Relations Among Multiple Peer Influences, Body Dissatisfaction, Eating Disturbance, and Self-Esteem: A Comparison of Average Weight, At Risk of Overweight, and Overweight Adolescent Girls

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Objective The goal of this study was to evaluate peer-related influences on appearance, body dissatisfaction, eating disturbance, and self-esteem in average weight, at risk of overweight, and overweight adolescent girls. **Methods** Three hundred twenty-five adolescent girls from high schools in Florida were assessed. Ninety met criteria for being at risk of overweight or overweight. Logistic and multiple regression analyses were used to evaluate group differences on all variables and to assess the amount of variance accounted for by peer-influence variables in the prediction of body dissatisfaction, eating disturbance, and self-esteem. **Results** Overweight and at risk of overweight girls scored higher than average weight girls on body dissatisfaction, dieting, and a peer measure that assessed negative comments and attributions about appearance. They also scored lower than average weight girls on self-report measures that assessed conversations about appearance and anti-dieting advice. How influential friends were in determining one's body image was a unique predictor of body dissatisfaction but only for the overweight and at risk of overweight group. **Conclusions** Possible implications for clinical intervention programs are discussed along with directions for future research.

Key words adolescence; body image; peer influences; eating disturbance; weight status.

Adolescent girls who are overweight or at risk of overweight often experience negative psychosocial interactions with peers, such as intentionally hurtful comments directed at their appearance and social avoidance (Neumark-Sztainer & Haines, 2004; Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999). For instance, Neumark-Sztainer et al. (2002) found that 63% of overweight girls had been teased about their appearance. Peer interactions may also extend beyond negative appearance-related feedback and include such factors as appearance-based conversations, popularity among friends based on appearance, and peer modeling of body image and/or weight concerns (Jones, 2004; Paxton, Schutz, Wertheim, & Muir, 1999; Thompson, Herbozo, Himes, & Yamamiya, 2005). In terms of peer modeling, Eisenberg, Neumark-Sztainer, Story, and Perry (2005) found that having friends who were dieting to lose weight was associated with a greater use of unhealthy weight-control behaviors (diet pills, purging, smoking, etc.) for average weight and moderately overweight girls.

Additional research is needed to gain a better understanding of the mechanisms by which peers transmit and reinforce societal messages regarding physical attractiveness to adolescents who are overweight or at risk of becoming overweight. Past research frequently has been limited because of the use of a single index of peer influence (or, often a single item to reflect an underlying construct) and/or the lack of a theoretical framework. Our work in recent years has been guided by the Tripartite Influence Model, which proposes that three formative influences (peers, parents, and media)

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Journal of Pediatric Psychology 32(1) pp. 24–29, 2007
doi:10.1093/jpepsy/jsl022
Advance Access publication July 21, 2006

are operative in the formation of body dissatisfaction and disturbed eating (Keery, van den Berg, & Thompson, 2004; Shroff & Thompson, 2006a), and social reinforcement theory (Thompson & Stice, 2001), which suggests that the values and standards regarding appearance are determined and perpetuated by proximate peers who reinforce the thin ideal promulgated by the media. Additionally, much of our work has focused on the examination of multiple peer-related dimensions, in an attempt to broaden the evaluation of peer-related influences (Keery et al., 2004; Shroff & Thompson, 2006a).

A better understanding of the specific types of peer influences that overweight or at risk of overweight adolescent girls experience could be useful in designing prevention and treatment programs. Researchers have yet to evaluate the relations among multiple peer measures and indices of disturbed body image and eating dysfunction, separately for adolescent girls who are average weight, overweight, or at risk of becoming overweight. This study provides such an examination. Because of the dearth of work on potentially (depending on context) positive peer influences, in this study a measure of anti-dieting advice from friends was included. It was hypothesized that girls who were overweight or at risk of becoming overweight would exhibit higher levels of body dissatisfaction and dieting than average weight girls, receive less anti-dieting advice than average weight girls, and receive more negative feedback about their appearance.

Method

Participants

The procedure and materials used for the study were approved by the Institutional Review Board affiliated with the University of South Florida and the Pasco County school system. The sample consisted of 325 girls from three high schools, ranging in age from 14 to 17 years old (grades 9–12). Although no sociodemographic data were collected from the participants, the three schools included a range of locations including rural and suburban, in a county located roughly 20 miles from the Tampa, FL area. The mean age of the sample was 14.49 (*SD* = 0.93). Most of the sample was in grade 9 (77%). With regard to ethnic background, 75% of the sample identified themselves as Caucasian, 12% as Hispanic/Latino, 4% as African American, 2% as Asian, 1% as Native American, and 5% as Other. An additional 1% of the participants did not provide information about their ethnic background.

The sample utilized in this study was also evaluated in Shroff and Thompson (2006b). The goal of Shroff and Thompson (2006b) was to evaluate the relationship between friendship cliques and peer influences. No analyses in that study were done to directly compare average weight to overweight or at risk of overweight samples. The hypotheses, goal, and analyses of the current study are unique to this investigation.

Measures

The Perceived Friend Preoccupation with Weight and Dieting Scale (Paxton et al., 1999; Shroff & Thompson, 2006a) assesses weight and dieting preoccupation and perceptions of the general importance of weight among friends. A coefficient α of .86 was obtained for the current sample.

The Appearance Conversations with Friends Scale (Jones, Vigfusdottir, & Lee, 2004) examines how often adolescents discuss their expectations for their bodies and for appearance enhancements with friends. For this sample, an α of .88 was obtained.

Four items from the Peer Attribution Scale (Lieberman, Gauvin, Bukowski, & White, 2001) were used to assess attributions made about female friends that relate to appearance. A coefficient α of .85 was found for the current sample.

The Friends as a Source of Influence Scale (Paxton et al., 1999) measures how important adolescents think their friends' opinions are in influencing their ideas of a perfect body and their use of weight-loss strategies. The coefficient α for the current sample was .86.

The Perception of Teasing Scale for Friends (Shroff & Thompson, 2006a) consists of two items that assess weight and appearance teasing from friends, and the α for the current sample was .78.

The Friend Anti-Dieting Scale (FADS) is a new scale created to measure the extent to which friends and peers advise adolescents against dieting (e.g., "How many times have your friends talked you out of dieting?"). With the current sample, an internal consistency of .74 was obtained.

Three subscales from the Eating Disorder Inventory (EDI) were used (Garner, Olmstead, & Polivy, 1983). The EDI–Body Dissatisfaction Scale measures satisfaction with specific body sites such as the waist, thighs, and buttocks. For the current sample, an α of .89 was found. The EDI–Drive for Thinness (EDI–DT) Scale contains items that assess restricting tendencies, desire to lose weight, and fear of weight gain (Garner et al., 1983). The α was .89 for the current sample. The EDI–Bulimia Scale assesses impulsive eating patterns and purgative use (Garner et al., 1983). An α of .79 was also obtained for the current sample.

Rosenberg's Self-Esteem Inventory is a widely used index of general feelings of self-esteem (Rosenberg, 1965). Adequate reliability (α = .86) has been demonstrated with adolescent samples (Shroff & Thompson, 2006a). An α of .88 was obtained for the current sample.

Objective weight status was assessed by two research assistants who underwent a training program consisting of rating magazine pictures and live undergraduate females using the nine figures on the contour drawing measure (Thompson et al., 1999). The raters completed ratings on a total of 16 females and pictures. The reliability of the research assistants' ratings during the training was .94. The research assistants rated the body size of all participants in the survey (see *Procedure*). The correlation between the objective rating of body size and body mass index (BMI) (based on participants' self-report of height and weight) was .77; therefore, BMI was used for all subsequent analyses. The international percentile cutoffs (based on height, weight, and age) were used to identify individuals who were at risk of overweight (85–95th percentile) and overweight (>95th percentile) (Eisenberg et al., 2005). There were 90 participants across all ages who were at risk of overweight (62) or overweight (28), which was approximately 28% of the total sample. (For comparison, Eisenberg et al. (2005) found that 32.4% of their sample were overweight or at risk of overweight.) Only two individuals were underweight and were included within the average weight group.

Procedure

The students completed questionnaires in a classroom setting. A parental assent form was sent home by teachers and returned by parents who did not want their child to participate. The testing took place in various school-related classes and took approximately 40 min. When the participants turned in their questionnaires, one of the research assistants ensured that they had completed all surveys and then rated each individual's body size. At the end of testing, all participants received debriefing information.

Preliminary analyses

Collinearity analyses indicated that the peer variables were not highly correlated with each other. All condition indices were less than 14. Factor analyses (Shroff & Thompson, 2006b) indicated the uniqueness of the peer-related factors with the one exception that the teasing items loaded with peer attribution (more information is available from the first author). The *t* tests comparing overweight with at risk of overweight participants on the variables assessed in the study revealed significant group differences for only the EDI–Bulimia Scale, $t(84) = 2.08$ ($p < 0.05$). For this reason, those in the overweight and at risk of overweight samples were combined for all other analyses and compared with the rest of the sample (i.e., $n = 90$ vs. 235). Our sample of 90 is close to the 91 recommended by Cohen's (1992) power analysis, for a medium effect size with power set at .80 and α = .05, for a regression with five predictors (see below).

Results

Logistic regression was used to evaluate group differences. In the first step of the logistic regression, the peer-influence measures were entered, and the model was statistically significant, $\chi^2(5) = 50.40$, $p < .001$, Cox & Snell $R^2 = .16$, and Nagelkerke $R^2 = .23$. Addition of the eating disorder and self-esteem measures in the second step resulted in a significant change in the proportion of variance accounted for, $\chi^2_{\Delta}(4) = 21.90$ and $p < .001$. The model that included all predictors was significant, $\chi^2(9) = 72.29$, $p < .001$, Cox & Snell $R^2 = .22$, and Nagelkerke $R^2 = .32$. Table I indicates significance tests and effect sizes of the individual predictors. Odds ratios greater than 1 indicate that higher scores on the predictor increase the odds of membership in the overweight/at risk of overweight group.

An evaluation of the simple correlations among all measures, by weight category, indicated significant relationships among all the variables, with the exception of the anti-dieting advice measure. The direction and magnitude of the correlations were quite similar for the two weight groups; therefore, regressions were used to determine whether there were different unique predictors of outcome measures by weight category (Table II). All the models were significant, indicating that a significant amount of variance in body dissatisfaction, drive for thinness, bulimia, and self-esteem was predicted by peer-influence variables. The model for the average weight adolescents for body dissatisfaction, $F(5, 216) = 19.622$, $p < .001$, revealed friend preoccupation and attribution-teasing to be the significant predictors. Significant predictors for the overweight/at risk of overweight individuals, $F(5, 79) = 14.87$, $p < .001$, included friend preoccupation and friends as a source of influence. Results for the regression with DT as the dependent measure revealed that all the friend variables were significant, with the exception of anti-dieting advice for the average weight group, $F(5, 215) = 36.64$, $p < .001$; however, for the overweight/at risk of overweight group, $F(5, 78) = 25.62$, $p < .001$, only the variables of appearance

Table I. Logistic Regression Predicting Weight Status Group Membership

Predictors	Average weight (*M*/*SD*)	Overweight/at risk (*M*/*SD*)	Odds ratio	Wald-statistic	Significance
Perceived friend preoccupation with weight and dieting	22.11 (7.55)	23.55 (7.05)	1.01	0.098	.75
Friends as a source of influence measure	11.46 (4.71)	12.27 (5.26)	0.99	0.087	.77
Conversations about appearance	15.36 (4.70)	14.21 (5.39)	0.83	17.75	.0001
Friend anti-dieting advice	8.23 (3.77)	6.84 (2.83)	0.87	7.92	.005
Attribution/teasing	9.82 (4.63)	12.65 (5.51)	1.13	11.63	.001
Drive for thinness	19.43 (8.90)	23.90 (8.61)	1.07	6.600	.010
Body dissatisfaction	26.96 (10.09)	33.27 (10.23)	1.05	5.173	.023
Bulimia	13.95 (5.28)	14.84 (6.37)	0.986	0.217	.641
Self-esteem	18.59 (5.39)	19.57 (5.63)	0.95	2.29	.130

Table II. Regression Analyses

	Average weight versus over/at risk			
	β	*t* value	*F* (overall)	R^2 (total)
Pfpw	.27**/.25*	3.84/2.17		
Conv	.01/.17	.19/1.58		
Infl	.13/.31**	1.96/3.01		
FADS	–.11/–.01	1.83/.12		
AttrTease	.32**/.17	5.11/1.62		
EDI–Body Dissatisfaction			19.62/14.87	.31/.49
Pfpw	.27**/.11	4.23/1.15		
Conv	.17**/.42**	2.66/4.65		
Infl	.28**/.42**	4.61/4.81		
FADS	–.06/.03	1.06/.33		
AttrTease	.18**/–.02	3.16/.24		
EDI–Drive for Thinness			36.64/25.62	.46/.62
Pfpw	.09/.14	1.12/.97		
Conv	.12/.11	1.48/.83		
Infl	.08/.24	.94/1.81		
FADS	–.00/.03	–.05/.31		
AttrTease	.26**/.14	3.88/1.08		
EDI–Bulimia			10.72/4.68	.20/.24
Pfpw	.22**/–.03	2.99/.24		
Conv	–.00/–.01	.02/.09		
Infl	.13/.21	1.92/1.62		
FADS	–.04/.05	.70/.50		
AttrTease	.27**/20	4.58/1.50		
Self-esteem			19.80/3.53	.35/.22

AttrTease, attributions about Popularity + Teasing Scale; Conv, conversations with peers about appearance; FADS, Friend Anti-Dieting Advice Scale; Infl, friends as a source of influence; Pfpw, perceived friend preoccupation with weight and dieting.

β for the average weight group are to the left of the diagonal; overall *t* and R^2 for the analyses are listed only on the line for the criterion variable.

*$p < .05$.

**$p < .01$.

conversations with friends and friends as a source of influence were significant. The variable of attribution-teasing was significant for the average weight participants, $F(5, 214) = 10.72$, $p < .001$, in the model with bulimic symptoms as the criterion, and there were no significant predictors for the overweight/at risk of overweight group, $F(5, 76) = 4.68$, $p < .001$, although the overall model was significant. For the average weight group, friend preoccupation and attribution-teasing, $F(5, 215) = 14.50$, $p < .001$, were the significant predictors in the case of self-esteem, whereas for the overweight/at risk of overweight group, $F(5, 78) = 2.96$, $p < .02$, there were no significant predictors.

Discussion

There were significant differences in attributions about appearance/teasing, friend anti-dieting advice, body

dissatisfaction, and DT, with overweight/at risk of overweight girls scoring lower on anti-dieting advice and conversations about appearance measures but higher on attribution/teasing, body dissatisfaction, and restrictive tendencies (dieting) scales. Perhaps not unexpectedly, the overweight/at risk of overweight sample received less anti-dieting advice, likely due to the belief among peers that individuals who are overweight may need to engage in dieting behaviors, which is what was found (e.g., higher scores for the overweight/at risk of overweight group on the EDI–DT scale). One possible concern that flows from these findings is that if overweight/at risk of overweight adolescents are engaging in unhealthy weight-loss behaviors (Neumark-Sztainer et al., 2002), and they are given less anti-dieting advice by peers, it is possible that they will continue to engage in these behaviors, as opposed to selecting healthy weight-management strategies.

Overweight and at risk of overweight girls also scored lower on the conversations about appearance scale. These items very specifically focus on talk among friends regarding their "looks" and "bodies." The odds ratio of .83 indicated that this was the strongest finding in this study. Whether the lower conversation level is a function of less input from peers or less initiation by the overweight and at risk of overweight girls (or both) is not known but would be an interesting avenue for future research. Additionally, as might be expected, overweight and at risk of overweight girls scored higher on the attributions/teasing variable, indicating that they received more negative comments about their appearance and also thought their friends would accept them more if they were more attractive.

Overall, several peer influences were significant in the regressions for the average weight sample; whereas, the unique influences were more defined for the overweight/at risk of overweight sample. For instance, for the average weight group, the measure of attributions/teasing was significant in each regression, and the perceived friend preoccupation scale was significant in three analyses. For the overweight/at risk of overweight group, friends as a source of influence was significant in two instances, and conversations about appearance offered unique predictive utility in one regression. Interestingly, for the measure of body dissatisfaction, the friends as a source of influence measure was a significant predictor for the overweight/at risk of overweight group; whereas, it was not significant for the average weight group. These findings indicate that interventions designed to treat the body image issues of overweight and at risk of overweight adolescent girls might need to focus on different peer-related issues than those that need to be addressed with a non-overweight sample.

Certainly, this study has methodological limitations. Most of the sample was Caucasian, and the sample size for the overweight/at risk of overweight group was rather small (n = 90). Additionally, the findings are limited in generalizability, because all of the data were collected within one school system in the state of Florida. Also, the age range was 14–17; therefore, it would be important to replicate these data with a younger sample. Additionally, the samples of African-American and other ethnic groups were too small to allow for comparisons based on ethnicity. Finally, as with any cross-sectional study, it is important to realize that causal implications are inappropriate—prospective analyses are needed to further inform the relations that were found in this study.

However, potential implications for future research and health intervention programs can be drawn from the results of this study. Research in this area may help identify types of coping skills that overweight or at risk of overweight adolescent girls can use to deal with negative appearance-related commentary and may also assist in the development of more effective programs to address issues related to weight stigmatization. Additionally, the findings from the current study with the new scale developed for this investigation (friends' anti-dieting advice) may provide a new variable for future research with overweight and obese individuals that could potentially foster a better understanding of their peer-related psychosocial experiences. Future work in this area will also need to focus on the context of peer interactions and also supplement self-report measures with an assessment of peer behaviors.

Received August 2, 2005; revisions received March 12, 2006, May 10, 2006, and June 7, 2006; accepted June 16, 2006

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