weight status* was calculated by using anthropometric data measured by trained research staff at baseline.

Data Analysis

All analyses were stratified by whether the behavior of interest (dieting or disordered eating) was reported at baseline. In the first set of analyses, we explore predictors of adolescents initiating either dieting or disordered eating at follow-up. Separate regression models were fit for dieting and disordered eating. Dieting models of initiation included dieting at follow-up as the outcome and were limited to those who reported not dieting at baseline. Disordered eating models of initiation included disordered eating at follow-up as the outcome and were, similarly, limited to those who reported no disordered eating at baseline. In the second set of analyses, we explored predictors of persistent engagement in dieting or disordered eating. In these models, dieting (or disordered eating) at follow-up were included as the outcome and analyses were limited to those who reported dieting (or disordered eating) at baseline. Logistic regression models were fit to estimate the association between each categorical predictor (e.g. self-esteem, weight teasing) and categorical outcome variable (e.g. dieting, disordered eating). Interactions by adolescent weight status were examined, but were not found to be statistically significant. All models were stratified by adolescent gender a priori owing to previous research findings showing gender differences in prevalence of dieting and disordered eating^{4,5}, as well as gender differences in the predictor variables explored within the current study. Models also included adjustment for race/ethnicity, SES, age, and weight status. For each model, participants were dropped from the analysis if they had missing data on the predictor of interest (personal or socio-environmental variable), the outcome of interest (dieting or disordered eating behaviors), or any of the covariates included in the model (age, race/ethnicity, or socioeconomic status). The adjusted prevalence of dieting or disordered eating is reported for each level of the categorical predictor, as well as the prevalence difference, and 95% confidence intervals. Prevalence differences were calculated from the logistic regression results. Analyses were conducted using STATA version 13.0³⁷.

Results

Predictors of continued dieting and disordered eating from adolescence to young adulthood—Among males, high weight concern and weight importance at

baseline were predictive of continued disordered eating from baseline to follow-up after adjustment for adolescent race/ethnicity, socioeconomic status, and weight status. Please see Table 1 (males) and Table 2 (females) for full details about predictors of persistent dieting or disordered eating from adolescence to young adulthood. Results show that among males with low weight concern at baseline only 26.1% reported engaging in persistent disordered eating as compared to 60.4% of males with high weight concern at baseline (Prevalence difference: 34.3, 95% CI: 10.5, 58.1; $p<0.01$). High weight importance and weight concern, high depressive symptoms, as well as low body satisfaction at baseline were predictive of continued dieting at follow-up. For example, 52.7% of males with low weight importance reported engaging in persistent dieting as compared to 73.4% of males with high weight importance (Prevalence difference: 20.7; 95% CI: 7.0, 34.4; $p<0.01$).

Among females, high weight importance during adolescence was predictive of continued dieting and disordered eating from baseline to follow-up (both $p<0.01$). Please see Table 1 (males) and Table 2 (females) for full details about predictors of persistent dieting or disordered eating from adolescence to young adulthood. Results indicate that among females with high weight importance during adolescence 75.1% reported persistent dieting as compared to 60.8% of females with low weight importance (Prevalence difference: 14.2%; 95% CI: 5.7, 22.8; $p<0.01$). Further, high family communication, as well as high body satisfaction, at baseline were significantly associated with persistent dieting from baseline to follow-up. For example, 82.3% of females with high levels of body satisfaction during adolescence reported persistent dieting as compared to 69.0% of females with low levels of body satisfaction (Prevalence Difference: 20.0; 95% CI : -35.3, -4.7; $p=0.01$).

Predictors of initiation of dieting and disordered eating during young adulthood—Among males, high weight concern at baseline predicted initiation of disordered eating at follow-up among those males who did not endorse these behaviors at baseline, after adjustment for adolescence race/ethnicity, socioeconomic status, and weight status (See Table 3). For example, 17.5% of males with low weight concern at baseline initiated disordered eating at follow-up as compared to 47.4% of males with high weight concern at baseline (Prevalence difference: 29.9; 95% CI(5.8, 54.1); $p=0.02$). High weight concern and low family communication at baseline predicted initiation of dieting at follow-up among males.

Among females, high levels of weight concern and low levels of body satisfaction at baseline were found to be predictive of initiation of dieting at follow-up among those females who did not endorse these behaviors at baseline (See Table 4). For example, 33.5% of females with low weight concern at follow-up initiated dieting at follow-up as compared to 46.7% of females with high weight concern (Prevalence difference=18.8; 95% CI (7.5, 30.1; $p<0.01$).

Discussion

The present study examined predictors of initiation or persistence of dieting and disordered eating over a 10-year period among adolescent males and females. Study results revealed a small set of personal factors, including weight concerns, weight importance, and depressive

symptoms, present during adolescence that are predictive of engaging in dieting and disordered eating during young adulthood for males and females, suggesting that these individual-level variables play an important role in both the development and continuation of dieting and disordered eating behaviors over this life-course transition. In contrast, parental weight concerns, peer dieting behaviors, and exposure to weight teasing at baseline, were not found to be significantly predictive of engagement in dieting and disordered eating behaviors at 10-year follow-up.

In particular, weight concern and weight importance were found to be significant predictors of dieting and disordered eating behaviors at follow-up within several models. For example, high levels of weight concern during adolescence was predictive of persistent dieting and disordered eating from adolescence to young adulthood among males, as well as initiation of dieting and disordered eating among males during young adulthood and initiation of dieting at during young adulthood among females. High levels of weight importance during adolescence were found to be predictive of persistent dieting and disordered eating during young adulthood for both males and females. Overall, these findings align with previous research studies that have also identified high levels of weight concerns and weight importance during adolescence as significant longitudinal predictors of disordered eating behaviors as well as clinically significant eating disorders^{23,38,39}. Weight concerns and weight importance have been theorized by researchers to serve as strong predictors of the initiation and persistence of disordered eating because these factors describe an individual's preoccupation with or worry about weight or shape and how much of an individual's personal identity is defined by their perception of their own shape or weight^{23,24}. Researchers posit that if an individual expresses a great deal of anxiety about their own weight and/or if they feel a large portion of their own personal value is defined by their ability to achieve or maintain a specific weight or shape, they will then be willing to take bigger risks (e.g. engaging in disordered eating behaviors) to maintain or achieve the body shape or weight they desire²³. The current study extends this literature by being the first, to our knowledge, to demonstrate the long-lasting impact of weight and shape concerns by revealing that the level of weight concern and weight importance and individual experiences during adolescence can predict dieting and disordered eating behaviors at 10-year follow-up, during young adulthood.

These present study findings align with those of the previously published five-year longitudinal analysis of young people from the same Project EAT sample³⁸; Linde and colleagues found that for both boys and girls personal factors were more predictive of both the initiation and persistence of disordered eating behaviors as compared to socio-environmental factors. Together, these two sets of findings from the Project EAT research study suggest that personal factors (e.g. weight concern, weight importance, depressive symptoms) might be more predictive of engaging in dieting and disordered eating over the long term, as compared to socio-environmental factors (e.g. peer dieting behaviors, parental weight concerns, weight teasing). Both personal and socio-environmental factors have been previously shown to be associated with engaging in disordered eating behaviors within cross-sectional and longitudinal studies with relatively short follow-up periods^{18,20–24,26–30}. It might be that while the socio-environmental variables assessed within the current study are associated with engaging in eating disorder behaviors in the short term, an individual's

exposure to these variables over their life-course is transient. In contrast, personal factors are perhaps more enduring, making them more useful predictors of long term weight-related behaviors. For example, an individual might be teased about their weight as an early adolescent, but not during late adolescence, and thus the impact of this teasing on dieting or disordered eating behaviors dissipates over time. It also might be that as individuals grow and develop, their internalization of socio-environmental variables lessens, decreasing these variables' impact on individuals' behaviors. For example, perhaps parent weight concerns are more likely to be internalized and in turn serve as a model for adolescent behavior, but that this internalization of parent's concerns lessens during the transition to young adulthood. Additional population-based longitudinal studies with long-term follow-up periods should be conducted to replicate the current study's findings and should include exploration of predictive factors that endure across important life-course transitions.

Study strengths included the use of a racially/ethnically and socioeconomically diverse, community-based sample of males and females. In addition, the 10-year follow-up period is longer than has been included in most previous longitudinal studies and spanned the important life course transition from adolescence to young adulthood. Study findings must also be interpreted with certain limitations in mind. First, because data were derived from a large epidemiological study, gold-standard measures were not feasible, thus, brief self-report measures were used to assess personal and socio-environmental variables. Finally, due to attrition between baseline and follow-up surveys, our final analytic sample was biased towards females, Caucasians, and those of a higher SES category.

Conclusion and Clinical Implications

Overall, study results indicate that there are personal factors present during adolescence that are predictive of dieting and disordered eating behaviors during young adulthood. In particular, weight concerns and weight importance during adolescence were found to be predictive in most models, providing support for inclusion of questions on weight importance and weight concerns within preventative adolescent health screenings. For example, the current study results indicate that inclusion of a few simple questions on weight concerns (e.g. "Do you think a lot about being thinner?" or "Are you worried about gaining weight?") within regular adolescent health screenings would allow physicians to easily identify young people at increased risk for current or future engagement in dieting or disordered eating. For both males and females, study results suggest that adolescent health screenings, both within primary care settings as well as school-based screening programs⁴⁰, should include discussion of level of weight importance, such as asking adolescents to discuss what role their weight or shape plays in how they feel about themselves. Young men and women who disclose during a health screening that their weight plays a significant or important role in how they feel about themselves should be identified as at risk for engaging in dieting and disordered eating behaviors both in the short- and long-term, as well as at increased risk for the associated health and psychosocial consequences of engaging in these dangerous weight-related behaviors.

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Implications and Contribution

Study results indicate that personal factors, such as weight concerns and weight importance, present during adolescence are predictive of dieting and disordered eating behaviors during young adulthood. Questions on weight importance and weight concerns should be included within preventative adolescent health screenings.

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Males: Personal and socio-environmental predictors of persistent^a dieting or disordered eating from adolescence to young adulthood**Table 1**

Personal Predictors		Dieting			Disordered eating		
		Prevalence ^b (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence ^b (%)	Prevalence Difference (95% Confidence Interval)	p-value
Self-esteem	High	45.0	Referent	--	39.4	Referent	--
	Med	61.8	16.7 (-6.5, 40.0)	0.16	55.4	16.1 (-7.8, 39.9)	0.19
	Low	72.1	27.1 (2.4, 51.8)	0.03	53.8	14.4 (-8.4, 37.2)	0.22
Body Satisfaction	High	49.7	Referent	--	33.3	Referent	--
	Med	62.6	12.9 (-11.1, 36.9)	0.29	54.9	21.6 (-0.5, 43.7)	0.06
	Low	63.4	13.6 (-11.2, 38.5)	0.28	56.9	23.6 (-1.2, 48.4)	0.06
Weight concern	High	64.7	36.0 (-1.2, 73.5)	0.06	60.4	34.3 (10.5, 58.1)	<0.01
	Med	64.5	36.0 (0.9, 71.1)	0.04	53.4	27.3 (5.0, 49.6)	0.02
	Low	28.5	Referent	--	26.1	Referent	--
Depression	High	76.7	37.8 (15.8, 59.8)	<0.01	62.3	15.2 (-9.8, 40.1)	0.23
	Med	64.6	25.7 (6.9, 44.5)	<0.01	49.4	2.3 (-15.7, 20.3)	0.80
	Low	38.9	Referent	--	47.1	Referent	--
Weight importance	High	73.4	20.7 (7.0, 34.4)	<0.01	63.1	18.7 (3.3, 34.2)	0.02
	Low	52.7	Referent	--	44.4	Referent	--
Health concerns	High	60.9	-12.0 (-3.1, 7.1)	0.22	53.0	8.0 (-12.3, 28.4)	0.44
	Low	72.8	Referent	--	45.0	Referent	--

Socio-environmental Predictors		Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value
Parental weight concerns	Yes	62.2	19.4 (-2.6, 41.5)	0.08	52.6	2.8 (-16.7, 22.2)	0.78
	No	42.7	Referent	--	49.9	Referent	--
Peer dieting	Yes	61.7	4.7 (-9.7, 19.1)	0.52	52.5	2.6 (-13.9, 19.2)	0.76
	No	57.0	Referent	--	49.8	Referent	--
Weight teasing	Yes	55.0	-9.2 (-24.8, 6.3)	0.25	47.2	-7.3 (-22.6, 8.1)	0.35
	No	64.2	Referent	--	54.5	Referent	--
Family communication	High	55.9	Referent	--	46.4	Referent	--

Socio-environmental Predictors		Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value
	Low	65.2	9.3 (-7.1, 25.7)	0.27	56.1	9.7 (-5.5, 25.0)	0.21

Notes:

^a 13.2% (n=103) of males reported “persistent dieting”, or dieting during adolescence as well as young adulthood; 12.7% (n=99) of males reported “persistent disordered eating behaviors” or engaging in disordered eating during adolescence as well as young adulthood

^b The prevalence of individuals engaging in dieting or disordered eating behaviors at each level of the predictor variable.

All models include covariate adjustment for adolescent race/ethnicity, socioeconomic status, and weight status.

Total *n*’s included may vary for different models due to missing values for the predictor of interest (personal or socio-environmental variable), the outcome of interest (dieting or disordered eating behaviors), or any of the covariates included in the model (age, race/ethnicity, or socioeconomic status).

Females: Personal and socio-environmental predictors of persistent^a dieting or disordered eating from adolescence to young adulthood**Table 2**

Personal Predictors		Dieting			Disordered eating		
		Prevalence ^b (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence ^b (%)	Prevalence Difference (95% Confidence Interval)	p-value
Self-esteem	High	60.4	Referent	--	57.1	Referent	--
	Med	67.8	7.4 (-10.2, 24.9)	0.41	60.5	3.5 (-17.6, 24.5)	0.75
	Low	66.7	6.3 (-12.1, 24.7)	0.50	69.3	12.3 (-9.3, 33.8)	0.27
Body Satisfaction	High	82.3	Referent	--	58.1	Referent	--
	Med	62.3	-20.0 (-35.3,-4.7)	0.01	63.3	5.2(-13.6, 23.9)	0.59
	Low	69.0	-13.4(-28.2, 1.5)	<0.01	67.6	9.5 (-8.3, 27.3)	0.30
Weight concern	High	70.7	2.1 (-35.8, 39.9)	0.92	67.9	23.1 (-12.0, 58.2)	0.38
	Med	61.7	-6.9 (-44.8, 30.9)	0.72	60.9	16.0 (-19.4, 51.5)	0.20
	Low	68.6	Referent	--	44.9	Referent	--
Depression	High	65.6	2.5 (-14.7, 19.8)	0.77	71.7	4.7 (-23.4, 7.9)	0.57
	Med	67.8	4.7 (-11.6, 21.0)	0.57	59.3	-7.7 (-23.4, 7.9)	0.33
	Low	63.1	Referent	--	67.0	Referent	--
Weight importance	High	75.1	14.2 (5.7, 22.8)	<0.01	72.7	15.8 (6.6, 24.9)	<0.01
	Low	60.8	Referent	--	56.9	Referent	--
	High	67.5	1.1 (-17.8, 20.0)	0.91	64.9	-0.3 (-18.2, 17.5)	0.97
	Low	66.4	Referent	--	65.3	Referent	--

Socio-environmental Predictors		Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value
		Yes					
Parental weight concerns	Yes	67.0	-0.02 (-10.6, 10.1)	0.97	64, 4	8.0 (-3.6, 19.6)	0.18
	No	67.2	Referent	--	56.3	Referent	-
Peer dieting	Yes	70.0	10.6 (-1.4, 22.6)	0.08	64.0	0.2 (-12.4, 12.8)	0.97
	No	59.4	Referent	--	64.3	Referent	--
Weight teasing	Yes	68.6	3.5 (-5.9, 12.8)	0.47	66.3	4.3 (-5.6, 14.2)	0.40
	No	65.1	Referent	--	62.1	Referent	--
Family communication	High	72.9	Referent	--	62.6	Referent	--

Socio-environmental Predictors		Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value
	Low	61.2	-11.7 (-21.3,-2.1)	0.02	67.7	5.1 (-4.8, 15.0)	0.31

Notes:

^a 28.9% (n=401) of females reported engaging in “persistent dieting”, or dieting during adolescence as well as young adulthood; 36.3% (n=374) of females reported engaging in “persistent disordered eating behaviors”, or engaging in disordered eating behaviors during adolescence and young adulthood

^b The prevalence of individuals engaging in dieting or disordered eating behaviors at each level of the predictor variable.

All models include covariate adjustment for adolescent race/ethnicity, socioeconomic status, and weight status.

Total *n*'s included may vary for different models due to missing values for the predictor of interest (personal or socio-environmental variable), the outcome of interest (dieting or disordered eating behaviors), or any of the covariates included in the model (age, race/ethnicity, or socioeconomic status).

Males: Personal and socio-environmental predictors of initiating^a dieting or disordered eating during young adulthood**Table 3**

Personal Predictors		Dieting			Disordered eating		
		Prevalence ^b (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence ^b (%)	Prevalence Difference (95% Confidence Interval)	p-value
Self-esteem	High	26.7	Referent	--	25.1	Referent	--
	Med	28.4	1.6 (-8.0, 11.3)	0.74	24.1	-1.0 (-10.3, 8.3)	0.83
	Low	31.4	4.7 (-8.2, 17.5)	0.48	25.1	4.3 (-9.9, 18.5)	0.55
Body Satisfaction	High	27.2	Referent		21.1	Referent	--
	Med	29.1	1.9 (-7.8, 11.6)	0.07	25.4	4.3 (-4.3, 12.9)	0.33
	Low	35.9	8.6 (-8.3, 25.6)	0.32	30.4	9.3 (-6.2, 24.8)	0.24
Weight concern	High	52.0	28.6 (7.2, 50.0)	0.01	47.4	29.9 (5.8, 54.1)	0.02
	Med	31.2	7.8 (-1.9, 17.4)	0.12	28.2	10.7 (1.8, 19.7)	0.02
	Low	23.4	Referent	--	17.5	Referent	--
Depression	High	37.2	9.8 (-5.3, 24.9)	0.20	37.6	16.3 (-3.1, 35.7)	0.10
	Med	28.0	0.6 (-8.5, 9.8)	0.89	25.8	4.5 (-3.9, 12.8)	0.29
	Low	27.4	Referent	--	21.3	Referent	--
Weight importance	High	38.9	11.8 (-0.6, 24.2)	0.06	24.9	-5.8 (-16.2, 4.7)	0.28
	Low	27.2	Referent	--	19.1	Referent	--
Health concerns	High	28.4	-3.5 (-14.5, 7.5)	0.54	33.5	-10.1 (-20.5, 0.3)	0.06
	Low	31.9	Referent	--	23.4	Referent	--

Socio-environmental Predictors		Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value
Parental weight concerns	Yes	29.6	2.8 (-7.4, 13.0)	0.59	24	0 (-10, 10)	0.97
	No	26.8	Referent	--	23	Referent	--
Peer dieting	Yes	31.1	4.3 (-4.6, 13.2)	0.08	21.1	-4.6 (-12.7, 3.4)	0.26
	No	26.8	Referent	--	25.7	Referent	--
Weight teasing	Yes	31.3	3.8 (-5.4, 13.0)	0.42	19.9	-6.3 (-14.6, 1.9)	0.13
	No	27.6	Referent	--	26.2	Referent	--
Family communication	High	25.2	Referent	--	24.0	Referent	--

Socio-environmental Predictors		Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value
	Low	36.6	11.5 (1.9, 21.0)	0.02	24.3	0.3 (-8.3, 8.9)	0.94

Notes:

^a 20.4% (n=159) of males reported initiating dieting during young adulthood; 17.3% (n=135) of males reported initiating disordered eating behaviors during young adulthood

^b The prevalence of individuals engaging in dieting or disordered eating behaviors at each level of the predictor variable.

All models include covariate adjustment for adolescent race/ethnicity, socioeconomic status, and weight status.

Total *n*'s included may vary for different models due to missing values for the predictor of interest (personal or socio-environmental variable), the outcome of interest (dieting or disordered eating behaviors), or any of the covariates included in the model (age, race/ethnicity, or socioeconomic status).

Females: Personal and socio-environmental predictors of initiating^a dieting or disordered eating during young adulthood**Table 4**

Personal Predictors		Dieting			Disordered eating		
		Prevalence ^b (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence ^b (%)	Prevalence Difference (95% Confidence Interval)	p-value
Self-esteem	High	43.6	Referent	--	30.5	Referent	--
	Med	43.9	0.3 (-13.0, 13.6)	0.96	42.1	11.6 (0.4, 22.7)	0.04
	Low	55.4	11.9 (-6.1, 29.8)	0.20	46.0	15.5 (-0.9, 31.9)	0.06
Body Satisfaction	High	34.8	Referent	--	35.1	Referent	--
	Med	48.5	13.7 (2.2, 25.1)	0.02	40.2	5.2 (-6.1, 16.4)	0.37
	Low	58.2	23.4 (7.3, 39.5)	<0.01	45.6	10.5 (-7.5, 28.5)	0.25
Weight concern	High	46.7	18.8 (7.5, 30.1)	<0.01	41.8	8.0 (-13.8, 29.8)	0.47
	Med	52.3	13.2 (-6.3, 32.7)	0.16	43.3	9.4 (-2.2, 21.1)	0.11
	Low	33.5	Referent	--	33.8	Referent	--
Depression	High	55.0	6.1 (-12.8, 25.0)	0.53	36.6	-5.9 (-22.6, 10.9)	0.49
	Med	42.8	-6.0 (-19.7, 7.6)	0.39	39.9	-2.5 (-15.7, 10.9)	0.71
	Low	48.9	Referent	--	42.5	Referent	--
Weight importance	High	47.6	2.0 (-13.1, 17.1)	0.80	45.1	6.6 (-8.1, 21.3)	0.38
	Low	45.6	Referent	--	38.5	Referent	--
Health concerns	High	45.4	-5.9 (-30.0, 18.3)	0.64	40.3	-0.02 (-23.6, 23.3)	0.99
	Low	51.3	Referent	--	40.5	Referent	--

Socio-environmental Predictors		Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value
Parental weight concerns	Yes	47.2	7.8 (-3.6, 19.3)	0.18	41.8	4.5 (-6.6, 15.6)	0.43
	No	39.4	Referent	--	37.4	Referent	--
Peer dieting	Yes	47.2	4.5 (-7.0, 16.0)	0.45	40.0	0.8 (-9.9, 11.5)	0.89
	No	42.7	Referent	--	39.2	Referent	--
Weight teasing	Yes	51.4	7.6 (-4.3, 19.5)	0.21	42.4	3.5 (-7.5, 14.6)	0.53
	No	43.8	Referent	--	38.8	Referent	--
Family communication	High	46.4	Referent	--	38.6	Referent	--

Socio-environmental Predictors		Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value	Prevalence (%)	Prevalence Difference (95% Confidence Interval)	p-value
	Low	44.2	-2.2 (-14.1, 9.7)	0.71	42.6	4.1 (-7.7, 15.8)	0.50

Notes:

^a 19.7% (n=203) of females reported initiating dieting during young adulthood; 17.5% (n=180) of females reported initiating disordered eating behaviors during young adulthood

^b The prevalence of individuals engaging in dieting or disordered eating behaviors at each level of the predictor variable.

All models include covariate adjustment for adolescent race/ethnicity, socioeconomic status, and weight status.

Total *n*'s included may vary for different models due to missing values for the predictor of interest (personal or socio-environmental variable), the outcome of interest (dieting or disordered eating behaviors), or any of the covariates included in the model (age, race/ethnicity, or socioeconomic status).