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Parent and family associations with weight-related behaviors and cognitions among overweight adolescents

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Abstract

Purpose—To examine parent and family variables in relation to adolescent weight control and eating behaviors, body satisfaction, and importance of thinness among overweight adolescents.

Methods—This study examined parent-reported use of weight control behaviors (i.e., healthy and unhealthy behaviors, behavioral changes, other diet strategies), parent psychosocial functioning (i.e., depression, self-esteem, body satisfaction, importance of thinness), and family functioning (i.e., cohesion and adaptability) in relation to adolescent weight control and eating behaviors, body satisfaction, and importance of thinness. Surveys were completed by 103 overweight (BMI 85th percentile) adolescents, ages 12 to 20, and their parents. Height and weight were also measured. Linear regression equations were used for continuous outcomes and logistic regression equations for dichotomous outcomes.

Results—Adolescent report of lower body satisfaction and engagement in more “severe” or less healthy forms of weight control behavior were associated with parent weight control behaviors. Adolescent report of overeating was associated with lower scores of family cohesion and adaptability. Adolescent report of lower body satisfaction was positively associated with parent report of body satisfaction and self-esteem. Adolescent report of greater importance placed on thinness was associated with parent report of lower self-esteem.

Conclusions—Findings indicate that several parent and family variables are associated with weight control behaviors, episodes of overeating, and body satisfaction and importance of thinness among overweight adolescents. Parent weight control behaviors and adolescent cognitions about body image may be important variables to target within intervention research and treatment programs for overweight youth.

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Keywords

Weight control behavior; overweight; body satisfaction; family functioning; adolescents

The high prevalence of overweight and obesity among adolescents continues to elicit concern with current national data showing that 34% of adolescents ages 12–19 are overweight or obese [1]. This statistic is particularly disturbing given that overweight during adolescence is a significant risk factor for adult obesity and mortality [2] and is associated with a number of medical and psychological comorbidities in adolescence and adulthood [3]. Furthermore, overweight in adolescence has been associated with increased use of unhealthy weight control behaviors (use of diet pills, laxatives, or diuretics or vomiting), and binge eating, particularly among adolescent girls [4–6]. In light of these concerns, recent attention has been placed on identifying factors that influence eating and weight management practices among overweight adolescents. Two areas that may potentially influence adolescents' weight control behaviors, eating, and body image include parent weight control behaviors and psychosocial functioning and the family social-emotional climate.

Parents can influence child behaviors in a number of ways, such as parental modeling of behaviors and expression of attitudes toward eating and body image. Initial evidence suggests that parent weight control behaviors and body perception may influence adolescent weight control behavior, with parents' body dissatisfaction and engagement in extreme weight-loss behaviors, such as fasting, skipping meals, and crash dieting, being predictive of these same behaviors among their adolescent daughters [7–8]. These same studies also found that parent encouragement to lose weight was a more significant predictor of daughters' moderate weight loss attempts, such as dietary restraint and exercise [7], and that parent encouragement was a stronger predictor in this case than parents' own dietary restraint levels [8]. In addition to modeling, adolescent perception of parents' concerns about weight and eating may also potentially influence their behaviors, with adolescent perception of maternal concern for healthful eating being positively associated with adolescent fruit and vegetable intake [9].

Parents may also influence their child's behaviors, and ultimately weight, through the social-emotional climate in the home, particularly given evidence suggesting that overweight in adolescence is associated with greater family conflict [10–11] and less family cohesion [10,12]. The family social-emotional climate in the context of pediatric health studies includes variables such as level of cohesion, adaptability, and connectedness, as well as family meal environment. There has been limited focus on associations between family climate and specific weight control behaviors and body image among adolescents, but the few studies conducted suggest that family climate is significantly associated with disordered eating and weight control behaviors among adolescents, with lower family cohesion and adaptability predictive of binge eating and use of extreme weight loss behaviors, such as vomiting and crash dieting among adolescent females [13]. Family connectedness, prioritizing of family meals, and a positive family mealtime environment have been found to be inversely associated with both unhealthy weight control behaviors, self-esteem, and body satisfaction among at-risk-for-overweight and overweight youth [14], suggesting that the family social-emotional climate not only impacts behavior of adolescents, but cognitions, as well. Furthermore, among adolescents with type 1 diabetes, adolescents engaging in disordered eating behaviors reported a lower level of family cohesion [15], family meal structure (e.g., fewer family meals) and more familial expression of weight concerns [16].

More evidence is needed to assess the impact of parent and family variables on weight control behaviors, overeating, and body image, particularly in an overweight population of adolescents given that this population appears to be at greater risk for use of extreme weight control behaviors and binge eating [5–6]. The purpose of this paper is to extend current research by examining parent and family variables that may influence healthy and unhealthy weight control behaviors, episodes of overeating, and cognitions associated with body image variables among overweight adolescents. Examination of new variables and replication of results from previous studies is necessary for informing future intervention development and research for this group of adolescents.

We examined parent and family variables that based on our previous research and the literature we hypothesized to be related to adolescent weight control behaviors, episodes of overeating, body satisfaction, and importance placed on thinness. We chose to include episodes of overeating given that it is a symptom of binge eating and binge eating often occurs in conjunction with unhealthy weight control behaviors. Our choice to study parent weight control behaviors, psychosocial functioning, and family social-emotional climate was more exploratory in nature, and our intent in choosing them was to address parent and family-related factors that could potentially be studied as targets for psychosocial weight management interventions for overweight and obese adolescents. Parent and family variables included reported use of weight control behaviors (i.e., healthy and unhealthy behaviors, behavioral changes, other diet strategies), social-emotional functioning (i.e., depression, self-esteem, body satisfaction), and family functioning (i.e., cohesion and adaptability).

We hypothesized the following: 1) parent weight control behaviors would be significantly associated with adolescent weight control behaviors given the importance of parental modeling; 2) parent social-emotional functioning would be significantly associated with adolescent cognitions about body image, such that adolescents of parents who report more negative affect and lower self-esteem and body satisfaction would express lower body satisfaction and greater importance of thinness; 3) lower parent body satisfaction would also be associated with adolescent use of unhealthy weight control behaviors; and 4) lower family cohesion and adaptability scores would be associated with both unhealthy weight control behaviors and episodes of overeating in adolescents.

Methods

Participants

Data from the present study was drawn from the Successful Adolescent Weight Losers (SAL) study, a descriptive study of 130 overweight adolescents who lost weight and those who did not. Participants were recruited using public marketing strategies (e.g., flyers, advertisements) from the Minneapolis/St. Paul area. Study procedures were approved by the Institutional Review Board at the University of Minnesota. Informed consent was obtained from all participants.

Because the aim of the present study is to identify parent and family variables associated with weight-related behaviors and body image-related cognitions among overweight adolescents, only adolescents who were classified as overweight or obese (BMI 85th percentile for gender and age) were included in analyses. As such, we did not examine differences between adolescents who lost weight and those who did not. This sub-sample of overweight and obese adolescents included 103 adolescents ages 12 to 20 ($M = 15.2$ years, $SD = 2.15$). The majority of the sample was female (65.0%) and White (59.2%), and 15.5% identified as multi-ethnic, 14.6% African American, 5.8% American Indian, 1.9% Asian, and 2.9% identified as “other.” Body mass index ranged from 21.7 to 45.1 ($M = 31.5$, $SD =$

5.10). Of the 103 parents who participated, 90.3% were female, and over half of the parents (66%) reported having a partner living in the home. The age of participating parents ranged from 31 to 63 years old ($M = 46.45$, $SD = 6.63$). Over half of the parents identified as white (74.8%); 11.7% African American, 8.7% American Indian, 1.9% multi-ethnic, 1.0% Hispanic, 1.0% Asian, and 1.0% identified as “other.” Parents’ BMI ranged between 20.5 to 56.0 ($M = 33.1$, $SD = 6.94$). Twenty-six percent of parents were overweight (BMI between 25.0–29.9) and 63% were obese (BMI ≥ 30.0).

Measures

The 73-item SAL adolescent survey and the 74-item parent survey are self-report instruments that assess behavioral, environmental, and psychological factors potentially associated with weight in adolescence. The following constructs from the SAL surveys were assessed for the present study.

Weight control behaviors in the past year (adolescent and parent)—Participants were asked to report about their use (yes or no) in the past year of 32 strategies to reduce or maintain weight, adapted from Project EAT [5]. A factor analysis identified four domains of weight control behaviors: healthy weight control behaviors (HWCB), unhealthy weight control behaviors (UWCB), “other” dietary changes (ODC), and behavior change strategies (BCS) [17]. HWCB included items such as eat fewer calories, increase exercise, increase fruits and vegetables, no snacking, eat less high fat food, etc. UWCB included fasting, skipping meals, taking laxatives, diuretics, diet pills or vomiting. ODC included eating less meat, eating fewer carbohydrates, using liquid diet supplements, eating more protein, following contemporary diet fads, such as the Atkins or South Beach Diet. BCS included attending a weight loss group, writing down food eaten, working with a professional (nutritionist, physician, etc.), eating a certain amount of calories, counting calories, and following a structured diet (Weight Watchers, Jenny Craig, etc.). In order to approximate normal distributions for analyses, the cutoff point for HWCB was determined by the distribution median and dichotomized into 6 or more versus 5 or less. UWCB, BCS, and ODC were dichotomized into any versus none.

Episodes of overeating (adolescent only)—Overeating episodes were assessed using an item from the Eating Disorder Examination Self-report Questionnaire (EDE-Q), the current gold standard in assessment of eating disorders [18]. Adolescents were asked the question, “Over the past four weeks (28 days), have there been any times when you have felt that you have eaten what other people would regard as an unusually large amount of food given the circumstances?” Responses were dichotomized into one or more versus none.

Importance of thinness (adolescent only)—Adolescents were asked to rate how important it is for them to be thin using a 4-point Likert scale ranging from “not at all important” (1) to “very important” (4).

Body satisfaction (adolescent and parent)—Body satisfaction was assessed with a modified version of the Body Shape Satisfaction Scale [19], in which participants rated their satisfaction with ten body features (height, weight, body shape, waist, hips, thighs, stomach, face, body build, shoulders) on 5-point Likert scale. Lower scores indicated less body satisfaction. This scale has been demonstrated to have adequate test-retest reliability ($r = .68-.77$) and a Cronbach’s alpha of .93 and .92 among adolescent males and females, respectively [20].

Self-esteem (parent only)—The Rosenberg Self-Esteem Scale (SES) [21] is a 10-item questionnaire that assesses level of self-esteem. Using a 4-point Likert scale, participants

were asked to rate their satisfaction with and attitudes about self-worth, with higher scores reflecting greater self-esteem. The SES has been found to have acceptable validity and reliability [21], with an internal consistency alpha between .85 and .88 and a test-retest correlation of .85 [22].

Depression (parent only)—Parental depression was assessed using the Center for Epidemiological Studies Depression Scale (CES-D) [23]. The CES-D is a 20 item self-report inventory that has been well validated in a variety of adult populations, and has been demonstrated to have good internal consistency ($r = .85$) and split-half reliability ($r = .87$), as well as adequate test-retest reliability correlations ($r = .51-.67$) [23]. A higher score on the CES-D is indicative of higher levels of depressive symptomatology.

Family functioning (adolescent and parent)—Family functioning was measured using the Family Adaptability and Cohesion Evaluation Scales (FACES II) [24]. The FACES II is a 30-item questionnaire that assesses participants' attitudes about associations in their family and family dynamics. Adolescents and parents responded to items using a 5-point Likert scale with higher scores reflecting greater cohesion or adaptability. In a sample of mother, fathers, and adolescents, alpha reliabilities were .83, .79, and .83, respectively, for the cohesion scale, and .66, .72, .67, respectively, for the adaptability scale [25]. The present study examined the average score between adolescent and parent scores for family cohesion and adaptability.

Demographics—Demographic data was obtained by self-report.

Weight status—Height and weight measurements of adolescents and parents were taken by trained research staff. Height was measured to the nearest 1mm using a portable Schorr height board and weight was measured to the nearest 0.1 kg using a Tanita Digital Scale (model WB-110A). Body mass index was calculated using $BMI = \text{weight}(\text{kg}) / \text{height}(\text{m}^2)$, and translated to BMI percentiles using gender- and age-specific cutoff points from the Center for Disease Control growth charts [26].

Analyses

Correlations, t-tests, and chi-square analyses were completed to identify significant associations between adolescent and parent variables of interest and demographic variables, which included the gender, race, and age of the adolescent, the BMI, age, and education level of the parent, whether or not a partner was present in the home, and family income. Parental age and family income were significantly associated with both adolescent and parent variables and were controlled for in each subsequent regression equation to account for potential moderating effects. Depending on the outcome variable (i.e., dichotomized versus continuous), logistic and linear regression analyses were conducted examining parent and family variables in relation to adolescent variables.

Results

Parent weight control behaviors

Parent weight control behaviors, specifically parent use of ODC, were associated with adolescent engagement in UWCB and BCS (see Table 1). Parent use of ODC was associated with a 2.5 increase likelihood of adolescents using at least one UWCB, and an almost 3 times increased likelihood of adolescents using at least one BCS. Parent use of HWCB, UWCB, and ODC were all associated with lower adolescent body satisfaction, and parent use of HWCB was associated with greater adolescent report of the importance of thinness (see Table 2).

Parent psychosocial functioning

Variables related to parents' psychosocial functioning were found to be related to adolescent report of importance of thinness and body satisfaction (see Table 2), but were unrelated to adolescent weight control behaviors and episodes of overeating (see Table 1). Parent self-esteem was significantly associated with adolescent report of importance of thinness, with adolescents of parents who reported greater self-esteem reporting less importance placed on thinness. There was also a significant, and positive, relationship between parent and adolescent report of body satisfaction. Parent report of depressive symptoms was not significantly associated with adolescent variables in regression analyses.

Given that adolescent body satisfaction was significantly associated with both parent weight control behaviors (HWCB, UWCB, and ODC) and parent body satisfaction, these variables were entered into a linear regression equation in order to determine which parent variables were predictors of adolescent body satisfaction. In this model, higher parent body satisfaction ($B = .21$, $SE = .10$, $\beta = .21$, $t = 2.11$, $p = .04$) was predictive of higher adolescent body satisfaction and parent use of UWCB ($B = -5.48$, $SE = 2.14$, $\beta = -.26$, $t = -2.56$, $p = .01$) was predictive of lower adolescent body satisfaction. Parent use of HWCB and parent self-esteem were entered into a linear regression equation to determine predictors of adolescent report of importance of thinness. Both parent use of HWCB ($B = -7.42$, $SE = 2.64$, $\beta = -.28$, $t = -2.81$, $p = .01$) and parent self-esteem ($B = .63$, $SE = .25$, $\beta = .25$, $t = 2.59$, $p = .01$) were significant predictors of adolescent report of importance of thinness.

Family functioning

Although significant associations between parent and adolescent report of family cohesion and adaptability and adolescent variables were limited, both cohesion and adaptability were inversely related to adolescent episodes of overeating (see Table 1). Family functioning was not associated with adolescent weight control behaviors or body satisfaction and importance placed on thinness (see Table 1 and 2). In a subsequent regression analysis, however, that included family cohesion and family adaptability as predictors of adolescent episodes of overeating, neither cohesion ($p = .18$) nor adaptability ($p = .16$) was significant, likely due to collinearity.

Discussion

The present study examined associations between parent weight control behaviors, psychosocial functioning, and family functioning and adolescent weight control and eating behaviors and cognitions related to body satisfaction and importance of thinness among a group of overweight adolescents and their parents. As hypothesized, associations were found between parent weight control behaviors and adolescent weight control behaviors, but not all weight control behaviors reported by parents were associated with the same adolescent weight control behaviors. Parent engagement in UWCB and lower body satisfaction were predictive of lower adolescent body satisfaction, whereas parent engagement in HWCB and lower self-esteem were predictive of greater adolescent emphasis placed on thinness. In addition, this study highlights family functioning as an important variable to study further with regard to episodes of overeating among adolescents, particularly in less cohesive and adaptable families.

Results from studies examining associations between parent and adolescent weight control behaviors in population-based samples have been somewhat mixed [7–8,13]. In the current study, focusing only on overweight adolescents, significant associations were not found between corresponding parent and adolescent weight control behaviors (e.g., parent HWCB and adolescent HWCB). Rather, weight control behaviors reported by parents in the present

study were associated with different adolescent weight control behaviors (e.g., parent ODC and adolescent UWCB), suggesting that within an overweight sample of adolescents weight control behavior may not be entirely influenced by modeling. Among these significant associations in the present study, adolescent engagement in less healthy forms of weight control behavior (i.e., UWCB) was significantly associated with parent engagement in a less “severe” form of weight control behavior (i.e., ODC). This finding is notable given previous research suggesting that among female and male adolescents, perception of their mother dieting to lose weight or keep from gaining weight was significantly associated with an increased likelihood of engaging in healthy and unhealthy weight control behaviors [27]. Overweight adolescents who observe their parents engaging in weight control behaviors and appearing dissatisfied with their bodies may be more likely to take more extreme measures to lose weight. Furthermore, parent use of UWCB was predictive of adolescent report of body satisfaction above and beyond parent use of HWCB and ODC, suggesting that overweight adolescents may be more greatly influenced by parents’ participation in UWCB making this a potentially important area to address with parents in psychosocial weight management interventions for overweight adolescents.

Furthermore, parent psychosocial functioning may also influence adolescent cognitions about body image, with parent report of lower self-esteem being associated with adolescent report of greater importance placed on thinness. Parent report of body satisfaction was positively associated with adolescent report of body satisfaction, and was found to be a significant predictor of adolescent body satisfaction when entered into a linear regression variable with parent weight control behaviors. This former finding is consistent with previous research that found a relationship between adolescent females’ levels of body dissatisfaction and parental body dissatisfaction [28–29]. Of note, parent report of depressive symptoms was not associated with any of the included adolescent variables, suggesting that other parent cognitions, such as body satisfaction and self-esteem, may be more critical to assess when working with overweight adolescents and their families.

The social-emotional climate in the family appears to also be a potentially important variable when looking at adolescent episodes of overeating. In the present study lower scores of family cohesion and adaptability (which were the mean of parent *and* adolescent report) were associated with adolescent episodes of overeating. This is somewhat consistent with previous research that found family variables, such as lower maternal care, a less cohesive family, and overprotective parents, rather than parent weight control behaviors [7–8], to be associated with binge eating among adolescents and young adults [13,30]. Causal interpretations can not be made within the present study, particularly in relation to binge eating since only episodes of overeating were included in analyses, but further exploration of a model of family functioning and overeating is warranted.

Within this study we also found to parental age and family income to be significantly associated with parent and adolescent variables, indicating that these variables may have a moderating effect and should be taken into account when developing weight management interventions for overweight adolescents and their families.

The study is limited by its use of self-report assessments and cross-sectional study design. Self-report measures included constructs such as binge eating which may be more difficult for adolescents to interpret and complicate the accuracy of responses. Future studies should include observational measures and standardized interviews to better assess these variables. Because of the cross-sectional design, we are unable to determine the causal relationship between adolescent weight-related behaviors and cognitions about body image and parent and family variables. While we discuss the associations in terms of parental impact on children’s disordered eating behaviors, it is important to note that children’s weight control

behaviors and disordered eating behaviors may also impact the family social emotional climate and parent weight-related behaviors. Although adolescent age was not significantly associated with parent variables and adolescent variables, the age range of adolescents included in the sample was large and the contribution of developmental factors (e.g., pubertal status) to outcome variables may not have been detected. Additionally, results should be interpreted cautiously given the homogeneity of the sample.

Results from the present study suggest that parent weight-related behaviors and cognitions and family functioning may be important variables to target within weight management intervention research and treatment programs. Further study is warranted regarding adolescents' use of more extreme weight control behaviors in relation to their parents' behaviors, and examination of additional familial variables, including observation of family dynamics and communication, would significantly enhance our understanding of areas to target for intervention research.

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Table 1

Logistic regression associations between parent weight control behaviors, psychosocial functioning, and family functioning and adolescent weight control behaviors and overeating, controlling for parent age and family income ($N = 103$).

	Adolescent Outcome Variables																						
	HWCB					UWCB					BCS					ODC					Overeating		
	B	SE	OR	95% CI	B	SE	OR	95% CI	B	SE	OR	95% CI	B	SE	OR	95% CI	B	SE	OR	95% CI			
Parent Weight Control Behaviors																							
HWCB	.45	.58	1.57	[.50, 4.91]	.75	.63	2.12	[.62, 7.27]	.58	.62	1.79	[.54, 5.97]	.94	.65	2.56	[.72, 9.09]	.70	.62	2.02	[.59, 6.85]			
WCB	-.20	.46	.82	[.33, 2.02]	.56	.45	1.74	[.72, 4.22]	-.17	.44	.85	[.36, 2.00]	-.20	.44	.82	[.35, 1.94]	.04	.44	1.04	[.44, 2.48]			
BCS	.23	.44	1.26	[.53, 2.97]	1.0	.43	1.10	[.48, 2.56]	-.37	.43	.69	[.30, 1.59]	-.41	.43	.67	[.29, 1.53]	.28	.43	1.33	[.57, 3.08]			
ODC	.48	.50	1.62	[.61, 4.30]	1.42	.58	4.13**	[1.33, 12.80]	1.21	.57	3.35*	[1.10, 10.22]	.49	.51	1.64	[.61, 4.44]	.73	.53	2.08	[.74, 5.86]			
Parent psychosocial functioning																							
Depression	-.02	.03	.98	[.92, 1.04]	.01	.03	1.01	[.95, 1.08]	.01	.03	1.01	[.95, 1.07]	.03	.03	1.03	[.97, 1.10]	-.03	.03	.97	[.91, 1.03]			
Self-esteem	.03	.06	1.03	[.92, 1.15]	-.07	.06	.93	[.83, 1.04]	-.03	.05	.97	[.87, 1.08]	-.07	.06	.93	[.84, 1.04]	-.05	.06	.95	[.86, 1.06]			
Body satisfaction	.00	.02	1.00	[.96, 1.05]	-.00	.02	1.00	[.96, 1.04]	.01	.02	1.01	[.97, 1.05]	-.03	.02	.98	[.94, 1.02]	-.01	.02	.99	[.95, 1.03]			
Family functioning																							
Family cohesion	-.01	.03	.99	[.94, 1.04]	-.03	.03	.98	[.93, 1.03]	-.03	.03	.97	[.93, 1.02]	.00	.03	1.00	[.95, 1.05]	-.07	.03	.93**	[.88, .98]			
Adaptability mean	.01	.04	1.01	[.93, 1.09]	-.03	.04	.97	[.90, 1.05]	-.06	.04	.95	[.88, 1.02]	-.02	.04	.98	[.91, 1.06]	-.11	.04	.90**	[.82, .98]			

²Note: OR = odds ratio; CI = confidence interval; HWCBC = healthy weight control behaviors; UWCB = unhealthy weight control behaviors; BCS = behavior change strategies; ODC = other dietary changes.

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January 25, 1901.

Table 2

Linear regression associations between parent weight control behaviors, psychosocial functioning, and family functioning and adolescent weight-related cognitions (N = 103).

	Adolescent Outcome Variables					
	Body satisfaction			Importance of thinness		
	B	SE	β	B	SE	β
Parent Weight Control Behaviors						
HWCB	-8.70**	2.92	-.31	.51*	.26	.22
UWCB	-4.79*	2.25	-.22	.12	.20	.06
BCS	-.20	2.22	-.01	-.21	.19	-.12
ODC	-5.68*	2.51	-.23	.41	.22	.19
Parent psychosocial functioning						
Depression	-.07	.16	-.05	.01	.01	.04
Self-esteem	.50	.28	.19	-.06**	.02	-.28
Body satisfaction	.21*	.11	.20	-.02	.01	-.17
Family functioning						
Cohesion mean	.11	.13	.09	.02	.01	.15
Adaptability mean	.29	.21	.14	.01	.02	.04

Note. HWCB = healthy weight control behaviors; UWCB = unhealthy weight control behaviors; BCS = behavior change strategies; ODC = other dietary changes.

* p .05.

** p .01.