

The Effects of Peer Influence on Disordered Eating Behavior

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ABSTRACT: Peer influence has been found to be correlated with a host of harmful health behaviors. However, little research has been conducted investigating the relationship between peer influence and disordered eating. The present study surveyed 6th-, 7th-, and 8th-grade girls and boys using the Eating Disorder Inventory (EDI) and Inventory of Peer Influence (I-PIEC). This study found a significant positive correlation between peer influence and disordered eating. Multiple regression analyses revealed that peer influence was equally present in both males and females. There were no significant differences between males and females and EDI or I-PIEC scores. The likeability construct of peer influence was the most significant predictor of disordered eating in this study. School nurses are in a unique position to educate both male and female students about the dangers of disordered eating behaviors as well as identify students who may be at risk for these behaviors.

KEY WORDS: peer influence, disordered eating, children, dieting

INTRODUCTION

The prevalence of disordered eating and eating disorders in adolescence has steadily risen during the past 50 years (Steiner & Lock, 1998). Researchers have found evidence that disordered eating patterns, such as excessive dieting, fasting, and bingeing, can lead to serious eating disorders, such as anorexia nervosa and bulimia nervosa (Neumark-Sztainer et al., 2006). In order to be diagnosed with an eating disorder, as opposed to disordered eating, individuals must meet a list of specific criteria, including the refusal to maintain a body weight at or above a minimally normal weight as well as recurrent episodes of binge eating. Those who do not meet all of the criteria for either anorexia nervosa or bulimia nervosa are considered "eating disorder not otherwise specified" [EDNOS] (American Psychological Association, 1994). This cat-

egory is also referred to as partial syndrome, subfrequency, atypical, or subthreshold disorders. When individuals do not meet the criteria for EDNOS but still manifest partial symptoms, disordered eating behavior is the appropriate category. For the purposes of this study, disordered eating is defined as exhibiting at least one of the following behaviors or thought patterns: fasting with the intention of losing weight, binge eating, self-induced vomiting, laxative use, diet pills, diuretics, excessive drive for thinness, and preoccupation with weight (Cohen & Petrie, 2005).

In response to the rising prevalence of eating disorders and disordered eating in adolescents, the Office on Women's Health implemented the Body Wise Educational Campaign on Eating Disorders (National Women's Health Information Center, 2001). This program was designed for teachers, coaches, counselors, school nurses and others who work with students 9 to 12 years of age and seeks to educate individuals about the signs and symptoms of eating disorders and strategies for promoting healthy eating and positive body image. This and other valuable programs continue to ignore the critical component of peer influence. Although peer influence has been shown to be signifi-

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cantly correlated with many harmful health behaviors, little research has explored its relationship to disordered eating.

LITERATURE REVIEW

In response to the high prevalence rates of EDNOS, many researchers have proposed the idea that dieting and eating disorders may represent different points along a continuum of eating pathology referred to as the Continuum Theory (Cohen & Petrie, 2005; Tylka & Subich, 1999). The Continuum Theory was first proposed by Nylander (1971), who surveyed Swedish female high school students and found that the majority perceived themselves as overweight or fat and that nearly 10% of the students reported three or more symptoms of anorexia nervosa with regards to weight loss attempts. Nylander suggested that the starvation associated with dieting might trigger fully developed eating disorders. Six years later, Fries (1977) contributed further evidence to the Continuum Theory of eating pathology, finding that rigid dieters who did not meet all of the diagnostic criteria for full-symptom eating disorders, shared body image distortions and attitudes with anorexic patients.

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Findings from later longitudinal studies also validated the Continuum Theory of eating pathology. For example, Project EAT surveyed adolescents in 1999 and again in 2004 (Neumark-Sztainer et al., 2006). The researchers found weight control behaviors at time one were significantly related to an increased risk for binge eating and extreme weight loss behaviors at time two. These findings suggest that disordered eating may be conceptualized as a continuum, with clinical eating disorders at one end and subthreshold eating disorders, chronic dieting, and disordered eating falling at intermediate points along the continuum (Cohen & Petrie, 2005).

The major differences within the categories along the eating disorder continuum include: (a) the frequency of problematic eating episodes, (b) the extent of food- or weight-related concerns, (c) a variety of disordered eating behaviors (e.g., binge eating, self-induced vomiting, laxative use, diet pills, diuretics, and fasting), and (d) psychopathology (Killen et al., 1994; Scarano & Kalodner-Martin, 1994; Tylka & Subich, 1999). These studies indicate that disordered eating behaviors can lead to the development of eating dis-

orders. Research is needed that involves individuals who struggle with disordered eating patterns. The present study sought to fill this gap in the literature on how peers may influence a symptomatic sample of middle school youth.

THEORETICAL PERSPECTIVE

The most established theory to study peer influence is the Social Cognitive Theory (SCT). SCT is often used with disordered eating by applying the psychological constructs of modeling and reinforcement (Bandura, 1986). Society and peers are two important modeling sources for adolescents. Modeling is the most influential when (a) the person displaying the behavior is found to be attractive, or (b) the adolescent identifies with the individual. Among adolescents, peers are viewed as the most influential source of modeling behaviors. The single best predictor of adolescent cigarette, drug, and/or alcohol use is peer use (Hoffman, Monge, Chou, & Valente, 2007; Ostaszewski & Zimmerman, 2006). Although adolescents with family members who smoke, drink, or use illicit drugs are more likely to use these substances, peers have an even greater influence on the adolescent's substance use behavior.

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Peer influence has been thoroughly researched in association with many unhealthy behaviors; however, peer influence on disordered eating has received little attention (Oliver & Thelen, 1996). Some evidence suggests that a girl's peer group provides a subculture that may either enhance or diminish the idea of thinness and weight loss behaviors (Eisenberg, Neumark-Sztainer, Story, & Perry, 2005). Peer attitudes toward weight concerns have been correlated with high rates of disordered eating behavior. Also, peers influence the development of disordered eating through modeling, discussing weight and eating issues, teasing, and the degree to which children believe being thin will increase their likability with peers. In addition, adolescent girls' frequency of discussion with peers concerning dieting and weight loss correlates significantly with their reported disordered eating behavior (Eisenberg et al.; Gerner & Wilson, 2005; Schutz & Paxton, 2007).

As noted above, teasing is another way that peers influence eating and weight concerns. Research suggests that the frequency of teasing, and the level of emotional disturbance portrayed by the victim being teased are both important. Research showed both to be statically significant and positively related to eating

and body image disturbances in women (Oliver & Thelen, 1996). More recent research found that boys who were teased about their weight were more likely than their peers to engage in disordered eating behaviors (e.g., binge eating, unhealthy weight control methods, and compulsive eating upon follow-up) (Haines, Neumark-Sztainer, Eisenberg, & Hannan, 2006).

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Peers influence disordered eating if the individuals believe they will be better liked by losing weight (Oliver & Thelen, 1996; Taylor et al., 1998). Maloney and colleagues (1989) reported on boys and girls in grades 3 through 6 and found that 15% believed their friends would like them more if they were thinner. They also found that this belief contributed statically significantly to the prediction of eating disturbances. A study done by Taylor and colleagues reported similar results when measuring the types of peer influence on elementary and middle school girls and boys. Weight concerns and the importance of peer influence, including peer approval of weight, was the strongest predictor for disordered eating behavior, accounting for 57% for the variance in weight concerns.

Despite the scope of research investigating disordered eating and eating disorders in adolescents, very few studies have explained peer influence on disordered eating behaviors (Oliver & Thelen, 1996; Paxton, 1996). A frequent problem with disordered eating and eating disorder research among adolescents is the exclusion of males (Skårderud, Nygren, & Edlund, 2005).

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METHODS

This study sought to recruit a young sample (11–14 years of age) and includes both males and females, unlike past research. This study had two main goals: (a) to determine the extent to which peer influence is a valid and reliable predictor of disordered eating behavior, and (b) to examine the specific features of peer influence that are the strongest predictors of disordered eating behaviors (e.g., likability, messages).

Prior to data collection, university institutional review board approval was granted for the research

study. In addition, school district approval was obtained to recruit students for the study, but it was stipulated that no data be collected during school hours or on school grounds. After classrooms were randomly selected, teachers were sent a memo outlining data collection procedures. One researcher visited the classrooms to distribute parental informed consent letters and the questionnaire to the students for them to take home. During this time, instructions were given to the students on how to complete the questionnaire. Students were instructed to take their questionnaire home and to complete on a voluntary basis. If they chose to participate, they were instructed to have their parents sign the informed consent form. To increase participation, students were given a free movie ticket for completing the survey. The same researcher, along with two assistants, returned to the classes the next school day to collect the signed informed consent forms and completed questionnaires.

Participants included 6th-, 7th-, and 8th-grade males and females attending middle school in an intermountain state. A randomized cross-sectional design was used. Students at the middle school where recruitment took place were required to attend a 20-minute reading period, similar to a “homeroom” class period; seven of these classes were randomly chosen from each grade. On average, 20 students per classroom equaled a potential sample size of approximately 420 students. The original sample consisted of 200 participants—both nonsymptomatic and symptomatic students—of which 83 were male and 117 were female, with a mean age of 12.61 years ($SD = 0.78$) and 12.59 years ($SD = 0.86$) for males and females, respectively. The samples were 58.5% female, 77.9% between 12 and 13 years old, 80% Caucasian, 8.5% Hispanic, 5% Asian, 1.5% African American, and 5% Other.

When asked to describe their weight, 61.7% of the participants chose “normal” while 26.1% described themselves as “slightly overweight” or “very overweight.” However, while only 26.1% described themselves as overweight, 34.2% were trying to lose weight. In addition, 21.8% reported dieting, and 51.3% reported exercising in the past 30 days to lose weight. Only 1.0% ($n = 2$ males) reported vomiting or taking laxatives in the past 30 days, and no one reported using diet pills in the past 30 days.

On the pen and paper survey, participants provided demographic information such as gender, race/ethnicity, age, grade, diet, and exercise habits. In addition, the participants were asked to complete the Eating Disorder Inventory (EDI) and the Inventory of Peer Influence on Eating Concerns (I-PIEC). The EDI was a self-reported measurement tool that assessed a number of psychological and behavioral traits commonly found in individuals who have anorexia nervosa or bulimia nervosa (Garner, 1991). For the present study the subscales drive for thinness, bulimia, and body dissatisfaction were utilized.

Table 1. Independent *t* Test Values and Standardized Mean Effect Scores for Scales Between Genders

Scales	Male Participants		Female Participants		<i>t</i>	SMD
	Mean	SD	Mean	SD		
DFT	3.13	4.47	3.57	4.30	-6.19	0.010
B	1.33	2.20	0.68	1.60	2.13*	-0.35
BD	6.00	6.92	7.41	7.10	-1.23	0.20
Total EDI	10.46	11.61	11.66	10.89	-0.661	0.11
M	1.57	0.755	1.48	0.735	0.741	-0.12
I	1.41	0.582	1.94	0.812	-4.49*	0.73
L	1.77	0.977	1.98	1.05	-1.30	0.21
Total I-PIEC	4.74	1.96	5.41	2.11	-1.97*	0.32

Note. B = Bulimia subscale of the Eating Disorder Inventory; BD = Body Dissatisfaction subscale of the Eating Disorder Inventory; DFT = Drive for Thinness subscale of the Eating Disorder Inventory; I = Interactions subscale of the Inventory of Peer Influence on Eating Concerns; I-PIEC = Inventory of Peer Influence on Eating Concerns; L = Likability subscale of the Inventory of Peer Influence on Eating Concerns; M = Messages subscale of the Inventory of Peer Influence on Eating Concerns; Total I = Drive for Thinness, Bulimia, and Body Dissatisfaction subscales of the Eating Disorder Inventory.

* $p < .05$.

The Inventory I-PIEC (Oliver & Thelen, 1996) was used to measure peer influence on children's eating and body concerns. It was a self-reported measurement tool that consisted of three constructs: messages, interactions, and likability. There was a total of five scales and 30 items that used a five-point Likert scale, which instructed the individual to answer if the statement applies to "never," "almost never," "not very often," "sometimes," and "a lot." Responses to each item that made up each of the scales were averaged to obtain mean scale scores. The Message scale measured the frequency that children experienced negative messages (teasing) from boys and girls about their bodies or eating habits. The next two scales, Interactions/Boys and Interactions/Girls, measured the frequency that children interacted (talked, exercised, compared bodies) with boys and girls about eating or body issues. The last two scales, Likability/Boys and Likability/Girls, measured the degree to which children believed being thin would increase their likability with their peers.

RESULTS

An α level of .05 was selected to determine statistical significance. Statistical analyses were based on the symptomatic sample only ($n = 159$). Table 1 presents the scores, *t* test values, and standardized mean effect scores for the EDI subscales and the I-PIEC scale and subscales between males and females. The difference in peer influence scores between gender were found to be statistically significant ($t[157] = -1.974$, $p < .05$). Male participants had a mean score of 4.74, while female participants had a mean score of 5.41. Nonetheless, caution must be used when interpreting these results because the magnitude of difference was very small for practical purposes ($ES = .32$).

Within the I-PIEC scale, statistically significant differences were found for the "interactions" subscale. Male subjects had a mean score of 1.41 compared to 1.94 for females. There were no significant gender differences for the "messages" or "likability" subscales of

the I-PIEC. Results showed that small effect sizes were found between males and females for the scale and subscales of I-PIEC, except for the "interactions" subscale, which had a large effect size of .73.

Females reported higher mean scores on the "drive for thinness" (female $M = 3.57$; male $M = 3.13$) and "body dissatisfaction" subscale (female $M = 7.41$; male $M = 6.00$). Males reported a higher mean score on the "bulimia subscale" ($M = 1.33$; female $M = 0.68$). Females reported a mean score of 11.66 when the three subscales of the EDI were summed to give an overall disordered eating symptom score compared to a mean score of 10.46 for males.

Independent *t* tests were used to determine if there was a significant difference between males and females. No significant differences were found on the overall disordered eating symptom score, the "drive for thinness" subscale, and the "body dissatisfaction" subscale. A statistically significant difference was found for the "bulimia" subscale ($t[157] = 2.13$, $p < .05$). Again, the validity of the "bulimia" scale was in question because of the low Cronbach's α level (.54). Small effect sizes were found for all subscales of the EDI and for the overall EDI score. These results indicate that there was no significant or practical difference between males and females on disordered eating scores.

Pearson product-moment correlation coefficients were calculated to determine if a relationship existed between peer influences and disordered eating symptoms. Moderately significant positive correlations were found between the I-PIEC scores and "drive for thinness" subscale ($r = .598$, $p < .05$) and "bulimia" subscale ($r = .284$, $p < .05$). Strong significant positive correlations were found between the I-PIEC scores and the "body dissatisfaction" subscale ($r = .658$, $p < .05$). In addition, a strong significant positive correlation was also found between the overall I-PIEC mean score and the overall EDI mean score ($r = .697$, $p < .05$). These results indicate that peer influence had a strong positive correlational relationship with disordered eating symptoms.

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Multiple regression analysis was conducted to determine the best predictor of disordered eating symptoms for the symptomatic sample (Table 2). Results indicated that only the I-PIEC was a significant predictor of disordered eating symptoms in both males and females ($B = .164, p < .05$). Gender and age did not significantly contribute to the prediction of disordered eating symptoms. The total predictive value of the multiple regression was 49% ($R^2 = .491$). Thus, almost half of the EDI subscale scores could be predicted by knowing the level of peer influence, as indicated by the I-PIEC in the present study.

Multiple regression analysis was conducted to determine the best peer influence predictor of disordered eating symptoms. The analysis showed that "likability" was the most significant predictor of disordered eating symptoms ($B = .214, p < .05$), followed by the "message" subscale ($B = .219, p < .05$). The "interactions" subscale was not a significant predictor of disordered eating symptoms. Again, gender and age did not significantly contribute to the prediction of disordered eating symptoms. The total predictive value for the multiple regression equation was approximately 55% ($R^2 = .548$). These results indicate that over half (55%) of the scores on the EDI subscales can be predicted by knowing the level of likability and message constructs of peer influence.

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As mentioned, results indicated that there was a statistically significant difference in scores based on gender for the I-PIEC scale scores ($t[157] = -1.97, p < .05$). Based on these results, a multiple regression was conducted for males and females to determine what peer construct was the best predictor of disordered eating symptoms for each gender (Table 3). For males, the "messages" subscale was the most significant predictor of disordered eating behavior ($B = .336, p < .05$), followed by the "likability" subscale ($B = .199, p < .05$), followed by the "interactions" subscale ($B = -.179, p < .05$). The male's total predictive value for the multiple regression analysis was approximately 55% ($R^2 = .554$). For the females, the "likability" subscale was the most significant predictor of disordered eating symptoms ($B = .233, p < .05$), followed by the "messages" subscale ($B = .189, p < .05$). The "interactions" sub-

scale for females was not found to be a significant predictor of disordered eating symptoms. The female's total predictive value for the multiple regression analysis was approximately 62% ($R^2 = .618$). Age was not a significant predictor of peer influence for either males or females.

DISCUSSION

The relationship between the age of onset of disordered eating and the development of eating disorders is still unclear. Studies have reported disordered eating and eating disorders to begin in children as young as 6 years old (Dohnt & Tiggemann, 2006), while others have found that disordered eating is delayed until the onset of adolescence (Krowchuck, Kreiter, Woods, Sinal, & Durant, 1998; Killen et al., 1994). This study contributes to the evidence that disordered eating may begin before children reach preadolescence or during preadolescence, and the symptoms are evenly distributed throughout the transition into adolescence. No one age had a significantly higher presence of disordered eating than another for the middle school children in this study.

Numerous studies have found females to show a higher prevalence of disordered eating behaviors as compared to males (Oliver & Thelen, 1996; U.S. Department of Health and Human Services, 2005). In this study, females scored higher on most of the scales, although there were no statistically significant or practical differences found between males and females. These results are consistent with the findings of Maloney, McGuire, Daniels, and Specker (1989), who found no significant differences between male and female Children's Eating Attitudes Test (ChEAT) scores in 3rd through 6th grades. However, Maloney and colleagues found the average ChEAT scores of girls in grades 4, 5, and 6 were higher than the males. Rolland, Farnill, and Griffiths (1997) found similar results when they compared male and female ChEAT scores in a sample of 3rd through 6th graders. They found no significant differences between gender and ChEAT scores, although the females did score slightly higher than the males.

It is important to mention that although females typically score higher on measures of disordered eating, males are not far behind (Maloney et al., 1989; Rolland et al., 1997). Despite these findings, the majority of research on disordered eating and eating disorders exclude males (Steiner & Lock, 1998). Results from past studies, as well as this study, indicate that the problem of disordered eating is as prevalent for males as it is for females. Future research is needed to advance our understanding of the differences that exist between males and females with respect to disordered eating and eating disorders.

These findings, as well as findings from previous researchers, show that a significant positive correlation

Table 2. Summary of Multiple Regression Analysis for Disordered Eating Predictors Gender, Age, and Peer Influence

Variable	B	SE B	β
I-PIEC	0.164	0.014	0.701*
Gender	5.744E-02	0.058	0.058
Age	2.714E-02	0.033	0.047

Note. I-PIEC = Inventory of Peer Influence on Eating Concerns. $R^2 = .491$.

* $p < .05$.

does exist between peer influence and disordered eating in a symptomatic sample (Eisenberg et al., 2005; Gerner & Wilson, 2005; Schutz & Paxton, 2007). Peer influence is well documented as the single best predictor of adolescent cigarette, drug, and/or alcohol use (Hoffman et al., 2007; Ostaszewski, & Zimmerman, 2006). Since peer influence is such a strong determinant of other unhealthy behaviors, it is logical to assume that it is equally as strong of a determinant for disordered eating. Many unhealthy behaviors, particularly cigarette, drug, and alcohol use, are explained by using the SCT. The influences of peers are attributed to two social learning processes: modeling and reinforcement. This study confirms the importance of these two constructs for explaining disordered eating behaviors.

Finding a practically significant positive correlation between peer influence and disordered eating is important because disordered eating and eating disorders have a myriad of factors that contribute to their development. While body image, self-esteem, media influence, and other psychosocial variables have been examined extensively, peer influence has received very little attention.

Future research is needed to validate these findings and to examine all possible constructs of peer influence and how they relate to disordered eating in pre-adolescents and adolescents. If peer influence is as strong a predictor on disordered eating as on smoking, drinking, and drug use, future prevention programs can be developed to target preadolescents and adolescents. Such interventions could potentially slow and/or reverse the increasing prevalence of disordered eating and eating disorders. Extensive research in the area of peer-led prevention programs suggest that they are effective in combating unhealthy peer influence (Mellanby, Rees, & Tripp, 2000).

Results of this study demonstrated that the likability construct of peer influence was the most statically significant predictor of disordered eating. Oliver and Thelen (1996) also found that likability played the strongest role in predicting children's eating-related concerns. The findings of this study, as well as that of Oliver and Thelen, are consistent with a previous study, which found that 15% of 3rd-through 6th-grade children believed that their friends would like them more if they were thinner and predicted eating disturbances (Maloney et al., 1989). More research is

Table 3. Summary of the Male and Female Sample Multiple Regression Analysis for Disordered Eating Predictors: Peer Influence Constructs and Age

Gender	Variable	B	SE B	β
Male	Messages	0.336	-0.095	0.483*
	Interactions	-0.179	0.080	-0.199*
	Likability	0.199	0.068	0.376*
	Age	3.685E-03	0.048	0.006
Female	Messages	0.189	0.057	0.277*
	Interactions	6.341E-02	0.040	0.105
	Likability	0.233	0.040	0.496*
	Age	5.420E-02	0.034	0.099

Note. $R^2 = .548$ for males; $R^2 = .618$ for females.

* $p < .05$.

needed to clarify the relationship between socioculture influences, peer influence, the likability construct, and disordered eating.

It is interesting to note that the most significant predictor of disordered eating for females was "likability," but for males it was "messages." This suggests that the motivation for disordered eating is different between genders. It appears that males respond more to teasing while girls hold the belief that their peers will like them better if they are thinner. This difference may be a result of boys and girls responses to being teased (Janssen, Craig, Boyce, & Pickett, 2004). While both male and female children are likely to tease peers of the same gender, and even though girls generally talk more, boys tend to be more verbally aggressive. Research has found that being overweight increases the risk of being teased by peers (Janssen et al.). However, boys tend to bully as well as tease their same-sex overweight peers. Furthermore, it may be possible that girls respond to "socially" unacceptable peers by withdrawing their friendship rather than teasing, as boys may do.

Another possible reason for the difference in motivation for boys and girls is the stronger cultural message directed towards women that thinness is linked to happiness, sociability, romance, and success. Messages from the media are documented to have the effect of minimizing the seriousness of eating problems, promoting extreme dieting behavior, and providing unrealistic expectations that thinness is healthy, easily achieved, and a sign of success (Haines et al., 2006). The media seems to send different messages to boys. Therefore, boys may not feel the same pressure from their culture to be thin in order to be liked and are more likely to have a better opinion of themselves in this regard. However, boys may be verbally and physically threatening when interacting between peers. Thus, messages (i.e., teasing) as measured in the present study are the only construct of peer influence left to influence boys in regards to weight.

IMPLICATIONS FOR SCHOOL NURSING PRACTICE

For any destructive behavior or illness, knowledge underlies treatment. For school nurses that conduct or

help supplement school health education, the findings of this study are important for a variety of reasons. First, present school-based interventions aimed at treating disordered eating and eating disorders rarely address peer influence. Educational interventions should include the definition of disordered eating, signs and symptoms, the consequences of extreme weight control strategies and/or disordered eating, and the awareness of media and societal influences. Individuals should also be taught the importance of self-esteem and body satisfaction. Second, peer influence prevention programs would be one way to help adolescents detect peer influence and learn how to effectively deal with it. Within these programs, individuals could discuss the issues surrounding the pressures to conform within the friendship environment. Third, because likability seems to be the most significant predictor of disordered eating, the belief that losing weight will improve relationships and be the solution to their problems needs to be addressed.

For school nurses who are not providing classroom education, this study is important in their interactions with students and their families. School nurses should not assume that only female students are at risk for unhealthy dieting and other disordered eating behaviors. Male students in particular may be at risk of being teased or bullied because of their weight. The school nurse may be in a prime position at the school to notice sudden weight loss or psychosomatic symptoms related to teasing or bullying in both male and female students. School nurses are also a significant source for referral information in such cases. This study, and its implications, can help researchers and school nurses understand how social influences contribute to disordered eating in boys and girls, and prevention efforts should address peer and media influences on young teens.

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