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The Association Between Peer Relations, Eating Behaviors, and Body Esteem in Adolescent Girls

Melissa Lieberman

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in
The Department
of
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ABSTRACT

The Association Between Peer Relations, Body Esteem, and Eating Behaviors in Adolescent Girls

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This study was designed to investigate the association between peer relations, eating behaviors, and body esteem in a sample of 876 adolescent girls (M age = 14 years). Participants completed questionnaires assessing peer pressure about weight and appearance (i.e., social reinforcement & peer modeling), body esteem, dieting and bulimia, weight and appearance related teasing, self esteem, and peer nominations of social rejection, popularity and teasing. Weight and height measurements were taken to calculate BMI. The Composite Social Map (CSM) procedure was used to determine clique membership and status.

Data were analyzed at the level of the clique, the friendship pair, and the individual. For cliques, results indicated that nuclear cliques were characterized by higher mean levels of peer pressure than secondary and peripheral cliques. Girls in cliques with higher social reinforcement, higher peer modeling, and an earlier average age of menarche, reported higher dietary restraint. For bulimia, higher reports of social reinforcement were associated with higher levels of bulimic behavior. Girls in high pressure cliques with low general self esteem, low body esteem, and high body-shape teasing were more likely to report problematic eating behaviors.

For best friend pairs, high between-pair associations were found for average popularity, social rejection, and age of first date, followed by perceptions of peer pressure. Further, dieting was a more common shared characteristic among best friend pairs than bulimic behavior. At the level of the individual, involvement in a close friendship, high

opposite-sex relational esteem, severe weight and body-shape teasing, peer pressure about weight and appearance, externalized self-perceptions, and peer attributions about the importance of weight and appearance for popularity and dating were important predictors of problematic eating behaviors. A more complete relational model should also include family variables.

These data point to the need for developing and implementing multilevel interventions. Prevention should focus on decreasing pressure by peers to be thin, increasing self and body esteem, and combating weight and body-shape related teasing within the school system.

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The Association Between Peer Relations, Eating Behaviors, and Body Esteem in Adolescent Girls

Adolescence is an important developmental period for the emergence of body dissatisfaction, dieting, and eating problems (Crisp, 1980; Rosen & Gross, 1987). Studies indicate that dieting occurs in approximately 50%-70% of North American adolescent high school girls, with even greater numbers reporting body dissatisfaction and expressing a desire to be thin (Wardle & Marsland, 1990). Due to the possibility that early eating and weight preoccupation might lead to later eating disorders, adolescent concern about weight and dieting has elicited the attention of both researchers and clinicians (Attie & Brooks-Gunn, 1989; Patton, Johnson-Sabine, Wood, Mann, & Wakeling, 1990; Thompson, Coovert, Richards, Johnson, & Cattarin, 1995). For example, in a prospective study examining a group of mid-adolescent schoolgirls, Patton et al. (1990) found that girls who dieted were eight times more likely to develop an eating disorder than non-dieters. Although it is well-accepted that not all dieters will necessarily develop an eating disorder, restrained eating in combination with a variety of predisposing biological, psychological, and social variables could increase an individual's risk (Cooper, 1995). In addition, restricting food intake can lead to a variety of health problems including retardation of growth, development, mental functioning and reproductive capacity (Mallick, 1983). Given the high prevalence of dieting and weight concerns during adolescence, and their potential influence on the development of eating disorders and health problems, it is important to examine the mechanisms through which these attitudes and behaviors are formed.

Although researchers have investigated the influence of both socio-cultural (e.g., Szmukler & Patton, 1995) and familial (e.g., Pike & Rodin, 1991) variables on the development of eating disorders, studies have only recently begun to examine the influence of peers (e.g., Paxton, Schutz, Wertheim, & Muir, 1999). Since peer relations and peer pressure become increasingly salient during adolescence (Sullivan, 1953), it is reasonable to propose that peers may have a significant influence on the development of eating behaviors and body satisfaction in adolescent girls, especially in environments where weight and appearance are emphasized. Also, given that girls rely strongly on social experiences to define their self-concept (Gilligan, Lyons, & Hammer, 1990), and that thinness and attractiveness have been associated with popularity (e.g., Lerner & Lerner, 1977), adolescent girls may become increasingly compliant with peer expectations and norms regarding appearance and weight in order to gain acceptance or approval, and/or to be popular. Unfortunately, the specific means through which peers influence the onset and maintenance of weight loss behaviors and the development of body esteem have not been thoroughly investigated. Thus, the purpose of this study is to explore some of the ways in which peers influence eating behaviors and body satisfaction in adolescent girls.

Eating Disorders: An Overview

It is generally agreed that the incidences of both anorexia nervosa and bulimia nervosa have increased over the past few decades (e.g., Polivy, Garner, & Garfinkel, 1986). These disorders occur predominately among young women, and usually emerge in adolescence. *Anorexia nervosa* is a syndrome characterized by self-starvation, fear of gaining weight, body image disturbance, amenorrhea, and a refusal to maintain body

weight (APA, 1994). *Bulimia nervosa* is an eating disorder characterized by recurrent episodes of uncontrollable and excessive overeating, inappropriate compensatory behaviors such as vomiting, purging, and/or exercising to counteract the effects of the binge, and body image disturbance (APA, 1994). The etiology of eating disorders is multifaceted and depends on one's vulnerability to risk factors and on protective mechanisms (Cooper, 1995). Vulnerability for the development of eating disorders may result from predisposing biological (e.g., heritable aspects of mood, lability and appetite), psychological (e.g., personality traits, perfectionism and impulsivity), and cultural variables (e.g., societal emphasis on thinness), compounded by the surrounding social environment (e.g., enmeshed, disorganized families) (see Steiger & Seguin, 1999 for a review). Studies have also shown that dieting may precede both anorexia and bulimia, although overeating, rather than dieting occurs as a precursor in a small proportion of women who develop bulimia (Cooper, 1995).

The prevalence of anorexia nervosa in Western school-aged girls and adolescents falls between 0.5% and 1%, (West, 1994). It has also been established that women are at higher risk than men (i.e., 10:1 ratio), particularly those in higher social classes (Yates, 1989). Though the prevalence of bulimia in women varies widely across subgroups, bulimia tends to be much more prevalent than anorexia. The incidence of bulimia in adolescents and young adult women in Western society is estimated at approximately 1% to 2% (Fairburn & Beglin, 1990). Research has also demonstrated that the prevalence of clinically significant bulimia may be higher in student populations, with estimates varying from 4% to19% (Hoek, 1991). Given that eating disorders occur within particular ages,

genders, classes, and populations, it seems likely that both social and cultural factors are significantly linked to their emergence.

Socio-Cultural Influences on Eating Disorders

There is some evidence that pressure on women to diet and to be thin may contribute, in part, to the increasing incidence of eating disorders. Research has demonstrated a shift toward a thinner ideal for female beauty in Western societies over the last few decades (Polivy et al., 1986). For example, Garner, Garfinkel, Schwartz, and Thompson (1980) demonstrated a decline in the average weights of Miss America contestants and Playboy centerfolds over a 20-year period (1959-1978), accompanied by a sixfold increase in the number of dieting articles in women's popular magazines. At the same time, the average body weight of women under the age of 30 was actually increasing (Metropolitan Life Foundation, 1983, cited in Striegel-Moore, Silberstein, & Rodin, 1986). The impact of this thin idealized shape is evident in the pervasiveness of dieting and body dissatisfaction, and an increased incidence of bulimia and anorexia nervosa in young women (Polivy et al., 1986). Although an obsession with weight and body dissatisfaction seem to be normative among young women, it is thought that those at the extreme end of the continuum are at significant risk for the development of eating disorders (Rodin, Silberstein, & Striegel-Moore, 1985). In addition to society's strong emphasis on thinness, it has been argued that the changing (more masculine) social role of women, greater health consciousness, and the wish to emulate upper social classes have also played important roles in shaping women's attitudes toward their body weight and shape (Polivy et al., 1986; Striegel-Moore et al., 1986). Although these values may filter

down to children and adolescents through the media and the mass-market weight control industry, they may also be transmitted by parents and peers.

Researchers have suggested that family members, especially mothers, may foster cultural ideals of thinness and beauty in their daughters. Striegel-Moore et al. (1986) suggest that mothers may model for their daughters both attitudes and behaviors concerning weight and eating, they may place heavy emphasis on thinness and appearance, they may evaluate their daughters critically with regard to weight, and they may reinforce their daughters' weight loss efforts. For example, in a recent study, Pike and Rodin (1991) demonstrated that mothers of eating disordered girls were more likely to have an eating disorder themselves and reported that their daughters needed to lose significantly more weight than mothers of non-eating disordered girls. Hill, Weaver, and Blundell (1990) found a strong correlation between dietary restraint in 10-year-old girls and their mothers (r=.68). In a sample of 236 mothers and daughters in grades 7-11, Buchholz (1996) demonstrated that mothers with strong beliefs about the link between success and thinness had daughters who were more uncomfortable with their own body image. In addition, mothers' perceptions of their own bodies and their dieting behaviors significantly contributed to how their daughters perceived their own appearance and to their global self esteem. In a Japanese sample, higher levels of eating disturbance were found in students who were encouraged to diet by their mothers and those who engaged in frequent conversations with their mothers about food and dieting (Mukai, Crago, & Shisslak, 1994). Thus, it seems likely that mothers play an important role in transmitting societal values regarding weight and appearance to their daughters. The role of fathers in the

development and maintenance of eating disorders remains relatively unexplored, though it has been suggested that the influence of fathers may not be as strong (e.g., Smolak, Levine, & Schermer, 1999).

Although researchers have investigated the influence of both the media, and more recently mothers, on the development of eating disorders, fewer studies have examined the influence of peers. Given the importance of peer acceptance during adolescence, in conjunction with the strong messages these girls receive from the socio-cultural milieu regarding beauty and thinness, one would expect peers to have an important influence on the development of eating attitudes and behaviors. Research has shown that attitudes toward thinness, obesity, and attractiveness are established from an early age (i.e., kindergarten; Lerner, 1969), with a consistent bias in favor of an ectomorphic or idealized body build over an endomorphic or fat body build. These biases are thought to become more pervasive, strong and negative in adolescence, particularly for females, due to the greater proportion of fat on the developing female body, and the importance of dating and popularity with boys (Polivy et al., 1986).

The transition into puberty can be extremely stressful for the young adolescent girl (Alsaker,1995a). In addition to physical transformations of the body (including a significant increase in body fat), young adolescents are faced with the challenge of establishing a new identity. During the rapid physical changes of puberty, perceptions of the body are strongly linked to overall self-perceptions, with stronger associations for females than males (Lerner & Karabenick, 1974). The challenge of puberty is thought to be especially difficult for girls who may experience more self-consciousness, insecurity,

and anxiety than boys (Hsu, 1989). In addition, researchers have found a consistent association between body dissatisfaction and poor self esteem in overweight female adolescents (Cash, & Green, 1986; Cash, Counts, & Huffine, 1990), but not in overweight children (Mendelson & White, 1982), suggesting that pressure to be thin may increase during this developmental period.

Further, as their abstract thinking and capacity for self-reflection develop, adolescents may become uniquely preoccupied with their maturing bodies, and the response of others, such as their peers, to this maturation. Research has shown that in women, physical attractiveness and body-shape is linked to peer evaluations, the quality of peer relationships, and social acceptance (Lerner, 1969; Langlois & Stephan, 1977). The link between popularity and thinness has been demonstrated, with overweight children, especially girls, considered less likeable by their peers (Lerner & Lerner, 1977; Lerner & Schroeder, 1971; Straus, Smith, Frame, & Forehand, 1985). Given that attractive girls are more successful interpersonally, especially in cross-gender interactions, the wish to be popular and to pursue thinness may become synonymous for the adolescent girl (Striegel-Moore et al., 1986). Research has shown that a woman's appearance is more important for dating than a man's appearance (Bercheid, Dion, Walster, & Walster, 1971). In addition, Rodin et al. (1985) demonstrated a higher prevalence of bulimia in schools where dating is heavily emphasized in comparison to schools where the emphasis on dating is less prominent.

Finally, since girls tend to develop their sense of self in the context of relationships (e.g., Gilligan et al., 1990), they are more likely to be dependent on and vulnerable to

external influences that impact their sense of identity. For example, in a large scale study of more than 1800 boys and girls, Simmons and Rosenberg (1975) found that 12- to 14-year-old girls seemed to worry more about what others thought of them, cared more about being liked, and tried to avoid negative reactions from others in comparison to boys. Thus, in response to feelings of insecurity, and in order to avoid negative evaluations by others, it has been suggested that adolescent girls may become increasingly sensitive to and compliant with social demands (i.e., peer influence) and sex-role appropriate stereotypes (i.e., regarding thinness; Hill & Lynch, 1983). In a recent study by Buchholz and White (1996), it was demonstrated that adolescent girls who had a higher "externalized" self-perception (i.e., viewed selves in eyes of others) had significantly lower appearance-esteem. Further, high externalized self-perceptions coupled with low appearance-esteem were significant risk factors for disordered eating. Thus, it seems likely that peers and peer relations may have an important role in shaping and/or maintaining adolescents' attitudes about their body weight and shape, which may be related to the development of eating disorders.

The Role of Peers

Peer relations contribute substantially to adolescent social and emotional development. Research has shown that peers play an important role in the development of emotion regulation, self understanding, self esteem, and in the formation and functioning of later relationships (Hartup,1983; Bukowski, Newcomb, & Hoza, 1987). Early social difficulties may place children at risk for later psychological adjustment problems (e.g., depression, loneliness, psychiatric illness) and academic difficulties (e.g., school drop out,

underachievement; Parker, Rubin, Price, & DeRosier, 1995; Parker & Asher, 1987). Peers also play an important role in socialization. For example, studies of peer reinforcement indicate that children's behaviors, personality dispositions, and attitudes are influenced by the reactions they receive from peers. Research has also demonstrated that children learn a variety of social behaviors (e.g., prosocial and aggressive acts, sex-roles) by observing peer behavior (Ladd, 1988).

The study of *peer relations* has generally been limited to the individual or the dyadic level (i.e., emphasizing popularity and friendship), with minimal attention devoted to the study of social networks or social groups (Cairns, Xie, & Leung, 1998). Alternatively, the study of *social influence or conformity* has focused primarily on group pressures, while social influence among friends as mutual, dyadic entities remains relatively unexplored (Hartup, 1993). Nonetheless, both dyadic mutual friendships (e.g., best friendships), and social networks (e.g., cliques), are salient features of the adolescent social world (Brown, 1989).

Although best friend dyads tend to be highly embedded within a social network (e.g., Urberg, Degirmencioglu, Tolson, & Halliday-Scher, 1995), it has been suggested that dyads and social networks may differ in their patterns of peer interactions and peer influence. For example, adolescents may respond to pressures from a best friend in order to maintain the dyadic relationship, while conformity to group norms may result from an interest in maintaining one's image or identity among peers as a whole (Brown, 1989). Best friends may have a stronger influence on attitudes and behaviors than the larger social group as a result of their greater amount of contact and interaction (Berndt & Keefe,

1995; Urberg, 1992). Alternatively, Brown (1989) suggests that social networks play an important role in identity formation, and therefore, may have a more powerful influence on the adolescent. In a recent study, Urberg, Degirmencioglu, and Pilgrim (1997) found that both the social group and best friends independently contributed to the prediction of adolescents' drinking to intoxication. However, only best friends were influential in the initiation of cigarette and alcohol use. Therefore, in the study of peer influence, both an investigation of pressures deriving from the social network as a whole, in addition to pressures deriving from same-sexed dyadic friendships, would be beneficial (Hartup,1993; Urberg et al., 1997).

Friendships

Although friendships exist in toddlerhood (Howes, 1989) and in middle childhood (Ladd, 1988), it is well-accepted that friendships become particularly salient in early adolescence (Berndt, 1982; Sullivan, 1953). Unlike earlier friendships, adolescent friendships are characterized by high degrees of intimacy, loyalty, trust, and closeness (Sullivan, 1953). Research has consistently shown that girls' friendships are more intimate than boys (Buhrmester, 1990; Hartup, 1993), with girls reporting more frequent occurrences of self-disclosure and spending more time with their friends on average than boys (Wong & Csikszentmihalyi, 1991). Therefore, girls may have more opportunities than boys to model "acceptable" behaviors for one another. In addition, adolescent friendships tend to be more stable than friendships in childhood (Hallinan, 1979), which would also increase the likelihood of peer influence. Research has also shown that *mutual* or *reciprocated* friends tend to exert more influence on one another than *unilateral*

friends, since they spend more time together and have a more intense relationship, allowing for more opportunity to influence one another (Epstein, 1983).

Friends are similar to one another in many domains. For example, friends tend to be similar on a variety of demographic variables (e.g., gender, race, age, social class), most likely due to increased opportunities for interaction with adolescents who are similar on these dimensions (Kandel, 1978a; Hartup, 1983; Eiser, Morgan, Gammage, Brooks, & Kirby, 1991). In terms of behavioral concordances, research has shown that adolescents are most similar to their friends in school-related attitudes, aspirations, and achievements, in addition to attitudes and behaviors that are relevant to the contemporary teen culture (e.g., smoking, drinking, drug use, dating; Epstein, 1983; Kandel, 1978a; Eiser et al., 1991). These similarities are thought to stem from homophily, a tendency to "select" partners who resemble one self (Bercheid & Walster, 1969). Hartup (1993) explains that socializing with similar individuals tends to be more stimulating and rewarding, increasing the likelihood of emotional support and consensual validation, and decreasing the likelihood of conflict. Nonetheless, it is unclear if adolescents select one another on the basis of an initial similarity, or whether they become more similar over time as a result of mutual socialization. In general, evidence from longitudinal studies has shown that similarities among friends derive from both sources (e.g., Kandel, 1978b; Epstein, 1983). For example, in a large study of children in grades 9-12, Kandel (1978b) found changes in drug use, educational aspirations, and involvement in delinquency over one school year, resulting from both selection and socialization, in approximately equal amounts. Therefore, it seems likely that adolescents may "select" one another as friends due to

initial similarities, but may also become more similar over time as a result of mutual socialization.

Similarity of best friend dyads in terms of eating behaviors and attitudes toward weight and shape has not been explored. However, it seems likely that adolescent girls who place a high value on appearance and thinness may "select" one another as friends. Research has shown that individuals similar in attractiveness tend to affiliate with each other (Bercheid et al.,1971), and attractiveness has been linked to thinness in several studies (e.g., Lerner, 1969). However, it is also possible that similarity among best friends regarding eating behaviors and body esteem may derive from mutual socialization. For example, given that self-concept in young women is strongly linked to interpersonal relations, adolescent girls may be influenced by their friends' beliefs and values (i.e., concerning thinness and appearance) in order to maintain their close relationships. Therefore, an important goal of the present study is to examine associations of eating behaviors and body esteem in best friend pairs.

Social Networks

In addition to participation in a "best" friendship, adolescents are usually part of a clique or social network. Cliques are described as interaction-based peer groups comprising a small number of individuals who hang around together (approximately 5-10) and develop close relationships (Brown, 1989). Like dyadic friendships, cliques tend to be same-sexed, at least through late adolescence, with girls forming smaller, more cohesive and exclusive groups than boys (Cairns, Gariepy, & Kindermann, 1989). Recent research by Cairns and his colleagues has demonstrated reasonably high stability in the composition

of social groups, especially over the short-term (3-6 weeks; Cairns, Leung, Buchanan, & Cairns, 1995), and in schools where children are kept together as a class from one year to another (e.g., private schools; Cairns, Perrin, & Cairns, 1985). Similar to friendships, social networks form on the basis of demographic similarities (e.g., gender, age, and race), behavioral characteristics (e.g., aggressiveness, popularity, substance use, smoking, and academic achievement) and biosocial variables (e.g., physical maturation, appearance or attractiveness) (Cairns et al., 1989; Ennett & Bauman, 1994).

Both selection and socialization have been implicated in peer group similarity (Bauman & Ennett, 1996; Ennett & Bauman, 1994; Wills & Cleary 1999; Patterson & Bank, 1989). For example, research has shown that antisocial behaviors of network members who are attracted to one another because of an initially shared interest in antisocial activity tend to increase over time due to mutual reinforcement (Patterson & Bank, 1989). Also, in a longitudinal study using social network analysis, Ennett and Bauman (1994) found that selection and socialization contributed equally to peer group smoking homogeneity. Although social networks exist and exert influence in students' lives before adolescence, Brown (1989) suggests that both the importance and influence of peer groups are much greater in adolescence than in childhood. Research has shown that the importance attached to belonging to a peer group peaks in early adolescence, diminishing steadily through the end of high school (Brown, Eicher, & Petrie, 1986). This is consistent with susceptibility to peer pressure, which tends to reach its height in early adolescence and then steadily diminishes to levels more characteristic of childhood (Costanzo & Shaw, 1966; Berndt, 1979).

Anecdotal evidence has suggested that eating disorders tend to run in social groups including cheerleading squads (Squire, 1983), athletic teams (Crago, Yates, Beutler, & Arizmendi, 1985), and dance camps (Garner & Garfinkel, 1980). In an empirical examination of social influence on binge behavior in two college sororities, Crandall (1988) demonstrated that women became more like their friends over time in terms of their binge behaviors. In addition, binge eating was significantly linked to popularity, and groups that binged were the most prestigious. This study provides some preliminary evidence that problematic eating behaviors (i.e., bingeing) may develop in close-knit social groups, especially where weight and appearance are central to group members. However, the ways in which these behaviors are transferred from friend to friend merits further investigation.

Given the salience of the developmental changes which occur in early adolescence (i.e., pubertal development, identity formation), it would be interesting to investigate if all female cliques are concerned with body weight and shape during this phase, or if these values predominate in specific cliques. Only one known study has investigated clique norms regarding weight, shape, and appearance during adolescence (Paxton et al., 1999). In a sample of grade 10 girls, Paxton et al. (1999) found greater similarity within than between friendship cliques for body image concerns, dietary restraint, and extreme weight loss behaviors, but not for binge eating, after controlling for BMI, depression, self esteem, and anxiety. Given that this is the only published study of this nature, it would be important to replicate these findings.

Peer Pressure

Peer pressure has been described as the primary mechanism for transmitting group norms. It has been suggested that social networks exert influence by offering desirable rewards to those who conform to group norms and/or undesirable consequences to those who resist them (Brown, 1989; Kandal, 1980). Nonetheless, questions remain regarding the exact processes or mechanisms through which peer group pressure is exerted. Ethnographic studies have provided evidence to suggest that pressure or influence can be direct or overt (i.e., group members persuade the individual to do or not to do something) and is sometimes much more subtle or indirect (i.e., ostracism of a member who does not conform to the group norm). In addition, group members may exert influence through modeling group appropriate norms and behaviors (Brown, 1989). Kandal's (1980) work on socialization of substance abuse differentiates between *social reinforcement* and *imitation* as mechanisms for influencing behavior.

Social reinforcement and imitation (i.e., modeling) could also be applied to a socio-cultural model of eating disorders. For example, Stice (1998) defines *social reinforcement* as comments or actions of others that serve to support and perpetuate the thin ideal body image for women, such as criticism regarding weight (e.g., teasing) and encouragement to diet. He suggests that social reinforcement promotes an internalization of the thin ideal and body dissatisfaction, resulting in eating pathology. On the other hand, *modeling* occurs when individuals copy behaviors they see others perform. From an eating disorders perspective, peers could model excess dietary restraint, binge behavior, preoccupation with body dimensions, and vomiting for weight control. It seems likely that

both mechanisms play an important role in influencing eating attitudes and behaviors. Thus, in the current study, both social reinforcement and peer modeling were examined in relation to eating behaviors and body esteem.

A few recent studies have examined the mechanisms through which peers influence eating attitudes and behaviors in elementary, high school, and college-aged samples. For example, Levine, Smolak, Moody, Shuman, and Hessen (1994) looked at indirect influences of peers on eating behaviors in girls in grades 6 to 8. These authors demonstrated that peer investment in dieting (e.g., how many of your friends would like to be thinner?) was a significant predictor of disturbed eating in adolescent girls, while exposure to peer dieting techniques (i.e., modeling) was predictive of non-pathological dieting. Nonetheless, peer investment in dieting was assessed using adolescent self-report, and was based on the summation of only three items. Given the low number of items, the validity of this measure is questionable. Also, the assessment of "how many" friends engage in a particular behavior may not accurately reflect peer investment in dieting, especially without any information about their total number of friends. Peer modeling was assessed by summing across a yes-no checklist of weight management techniques that the subject reported her *girlfriends* to be using. Whether or not these girls accurately reported their friends' eating behavior is questionable. Although researchers often measure peer influence using the adolescents' perception of their friends' attitudes and behavior, evidence has shown that adolescents tend to perceive their friends as much more similar to themselves than they really are (Urberg, Shyu, & Liang, 1990; Berndt & Keefe,

1995). It is therefore important to attain information directly from the friend, rather than only from the subject.

Over the last five years, similar investigations with elementary and middle school girls have been conducted. For example, in a sample of elementary and middle school girls, Shisslak et al. (1998) reported that the frequency and severity of weight control behaviors were associated with sensitivity to peers' weight-related pressures. Barr Taylor et al. (1998) found that perceptions of the importance peers placed on weight and eating was most strongly related to weight concerns in elementary and middle school girls. Oliver & Thelen (1996) found that in 3rd to 5th grade children, peer likability (e.g., the belief that being thin will increase how much peers like them), and peer messages (e.g., being teased about weight) were major contributors in predicting eating and body concerns, with likability having the most significant effects.

Studies examining peer influence on eating behavior in high school samples have also increased over the past five years. In an interview study of grade 10 girls, Wertheim, Paxton, Schutz, and Muir (1997) found that indirect pressures to be thin were more common than direct pressures, including social comparison, joint dieting, avoidance of social disapproval, and other girls' verbalized concerns. Lattimore & Butterworth (1999) found that perceived peer investment in dieting significantly predicted dietary restraint in a sample of high school girls. In a sample of girls in grades 9-12, Pike (1995) found that difficulty expressing conflict in friendship was a modest predictor of bulimic patterns, after controlling for psychological distress. Also, degree of bulimic symptoms reported by participants was associated with perceptions of occurrence of anorexia and bulimia among

friends, bulimic symptoms in the social clique, direct social pressure to diet, social anxiety, and public self-consciousness, after controlling for social desirability and psychological distress. Finally, Paxton et al. (1999) found that the frequency with which friends talked about dieting, friends as a source of influence (re: perfect body, diet products used, exercise), and body comparisons, significantly predicted body image concern, dietary restraint, binge eating, and extreme weight loss behaviors in a sample of grade 10 girls. It is important to note that the items used in these studies did not clearly differentiate social reinforcement and peer modeling, and did not examine peer processes from a developmental perspective. Also, most items used in these studies reflect perceptions of peer behavior, rather than peer reports of their own behavior.

Studies have also examined peer influences on disordered eating in college-aged women. For example, in one college sample, Irving (1990) demonstrated that perceived pressure from peers to be thin, (in addition to parents and the media), was positively related to bulimic symptoms. In a case series study, Mitchell, Hatsukami, Pyle, and Eckert (1986) found that 45% of bulimics reported that they initiated bingeing and purging following pressure from a friend to lose weight, whereas Pyle, Mitchell, and Eckert (1981) found that suggestions to lose weight by friends were often followed by dieting episodes associated with the onset of bulimia. Nonetheless, in all of these studies, reports were retrospective in nature, limiting the reliability of these findings. In terms of peer modeling or peer instruction, Chiodo and Latimer (1983) found that 37% of college-aged bulimics retrospectively reported learning to vomit from a friend, while Schwartz, Thompson, and Johnson (1982) reported that most college-aged women who purged had another self-

induced vomiter as her closest friend. Again, these studies were conducted in college-aged students, limiting their generalizability to an adolescent population.

Peers may also influence eating behaviors and attitudes through weight-related teasing. Studies have shown that high levels of perceived teasing are associated with negative effects in both obese and non-obese individuals, particularly body image disturbance (Cash, Winstead, & Janda, 1986; Fabian & Thompson, 1989; Thompson & Psaltis, 1988; Stormer & Thompson, 1995). For example, in a large-scale study, Cash et al. (1986) demonstrated that women who were teased about their weight in childhood, were more dissatisfied with their appearance during adulthood. In a more recent college-aged study, Cash (1995) found that teasing/criticism focused primarily on weight and facial features, and peers were reported to be the worst perpetrators of appearance teasing /criticism. Nonetheless, most of these studies have used self-reports of college students about their childhood, and are therefore subject to retrospection bias.

Few studies have focused on teasing in adolescent populations. Fabian and Thompson (1989) examined if retrospective accounts of having been teased about one's weight predicted current levels of body esteem and eating disturbance in a small sample of pre and post-menarcheal females. Results showed that in pre-menarcheal girls, low body esteem was associated with greater frequency and reported negative emotional consequences of weight-related teasing, while in post-menarcheal girls, body esteem was correlated with teasing frequency only. Thompson et al. (1995), in a longitudinal study of 10- to 15-year-old girls, found that teasing history had a directional effect on body image and eating disturbance. Also, being overweight was a risk factor for being teased about

weight, size, and overall appearance. More recently, Paxton et al. (1999) found that teasing about weight contributed to dietary restraint and body image concern in a sample of grade 10 girls.

Although these studies provide some preliminary evidence demonstrating that peers may have a significant influence on eating behaviors and body dissatisfaction, methodological flaws (e.g., small number of self-report items) highlight the necessity for more extensive work in this area. Therefore, another goal of this study is to explore some of the processes through which peers influence eating attitudes and behaviors. It is expected that peers may model both attitudes and behaviors regarding weight and eating, they may directly teach their friends "acceptable" weight loss behaviors (i.e., dieting, vomiting after eating), they may place heavy emphasis on thinness and appearance (which may be internalized by their friends), they may evaluate their friends critically with regard to weight, or they may reinforce their friends' weight loss efforts and thin appearance (social reinforcement). The current study improved on past research by using both subjective (self) and objective (peer) ratings of teasing, by assessing current teasing experiences, and by differentiating different types of teasing (re; appearance, weight, body-shape, general) in predicting body esteem and eating behaviors. Also, the differential effects of social reinforcement and peer modeling on eating behaviors and body esteem were evaluated.

Susceptibility to Peer Influence

Peer pressure is only influential if adolescents are willing to respond to it. In other words, in order for pressures to influence behavior, they must be internalized. Urberg

(1992) proposes that adolescents who are higher on *conformity* may be more easily influenced by their peers. She bases this assumption on the behavioral intention model of Ajzen and Fishbein (1970), which states that an individual's intention to engage in a behavior varies as a function of the individual's beliefs about what others think of the behavior, weighted by the individual's motivation to comply with these others. That is, those who care most about doing what others want should be most easily influenced by others. To test her hypothesis, Urberg (1992) conducted a study examining peer influence on the development of cigarette smoking in grade eleven students. Results showed that subjects who rated doing what their best friend wants them to do as important (i.e., conformity), were more likely to be influenced by their best friends. However, she did not examine what leads adolescents to believe that it is important to do what their friends want them to do.

Many authors suggest that patients with eating disorders are particularly vulnerable to the influence of external standards such as those portrayed in the media, especially with regard to appearance (Crisp, 1980; Garner & Garfinkel, 1982). However, at this point it is unclear whether a heightened susceptibility to social pressures is a predisposing factor for the development of an eating disorder, or whether the effects of these social pressures are amplified as a result of having the disorder. Crandall (1988) suggests that many of the personality characteristics that clinicians have found as correlates of eating disorders (e.g., low self esteem, depression, impulsivity, poor family environment, poorly developed sense of self) may be better characterized as indicators of susceptibility to social influence. In addition, research with both adults and adolescents has indicated that bulimics may

experience greater social anxiety, poorer social relationships, and a strong need for social approval (Becker, Bell, & Billington, 1987; Gross & Rosen, 1988; Striegel-Moore et al., 1986), which may also influence their susceptibility to social pressure. In a longitudinal study of self esteem in an adolescent population, Zimmerman, Copeland, Shope, and Dielman (1997) found that susceptibility to peer pressure was highest in adolescents with low self esteem, and the greatest rise in susceptibility occurred in the consistently low self esteem group. Thus, another goal of this study is to examine if adolescent girls with social difficulties (both weight and non-weight specific) and a poor sense of self, perceive more pressure from their friends to achieve the thin ideal, are dissatisfied with their bodies, and engage in disordered eating behaviors.

Summary

Young adolescent girls are growing up in a socio-cultural environment that glorifies thinness. The mass media promotes unrealistic beliefs that thinness is healthy, easily achieved, and a sign of success. Thus, young adolescent girls are being exposed to unhealthy messages about the importance of body-shape, dieting, and attractiveness (McVey, 1996). Family members, especially mothers, may also reinforce cultural ideals regarding thinness and beauty, which may further contribute to the development of eating problems. Nonetheless, just as the media and family members play important roles in the transmission of socio-cultural pressures, peers may also have an important part in this process. Given the salience of peer relations during early adolescence, and the high prevalence of dieting and body dissatisfaction which emerge at this age, it seems likely that peers will significantly influence attitudes about body weight and shape, and the

development of eating behaviors more directly. The purpose of this study was to explore some of the mechanisms through which peers exert this influence. Although eating problems can develop at any point throughout the life span, they tend to emerge when an individual is exposed to several changes at once, such as during early adolescence (Levine et al., 1994). Adjusting to the physical changes of puberty, paired with the establishment of intimate peer relations and relations with members of the opposite sex, may heighten a young girl's concern with appearance and body-shape. Thus, the sample for the current study represents an early to mid-adolescent age group. Research in this area has implications for the design and implementation of prevention programs as well as intervention approaches. Also, this research extends the empirical examination of recent theories regarding socio-cultural influences on eating attitudes and behaviors. More specifically, this research will add to our knowledge base regarding the means through which young girls acquire negative attitudes toward their bodies and problematic eating behaviors, which are both important risk factors for the development of eating disorders.

Objectives and Hypotheses

The primary objective of this study was to examine associations between peer relations, eating behaviors, and body esteem at three levels: the group level (i.e., clique data), the pair level (i.e., friendship pairs), and the individual level.

Clique and Friendship Pair Analyses

Objective 1:

To examine the associations (ICCs) between clique members and best friend pairs for perceptions of peer pressure about weight and appearance, eating behaviors, body esteem,

self esteem, popularity/social rejection, physical attractiveness, average age of menarche, and social self-perceptions.

Hypotheses:

a) It is hypothesized that higher between-clique/between-pair variability will be found for perceptions of peer pressure about weight and appearance, eating behaviors, and average age of menarche than for body esteem and self-perceptions.

b) It is hypothesized that different patterns will emerge for cliques and friendship pairs.

Objective 2:

To explore group characteristics associated with individual perceptions of peer pressure in cliques, including clique status (nuclear, secondary, or peripheral), average age of menarche, and number of group members.

Hypothesis:

a) It is hypothesized that girls in nuclear, early maturing, and smaller cliques will experience more peer pressure than girls in secondary/peripheral, later maturing, and larger cliques.

Objective 3:

To explore group characteristics associated with dieting behavior, bulimic behavior and body esteem. Clique status (nuclear, secondary, and peripheral), average clique peer pressure (social reinforcement and peer modeling), average age of menarche, and number of group members will be examined as group level variables.

Hypothesis:

a) It is hypothesized that girls in nuclear, high pressure, early maturing, and smaller

cliques will report more dieting and bulimic behavior and lower body esteem.

Objective 4:

To examine the extent to which peer relations and self-perceptions moderate the relationship between being in a high peer pressure group and eating behaviors.

Hypothesis:

a) It is hypothesized that girls with lower general and relational self esteem, more negative peer relations, higher reports of severe teasing, and greater appearance preoccupation will be more likely to report disordered eating when in high peer pressure cliques.

Level of the Individual

Objective 5:

To explore social and relational characteristics linked to perceptions of peer pressure, body esteem, and disordered eating in adolescent girls.

Hypotheses:

a) It is hypothesized that girls who are more popular, leaders, and are involved in close friendships will have higher body esteem, and will report less problematic eating behaviors.

b) It is hypothesized that girls who are reported by peers to be teased about their weight, and those who are socially rejected, will have lower body esteem and will be more likely to engage in problematic eating behaviors.

c) It is hypothesized that girls who report more weight, appearance, and body-shape related teasing will have lower body esteem and engage in problematic eating behaviors.

d) It is hypothesized that girls with higher external selves, lower same and opposite-sex

relational esteem, and higher attributions about the importance of weight and appearance for popularity and dating will have lower body esteem and engage in more problematic eating behaviors.

e) After controlling for maturational, general peer, and social-self variables, it is hypothesized that peer pressure will contribute to body esteem and problematic eating behaviors above and beyond these constructs.

Method

Participants

A total of 876 adolescent girls (M age =14.08, SD=1.23) in grades 7 through 10 were recruited from four English private schools in greater Montreal, Canada. Two of the schools were relatively small (n=68 & n=118 participants), while the other two schools were relatively large (n = 333 & n = 357 participants). The sample of girls represents a middle-upper socioeconomic and multi-cultural group. 61% of fathers and 54% of mothers were reported by their children to have a B.A. or graduate level university degree. The majority of students were from two-parent families; 83% of parents were married, 14% were divorced or separated, and 3% were from "other" family situations (e.g., death of a parent). In three schools, more than 90% of the students attending class participated in the study, while in the smallest school the rate of participation was 82%. In three of the four schools, consent to participate was obtained from both the student and a parent. This was done at the principals' request. In the fourth school (n=357), subjects fourteen years and over were allowed to participate without parental consent.

Procedure

Principals were contacted directly by phone, and were given a brief description of the study. Once approval was attained from the principals, a description of the study was provided to students during class time. Students were asked to bring home a brief letter describing the project, including a consent form to be signed by their parents. Only students with signed parental consent and/or their own consent (see above), were permitted to participate. Subjects who did not wish to participate worked quietly at their desks during the data collection (see Appendix A for letters to principal and parents and consent forms).

The project took place in two phases. The first session took approximately 45 minutes of class time. During the first session, students who agreed to participate completed sociometric nominations (Bukowski & Hoza, 1989), the social network procedure (Cairns et al., 1989), a modified version of the Revised Class Play/Peer Nomination Inventory (Masten, Morison, & Pellegrini,1985; Perry, Kusel, & Perry, 1988), a modified version of the Silencing the Self Scale (Jack & Dill, 1992; Sippola & Bukowski, in prep.), and a general information form, which included self-reported teasing (adapted version of POTS, Thompson et al., 1995). At the end of this session, students' height and weight were measured by the examiner in a private area of the school. During the second session, students completed the remainder of the measures, including the children's version of the Eating Attitudes Test (Maloney, McGuire, & Daniels, 1988), the Revised Body Esteem Scale (Mendelson, Mendelson, & White, in press), the Peer Pressure and Eating Scale (Lieberman & White, unpublished), and the Self-Description

Questionnaire-II (Marsh, 1990). At the end of this session, students were debriefed on the purpose of the study. Subjects were also provided with a phone number in order to speak to an upper level graduate student if they had any concerns about the questionnaires or about their own eating behavior. Verbatim instructions to students are presented in Appendix B.

Measures

Sociometric Measures

1. *Mutual Reciprocated Friendships and Popularity (Bukowski & Hoza, 1989)* (see Appendix C)

In order to assess mutual reciprocated friendships and popularity, participants were asked to indicate the first name and last initial of their best friends in order of preference. Students were permitted to list up to eight friends, and were strongly encouraged to choose friends from within the school. Reciprocated friendship nominations were used to determine friendship closeness based on Bukowski and Hoza's (1989) methodology. Having a best or close friend was defined as a reciprocated nomination within one's top two choices (i.e., 1-1, 1-2, 2-1, 2-2; n=579), having only a distant friend was defined as having a reciprocated nomination greater than one's third choice (i.e., 1-3, 4-7, 3-6; n=239), and friendless was defined as no reciprocated nominations at any level (n=22). *Friendship closeness* was re-coded on a three-point ordinal scale. Participants with a best friend were rated as 2, participants with no best friend who had a distant reciprocated friendship were rated as 1, and participants with no reciprocated friend at either level were rated as 0.

For the friendship pairs analysis (using hierarchical linear modeling), reciprocated friendships were re-computed, allowing for the maximization of first choice (i.e., 1-1) nominations. Since we were interested in examining peer similarity or influence, we felt that the closer the friendship pair, the stronger the influence (Kandal, 1978a). Given the assumption of independence for the statistical analyses used in this study (i.e., HLM), participants were assigned to only one friendship pair. Based on these restrictions, 208 participants were involved in 1-1 reciprocated friendship pairs, 58 pairs were involved in 1-2 or 2-2 reciprocations, and 75 pairs were involved in reciprocations greater than their third choice (total n=341 pairs). Since we were interested in similarity among close friendship pairs, only reciprocations within the top 2 choices were used for the friendship pair analysis (n=266 pairs).

Evidence has been provided to suggest that a reciprocated friendship nomination is a valid measure of friendship. For example, research has demonstrated that reciprocated friendships in adolescence are more stable and are of higher quality than unreciprocated friendships (Bukowski & Newcomb, 1984; Bukowski et al., 1987). Also, correlational evidence has demonstrated that children who have reciprocated friendships are more socially competent than are children who do not (Howes, 1989).

Friendship nominations were also used to calculate average popularity, based on the average number of positive nominations each child received from their classmates, standardized within class and school. This methodology is also a valid measure of popularity (see Bukowski & Hoza, 1989 for a review)

2. *Social Networks (Cairns et al., 1989)* (see Appendix C)

Social networks were determined using the composite social-cognitive map (SCM) procedure designed by Cairns et al. (1989). This measure has two purposes; it provides an efficient and flexible method for identifying clusters of individuals and connections among persons, and it defines the centrality or peripherality of persons and groups in the social network that is *not* dependent on popularity. Cairns et al., (1989) suggest that most sociometric methods are limited because they require a high participation rate (e.g., >90%), they often impose limits on the minimal network size (e.g., >20), they are usually two-dimensional representations of multi-dimensional clusters, and they usually ignore the distance between participants. The SCM procedure resolves some of these issues by allowing a small number of participants to define the groups, by allowing groups to range in size from 2-25, by examining multi-dimensional clusters, and by computing the centrality of members within each group and the centrality of groups within the network. Further, since SCM requires participants to describe the network as a whole, it allows the researcher to examine *actual* social configurations, rather than children's friendship *preferences* or *desires* (which is the basis of many sociometric procedures; e.g., see Bukowski & Hoza, 1989 for review) (Kindermann, 1998).

In the current sample, social networks were identified using a free recall task where participants were asked about the students in a definable network unit (i.e., their grade). Participants were given a complete grade list and were asked to list the students who hang around together a lot. Subsequently, they were asked to list any students who do not hang around with a particular group. Participants were also asked to place

themselves in all of the groups that they hang out with (if they were in a group at all). Although this procedure has generally been conducted in a face-to-face individual interview, it has also been used effectively in a small group administration (4-12 girls per group, 9-15 years of age) (see Edwards, 1990, cited in Cairns et al., 1989). It is important to note that not all students have the same social knowledge, social attributions, or recall/memory, which may lead to omissions of cliques and omissions of individuals within cliques. However, since *all* participants completed this measure (rather than a small group of girls), it is likely that the descriptions of the cliques within each grade are accurate and complete.

A specially designed computer program (MORENO, developed by H.K. Juliusson) was used to create cliques based on co-occurrence matrices (the frequencies with which participants are reported to belong to the same group), which provide the source for further analyses (i.e., based on conditional probabilities). The MORENO program a) displays the raw recall matrix, b) computes the co-occurrence and correlation matrices, and c) reorganizes the participant-by-participant correlation matrix to provide an approximation of individual membership into cliques (based on least squares) (Cairns et al., 1989). In the current sample, 122 cliques were created ranging in size from 2-19. One clique was dropped because only one of four members had sufficient data, leaving a total of 121 cliques. In addition, 22 girls were identified as isolates and were removed from all clique analyses (see Appendix C for frequency of cliques of different member size).

The MORENO program was also used to calculate the centrality and peripherality of both members and cliques. Frequency of nomination was used to calculate centrality based on the assumption that participants and cliques that are named most often are more central in the network. Participants were identified as nuclear (high status), secondary (medium status) or peripheral (low status) members of the clique to which they belonged, and cliques were identified as having nuclear, secondary or peripheral status within the network.

In order to operationalize group status, two dummy variables were created. The first dummy variable compared secondary status groups to all other groups (i.e., nuclear and peripheral). In this case, secondary status was assigned a value of 1 and all other cases had a value of 0. The second dummy variable compared peripheral groups to all other groups (i.e., nuclear & secondary). In this case, peripheral status was assigned a value of 1 and all other cases had a value of 0. Thus, the reference category was nuclear. In the current sample, 49 cliques were classified as nuclear, 45 cliques were classified as secondary and 27 cliques were classified as peripheral.

In order to operationalize individual status, two other dummy variables were computed. The first dummy variable compared secondary status members to all other members (i.e., nuclear and peripheral). In this case, secondary status was assigned a value of 1 and all other cases had a value of 0. The second dummy variable compared peripheral members to all other members (i.e., nuclear & secondary). In this case, peripheral status was assigned a value of 1 and all other cases had a value of 0. Thus, the reference

category was nuclear. In the current sample, 604 girls were classified as nuclear, 183 girls were classified as secondary and 67 girls were classified as peripheral members.

Because the statistical procedures used in this study required independence of groups, no participant was assigned to more than one clique. Individuals identified as members in more than one clique were assigned to the clique in which they had the highest individual status (i.e., nuclear, followed by secondary, followed by peripheral). If they had equal individual status in both cliques, clique status was used as a criterion. That is, participants were assigned to the highest status clique (i.e., nuclear, followed by secondary, followed by peripheral). If clique and individual status were parallel, it was decided that participants would be assigned to the smaller of the two groups. These criteria were based on the assumption that more central groups and participants are more cohesive, and thus may have a greater influence on their peers. In the current sample, eighty participants were members in multiple groups (9%). Using the criteria listed above, 25 cliques lost one member, 10 cliques lost two members, 4 cliques lost three members, 3 cliques lost five members, and 1 clique lost eight members. In addition, participants were provided with a complete grade list and were asked to assign *all* grade members into cliques, whether or not they were participants in the study. Therefore, non-participants ($\underline{n}$=62) were dropped from their respective cliques ($\underline{n}$=38) leaving a total of 854 (from 916) clique members (93%). Twenty-three cliques lost one member, 10 cliques lost two members, 1 clique lost three members, and 4 cliques lost four members.

It is important to note that when "number of group members" was used as a variable in the analyses, the original number of members (i.e., including the non-

participants) was used. We felt that this was more reflective of the actual clique size, even though some of the members did not participate. Also, Paxton et al. (1999) removed all dyads from their clique analyses since they felt that dyads functioned differently from groups of three or more. However, in the current study, "number of group members" was not a significant predictor variable in any of the analyses, and therefore, dyadic cliques (n=5) were not removed.

Cairns et al. (1998) provide a summary of ten studies which have used this procedure, in addition to information regarding its reliability and validity. In general, this measure has been shown to demonstrate concurrent, predictive, and construct validity. For example, research has demonstrated that adolescent composite social cognitive maps are linked with independent measures of social organization, affiliation (e.g., by gender, race) and network centrality (e.g., leadership, popularity). In addition, longitudinal evidence has demonstrated high predictive validity of social clusters over time. Research has also indicated that this measure is reliable. First, the proportion of agreement on the inclusion of members in social networks is quite high. Second, there seems to be moderate stability in cluster composition over a 3-12 week period, with centrality and peripherality remaining stable over longer periods. Thus, this measure is useful for the assessment of social clusters in adolescence.

Eating Behavior and Body Satisfaction Measures

1. *General Information and BMI* (see Appendix D)

Subjects completed a general information form regarding their current dieting status, dieting history, perception of their weight status, their parents' and peers'

perceptions of their weight status, and their parents' highest level of education. In addition, subjects were asked their age of menarche and age of first date (scores ranged from 1 {<10 years} to 10 {>14 years}). Research has shown that adolescent girls report their age of menarche accurately (e.g., Brooks-Gunn, Warren, Rosso, & Gargiulo, 1987). Height and weight measurements were taken with subjects fully clothed with their shoes off. Each subject was weighed on an electronic scale with a digital read out. Standard wall-height measurements were taken with a measuring tape.

Body Mass Index (BMI), a weight/height ratio (kilogram/metres^2), was calculated as an indirect measure of adiposity recognized in the obesity and eating disorders literature. BMI values ranged from 14.01 to 42.24 ($\underline{M}$ = 21.14, $\underline{SD}$ = 3.63), which represents a wide range of weight status, from very underweight to obese. In the current study, the mean BMIs for each age group were comparable with those presented by Rosner, Prineas, Loggie, and Daniels (1998) for American adolescent girls between the ages of 12 and 17. Their research was based on nine large epidemiologic studies, and included 66,722 children between the ages of 5 to 17. The distribution tables for BMI outlined in their paper are used by pediatricians and hospital settings within the Montreal area (personal contact, MCH nutritionist).

2. *Children's Version of the Eating Attitude Test; (CHEAT) (Maloney et al., 1988)* (see Appendix E)

Eating behaviors were assessed using the children's version of the Eating Attitudes Test (CHEAT). This is a modified version of the Eating Attitudes Test (EAT-26, Garner & Garfinkel, 1979), a 26-item self-report inventory that measures dieting behaviors, food

behaviors, food preoccupation, anorexia, bulimia and concerns about being overweight. Respondents are asked to rate the frequency of each item on a 6-point scale ranging from always to never. For each item, the most symptomatic response receives a score of 3, the next most symptomatic receives a score of 2, and the next 1. The remaining 3 choices receive a score of 0. The EAT-26 measures disordered eating on a continuous scale with scores (EAT-total) ranging from 0-78. Higher scores reflect more disordered eating. This measure is also used categorically; adult patients with scores greater than 30 are considered to be anorexic (Garner and Garfinkel, 1979), whereas for children (ages 8 to 13), a cut off of 20 is used (Maloney et al., 1988). Items on the EAT-26 cluster into 3 subscales including; *Dieting* (e.g., I am scared about being overweight), *Bulimia/Food Preoccupation* (e.g., I have gone on eating binges where I feel that I might not be able to stop), and *Oral Control* (e.g., I cut my food into small pieces). In the current study, when the subscales were analyzed separately, the 6-point scoring system was retained in order to allow for greater variability. When examining the group level variable (i.e., anorexic vs. normal), the 0-3 scoring system was used, with a cutoff of 25 (i.e., between the adult and child cutoff). The EAT-26 has demonstrated predictive validity as well as reliability (Garner, Garfinkel, & Olmstead, 1983). For example, the EAT-26 is able to discriminate between normal dieters and individuals with obesity, anorexia and bulimia (Garner, Garfinkel, & O'Shaughnessy, 1985). Also, Garner, Olmstead, Bohr, and Garfinkel (1982) found high reliability (internal consistency) of the EAT-26 (α= .90) in a sample of anorexics.

The youngest age group on which the EAT has been used in a published study was a sample of 12-year-old girls (Wells, Coop, Gabb, & Pears, 1985). However, some authors argue that the EAT-26 may be difficult for younger children to understand (Maloney et al., 1988). Given the difficult terminology, the EAT-26 was modified for children by substituting difficult words with simpler synonyms. The children's version of the EAT also consists of 26 items, is administered in the same format, and includes the same three subscales. In a sample of 318 students between the ages of 8-13, Maloney et al. (1988) demonstrated a test-retest correlation of .81 ($\underline{n} = 68$) on the CHEAT, with a consistent pattern across grades. The measure was also found to be quite reliable in this age group, with a Chronbach's alpha of .76 ($\underline{N} = 318$), again with a consistent pattern across ages. In addition, 7% of children scored in the anorexic range, which is comparable to rates found for the EAT in adult populations (Garner & Garfinkel, 1979). In the present sample, the Chronbach's alphas for dieting, bulimia ,and oral control were .91, .76, & .61, respectively.

3. Revised Body Esteem Scale (Mendelson, Mendelson, & White, in press) (see Appendix F)

Adolescents' attitudes about their appearance and body was assessed using the Revised Body Esteem Scale (BES). This 23-item measure conceptualizes body esteem as a multi-dimensional construct consisting of three subscales including, *Appearance* (e.g., I am pretty happy about the way I look), *Weight* (e.g., I really like what I weigh), and *Attributions* (e.g., Other people make fun of the way I look). Subjects are asked to rate how often they agree with each item on a 5-point Likert scale, ranging from never to

always. This scale has been validated on both child and adolescent samples, and has shown good reliability and validity (Mendelson, White, & Mendelson, 1996). For example, the Body Esteem Scale has demonstrated good internal consistency (α = .74 - .77 for weight esteem, α = .85 - .87 for appearance esteem) in two large samples, and has shown moderate stability over a 2-year period (Mendelson et al., 1996). In addition, the appearance esteem scale has been linked with self esteem appearance on the Harter Self Perception Profile (r=.73), indicating good construct validity. Finally, Mendelson et al., 1996 found that overweight children and adolescents had lower scores on both body esteem subscales, particularly on weight esteem, and only weight esteem was related to actual weight. Because in the current study a more extensive attribution scale was employed, only the appearance and weight esteem subscales of the BES were included. Both subscales were found to be reliable with Chronbach's alphas of .93 & .95, respectively. However, given the high correlation between appearance and weight esteem (r=.74), these variables were combined for the majority of the analyses.

4. The Peer Pressure and Eating Scale (Lieberman & White, unpublished measure) (see Appendix G)

Given the paucity of measures examining the association between peer relations and eating behavior, the author of this study developed a measure to examine the influence of peers on eating behaviors and eating attitudes in adolescence. This 36-item measure was developed from an extensive review of the theoretical literature in this area, and through informal interviews with young adolescent girls in the Montreal area. Subjects rated items on a 6-point Likert scale ranging from never true to always true. The measure

comprises three subscales including; 1. *Peer Modeling* (8 items; Chronbach's alpha = .64), 2. *Social reinforcement* (11 items; Chronbach's alpha = .76) and 5. *Peer Attributions* (8 items; Chronbach's alpha = .90), in addition to several filler items (see Appendix G for subscale items and correlations). It is important to note that when the peer modeling and the social reinforcement subscales are combined, the Chronbach's alpha increases to .78 (r=.51). However, since we conceptualized social reinforcement and peer modeling as two different mechanisms, and we were interested in their differential predictions, the subscales were left separate for all analyses. This measure was pilot tested on several adolescent girls before it was administered for our study, and modifications in wording and items were made based on their suggestions.

5. *Self-Reported Teasing (adapted version of Thompson et al., 1995)* (see Appendix D)

Self-reported teasing was assessed using four YES/NO questions about the presence of teasing (i.e., weight, body-shape, appearance, and general teasing), in addition to the impact of the teasing on the subject's feelings using a four-point rating scale ranging from "really upset me" to "did not upset me at all." This measure is based on questions used by Fabian & Thompson (1989). However, unlike Fabian & Thompson (1989), our questions focused on teasing by peers, rather than teasing in general, and we assessed teasing related to weight, body-shape, appearance and general competence, rather than just weight. Also, these authors ask about the frequency of teasing that occurred in the past, while we are asking if they have *ever* been teased, allowing for the assessment of both current and past teasing. Although Thompson, Fabian, Moulton, Dunn, and Altabe (1991) have created an 18-item self-report measure (PARTS; Physical Appearance

Related Teasing Scale) to examine Weight/Size teasing and General Appearance teasing, the measure was primarily designed for overweight adults who are asked to retrospectively report about the way they were teased in their childhood (e.g., "When you were a child did people make jokes about you being too big?") This measure seemed inappropriate for our sample.

In order to maintain our entire sample in the teasing analyses (i.e., rather than *only* those who were teased), self-reported teasing was re-coded into two dummy variables for each type of teasing. The first dummy variable compared girls who were *teased* and *upset* by the teasing, to girls who were *teased* and *not upset*, and girls who were *not teased* and *not upset*. In this case being teased and upset was assigned a value of 1 and all other cases had a value of 0. The second dummy variable compared girls who were *teased* and *not upset*, to girls who were *not teased* and *not upset* and girls who were *teased* and *upset*. In this case, being teased and not upset was assigned a value of 1 and all other cases were assigned a value of 0. Thus, the reference category was girls who were *not* teased and *not* upset by the teasing. Upset by the teasing was defined as those who reported that the teasing "really or somewhat upset them," and not upset by the teasing was defined as girls who reported that the teasing "upset them a little or not at all."

6. *Teasing: Peer Report (Masten et al., 1985; Perry et al., 1988; Crick, 1991)* (see Appendix H)

Peer-reported teasing was assessed using a modified version of the Revised Class Play (Masten et al., 1985). This technique requires participants to circle the name of one student in their grade who fits a particular behavioral descriptor. This measure consists of

three subscales including, *Leadership* (e.g., someone who everyone likes to be with), *Social Isolation* (e.g., someone who is often left out), and *Aggression* (e.g., someone who is too bossy). Only the leadership and social isolation subscales were used in the present study. The Class Play has demonstrated high internal consistency and has shown moderate stability over a 17-month period, despite changes in grade and peer group composition (Masten et al., 1985). In the present study, the Chronbach's alphas for the leadership and isolation subscales were .82 and .78, respectively. In order to assess general teasing, several items from Perry et al.'s (1988) victimization subscale (e.g., someone who people make fun of, gets called names by others, people do mean things to), and a modification of Crick's (1991) relational aggression subscale (e.g., people talk behind their back, is ignored by others, is often chosen last for sports) were included. In the present study, the Chronbach's alpha for the general teasing subscale was .87. In addition, several items were added by the author (e.g., someone who is teased because of the way they look, is overly concerned with their appearance, feels that looks are really important, is really good looking, is teased about being overweight, is teased about being too thin), in order to assess weight and appearance related teasing. Due to their relatively high inter-correlation, teasing about appearance, general teasing, and social isolation were combined to form a social rejection subscale ($\alpha = .84$).

Other Measures

1. Self Esteem; Self-Description Questionnaire-II (Marsh, 1990) (see Appendix I)

Self esteem was assessed using the SDQ-II. This measure was specifically designed for use with students in grades 7-10, based on Shavelson, Hubner, and Stanton's

(1976) theoretical model which conceptualizes self esteem as a multi-dimensional construct. Although the measure consists of 102 items and 11 scales, only 4 subscales were administered to our sample. These included *Opposite-sex relations* (e.g., "I get a lot of attention from members of the opposite sex"), *Same-sex relations* (e.g., "I make friends easily with members of my own sex"), *General Self* (e.g., "Most things I do, I do well"), and *Physical Ability* (e.g., "I can run a long way without stopping"). The Parental Relations, Physical Appearance, General School, Emotional Stability, Honesty-Trustworthiness, Math and Verbal self-concept subscales were *not* used for this study. Items were rated on a 6-point Likert scale ranging from false to true. Scores are based on the adolescents' self-ratings on 8-10 items, half of which are negatively worded to disrupt positive response biases. The SDQ-II measure shows high reliability, with Chronbach's alphas for the subscales ranging from .83 to .91, and a modest average correlation between them ($\underline{r}$=.18). In terms of construct validity, research has shown that responses to the SDQ-II are related to other variables including sex, age, academic achievement in particular subject areas, and responses on other self-concept measures (Marsh, 1990). Also, the subscales have good face validity. In the present sample, Chronbach's alphas ranged from .86 to .93, indicating good reliability.

1. *Silencing the Self Scale (Jack & Dill, 1992, adapted for adolescents by Sippola & Bukowski, in preparation)* (see Appendix J)

The Silencing the Self Scale (STSS) was originally developed by Jack & Dill (1992) to assess gender-specific cognitive schemas associated with depression in women. The scale is derived from a model of female depression which suggests that in order to

create and maintain safe, intimate relationships, women often silence certain thoughts, feelings, and actions, contributing to a "loss of self." This measure was recently adapted by Sippola and Bukowski (in preparation) for a pre-adolescent population. These authors re-worded the items to assess relationships with friends, rather than with significant partners. This adapted 26-item measure consists of four subscales assessing adolescents' cognitive schemas of their relationships with peers. These include; a) *Externalized self perception;* judging the self by external standards (e.g., "I tend to judge myself by how I think my friends see me") b) *Silencing the self* ; inhibiting self-expression and action to avoid conflict and possible loss of friendship (e.g., "I think its better to keep my feelings to myself when they conflict with my friends") and c) *Divided self* ; presenting an outer compliant self while the inner self grows angry and hostile (e.g., "In order for my friends to like me, I cannot reveal certain things about myself') and d) *Care as self-sacrifice;* securing friendships by putting the needs of others before the needs of the self (e.g., "Caring means putting the other person's needs in front of my own.") The care as self-sacrifice subscale was as not administered to our sample. Items were rated on a 5-point Likert scale ranging from strongly disagree to strongly agree. For the purpose of this study, we were most interested in the "externalized self-perception" subscale because we felt that it was most relevant to peer influence. However, the "silent-self" and "divided-self" subscales were thought to reflect social anxiety, and therefore, were analyzed as risk factors for the development of problematic eating behavior in high peer pressure groups. Based on results from a preliminary study in a sample of 12- and 13-year-old girls and boys, Sippola & Bukowski (in preparation) demonstrated that the STSS was positively

correlated with self esteem for girls, but not for boys. Also, Chronbach's alphas for the STSS subscales ranged from .79-.83. In the present study, Chronbach's alphas were .73 for the external self subscale, .82 for the divided self subscale, and .79 for the silent self subscale.

Data Preparation

The raw data from the questionnaires were entered twice, each entry by a different person. The two files were compared using a Word Perfect comparison program and all discrepancies were corrected. Seven participants completed the first part, but were unable to complete the second part. These participants were included in the study. Listwise deletion occurred for missing data.

In general, most of the measures were significantly positively or negatively skewed (see Table 1 for means, SD, and skewness). All significantly skewed variables (i.e., skew >5 in large samples) were transformed (square root) and analyses were performed on both the transformed and untransformed scores. Results were comparable and thus the raw scores are presented. The assumptions of normality and homogeneity of variance were verified for all analyses. There were no multivariate outliers identified through inspection of the Mahalanobis distances. Bivariate scatterplots of residuals suggested normality and linear relations among variables. No multicollinearity was found for any pair of variables in the analyses as indicated by the correlation matrixes. For the regression analyses, predictors demonstrated small to moderate correlations with the criterion.

Results

Approach to Data Analysis

Data analyses for this study are presented in four sections: (1) descriptive data and control comparisons across schools, age groups, and weight groups (2) an evaluation of peer group processes (i.e., clique data) and their association with eating behaviors and body esteem (3) an evaluation of associations between eating behaviors, peer nominations, and self perceptions in best friendship pairs (4) an exploration of social factors which are associated with eating behaviors, body esteem, and disordered eating at the level of the individual. For each component, different statistical methodologies were used as described below.

Descriptive Data and Control Comparisons

The descriptive data consist of a summary of the self-reported general information data, and are presented in the form of percentages. According to data obtained from the background information sheet, 10% (n=86) of the sample reported that they are currently on a diet to lose weight, 4% (n=37) reported that they are currently eating less to maintain a recent weight loss, 51% (n=441) reported that they watch what they eat but are not currently on a diet, and 34% (n=294) reported that they are not dieting. Thus, although only 14% of girls reported dieting, half of the girls in our sample are concerned with what they eat. For dieting history, 45% (n=389) of the sample reported that they have never dieted, 29% (n=244) of the sample reported that they have attempted to lose weight through dieting once or twice, 19% (n=161) of the sample reported that they have tried to lose weight more than once or twice over the past year, while 7% (n=62) reported that

they are chronically dieting to lose weight. Sixty-five percent of older girls and 54% of younger girls reported that they had begun dating, and 98% of older girls and 78% of younger girls reported that they had their first period.

In regard to perception of current weight by self, peers, and parents, the percentages of underweight, overweight and average weight are shown in Table 2. It is interesting to note that few of the girls perceived themselves as underweight, but more reported that their parents and friends perceived them as underweight. Conversely, more girls perceived themselves as overweight than reported perceptions of being overweight by peers and parents. In the present sample, approximately 14.2% (n=124) of girls would be considered underweight and 14.2% (n=124) of girls would be considered overweight, based on 15th and 85th percentile cutoff scores for each age group. Thus, it seems that girls' perceptions of their parents views may be the most accurate for being overweight and underweight.

Mean comparisons across schools. In order to ascertain whether there was a relatively homogenous sample selection across schools, between-school univariate and multivariate analyses of variance were conducted on the constructs measured. Given the large sample size and the exploratory nature of the descriptive statistics, a stringent significance criterion was used (i.e., $p<.005$). The means and standard deviations for the four schools are presented in Appendix K.

Results indicated that there were no differences between schools on BMI (F (3, 861) = 3.92, $p>.005$), silencing the self (Wilks's $\lambda = .98$, F (9, 2098) = 2.28, $p>.005$),

Table 1

Means, Standard Deviations, and Skewness for Variables Included in the Current Study

Variables and Measures	Mean	SD	Skewness (Skew/SE Skew)
SELF-DESCRIPTION QUESTIONNAIRE-II			
Same Sex Relational Esteem	5.12	0.75	-17.8
Opposite-sex Relational Esteem	4.24	1.09	-5.84
Physical Ability Esteem	4.72	0.95	-11.1
General Self Esteem	4.95	0.85	-16.1
PEER PRESSURE AND EATING SCALE			
Social Reinforcement	2.03	0.62	11.8
Peer Modeling	3.56	0.77	-0.04
Peer Attributions	2.59	1.17	7.66
EATING ATTITUDES TEST			
Dieting	2.64	1.03	7.86
Bulimia/Food Preoccupation	1.86	0.74	20.3
Oral Control	2.46	0.72	12.1

SILENCING THE SELF			
Silent Self	2.62	0.73	4.66
Divided Self	2.03	0.88	10.4
External Self	2.31	0.75	5.47
BODY ESTEEM SCALE			
Weight Esteem	2.18	1.10	-2.72
Appearance Esteem	2.11	0.90	-3.10
Weight and Appearance	2.14	0.85	-3.76
GENERAL			
Average Popularity	4.88	2.56	6.02
Body Mass Index	21.14	3.63	14.70

Table 2

Perceptions of Weight for Self, Parents, and Peers

	Underweight		Overweight		Average Weight	
Self	6%	(n=54)	32%	(n=272)	62%	(n=532)
Parents	12%	(n=105)	14%	(n=120)	74%	(n=635)
Peers	17%	(n=146)	5%	(n=43)	78%	(n=671)

body esteem (Wilks's $\lambda = .98$, $F(6, 1726) = 2.62$, $p > .005$), and self-reported teasing (Wilks's $\lambda = .98$, $F(12, 2246) = 1.21$, $p > .005$). On the other hand, significant between-school differences were found for the following measures: age of menarche ($F(3, 761) = 4.36$, $p < .005$), age of first date ($F(3, 511) = 10.38$, $p < .0001$), self esteem (Wilks's $\lambda = .95$, $F(12, 2278) = 3.83$, $p < .0001$, $R^2 = 0.02$), eating behaviors (Wilks's $\lambda = .97$, $F(9, 2100) = 3.27$, $p < .001$, $R^2 = .01$), and peer pressure (Wilks's $\lambda = .94$, $F(9, 2100) = 5.98$, $p < .0001$, $R^2 = 0.03$). However, as indicated above, the index of redundancy (or the estimated eta-squared) was found to be less than 3% of the explained variance. Given that this represents 'small' effect size according to Keppel (1982), these differences were not further interpreted. Also, the pattern of differences shifted according to the variable measured, indicating that no one school was systematically different from the others on all variables.

Developmental comparisons between younger and older adolescent girls. In order to examine mean differences between younger and older adolescent girls, one-way (between grade) univariate (ANOVA) and multivariate analyses of variance (MANOVA) were conducted. Age was categorized into younger (grades 7 & 8; M age=13.05, SD=0.74; n=420) and older (grades 9 & 10; M age=15.05 , SD=.70, n= 456) in order to explore developmental differences. Again, a strict significance criteria of $p < .005$ was used. The means and standard deviations for each age group are presented in Appendix K.

Both age of menarche ($F(1, 763) = 20.46$, $p < .0001$) and age of first date ($F(1, 513) = 67.17$, $p < .0001$) differed as a function of age, with younger girls reporting an

earlier average age of first date and average age of menarche than older girls. For measures of self-perception, significant age differences were found for self esteem (Wilks's λ =.97, $\underline{F}$ (4, 863) = 7.29, $\underline{p}$<.0001), with only physical ability esteem (univariate $\underline{F}$ (1, 866) = 21.53, $\underline{p}$<.0001, $\underline{R^2}$ = .02) contributing uniquely. Physical ability esteem was reported to be higher in younger girls than in older girls. It is interesting to note that in the current study, same and opposite-sex relational esteem, in addition to general self esteem were consistent across age. Significant grade differences were also reported for silencing the self (Wilks's λ =.97, $\underline{F}$ (3, 864) = 10.42, $\underline{p}$<.001), with younger adolescent girls scoring higher on the silent self subscale (univariate $\underline{F}$ (1, 866) = 12.64, $\underline{p}$<.001, $\underline{R^2}$ =.01) than older girls. No unique grade differences were found for external self or divided self.

For the weight and appearance related variables, significant age differences were found for eating behaviors (Wilks's λ =.97, $\underline{F}$ (3, 865) = 10.34, $\underline{p}$<.0001), with unique variance for bulimia (univariate $\underline{F}$ (1, 867) = 19.22, $\underline{p}$<.0001, $\underline{R^2}$ = .02), but not for dieting and oral control. The results suggest that girls as young as 11 and 12 years of age are reporting the same degree of dieting and food restriction as their older peers. The increase of bulimic behavior with age is consistent with previous reports (Attie, Brooks-Gunn, & Petersen, 1990). The multivariate analysis for grade differences in body esteem was not significant, indicating that younger girls are just as likely as older girls to be unhappy with their appearance and their weight.

Finally, for the peer related variables, there were no significant multivariate grade differences found for self-reported teasing about weight and appearance. Nonetheless,

significant multivariate age differences were found for the peer pressure measure (Wilks's λ =.98, F (3, 865) = 6.70, p<.0001), though none of the individual subscales contributed uniquely. Using our stricter criteria, social reinforcement, peer modeling, and peer attributions did not differ across the age groups, accounting for less than 1% of variance. Class play nominations and average popularity were not analyzed because variables were standardized within class and school.

Mean comparison of variables across weight groups. In order to examine differences among related variables as a function of weight group, one-way between-subjects univariate (ANOVA) and multivariate analyses of variance (MANOVA) were conducted on the constructs measured, using a p<.005 significance level. For the descriptive analyses, BMI was divided into three weight groups; average weight (n=628), underweight (<15th percentile; n=124), and overweight (>85th percentile; n=124) as a function of age. These figures were based on data from the first National Health and Nutrition survey (Must, Dallal, & Dietz, 1991) where a BMI index over the 85th percentile is considered to represent increased risk of overweight and obesity. Thus, in order to examine variables associated with extreme obesity and extreme thinness, weight was analyzed categorically. For all other analyses in this study BMI is used as a control variable, and therefore is examined as a continuous measure. Post hoc Tukey HSD tests were used to ascertain the exact nature of the weight group differences. The means and standard deviations for the three weight groups are presented in Appendix K.

For age of menarche, results indicated that age of first period differed significantly as a function of weight group (F (2, 762) = 22.98, p<.0001), with Tukey HSD tests

indicating that underweight girls reported a later age of menarche than both overweight ($p<.0001$) and average weight ($p<.0001$) girls. Age of first date did not differ as a function of weight group. Also, for self-perception measures, neither self esteem nor silencing the self differed as a function of weight.

For eating behaviors, significant weight group differences were found (Wilks's λ = .80, F (6, 1728) = 35.00, $p<.001$), with unique variance for dieting (univariate F (2, 866) = 40.78, $p<.001$, $R^2 = 0.09$), and oral control (univariate F (2, 866) = 24.32, $p<.001$, R^2 = 0.05). Post hoc Tukey HSD tests indicated that overweight girls reported more dieting than underweight ($p<.001$) and average weight ($p<.001$) girls, and average weight girls reported more dieting than underweight girls ($p<.001$). Further, underweight girls scored higher in oral control than both average ($p<.001$) and overweight girls ($p<.001$), and average weight girls scored higher in oral control than overweight girls ($p<.001$). Bulimia did not differ as a function of weight group, which is consistent with literature suggesting that the weight of bulimic individuals is variable, ranging from underweight to overweight (Yates, 1989).

Significant weight group differences were also found for body esteem (Wilks's λ = .81, F (4, 1728) = 47.80, $p<.0001$), with unique variance for weight esteem (univariate F (2, 865) = 75.25, $p<.0001$, $R^2 = 0.15$) and appearance esteem (univariate F (2, 865) = 10.09, $p<.0001$, $R^2 = 0.02$). Post hoc Tukey HSD tests indicated that overweight girls reported significantly lower appearance esteem and weight esteem than average ($p<.0001$) and underweight girls ($p<.0001$), and average weight girls reported lower weight esteem than underweight girls ($p<.0001$).

For the peer related variables, significant weight group differences were found for self-reported teasing (Wilks's λ =.93, F (8, 1700) = 8.42, p<.0001), with Tukey HSD post-hoc analyses indicating that overweight girls reported more weight-related teasing than both average and underweight girls (univariate F (2,853) = 29.75, p<.001, R^2 = 0.07). No unique weight group differences were found for self-reported appearance teasing, body-shape teasing, and general teasing.

Significant weight group differences were also found on the class play peer nomination measure (Wilks's λ =.58, F (12, 1556) = 39.96, p<.0001), with unique variance for social rejection (univariate F (2, 783) =18.22, p<.0001, R^2 = 0.04), overweight teasing (univariate F (2, 783) = 147.52, p<.0001, R^2 = 0.27), underweight teasing (univariate F (2, 783) = 92.34, p<.0001, R^2 = 0.19), and good looks (univariate F (2, 783) = 6.37, p<.005, R^2 = .02). Post hoc Tukey HSD tests indicated that overweight girls scored higher on peer rejection than average (p<.0001) and underweight (p<.0001) girls, were teased more about being overweight than average (p<.0001) and underweight (p<.0001) girls, and received less "good looking" nominations than average weight girls (p<.001). Underweight girls were teased more about being underweight than both overweight (p<.0001) and average weight (p<.0001) girls. It is interesting to note that no significant weight group differences were found for involvement in a reciprocated friendship, popularity, and leadership.

Weight group differences were also found for peer pressure (Wilks's λ =.93, F (6, 1728) = 11.19, p<.0001), with unique variance for peer attributions about the importance of weight and appearance for popularity and dating (univariate F (2, 866) = 30.34,

$p<.0001$, $R^2 = 0.07$). Post hoc Tukey HSD analyses showed that girls in the overweight group scored higher on peer attributions than both average ($p<.0001$) and underweight ($p<.0001$) girls, and average weight girls had higher attributions than underweight ($p<.001$) girls. Peer modeling and social reinforcement did not contribute uniquely.

Clique and Friendship Pair Analyses.

General introduction to hierarchical linear modeling. Given the hierarchical nature of the current data set (e.g., nesting of individuals within cliques & pairs), peer group processes and relationships among friendship pairs were examined using hierarchical linear modeling procedures (HLM). In this data set, 854 girls were nested within121 cliques (range = 2-19), and 532 girls were nested within 266 close friendship pairs. Using HLM, we were able to decompose the variance in the outcome measure that was ascribed to between-group variation and within-group variation. In turn, we were able to look at the utility of specific predictor variables in explaining variance at each level.

In extant research, the structure of the data set is often ignored, contributing to problems with standard errors. For example, most of the widely used statistical methodologies (e.g., multiple regression analysis, MANOVA, etc.) tend to ignore the group or pair and focus on the level of the individual, or ignore the individual and focus only on the level of the group or pair. This leads to the loss of valuable information, and at the same time, ignores possible cross-level interactions. While some methodologies suggest the creation of multiple dummy variables to incorporate the nesting of individuals within groups, this strategy does not allow the researcher to take clustering into account and does not allow for the specification of random effects. In the current data set, this

approach would be quite cumbersome (i.e., 121 cliques would require the creation of 120 dummy variables), and again, would not allow for appropriate estimates of standard errors. HLM provides a good alternative to begin to resolve some the difficulties inherent in previous statistical methods.

Hierarchical linear modeling is an extension of the general linear model used in traditional multiple regression analysis which allows for the analysis of hierarchically structured, unbalanced data (i.e., lower level observations are nested within higher levels; e.g., students nested within schools, schools nested within school boards). These models are thought to be more accurate for hierarchically nested data since they are based on more realistic assumptions that allow for intra-class correlation and random coefficients (Kreft, 1996). The assumption of independence of observations is not made, and the relationships in the data are not fixed over contexts, but allowed to differ. That is, unlike traditional statistical methodologies, hierarchical linear modeling allows assumptions of constant slopes and intercepts to be relaxed. Therefore, multilevel modeling allows researchers to test the adequacy of a variety of models that include "fixed effects" (constant slopes and intercepts across persons) "random effects" (random slopes and intercepts across persons), and "non-randomly varying effects" (systematic variations in intercepts and/or slopes explained by fixed predictor variables; Steiger, Gauvin, Jabalpurwala, Seguin, & Stotland, 1999). Further, in traditional regression analysis, standard errors tend to be estimated as too low if intra-class correlation is present (i.e., the higher the intra-class correlation, the higher the underestimation of standard errors).

Hierarchical linear models allow for larger standard errors, and are thus more conservative.

Bryk and Raudenbush (1992) outline several advantages of hierarchical linear models (HLM) over other statistical methodologies. First, they report that HLM helps to reduce *aggregation bias*; when a variable has different meanings and effects depending on the organizational level at which it is observed at (e.g., average dieting of clique may have an effect on body esteem above and beyond the individual's own level of dieting). HLM allows the user to observe relationships between variables at two different levels (Level-1 and Level-2) which helps to resolve this bias (Bryk & Raudenbush, 1992). Second, it helps to reduce *misestimated standard errors* which occur when we fail to take into account the dependence among individual responses within the same group (i.e., because of shared experiences within the group or because of the reasons that individuals initially joined the group). HLM solves this problem by incorporating a unique random effect for each organizational unit (Bryk & Raudenbush, 1992). Finally, HLM helps to reduce *heterogeneity of regression*; when relationships between individual characteristics and outcomes vary across groups. HLM resolves this issue by allowing the researcher to estimate a separate set of regression coefficients for each group, and then to model variation among the groups in their sets of coefficients as multivariate outcomes explained by group factors (Bryk & Raudenbush, 1992). In the current application, we used the HLM/2L, version 4.01 software (Bryk, Raudenbush, & Congdon, 1996) and associated model nomenclature (Bryk & Raudenbush, 1992) to test our hypotheses and models.

Statistical model. In hierarchical data sets, the variability in the outcome measure can be attributed to both within (Level-1) and between (Level-2) group variations. In the current sample, Level-1 represents the individual. At Level-1, the predictors represent the characteristics of the individual (e.g., age, BMI). Level-2 represents the group. At Level-2, the regression coefficients for each group are seen as outcome variables that are hypothesized to depend on specific group characteristics. In statistical terms, this is represented by a Level-1 (within-group) and a Level-2 (between-group) model (Bryk & Raudenbush, 1992):

Level-1 model: $Y_{ij} = \beta_{0j} + \beta_{1j} X_{ij} + e_{ij}$

Level-2 model: $\beta_{0j} = \gamma_{00} + \gamma_{01} W_j + \mu_{0j}$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} W_j + \mu_{1j}$$

As outlined by authors such as Gauvin, Rejeski, and Reboussin (in press), Duncan, Jones, and Moon (1998), Steiger et al. (1999), Goldstein (1987), and Bryk and Raudenbush (1992), in the Level-1 model, the outcome measure recorded for subject i in group j is represented as Y_{ij} and is related to a set of subject specific predictors X_{ij} by the coefficients β_{0j} and β_{1j}. The random effect for the Level-1 model is defined as e_{ij}. It is assumed to be normally distributed with a mean of 0 and variance σ^2. The regression coefficient at Level-1 may be fixed or may vary randomly across participants. Any between-group variation in the regression coefficients is modeled at Level-2 as a function of individual level predictors W_j and random effects μ_{0j} and μ_{1j}. These random effects are assumed to be normally distributed with means of 0 and variances of τ_{00} and τ_{11}. For a model with only randomly varying intercepts, the percentage of the residual variance

attributed to between-group variation (i.e., intra-class correlation, ρ) is given by $\tau_{00}/(\tau_{00} + \sigma^2)$. This is also referred to as the variance component ratio, where σ^2 is the within-group variance component and τ_{00} is the between-group variance component. The fixed effects (γ_{00}, γ_{01}) are the average intercepts and slopes across all participants or the contribution of a Level-2 predictor. In HLM, continuous predictor variables can be centered, giving 0 a specific meaning. Group mean centering involves centering around the mean of a specific Level-2 cluster, and grand mean centering involves centering around the mean of all groups combined. In the current analysis, grand mean centering was used for both Level-1 and Level-2 predictors.

General approach to HLM data analysis. In order to compute hierarchical linear models, Bryk and Raudenbush (1992) suggest a "step-up" model building strategy (pp.197-229), starting at the bottom of the hierarchy and moving to the top. Using this strategy, the proportion of total variance between and within groups is first computed for each outcome variable (i.e., intra-class correlations) without entering any Level-1 or Level-2 predictors. This allows for the decomposition of variance. Next, Level-1 variables of interest are entered into the model as either random or as fixed. Since Level-1 variables serve as covariates or control variables, failure to specify a Level-1 variable can lead to bias in the estimation of Level-2 predictors of the intercept. Only significant Level-1 variables are retained for the final model. Finally, Level-2 variables are entered into the model as moderators of the intercept, or as moderators of the Level-1 variables, depending on the question of interest. Only statistically significant variables are retained

for the final model. In the current study, restricted maximum likelihood was used for all analyses.

Approach to current data analysis. The first question addressed the association of eating behaviors, body esteem, and variables related to these constructs (e.g., peer pressure, BMI) among clique members and close friendship pairs. In order to answer this question, we computed the proportion of total variance between cliques/pairs compared with the proportion of variance within cliques/pairs (i.e., intra-class correlations) for all variables of interest using HLM. As mentioned previously, to compute intra-class correlations, hierarchical linear models are run with *only* the random intercept (i.e., the outcome variable) entered into the equation. The percentage of variance attributed to between-group variation (i.e., intra-class correlation, ρ) is defined as $\tau_{00}/(\tau_{00} + \sigma^2)$, where σ^2 is the within-group variance component and τ_{00} is the between-group variance component. This also allows us to determine the significance of the random variability by examining the p value of the χ^2.

Associations among clique members. In the current sample, results indicate that approximately 1/4 of the total variability in social reinforcement, peer modeling, age of first date, and social rejection is at the clique (group) level, whereas the remainder is at the level of the individual. Moderate intra-class correlations were found for age of menarche, popularity, and self esteem (ICCs > .10 and < .20), while lower intra-class correlations were found for eating behaviors, body esteem, peer attributions, peer nominations of appearance preoccupation, good looks and leadership, self-reported severe general teasing, and silencing the self (ICCs <.10). It is particularly interesting that non-significant

intra-class correlations were found for weight and appearance-related teasing (both self-report and peer nominations). Table 3 summarizes the within-group variance (σ^2), between-group variance (τ_{00}), and the intra-class correlations(ρ).

Associations among friendship pairs. Results indicate that a high proportion (>25%) of the total variability in social reinforcement, peer modeling, popularity, social rejection, and age of first date is between friendship pairs, while the remainder is within pairs. Moderate-high proportions of total between-pair variability (ICCs >.15 and < .25) were found for BMI, age of menarche, dieting behavior, self esteem, weight esteem, appearance nominations, and self-reported severe body-shape teasing. Results indicated moderate intra-class correlations (ICCs >.10 and < .15) for peer attributions about the importance of weight and appearance for popularity and dating, appearance-esteem, peer nominations of appearance preoccupation and leadership, severe appearance-related teasing, divided self, external self and bulimia. Non-significant ICCs were found for teasing about weight (both peer and self-report), self-reported general teasing (severe and non-severe), less severe body-shape teasing, silent self, and oral control. Table 4 presents within-group variance (σ^2), between-group variance (τ_{00}), and the intra-class correlations (ρ). Also, see Appendix L for comparison of clique and friendship pair intra-class correlations.

Group characteristics associated with peer pressure. The second question addressed what group level characteristics are associated with perceived social reinforcement and peer modeling, after controlling for individual characteristics. More specifically, the interest was in the association of clique size, clique status (secondary &

Table 3

Intra-class Correlations for Cliques

Variable	Sigma^2 (σ^2)	Tau (τ_{00})	ICC (ρ)
General Information			
Body mass index*	12.4	0.73	0.06
Age of menarche*	3.59	0.48	0.12
Age of first date*	5.12	1.39	0.21
Peer Pressure and Eating Scale			
Social reinforcement*	0.30	0.10	0.24
Peer modeling*	0.44	0.16	0.26
Peer attributions*	1.26	0.11	0.08
Self esteem			
Same sex relations esteem*	0.49	0.06	0.11
Opposite-sex relations esteem*	1.03	0.15	0.13
Physical ability esteem*	0.81	0.10	0.11
General self esteem*	0.64	0.07	0.10
Silencing the Self			
External self*	0.53	0.03	0.05
Divided self *	0.73	0.05	0.06
Silent self*	0.50	0.02	0.04
Body Esteem Scale			
Weight esteem*	1.13	0.09	0.07

Variable	Sigma^2 (σ^2)	Tau (τ_{00})	ICC (ρ)
Appearance esteem*	0.74	0.07	0.08
Children's Eating Attitudes Test			
Dieting*	0.97	0.09	0.08
Bulimia and food preoccupation*	0.52	0.04	0.06
Oral control	0.52	0.01	0.02
Peer Nominations			
Average popularity*	0.84	0.12	0.13
Peer nominated leadership*	0.87	0.09	0.09
Peer nominated rejection*	0.55	0.15	0.21
Peer nominated appearance preoccupation*	0.88	0.06	0.07
Peer nominated good looking*	0.90	0.04	0.04
Peer nominated overweight tease	0.98	0	0
Peer nominated underweight tease	0.98	0	0
Self-Reported Teasing			
Self reported severe weight tease	0.19	0	0.02
Less severe weight related teasing	0.13	0	0.01
Self reported severe body tease	0.20	0	0.02
Less severe body related teasing	0.20	0	0
Self reported severe appearance tease	0.19	0.01	0.03
Less severe appearance related tease	0.13	0	0
Self-reported severe general tease*	0.16	0.01	0.04
Less severe general teasing	0.14	0	0.02

* χ^2 test examining the presence of random variability

Table 4

Intra-class Correlations for Friendship Pairs

Variable	Sigma^2 (σ^2)	Tau (τ_{00})	ICC (ρ)
General Information			
Body mass index*	9.12	2.92	0.24
Average age of menarche*	3.24	0.71	0.18
Age of first date*	3.94	2.68	0.40
Peer Pressure and Eating Scale			
Social reinforcement*	0.27	0.10	0.27
Peer modeling*	0.39	0.21	0.35
Peer attributions*	1.23	0.15	0.11
Self esteem			
Same sex relations esteem*	0.39	0.09	0.18
Opposite-sex relations esteem*	0.95	0.25	0.21
Physical ability esteem*	0.69	0.22	0.24
General self esteem*	0.58	0.13	0.22
Silencing the Self			
External self*	0.51	0.06	0.10
Divided self*	0.71	0.07	0.10
Silent self	0.50	0.04	0.07
Body Esteem			
Weight esteem*	0.99	0.24	0.20

Variable	Sigma^2 (σ^2)	Tau (τ_{00})	ICC (ρ)
Appearance esteem*	0.70	0.11	0.13
Children's Eating Attitudes Test			
Dieting*	0.88	0.24	0.22
Bulimia and food preoccupation*	0.51	0.04	0.10
Oral control	0.51	0.01	0
Peer Nominations			
Average popularity*	0.41	0.39	0.49
Peer nominated leadership*	0.97	0.15	0.13
Peer nominated rejection*	0.19	0.11	0.37
Peer nominated appearance preoccupation*	0.92	0.15	0.14
Peer nominated good looking*	0.95	0.22	0.19
Peer nominated overweight tease	0.58	0.02	0.03
Peer nominated underweight tease	0.93	0.01	0.02
Self Reported Teasing			
Self reported severe weight tease	0.19	0	0.01
Less severe weight related teasing	0.12	0.01	0.04
Self reported severe body teasing*	0.16	0.04	0.21
Less severe body related teasing	0.20	0.01	0.03
Self reported severe appearance tease*	0.17	0.02	0.12
Less severe appearance related tease*	0.11	0.01	0.08
Self reported severe general tease	0.16	0	0.01
Less severe general teasing	0.14	0	0.02

* χ^2 test examining the presence of random variability

peripheral vs. nuclear), and clique maturational level (i.e., early vs. late development) with perceptions of social reinforcement and peer modeling (Level-2). We were also interested in the relation of individual status (secondary & peripheral vs. nuclear) with perceptions of social reinforcement and peer modeling (Level-1). Given the significant age and BMI effects reported previously, age and BMI were entered into the model as Level-1 control variables.

Social reinforcement. Following the "step-up" procedure (Bryk & Raudenbush, 1992), in the first model, no Level-1 or Level-2 predictor variables were included. In this model, the Level-1 intercept (i.e., social reinforcement) was allowed to vary randomly. Results of this first model showed that the average level of perceived social reinforcement for all subjects was 2.04 (range = 1 to 6), indicating a low-moderate level. The chi-square value associated with the variance component suggested significant between-clique variation in average level of social reinforcement, χ^2 (119) = 311.11, $p<.0001$. Again, computation of the intra-class correlation suggested that 24% of the variance in social reinforcement was between cliques.

Next, BMI and age (control variables) were entered into the model separately at Level-1 as fixed variables. Examination of the fixed effects indicated that BMI was statistically significant ($\gamma_{10} = 0.01$, $p<.05$), while age was not significant. BMI accounted for 1% of within-group variance in social reinforcement, with participants who had higher BMIs reporting higher levels of perceived social reinforcement. Next, the individual status dummy variables were entered into the model as fixed effects but were not significant. Thus, only BMI was retained in the model at Level-1.

Subsequently, the Level-2 variables of interest were entered into the model. First, the group status dummy variables were entered as moderators of the intercept. Results indicated that both secondary (γ_{01} = -0.18, p<.05) and peripheral (γ_{02} = -0.27, p<.01) cliques differed from nuclear cliques in their perceptions of social reinforcement, with girls in nuclear cliques reporting higher social reinforcement than the two comparison groups. These variables accounted for 9.4% of between-group variance in individual perceptions of social reinforcement. Hypothesis testing was conducted to see if peripheral and secondary cliques differed from each other. Results were not significant, indicating that although both secondary and peripheral cliques differ from nuclear cliques in perceptions of social reinforcement, they do not differ significantly from one another. Number of group members and average age of menarche were not significant predictors, and therefore, were not included in the model. The final model included BMI at Level-1 and group status at Level-2 (see Table 5 for estimated parameters and Figure 1 for visual display).

Peer modeling. For perceptions of peer modeling, a parallel "step-up" procedure was used. The average level of peer modeling for all subjects was 3.54, slightly higher than the social reinforcement variable. The chi-square value associated with the between-group variance component was statistically significant, χ^2 (119) = 363.16, p<.0001. Again, computation of the intra-class correlation suggested that 26% of the variance in peer modeling is between cliques.

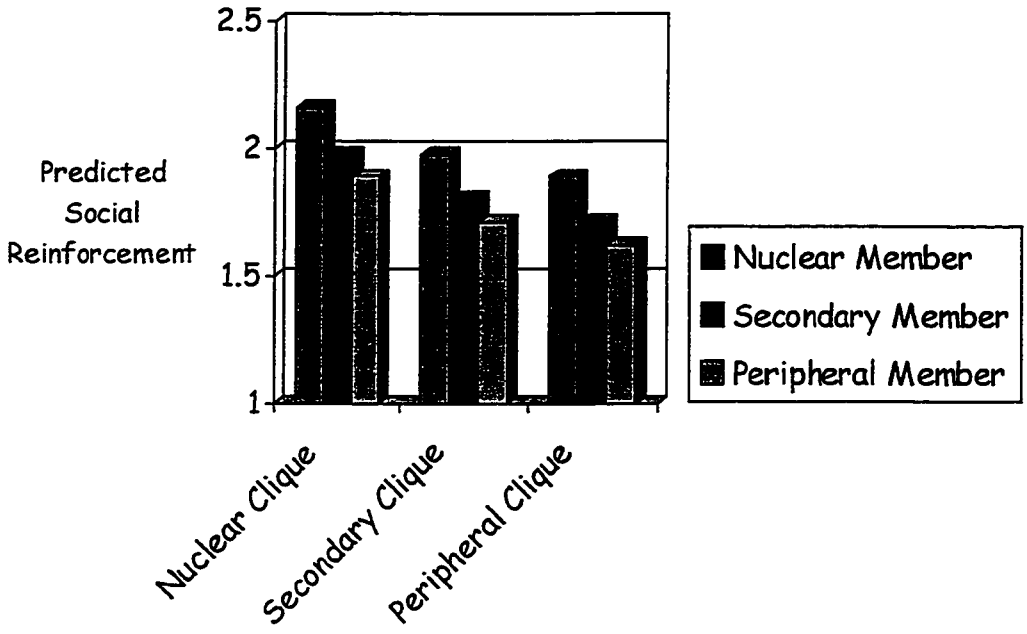
Next, the Level-1 control variables were entered into the model separately (i.e., BMI & age) as fixed variables. Examination of the fixed effects indicated that neither

Table 5

Results of Final Model for BMI (Level-1) and Group Status (Level-2) for Social Reinforcement

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept	μ_{0j}	0.08	0.28	296.43	.000
	r_{ij}	0.29	0.54		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.16	0.05	42.07	.000
Secondary Status	γ_{01}	-0.18	0.08	-2.34	.05
Peripheral Status	γ_{02}	-0.27	0.09	-2.90	.01
BMI slope	γ_{10}	0.02	0.01	2.57	.01

Figure 1. Predicted social reinforcement as a function of group status (illustrated for a person with average BMI).


Predicted
Social
Reinforcement
2.5
2
1.5
1
Nuclear Clique
Secondary Clique
Peripheral Clique
Nuclear Member
Secondary Member
Peripheral Member

BMI nor age were significant predictors of perceived peer modeling. Next, the individual status dummy variables were entered into the model as fixed effects. The secondary status dummy variable was found to be significant (γ_{10} = -0.15, $p<.05$), indicating that nuclear status girls reported higher levels of peer modeling than secondary status girls. Peripheral status girls did not differ significantly from nuclear status girls. Individual status accounted for 1% of within-group variance in peer modeling.

Subsequently, the clique status dummy variables were entered into the model. As with social reinforcement, results indicated that both secondary (γ_{01} = -0.26, $p<.01$) and peripheral (γ_{02} = -0.35, $p<.01$) clique status significantly predicted individual perceptions of peer modeling. Results showed that in higher status cliques, reports of peer modeling were higher. The secondary and peripheral status dummy variables accounted for 12.1% of between-clique variance, after controlling for individual status. Post-hoc hypothesis testing did not reveal significant differences between secondary and peripheral cliques. Number of group members and average age of menarche did not significantly predict individual perceptions of peer modeling, and thus were not included in the model. The final model included dummy coded individual status at Level-1 and dummy coded group status at Level-2 (see Table 6 for estimated parameters and Figure 2 for a visual display).

Group Characteristics Associated with Eating Behaviors and Body Esteem

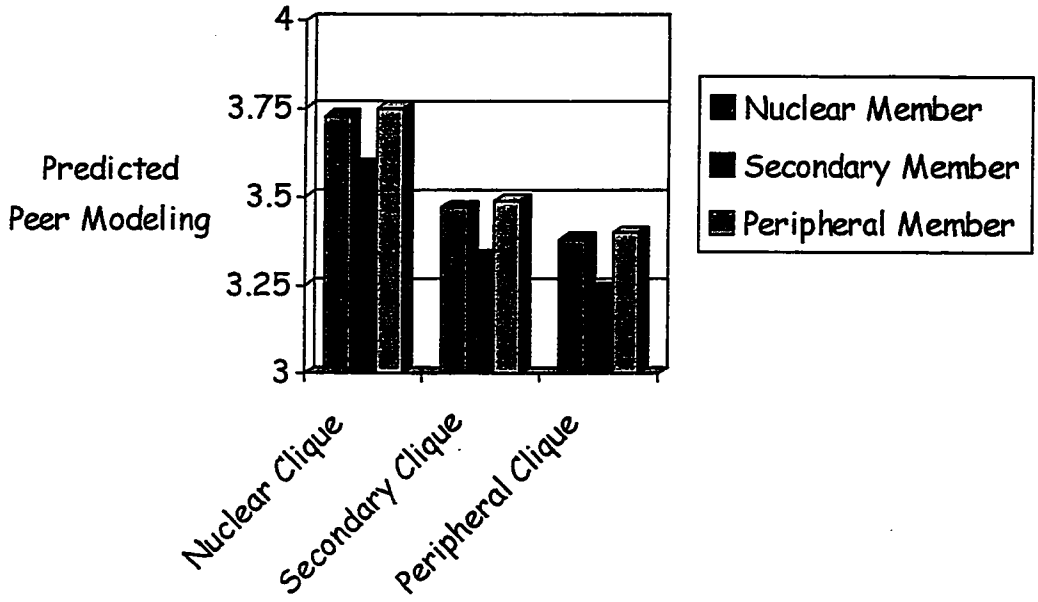
The third question addressed what group level characteristics are associated with dieting, bulimia, and body esteem, after controlling for individual characteristics. Again, we were interested in the association of clique size, clique status, and level of maturation in relation to eating behaviors and body esteem. In addition, the influence of

Table 6

Results of Final Model for Individual Status (Level-1) and Group Status (Level-2) for Peer Modeling

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept	μ_{0j}	0.13	0.37	325.32	.000
	r_{ij}	0.45	0.67		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	3.73	0.07	55.03	.000
Secondary Clique	γ_{01}	-0.26	0.10	-2.68	.01
Peripheral Clique	γ_{02}	-0.35	0.12	-2.98	.01
Secondary Individual	γ_{10}	-0.14	0.07	-2.10	.05
Peripheral Individual	γ_{20}	0.02	0.10	0.26	.80

Figure 2. Predicted peer modeling as a function of group status.


Predicted
Peer Modeling
4
3.75
3.5
3.25
3
Nuclear Clique
Secondary Clique
Peripheral Clique
Nuclear Member
Secondary Member
Peripheral Member

average clique perceptions of social reinforcement and peer modeling on eating behaviors and body esteem were also of interest.

Dieting. Following the "step-up" procedure, in the first model, no Level-1 or Level-2 predictor variables were included. In this model, the Level-1 intercept (i.e., dieting) was allowed to vary randomly. Results of this first model showed that the average level of dieting for all subjects was 2.67 (range 1-6), indicating a low-moderate level of dieting. The chi-square value associated with the variance component suggested significant between-clique variation in average level of dieting, χ^2 (119) = 165.49, $p<.01$. Again, computation of the intra-class correlation suggested that 8% of the variance in dieting was between cliques.

Next, the Level-1 control variables (i.e., BMI & age) were entered into the model as fixed effects. Results showed that BMI was statistically significant ($\gamma_{10} = 0.09$, $p<.0001$), while age was not. BMI accounted for 13.25% of the within-group variance in dieting. Next, the individual status dummy variables were entered into the model as fixed effects. Secondary status individuals were significantly different from nuclear status individuals ($\gamma_{20} = -0.25$, $p<.01$), with nuclear status girls reporting more dieting than secondary status girls. The secondary status dummy variable accounted for an additional 1% of within-subject variance after controlling for BMI. Peripheral status did not differ significantly from nuclear status. Thus, BMI and individual status were retained in the model at Level-1.

Subsequently, the Level-2 variables were entered into the model. Results indicated that average social reinforcement ($\gamma_{03} = 0.59$, $p<.0001$), average peer modeling ($\gamma_{02} = 0.31$,

$p<.01$), and average age of menarche ($\gamma_{01} = -0.08$ $p<.05$) were significant predictors of dieting after controlling for individual status and BMI. These three variables accounted for 95.5% of between-group variance in dieting (controlling for Level-1 variables) and eliminated all significant random variance. Post-hoc hypothesis testing revealed that the effects of social reinforcement and peer modeling were of equal strength. Thus, cliques of early maturing girls, and cliques that report higher social reinforcement and higher peer modeling were more likely to have members that reported higher dieting. Clique status and number of clique members were not significant, and therefore, were not included in the model. The final model included BMI and individual status at Level-1, and average age of menarche, average clique social reinforcement and average clique peer modeling at Level-2 (see Table 7 for estimated parameters and Figure 3 for a visual display).

Bulimic behavior and food preoccupation. In the first model, no Level-1 or Level-2 predictor variables were included. As in previous models, the Level-1 intercept (i.e., bulimic behavior) was allowed to vary randomly. Results showed that the average level of bulimia for all subjects was 1.86 (range=1-6), indicating a low level of bulimic behavior within the sample. The chi-square value associated with the variance component suggested significant between-group variation in average level of bulimic behavior, χ^2 (119) = 153.21, $p<.05$. Again, computation of the intra-class correlation suggested that 6% of the variance in bulimic behavior was between cliques.

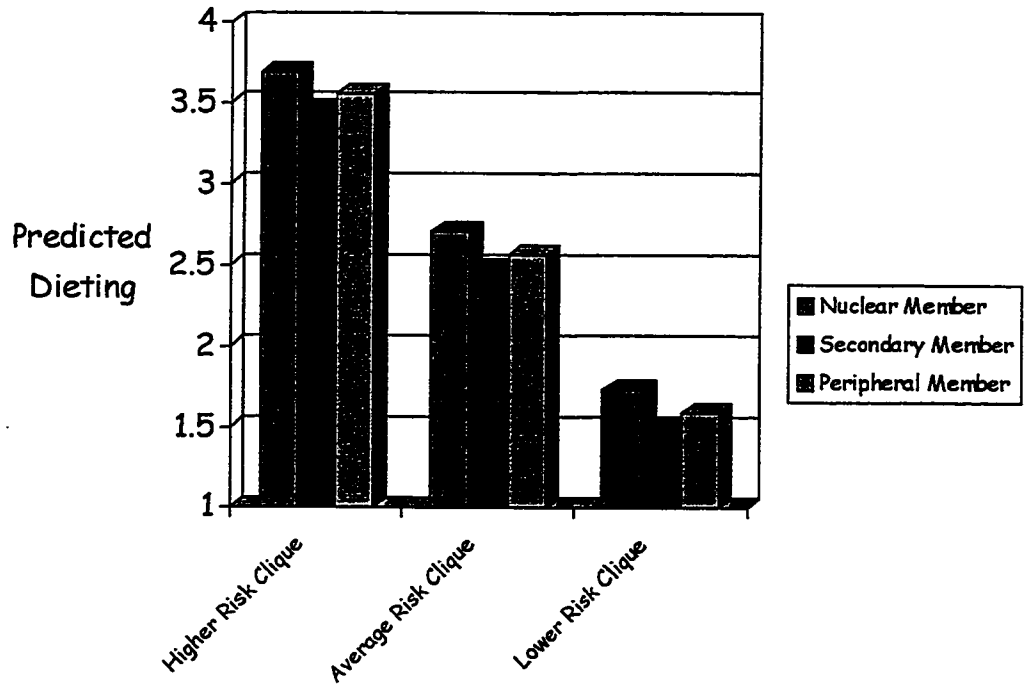
Next, age and BMI were entered into the model separately as fixed variables. Examination of the fixed effects indicated that BMI ($\gamma_{20} = 0.02$, $p<.05$) and age ($\gamma_{10} = 0.06$,

Table 7

Results of Final Model for BMI and Individual Status (Level-1) and Age of Menarche and Peer Pressure (Level-2) for Dieting

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept	μ_{0j}	0.01	0.07	100.15	>.5
	r_{ij}	0.82	0.91		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.71	0.04	65.25	.00
Average Menarche	γ_{01}	-0.08	0.03	-2.19	.05
Peer Modeling	γ_{02}	0.31	0.10	2.98	.01
Social Reinforcement	γ_{03}	0.59	0.14	4.34	.00
BMI Slope	γ_{10}	0.09	0.01	9.98	.00
Secondary Individual	γ_{20}	-0.23	0.08	-2.77	.01
Peripheral Individual	γ_{30}	-0.14	0.12	-1.12	.27

Figure 3. Predicted dieting in higher, average, and lower risk cliques (illustrated for nuclear member of a clique with average BMI).



Higher Risk Group: Cliques with early maturation, high social reinforcement, high peer modeling

Average Risk Group: Cliques with average age of maturation, average social reinforcement, average peer modeling

Lower Risk Group: Cliques with late maturation, low social reinforcement, low peer modeling

$p<.05$) were statistically significant, with overweight girls and older girls reporting higher levels of bulimic behavior than underweight and younger girls. These control variables accounted for 1% of within-group variance in bulimic behavior. Following the control variables, the individual status dummy variables were entered into the model as fixed effects. These variables did not contribute significantly to bulimic behavior. Thus, only BMI and age were retained in the model at Level-1.

Subsequently, the Level-2 variables were entered into the model as moderators of the intercept. Results indicated that average clique social reinforcement ($\gamma_{01} = 0.50$, $p<.0001$), but not average clique peer modeling, predicted the intercept. Girls in high social reinforcement cliques reported more bulimic behavior than girls in low social reinforcement cliques. Social reinforcement accounted for 83.2% of between-group variance in bulimic behavior (after controlling for BMI and age), again eliminating all significant random variation. Clique status, number of clique members, and average age of menarche were entered into the model and were not significant. The final model included BMI and age at Level-1 and social reinforcement at Level-2 (see Table 8 for estimated parameters and Figure 4 for visual display).

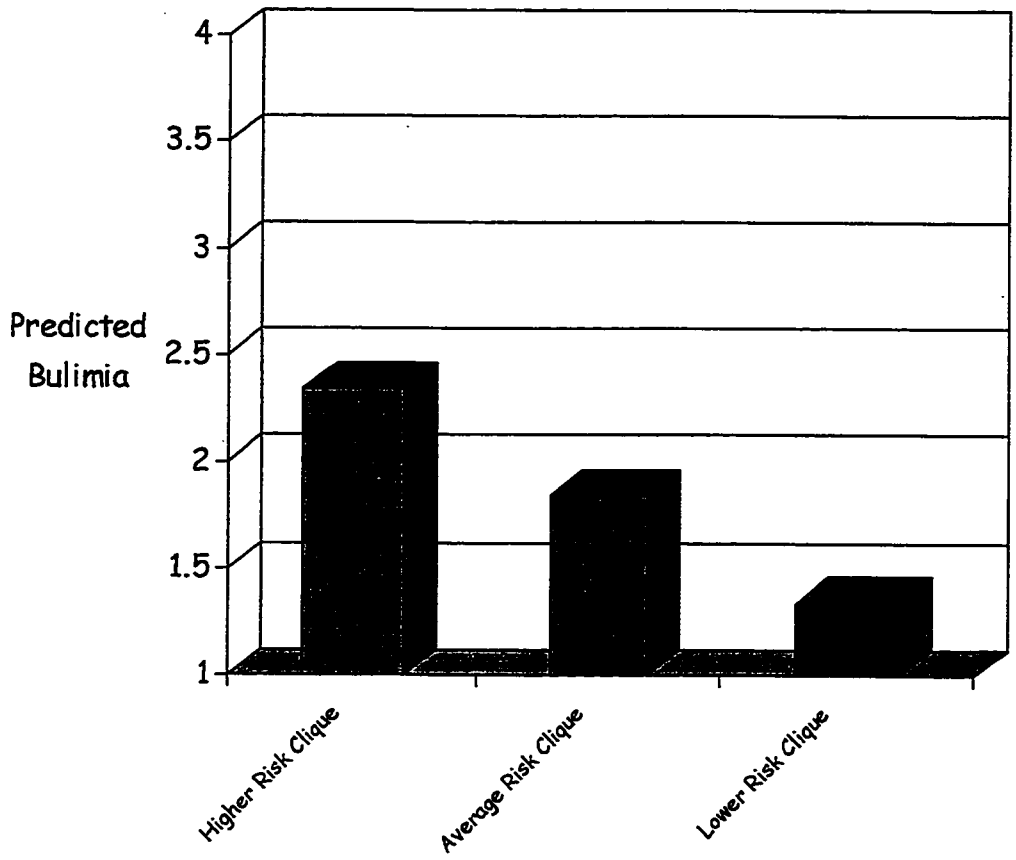
Body esteem. For body esteem, a parallel "step-up" procedure was used. With no Level-1 or Level-2 variables in the model, the average level of body esteem was 2.12. The chi-square value associated with the between-group variance component was statistically significant, $\chi^2 (119) = 182.89$, $p<.0001$. Again, computation of the intra-class correlation suggested that 8% of the variance in body esteem was between cliques.

Table 8

Results of Final Model for BMI and Age (Level-1) and Social Reinforcement (Level-2) for Bulimia

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept	μ_{0j}	0.07	0.01	105.79	>.5
	r_{ij}	0.72	0.51		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	1.84	0.03	65.99	.00
Social Reinforcement	γ_{01}	0.50	0.08	6.48	.00
Age Slope	γ_{10}	0.06	0.02	2.39	.05
BMI Slope	γ_{20}	0.02	0.01	2.31	.05

Figure 4. Predicted bulimia in higher, average and lower social reinforcement cliques (illustrated for nuclear member of a clique with average BMI and average age).


Predicted Bulimia
4
3.5
3
2.5
2
1.5
1
Higher Risk Clique
Average Risk Clique
Lower Risk Clique

Next, the Level-1 control variables were entered into the model separately (i.e., BMI & age) as fixed variables. Examination of the fixed effects indicated that BMI was a significant predictor of body esteem (γ_{01} = -0.08, $p<.0001$), while age was not. As expected, girls with higher BMIs had lower body-esteem, accounting for 2% of the variance. Next, the individual status dummy variables were entered into the model as fixed effects and were found to be non-significant. Thus, only BMI was entered into the model at Level-1.

Subsequently, Level-2 variables were entered into the model separately. Results indicated that only average clique social reinforcement significantly predicted body esteem at Level-2 (γ_{01} = -0.68, $p<.0001$), accounting for 74.5% of between-group variance in body esteem, and eliminating all significant random variance. Average peer modeling, average age of menarche, number of clique members, and clique status did not significantly predict body esteem at Level-2. Thus, BMI was retained for the model at Level-1, and perceived social reinforcement was retained for the model at Level-2 (see Table 9 for estimated parameters).

Individual Level Risk Factors for Problematic Eating Behaviors in High Pressure Groups

The next question explored individual difference variables (Level-1) as potential moderators, or risk factors, for problematic eating behaviors. Specifically, we examined whether girls in high peer pressure groups (i.e., social reinforcement and peer modeling) who had lower self esteem, lower body esteem, were less popular and more isolated, had higher silencing the self scores, and were teased by their peers were at greater risk for disordered eating (i.e., dieting and bulimia). Thus, sets of related Level-1 constructs

Table 9

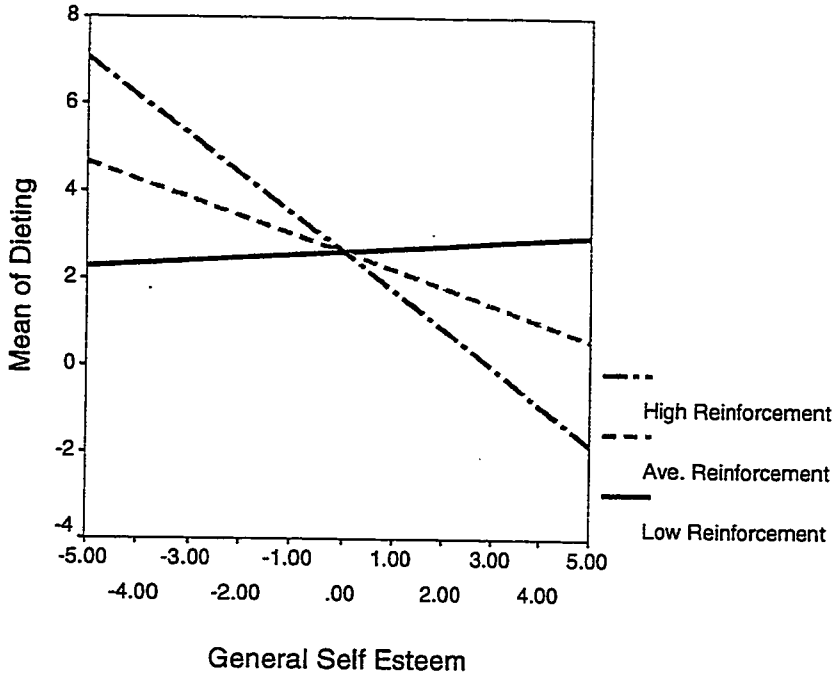
Results of Final Model for BMI (Level-1) and Social Reinforcement (Level-2) for Body Esteem

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept	μ_{0j}	0.12	0.01	137.99	.10
	r_{ij}	0.75	0.56		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.15	0.03	70.12	.000
Social Reinforcement	γ_{01}	-0.68	0.08	-8.03	.000
BMI Slope	γ_{10}	-0.08	0.01	-10.52	.000

were analyzed using five hierarchical linear models, separately for social reinforcement and peer modeling. The following Level-1 variables were entered as fixed effects, after controlling for body mass index; a) self esteem (same and opposite-sex relational, physical ability esteem & general self esteem) b) silencing the self (silent self, divided self, external self) c) body esteem (weight and appearance combined) d) peer nominations (leadership, over and underweight teasing, appearance preoccupation, good looking, social rejection) e) self-reported teasing and associated affect (severe and non-severe weight, body-shape, appearance and general teasing). Perceived social reinforcement and peer modeling were entered into the model at Level-2 as moderators of the Level-1 variables on dieting and bulimia. Again, only significant variables were retained for the final model. In each analysis, the Level-1 intercepts were allowed to vary randomly.

Self esteem. For dieting, results indicated that physical ability esteem ($\gamma_{20} = 0.09$, $p<.05$) and general self esteem ($\gamma_{30} = -0.42$, $p<.0001$) were significant predictors of dieting after controlling for BMI. That is, girls who had higher physical ability esteem and lower general self esteem reported more dieting. Same and opposite-sex relational esteem were not significant predictors of dieting and were dropped from the model. In addition, social reinforcement (but not peer modeling) moderated the effect on dieting for general self esteem ($\gamma_{31} = -0.24$, $p<.05$). That is, in high social reinforcement cliques, girls with lower self esteem reported more dieting. This effect was not apparent in the low reinforcement groups (see Figure 5). For bulimia, only general self esteem significantly predicted bulimic behavior ($\gamma_{20} = -0.30$, $p<.0001$), with girls who had lower self esteem reporting more

Figure 5. Social reinforcement as a moderator of general self esteem in predicting dieting.


8
6
4
2
0
-2
-4
Mean of Dieting
-5.00
-3.00
-1.00
1.00
3.00
5.00
-4.00
-2.00
.00
2.00
4.00
General Self Esteem
High Reinforcement
Ave. Reinforcement
Low Reinforcement

bulimic behavior. All other self esteem variables were dropped from the model. In addition, results showed that general self esteem was moderated by social reinforcement ($\gamma_{21} = -0.19$, $p<.05$) and peer modeling ($\gamma_{21} = -0.12$, $p<.05$) in predicting bulimic behavior. That is, in high social reinforcement cliques, girls who had low general self esteem reported more bulimic behavior. This effect was not apparent in low social reinforcement cliques (see Figure 6). Similarly, for peer modeling, girls in high peer modeling groups with lower general self esteem indicated more bulimic behavior. Again, this effect was not apparent in low peer modeling groups (see Figure 7). Table of final model and estimated parameters are presented in Appendix M.

Silencing the self. Results indicated that only external self significantly predicted dieting behavior ($\gamma_{30} = 0.46$, $p<.0001$), after controlling for BMI. Girls with higher external selves were more likely to diet. In addition, divided self was significantly moderated by peer modeling ($\gamma_{21} = -0.21$, $p<.05$) in predicting dieting behavior, though it did not predict dieting directly. That is, in high peer modeling groups, the higher the divided self, the lower the dieting. In low peer modeling groups, the higher the divided self, the higher the dieting (see Figure 8). No significant moderator effects were found for social reinforcement. For bulimia, silent self ($\gamma_{20} = -0.09$, $p<.05$), divided self ($\gamma_{30} = 0.13$, $p<.0001$), and external self ($\gamma_{40} = 0.28$, $p<.0001$) were significant predictors of bulimic behavior, with girls lower in silent self, higher in divided self, and higher in external self reporting higher levels of bulimic behavior. However, none of these variables were moderated by peer modeling or by social reinforcement. Table of final model including estimated parameters is presented in Appendix M.

Figure 6. Social reinforcement as a moderator of general self esteem in predicting bulimia.

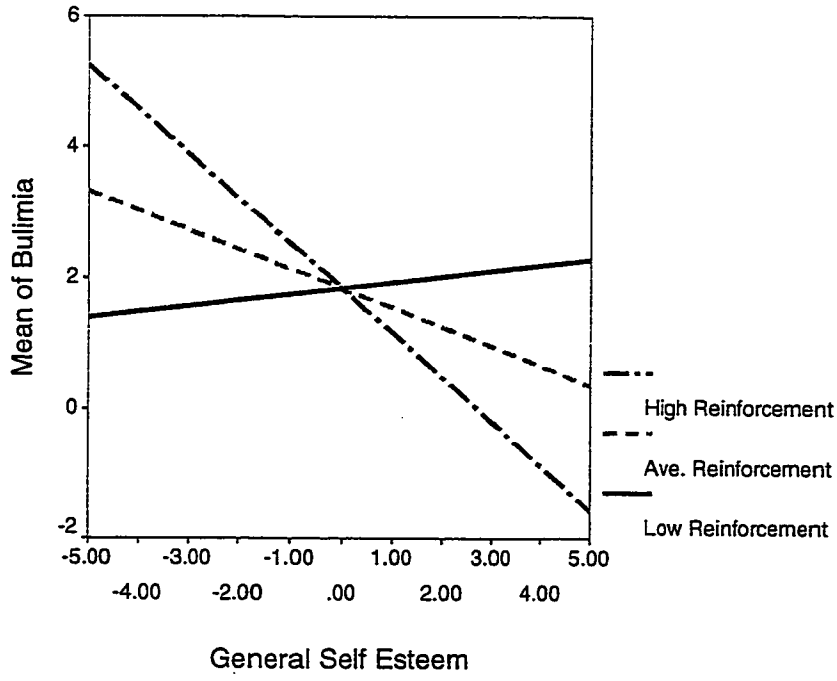

6
4
2
0
-2
Mean of Bulimia
-5.00
-3.00
-1.00
1.00
3.00
5.00
-4.00
-2.00
.00
2.00
4.00
General Self Esteem
High Reinforcement
Ave. Reinforcement
Low Reinforcement

Figure 7. Peer modeling as a moderator of general self esteem in predicting bulimia.

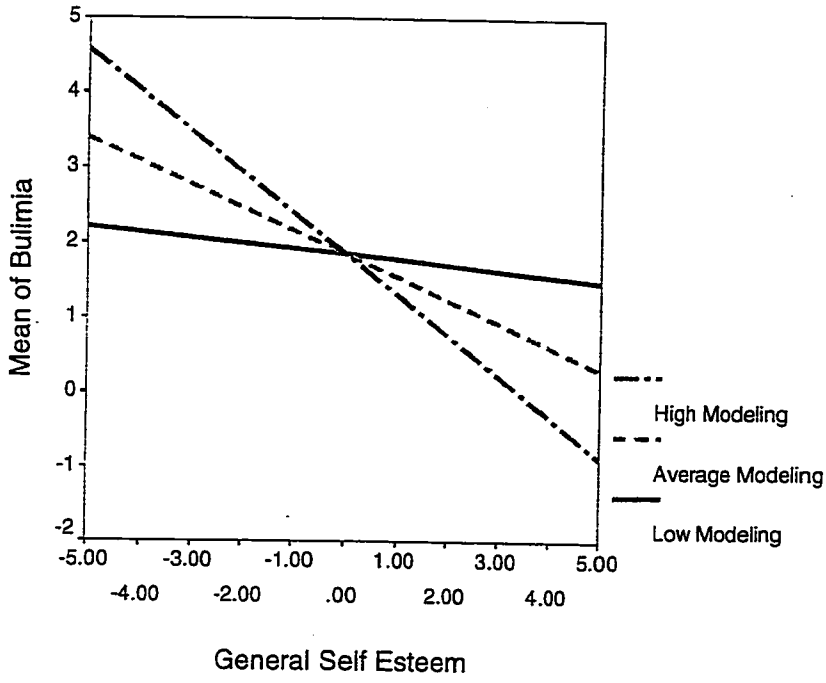
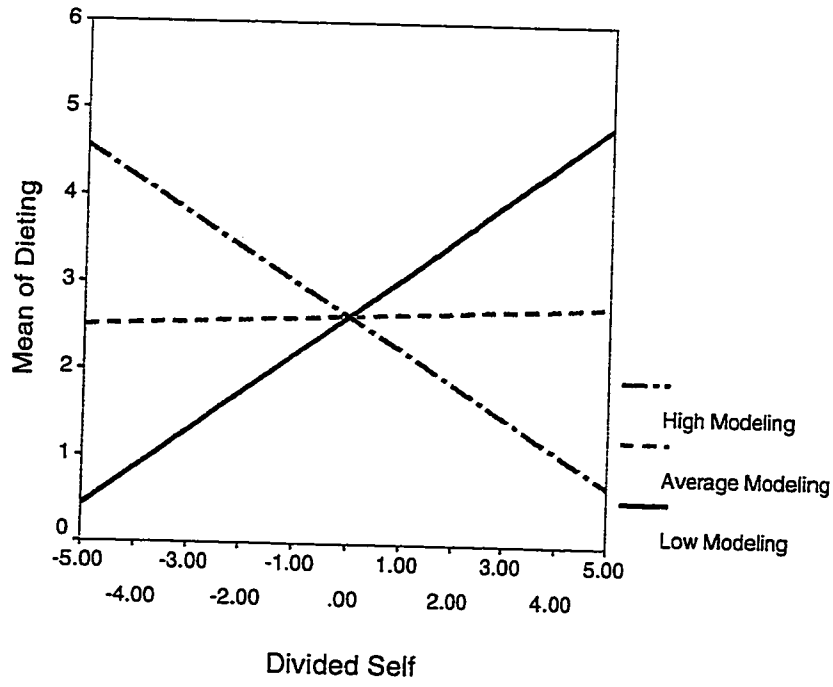

5
4
3
2
1
0
-1
-2
Mean of Bulimia
-5.00
-4.00
-3.00
-2.00
-1.00
.00
1.00
2.00
3.00
4.00
5.00
General Self Esteem
High Modeling
Average Modeling
Low Modeling

Figure 8. Peer modeling as a moderator of divided self in predicting dieting.


6
5
4
3
2
1
0
Mean of Dieting
-5.00
-4.00
-3.00
-2.00
-1.00
.00
1.00
2.00
3.00
4.00
5.00
Divided Self
High Modeling
Average Modeling
Low Modeling

Body esteem. Body esteem was a significant predictor of dieting (γ_{20} = -0.82, p<.0001), with girls with lower body esteem reporting more dieting behavior. In addition, perceptions of peer modeling (γ_{21} =-0.18, p<.01) and social reinforcement (γ_{21} = -0.30, p<.001) were significant moderators of body esteem in predicting dieting behavior. That is, in high social reinforcement cliques, girls with lower body esteem reported more dieting. This interaction was not apparent in the low social reinforcement cliques (see Figure 9). For peer modeling, in all cliques, girls with lower body esteem reported higher levels of dieting. However, this effect was strongest in high modeling cliques and weakest in low modeling cliques (see Figure 10). For bulimia, parallel results were found. Body esteem was a significant predictor of bulimic behavior (γ_{20} = -0.47, p<.0001), and both peer modeling (γ_{21} = -0.22, p<.0001) and social reinforcement (γ_{21} = -0.29, p<.0001) were significant moderators of body esteem in predicting bulimic behavior. In high reinforcement and modeling cliques, girls with lower body esteem reported higher levels of bulimic behavior. Again, these effects were not apparent in the low social reinforcement and modeling cliques (see Figures 11 & 12). The table of the final model including estimated parameters is presented in Appendix M.

Peer nominations. Peer nominations of appearance preoccupation was the only significant predictor of dieting after controlling for BMI, indicating that girls who were nominated by peers as being preoccupied with appearance reported more dieting (γ_{20} = 0.19, p<.0001). All other peer nomination variables were dropped from the model. In addition, appearance preoccupation was moderated by both peer modeling (γ_{21} = 0.16, p<.05) and social reinforcement (γ_{21} = 0.19, p<.001) in predicting dieting behavior.

Figure 9. Social reinforcement as a moderator of body esteem in predicting dieting.

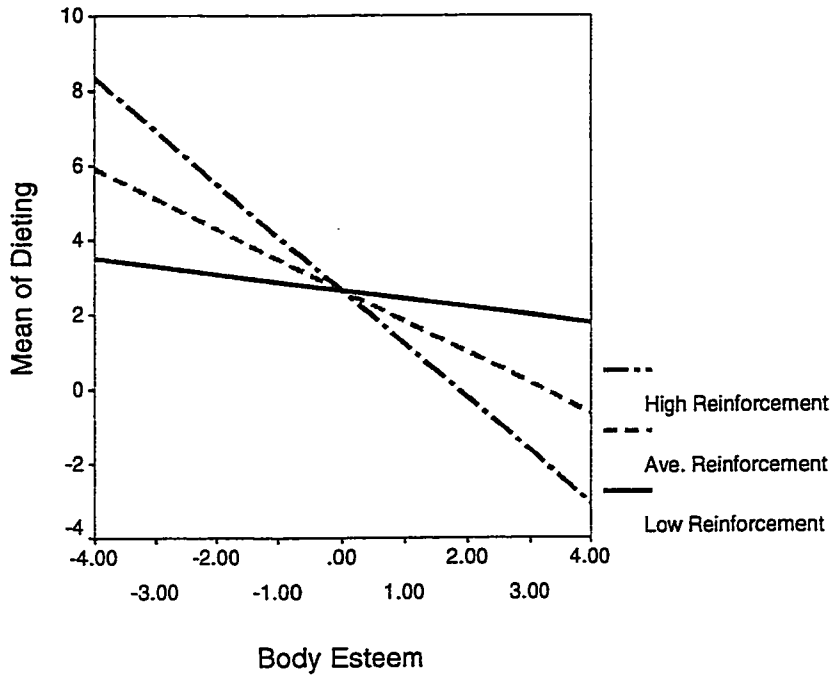

10
8
6
4
2
0
-2
-4
Mean of Dieting
-4.00
-3.00
-2.00
-1.00
.00
1.00
2.00
3.00
4.00
Body Esteem
High Reinforcement
Ave. Reinforcement
Low Reinforcement

Figure 10. Peer modeling as a moderator of body esteem in predicting dieting.

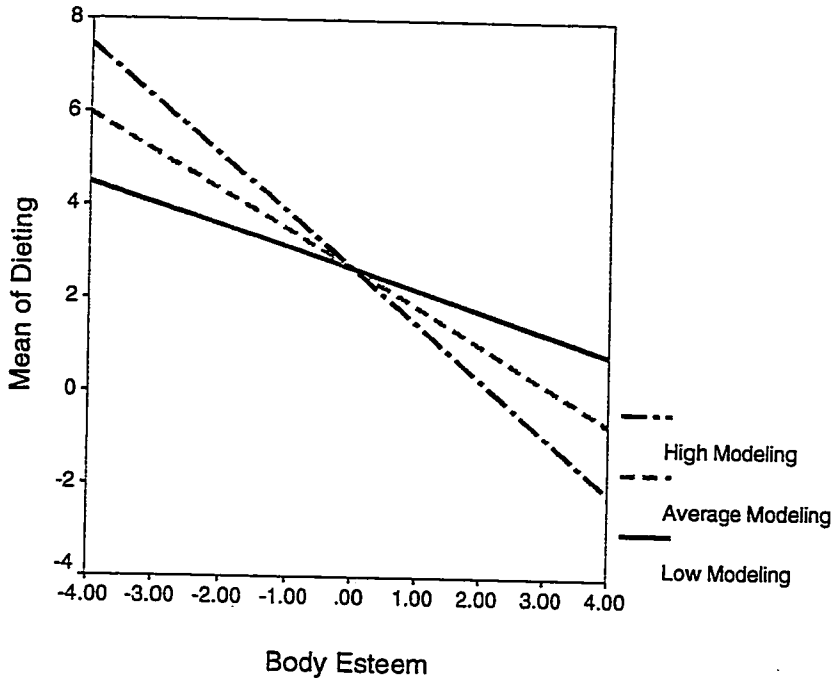

8
6
4
2
0
-2
-4
Mean of Dieting
-4.00
-3.00
-2.00
-1.00
.00
1.00
2.00
3.00
4.00
Body Esteem
High Modeling
Average Modeling
Low Modeling

Figure 11. Social reinforcement as a moderator of body esteem in predicting bulimia.

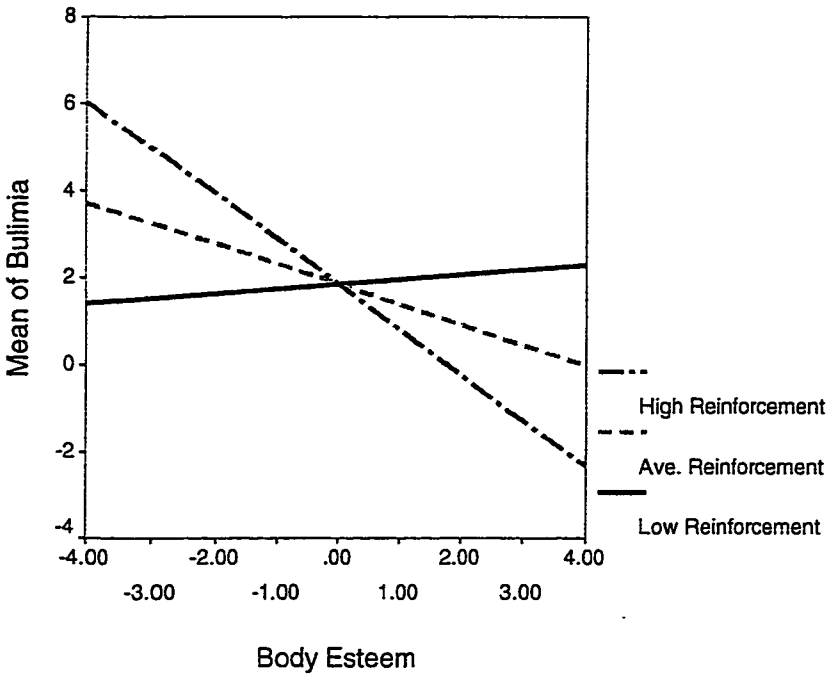
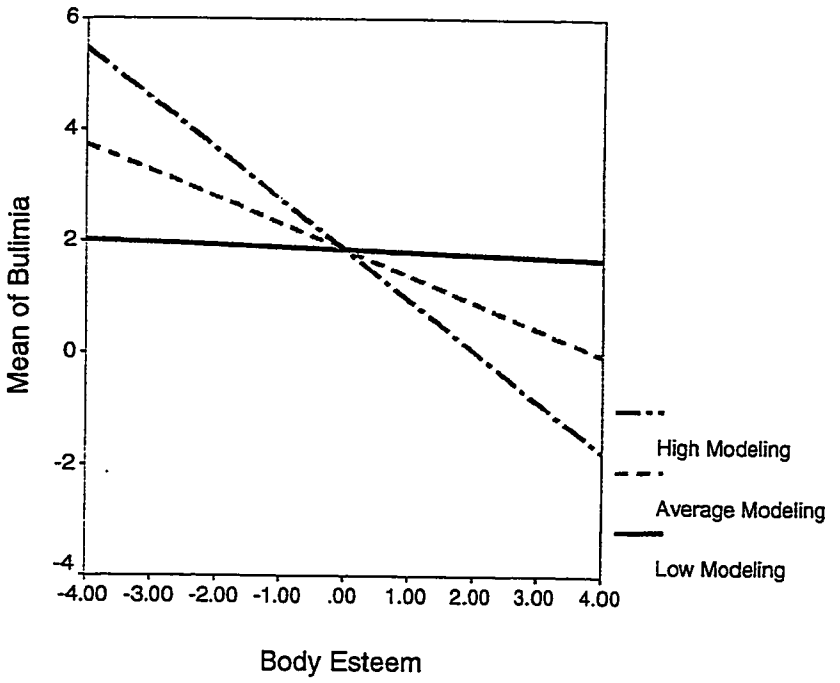

8
6
4
2
0
-2
-4
Mean of Bulimia
-4.00
-3.00
-2.00
-1.00
.00
1.00
2.00
3.00
4.00
Body Esteem
High Reinforcement
Ave. Reinforcement
Low Reinforcement

Figure 12. Peer modeling as a moderator of body esteem in predicting bulimia.


6
4
2
0
-2
-4
Mean of Bulimia
-4.00 -3.00 -2.00 -1.00 .00 1.00 2.00 3.00 4.00
Body Esteem
High Modeling
Average Modeling
Low Modeling

That is, for high peer modeling and social reinforcement cliques, girls who were preoccupied with their appearance reported more dieting. These effects were not apparent in low reinforcement/modeling groups (see Figures 13 & 14).

For bulimia, none of the peer-related nor the appearance-related variables were direct predictors of bulimic behavior. However, peer nominated overweight teasing was moderated by social reinforcement ($\gamma_{21} = 0.35$, $p<.0001$) and peer modeling ($\gamma_{21} = 0.20$, $p<.01$) in predicting bulimic behavior. That is, for both social reinforcement and peer modeling, girls in high reinforcement/modeling cliques who were teased about being overweight reported more bulimic behavior. In low reinforcement/modeling cliques, higher overweight teasing was associated with lower scores (see Figures 15 & 16). The table of the final model including estimated parameters is presented in Appendix M.

Self-reported teasing. For dieting, severe weight ($\gamma_{20} = 0.39$, $p<.0001$) and body-shape ($\gamma_{40} = 0.25$, $p<.01$) teasing and less severe appearance-related teasing ($\gamma_{21} = -0.19$, $p<.05$) were significant predictors of dieting. Further, both social reinforcement ($\gamma_{41} = 0.91$, $p<.0001$, $\gamma_{51} = 0.53$, $p<.01$) and peer modeling ($\gamma_{41} = 0.66$, $p<.0001$, $\gamma_{51} = 0.48$, $p<.01$) moderated the relationship between *severe* and *less severe* body-shape teasing and dieting. The same pattern of results was found for social reinforcement and peer modeling after controlling for severe weight-related teasing. That is, for girls in high reinforcement and high peer modeling cliques, severe body-shape teasing resulted in higher reports of dieting. The opposite effect was found in low reinforcement/modeling cliques where girls who were teased about their body-shape reported the lowest levels of dieting (see Figures 17 a, b, & c and Figures 18 a, b, & c).

Figure 13. Social reinforcement as a moderator of appearance preoccupation in predicting dieting.

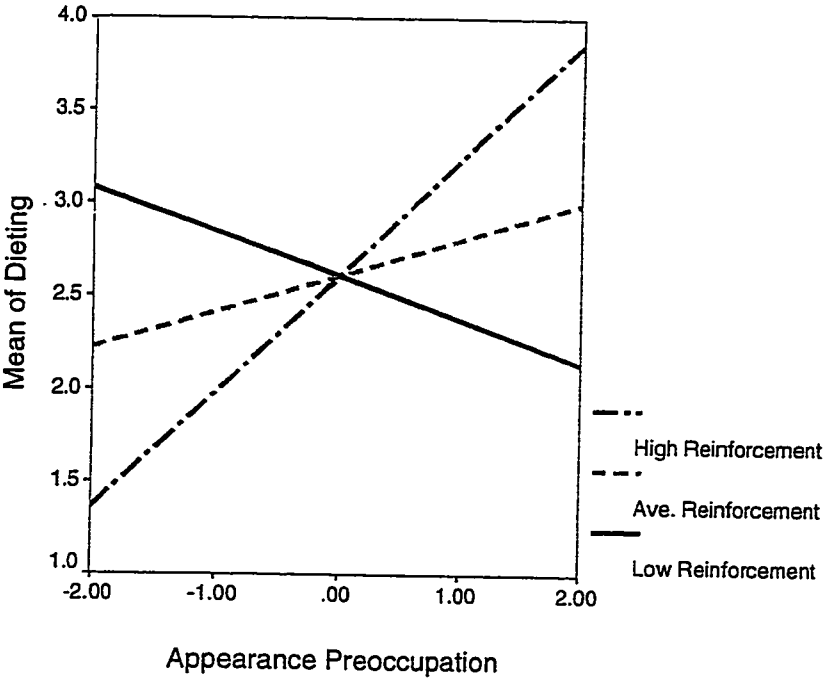

4.0
3.5
3.0
2.5
2.0
1.5
1.0
Mean of Dieting
-2.00
-1.00
.00
1.00
2.00
Appearance Preoccupation
High Reinforcement
Ave. Reinforcement
Low Reinforcement

Figure 14. Peer modeling as a moderator of appearance preoccupation in predicting dieting.

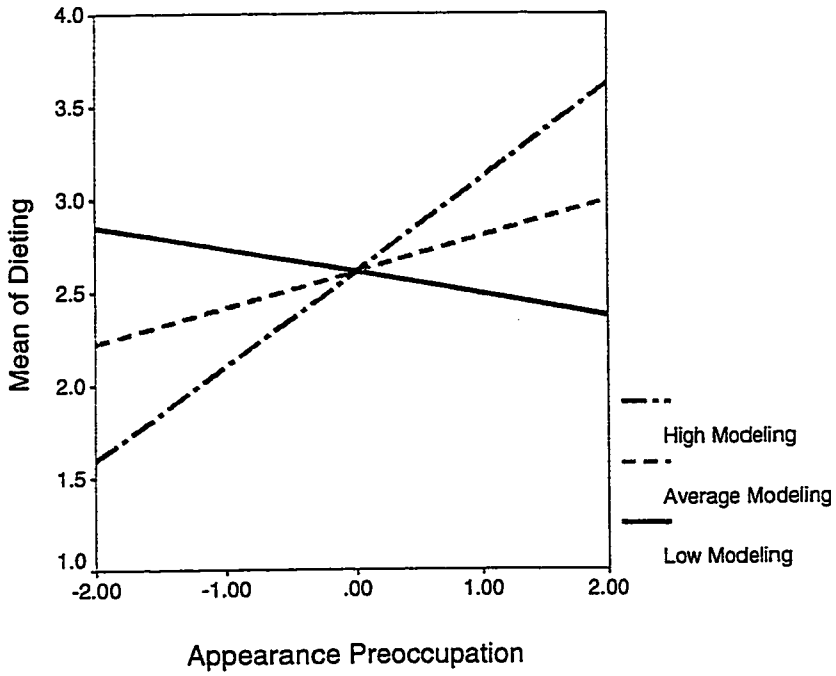

4.0
3.5
3.0
2.5
2.0
1.5
1.0
Mean of Dieting
-2.00
-1.00
.00
1.00
2.00
Appearance Preoccupation
High Modeling
Average Modeling
Low Modeling

Figure 15. Social reinforcement as a moderator of overweight teasing in predicting bulimia.

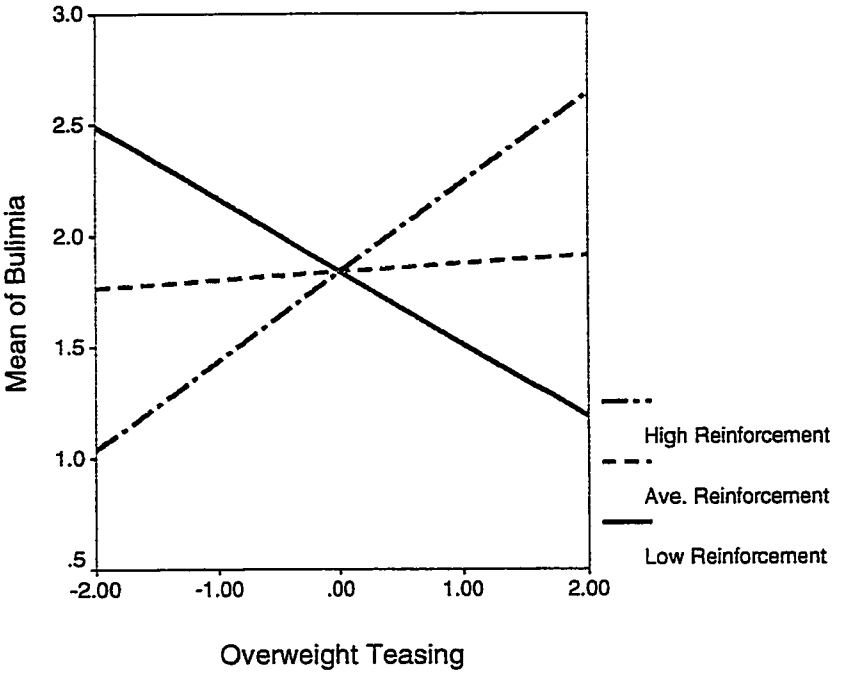
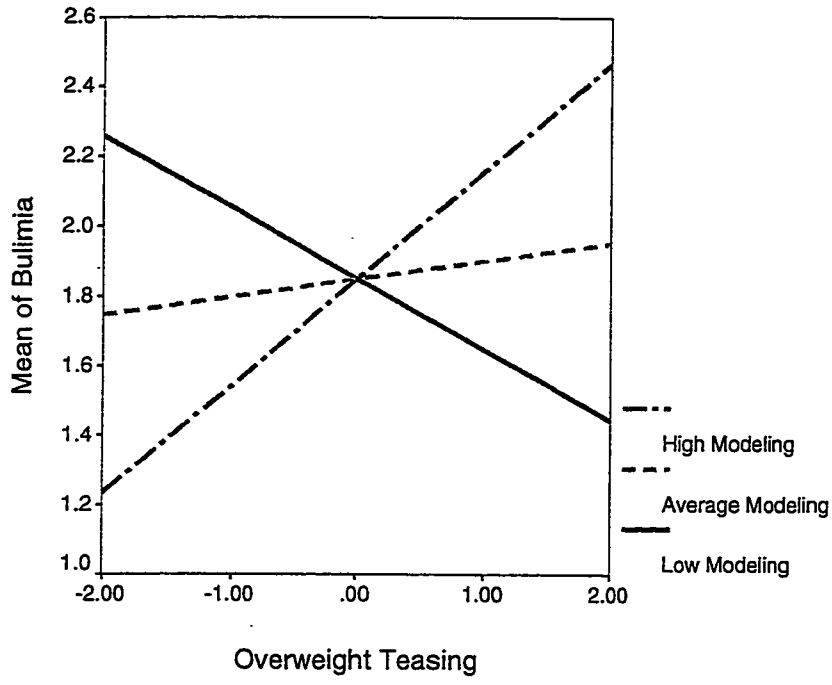
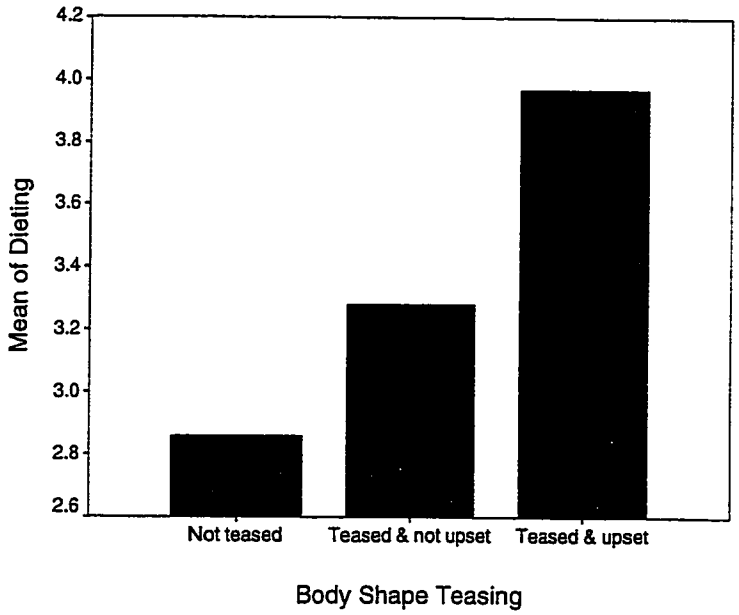

3.0
2.5
2.0
1.5
1.0
.5
Mean of Bulimia
-2.00
-1.00
.00
1.00
2.00
Overweight Teasing
High Reinforcement
Ave. Reinforcement
Low Reinforcement

Figure 16. Peer modeling as a moderator of overweight teasing in predicting bulimia.

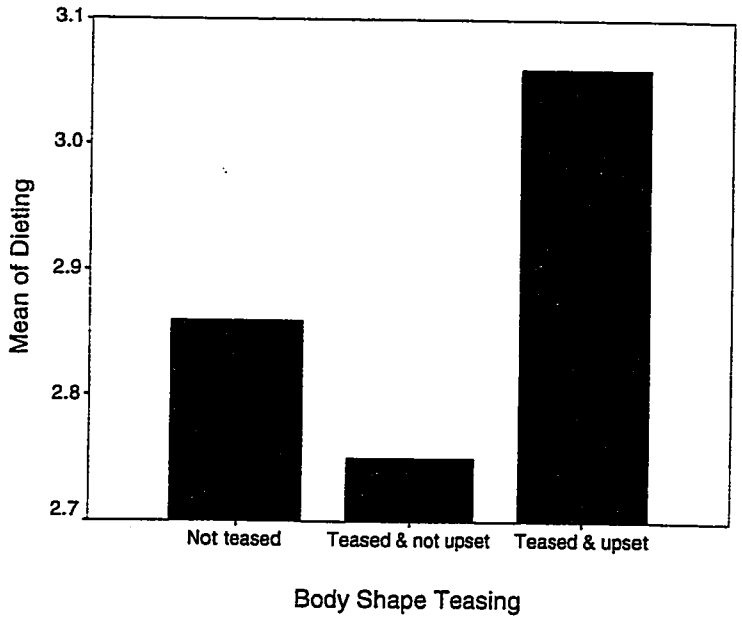

2.6
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
Mean of Bulimia
-2.00
-1.00
.00
1.00
2.00
Overweight Teasing
High Modeling
Average Modeling
Low Modeling

Figures 17 a, b. & c. High, average, and low social reinforcement as moderators of body-shape teasing in predicting dieting behavior (with severe weight-related teasing).

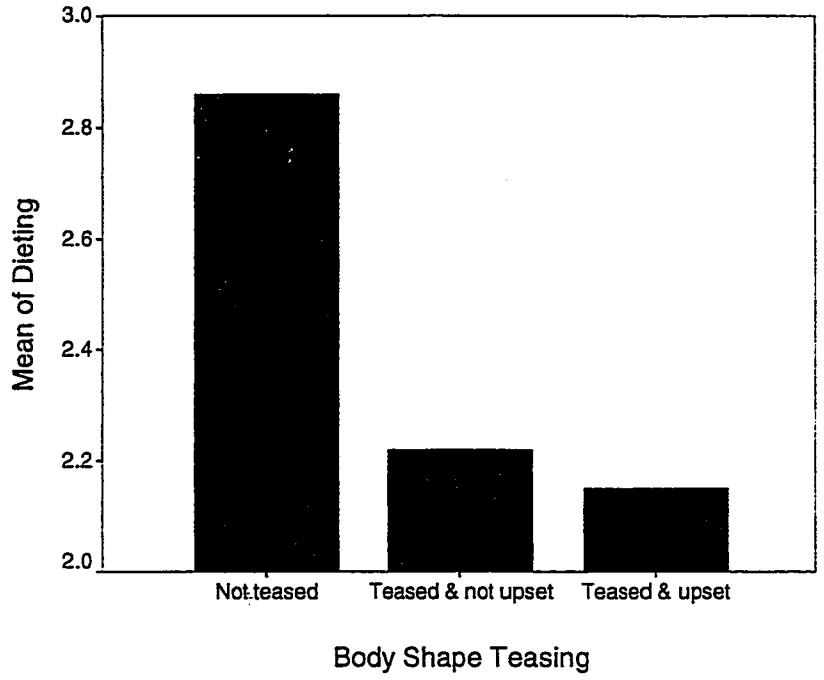
High Social Reinforcement



Average Social Reinforcement

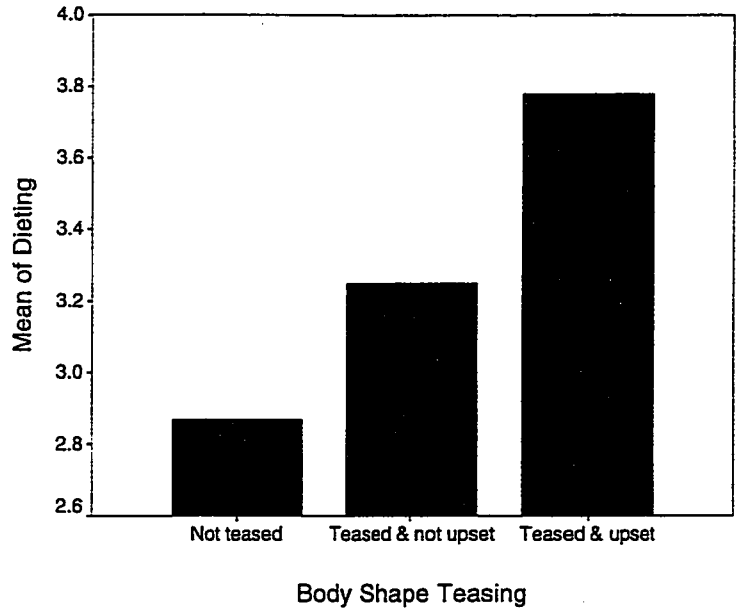


Low Social Reinforcement

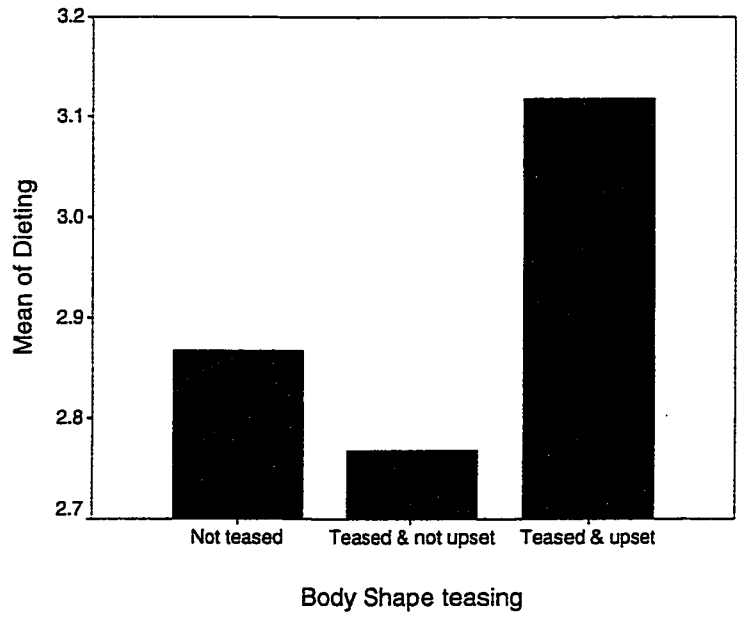


Figures 18 a, b, & c. High, average, and low peer modeling as moderators of body-shape teasing in predicting dieting behavior (with severe weight-related teasing).

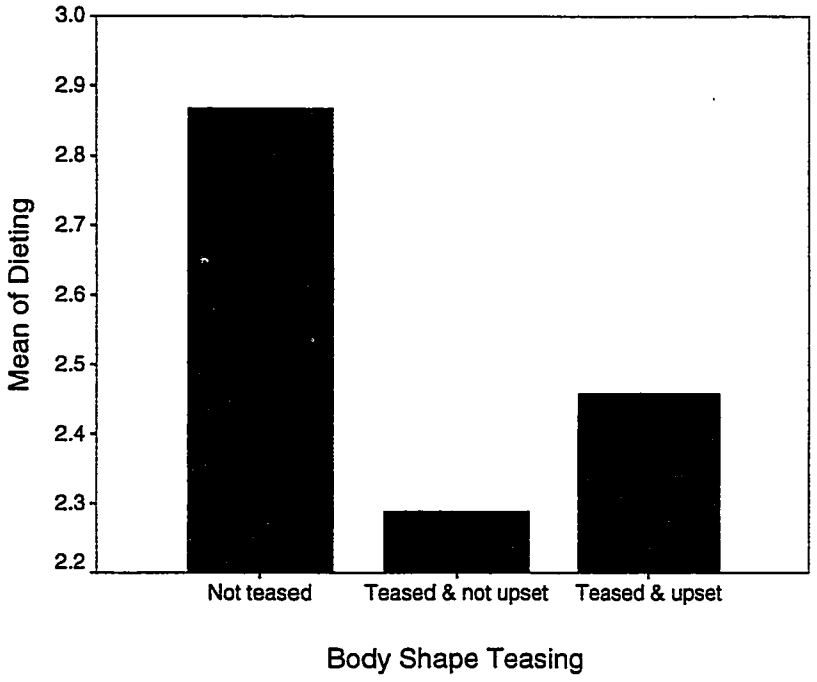
High Peer Modeling



Average Peer Modeling

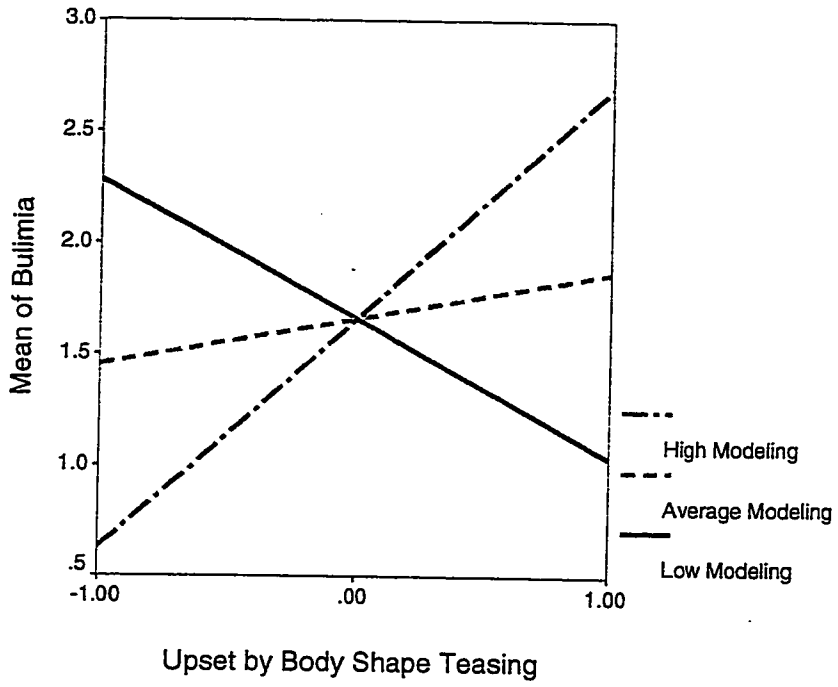


Low Peer Modeling



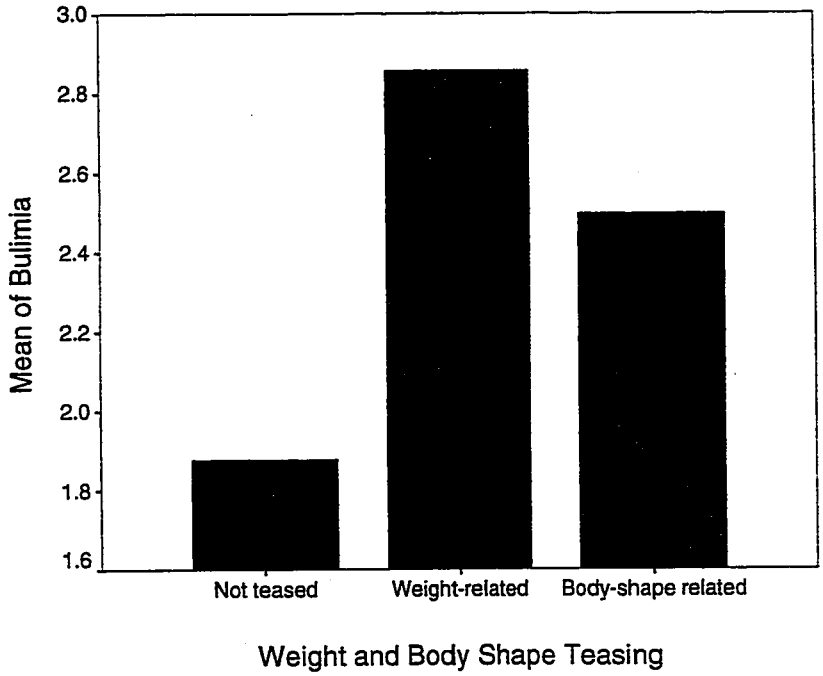
For bulimic behavior, severe weight ($\gamma_{20} = 0.22$, $p<.01$), body-shape ($\gamma_{40} = 0.20$, $p<.01$), and appearance-related ($\gamma_{60} = 0.22$, $p<.001$) teasing were statistically significant. That is, girls who were teased about their weight, body-shape, and appearance and were upset by this teasing were more likely than girls who were not upset, and those who were not teased, to engage in bulimic behavior. In addition, peer modeling was a significant moderator of severe body-shape teasing ($\gamma_{41} = 0.41$, $p<.01$) in predicting bulimic behavior. Results indicate that girls in high peer modeling cliques who were upset by body-shape teasing were more likely than girls who were not upset by the teasing, and not teased at all, to engage in bulimic behavior (see Figure 19). Social reinforcement was a significant moderator of both severe weight teasing ($\gamma_{21} = 0.42$, $p<.05$) and severe body-shape teasing ($\gamma_{41} = 0.81$, $p<.0001$) in predicting bulimic behavior, after controlling for appearance-related teasing. Results indicated that girls in high reinforcement cliques who report being upset by weight-related teasing, followed by body-shape teasing, were more likely than girls who are not teased to report bulimic behavior. In the average reinforcement group, girls who were upset about body-shape teasing, followed by weight-related teasing, were more likely than girls who were not teased to report bulimic behavior. Finally, in low reinforcement cliques, the level of reported bulimic behavior was much lower than in the other two groups, with girls who were not teased reporting higher levels of bulimic behavior (see Figures 20 a, b, & c). The table of the final model including estimated parameters is presented in Appendix M.

Figure 19. Peer modeling as a moderator of severe body-shape teasing in predicting bulimia.

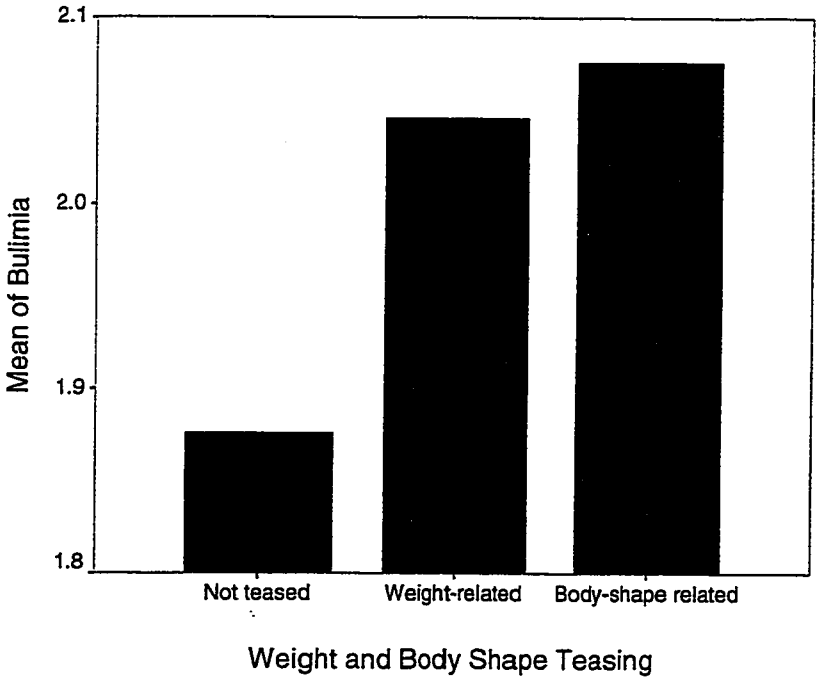

3.0
2.5
2.0
1.5
1.0
.5
Mean of Bulimia
-1.00
.00
1.00
Upset by Body Shape Teasing
High Modeling
Average Modeling
Low Modeling

Figures 20 a, b, & c. High, average, and low social reinforcement as a moderator of weight and body-shape teasing (with severe appearance teasing).

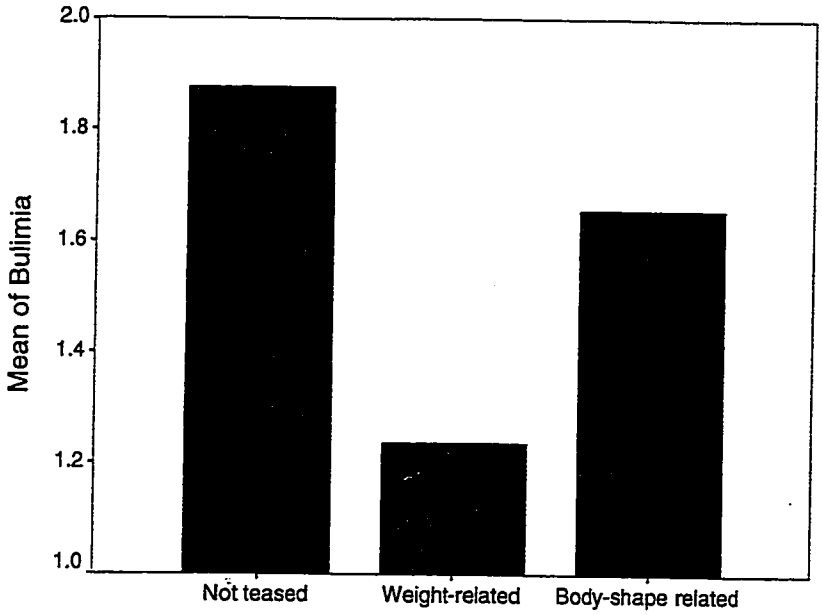
High Social Reinforcement



Average Social Reinforcement



Low Social Reinforcement



Individual Level Analysis

Approach to current data analysis. In order to investigate the influence of social/relational characteristics on eating behaviors and body esteem at the level of the individual, hierarchical multiple regression analyses were conducted. Order of entry for variables was based on theoretical knowledge, from most distal to most proximal relations to the outcome measures. *Social characteristics* of subject (e.g., popularity, leadership skills) were entered first, followed by *negative peer behaviors* (e.g., weight-related teasing, social rejection). These were followed by *self-reported teasing* and *individual perceptions of the social self* (e.g., both weight specific and non-weight specific), which are presumably influenced by relations or experiences within the peer group. Finally, after all of the peer relations and social self variables were entered, we were interested in examining the strength of *peer pressure* in influencing eating behaviors and body esteem.

For each regression, BMI, age, and age of first period served as control variables, and were entered into the model on the first step. *Social characteristics* were entered on the second step and included friendship closeness, average popularity, and leadership (based on peer nominations). *Negative peer behaviors*, including peer nominations of overweight and underweight teasing, in addition to the social rejection composite (i.e., teasing about appearance, general teasing & social isolation), were entered on the third step. *Self-reported teasing* about weight, body-shape, appearance, and general teasing were entered on the fourth step. *Social self* variables were entered on the fifth step, including external self, same and opposite-sex relational esteem, and peer attributions (i.e., importance of weight and appearance for popularity and dating). The sixth step included

peer pressure, both social reinforcement and peer modeling. *Interactions* with BMI, age of menarche, and age were included on the final step. Given the large sample size and the exploratory nature of the analyses, only interactions higher than $p<.005$ were interpreted. The unstandardized regression coefficients (B) and intercept (for each step), the standardized regression coefficients β (for each step), the semipartial correlations (sr^2), and R, R^2, R^2 change, and adjusted R^2 are presented for each regression analysis.

Dieting. For dieting, all steps in the regression analysis were significant with the exception of step 3 (see Table 10). Step 1 showed statistical significance, $R^2 = .11$, $F(3, 625) = 25.06$, $p<.0001$, with unique predictions for BMI ($p<.0001$) and average age of menarche ($p<.01$). Results indicated that girls with higher BMIs and an earlier age of menarche reported more dieting. Step 2 was also statistically significant, $R^2 = .12$, $F_{inc}(3, 622) = 2.77$, $p<.05$, with girls involved in closer friendships ($p<.05$) reporting higher levels of dieting. Average popularity and leadership did not contribute uniquely. After controlling for bio-maturational variables and social characteristics, negative peer behaviors (step 3) were not significant. Self-reported teasing (step 4) was statistically significant, $R^2 = .253$, $F_{inc} = (8, 611) = 13.09$, $p<.0001$, with unique prediction for severe weight ($p<.0001$) and body-shape ($p<.001$) teasing, and both severe ($p<.05$) and non-severe ($p<.05$) appearance teasing. Results indicated that girls who were upset about weight, body-shape and appearance-related teasing reported more dieting than girls who were not upset by the teasing and those who were not teased at all. The social self variables (step 5) showed significant prediction, $R^2=.427$, $F_{inc}(4, 607) = 46.19$, $p<.0001$, after controlling for all friendship and control variables. Results showed that girls with

Table 10

Hierarchical Multiple Regression Predicting Dieting from Social Constructs (n=629)

Social Constructs	Unstandardized Beta Weight (B)(SE)	Standardized Beta Weight β	Semi-Partial Correlation (r)
Step 1			
BMI	.08 (.01)	.29***	.29
Age	-.01 (.03)	-.01	-.01
Average age of menarche	-.06 (.02)	-.12**	-.11
R^2= .11, Adjusted R^2 = .10, R^2 change=.11, R= .33***			
Step 2			
Friendship closeness	.18 (.08)	.09*	.08
Average popularity	.05 (.04)	.05	.04
Leadership	-.03 (.04)	-.03	-.02
R^2= .12, Adjusted R^2 = .11, R^2 change = .01, R= .35*			
Step 3			
Social rejection	-.03 (.06)	-.02	-.02
Overweight tease	.05 (.05)	.04	.04
Underweight tease	.07 (.04)	.07	.06
R^2= .12, Adjusted R^2 = .11, R^2 change = .01, R= .35			
Step 4			
Tease weight upset	.38 (.10)	.17***	.13
Tease weight not upset	-.20 (.11)	-.07	-.06
Tease body-shape upset	.34 (.10)	.15**	.12
Tease body-shape not upset	-.08 (.09)	-.03	-.03
Tease appearance upset	.21 (.10)	.09*	.07
Tease appearance not upset	-.22 (.11)	-.08*	-.07
Tease general upset	-.06 (.10)	-.02	-.02
Tease general not upset	-.07 (.10)	-.03	-.03
R^2= .25, Adjusted R^2 = .23, R^2 change = .13, R= .50***			

Step 5			
External self	.24 (.05)	.18***	.14
Same sex esteem	.09 (.05)	.06	.05
Opposite-sex esteem	.09 (.03)	.09*	.08
Peer attributions	.35 (.04)	.41***	.31
R^2= .43, Adjusted R^2 = .41, R^2 change = .17, R= .65***			
Step 6			
Social reinforcement	.33 (.07)	.20***	.14
Peer modeling	.12 (.05)	.09**	.08
R^2= .47, Adjusted R^2 = .45, R^2 change =.05, R= .69***			
Step 7			
Menarche x external self	-.05 (.02)	-.08**	-.07
BMI x external self	.04 (.01)	.09**	.07
BMI x attributions	-.03 (.01)	-.15***	-.11
Menarche x tease body-shape	.10 (.03)	.11**	.08
R^2= .50, Adjusted R^2 = .47, R^2 change =.02, R= .70***			

*p<.05. **p <.01. ***p<.001.

higher external selves ($p<.0001$), higher opposite-sex relational esteem ($p<.01$), and strong attributions about the importance of weight and appearance for popularity and dating ($p<.0001$) reported higher levels of dieting. Finally, peer pressure (step 6) significantly predicted dieting after controlling for all other general peer and social self variables, $R^2=.473$, F_{inc} (2, 605) = 26.57, $p<.0001$. Both social reinforcement ($p<.0001$) and peer modeling ($p<.01$) contributed uniquely to dieting behavior in adolescent girls.

Several of the interaction effects were significant (step 7), $R^2=.495$, F_{inc} (4, 601) = 6.15, $p<.0001$. A significant BMI by peer attributions interaction was found ($p<.0001$), with underweight girls who had higher scores on peer attributions reporting higher dieting. Also, a significant age of menarche by severe body-shape teasing was found ($p<.005$). Results indicated that for late developers, the greater the body-shape teasing, the higher the dieting (see Appendix N).

Bulimia. For bulimia, all steps of the regression analysis were statistically significant, with the exception of step 2 (see Table 11). The control variables were significant predictors of bulimia, $R^2= .029$, $F_{inc}(3, 625) = 6.20$, $p<.0001$, with age ($p<.01$) and age of menarche ($p<.01$) showing unique prediction. Older and early maturing girls reported more bulimic behavior than younger, later maturing girls. After controlling for maturational variables, social characteristics of the subject (step 2) were not significant. Step 3 was also statistically significant, $R^2= .049$, F_{inc} (3, 619)= 3.19, $p<.05$, with peer reported teasing about being overweight showing unique prediction ($p<.05$). Girls who were teased about being overweight reported greater bulimic behavior than girls who were not teased. Self-reported teasing (step 4) contributed above and beyond the previous

Table 11

Hierarchical Multiple Regression Predicting Bulimia from Social Constructs (n=629)

Social Constructs	Unstandardized Beta Weight (B)(SE)	Standardized Beta Weight β	Semi-Partial Correlation (r)
Step 1			
BMI	.02 (.01)	.08*	.08
Age	.07 (.03)	.11**	.10
Average age of menarche	-.04 (.02)	-.11**	-.11
R^2= .03, Adjusted R^2 = .02, R^2 change = .03, R= .17***			
Step 2			
Friendship closeness	.06 (.06)	.04	.04
Average popularity	.04 (.04)	.05	.05
Leadership	-.00 (.03)	-.00	-.00
R^2= .04, Adjusted R^2 = .03, R^2 change = .01, R= .19			
Step 3			
Social rejection	-.04 (.04)	-.04	-.04
Overweight tease	.09 (.04)	.12*	.09
Underweight tease	.06 (.03)	.08	.07
R^2= .05, Adjusted R^2 = .04, R^2 change = .02, R= .22*			
Step 4			
Tease weight upset	.21 (.08)	.12**	.09
Tease weight not upset	-.10 (.09)	-.05	-.04
Tease body-shape upset	.28 (.08)	.17***	.13
Tease body-shape not upset	.04 (.07)	.02	.02
Tease appearance upset	.24 (.08)	.14**	.11
Tease appearance not upset	.00 (.09)	.00	.00
Tease general upset	.06 (.08)	.03	.03
Tease general not upset	.03 (.08)	.01	.01
R^2= .16, Adjusted R^2 = .14, R^2 change = .11, R= .40***			

Step 5			
External self	.26 (.04)	.26***	.20
Same sex esteem	-.02 (.04)	-.02	-.02
Opposite-sex esteem	.05 (.03)	.07	.06
Peer attributions	.16 (.03)	.25***	.19
R^2= .29, Adjusted R^2 = .27, R^2 change = .13, R= .54***			
Step 6			
Social reinforcement	.28 (.06)	.22***	.16
Peer modeling	-.01 (.04)	-.01	-.01
R^2= .32, Adjusted R^2 = .30, R^2 change = .03, R= .57***			
Step 7			
Menarche x leadership	.03 (.01)	.07*	.07
Menarche x external self	-.04 (.02)	-.08*	-.07
BMI x external self	.02 (.01)	.08*	.07
Menarche x attributions	.03 (.01)	.09*	.07
BMI X reinforcement	.04 (.01)	.11**	.09
R^2= .36, Adjusted R^2 = .33, R^2 change = .04, R= .60***			

*p<.05. **p <.01. ***p<.001.

steps, R^2 = .160, F_{inc}(8, 611) = 10.04, p<.0001, with severe weight (p<.01), body-shape (p<.0001), and appearance related (p<.001) teasing contributing uniquely. The social self variables (step 5) also added significantly to bulimic behavior after controlling for previous social constructs, R^2 = .291, F_{inc} (4,607) = 28.12, p<.0001. Unique contributions were found for external self (p<.001) and peer attributions about the importance of weight and appearance for dating and popularity (p<.0001), with girls with higher scores on external self and higher peer attributions reporting more bulimic behavior. Finally, peer pressure was a significant predictor of bulimia, R^2 = .322, F_{inc} (2, 605) = 13.62, p<.0001, with unique variance for social reinforcement (p<.0001), but not peer modeling. Several of the interaction effects (step 7) were significant, R^2 = .358, F_{inc} (5, 600) = 6.71, p<.0001), though none predicted uniquely (r>.005), and thus were not interpreted.

Body esteem. For body esteem, all steps of the regression analysis were statistically significant (see Table 12). For the control variables, R^2=.128, F_{inc} (3, 625) = 30.47, p<.0001, only BMI showed unique variance (p<.001), with girls with lower BMIs reporting higher body esteem. Step 2 was also significant, R^2= .140, F_{inc} (3, 622) = 2.97, p<.05, with girls who were nominated by peers as leaders (p<.01) showing higher body esteem. Average popularity and friendship closeness were not unique predictors of body esteem. After controlling for maturational and social characteristics, negative peer relations (step 3) showed statistical significance, R^2=.153, F_{inc} (3, 619)=3.14, p<.05, with teasing about being underweight contributing uniquely (p<.05). Results indicated that girls who were teased about being underweight (but not overweight) reported lower body esteem.

Table 12

Hierarchical Multiple Regression Predicting Body Esteem from Social Constructs (n=629)

Social Constructs	Unstandardized Beta Weight (B)(SE)	Standardized Beta Weight β	Semi-Partial Correlation (r)
Step 1			
BMI	.08 (.01)	-.34***	-.34
Age	.02 (.03)	.02	.02
Average age of menarche	.03 (.02)	.06	.06
R^2= .13, Adjusted R^2 = .12, R^2 change = .13, R= .36***			
Step 2			
Friendship closeness	.00 (.07)	.00	.00
Average popularity	-.06 (.04)	-.07	-.06
Leadership	.10 (.03)	.11**	.11
R^2= .14, Adjusted R^2 = .13, R^2 change = .01, R= .37*			
Step 3			
Social rejection	-.06 (.05)	-.06	-.05
Overweight tease	-.04 (.04)	-.05	-.04
Underweight tease	-.08 (.04)	-.09*	-.08
R^2= .15, Adjusted R^2 = .14, R^2 change = .01, R= .39*			
Step 4			
Tease weight upset	-.28 (.08)	-.15***	-.12
Tease weight not upset	-.02 (.08)	-.01	-.01
Tease body-shape upset	-.46 (.08)	-.25***	-.20
Tease body-shape not upset	-.06 (.07)	-.03	-.03
Tease appearance upset	-.41 (.08)	-.22***	-.17
Tease appearance not upset	.05 (.08)	.02	.02
Tease general upset	-.06 (.08)	-.03	-.03
Tease general not upset	.05 (.08)	.02	.02
R^2= .37, Adjusted R^2 = .35, R^2 change = .21, R= .61***			

Step 5

External self	-.32 (.04)	-.29***	-.23
Same sex esteem	-.03 (.03)	-.03	-.02
Opposite-sex esteem	.02 (.02)	.03	.03
Peer attributions	-.30 (.02)	-.42***	-.32

R^2= .64, Adjusted R^2 = .63, R^2 change = .27, R= .80***

Step 6

Social reinforcement	-.01 (.05)	-.01	-.00
Peer modeling	-.08 (.03)	-.07**	-.06

R^2= .64, Adjusted R^2 = .63, R^2 change = .01, R= .80**

Step 7

BMI x popularity	-.01 (.01)	-.06*	-.06

R^2= .65, Adjusted R^2 = .63, R^2 change = .00, R= .80*

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*p<.05. **p <.01. ***p<.001.

Self-reported teasing (step 4) was statistically significant, R^2 = .369, F_{inc} (8,611) = 26.19, p<.0001, with severe teasing about weight (p<.0001), body-shape (p<.0001) and appearance (p<.0001) contributing uniquely. Girls who reported being upset about weight, body-shape, and appearance related teasing had lower body esteem than girls who were not upset by this teasing and those who were not teased at all. The social self variables (step 5) also contributed to body esteem after controlling for the peer variables, R^2= .638, F_{inc}(4,607) = 113.06, p<.0001. Girls with higher external selves (p<.0001) and higher attributions about the importance of appearance and weight for dating and popularity (p<.0001) reported lower body esteem. Same and opposite-sex relational esteem did not contribute uniquely. Finally, after controlling for all other variables, peer pressure (step 6) significantly predicted body esteem, R^2=.644, F_{inc} (2, 605)= 4.31, p<.05. However, only peer modeling showed unique variance (p<.05), with girls who reported more peer modeling, indicating lower body esteem. The final step (interaction effects) was significant, R^2=.647, F_{inc} (1, 604)= 5.26, p<.05, though none of the individual variables were significant at the p< .005 level.

Social Risk Factors for Eating Disordered and Non-Eating Disordered Groups

In order to evaluate the clinical significance of the overall individual level findings, social constructs (see above) were used to differentiate non-eating disordered girls (n=669) and eating disordered girls (n=72) using logistic regression analysis. These two groups were created based on the three subscales of the Children's Eating Attitudes Test (i.e., dieting, bulimia/food preoccupation, and oral control), with a cutoff of 25 or above indicating disordered eating. Using this cutoff score, 9% of girls were classified as eating

disordered which is comparable to results found in the literature using this measure (Garner & Garfinkel, 1979; Maloney et al., 1988). We were interested in how accurately these social constructs could differentiate eating disordered from non-eating disordered adolescent girls, after controlling for BMI. Only significant variables were retained for the final model.

Logistic regression analysis. In this hierarchical logistic regression analysis, BMI was entered on the first step followed by the significant social construct variables. Results indicated that BMI was statistically significant (χ^2 (1, N = 741) = 8.77, $p<.01$), though it did not correctly predict group membership. That is, eating disordered girls had higher BMIs than non-eating disordered girls, although BMI was not a good variable for group classification. The second step was also statistically significant (χ^2 (9, N = 741) = 135.39, $p<.0001$), with friendship closeness ($p<.01$), peer nominations of underweight teasing ($p<.01$), self-reported weight teasing ($p<.05$), external self ($p<.001$), opposite-sex relational esteem ($p<.001$), peer attributions ($p<.01$), and social reinforcement ($p<.0001$), differentiating eating disordered from non-eating disordered girls. Girls in the eating disordered group were more likely than non-eating disordered girls to be involved in a close friendship, to be teased about their weight, to have higher external selves, higher opposite-sex relational esteem, higher importance ratings of weight and appearance for popularity and dating, and to report more social reinforcement. Correct classification of participants based on the logistic regression was not impressive; 98.51% of non-eating disordered girls, but only 29.17% of eating disordered girls were correctly classified using these social constructs. Thus, these social constructs do not appear to be useful for

discriminating clinical levels of eating disordered from non-eating disordered individuals. However, it is important to be aware of the social characteristics which may increase the individual's risk of developing more severe eating problems. Results suggest that a more complete model of eating disorders (e.g., two-factor model) may be useful in differentiating eating from non-eating disordered patients, including both eating pathology and general psychopathology (Steiger & Seguin, 1999). Table 13 shows the regression coefficients, Wald statistics, and odds ratios and 95% confidence intervals for each of the predictors.

Discussion

The purpose of the present study was to examine the role of peers in the development of problematic eating behaviors (i.e., dieting and bulimia) and body esteem. Unlike previous research, peer relations were examined at three levels: the level of the clique, the level of the best friendship pair, and the level of the individual. Based on theories of socialization (e.g., Hartup, 1983; Kandal, 1980; Stice, 1998), it was hypothesized that peers would play an integral role in the development of eating behaviors and body esteem through social reinforcement (i.e., comments or actions that perpetuate the thin ideal, such as teasing about weight and encouragement to diet/exercise), and modeling (i.e., imitation of peer behaviors and attitudes). This study is unique in that it examined perceptions of social reinforcement and peer modeling as distinct contributors to eating problems and body esteem. Also, this study included two data sources, participant-reports and peer-reports, which tend to be more accurate than simply examining participant reports of their peers' behaviors.

Table 13

Hierarchical Logistic Regression Analysis of Social Constructs as a Function of Eating Disorder Group

Variables	β	Wald Test (z-ratio)	Odds Ratio	95% CI Lower	Upper
Step 1					
BMI	.09	9.4	1.1**	1.0	1.2
Step 2					
Friendship closeness	0.9	2.0	2.3**	1.2	4.5
Underweight tease	0.4	6.9	1.4**	1.1	1.9
Severe weight tease	-0.2	0.4	0.8	0.4	1.6
Non-severe weight tease	2.6	6.0	13.1**	1.7	103
External self	0.6	6.9	1.7**	1.2	3.0
Opposite-sex esteem	0.5	12	1.7***	1.3	2.3
Peer attributions	0.5	9.7	1.6***	1.2	2.1
Social reinforcement	1.1	19	3.0***	1.8	4.8

**p<.001, ***p<.0001

Eating Behaviors, Body Esteem, and Perceptions of Peer Pressure in Cliques and Best Friend Pairs

The first objective of this study was to examine how much of the variance in eating behaviors, body esteem, and peer pressure about weight and appearance was at the level of the clique and at the level of the best friend pair in comparison to the individual level. Results indicate that for dieting and weight esteem, a greater proportion of variance is found at the best friend pair level (ICCs = .22 & .20, respectively) than for bulimia and appearance esteem outcomes (ICCs = .10 & .13, respectively). On the other hand, in cliques, the ICCs for dieting and bulimia (.08 & .06, respectively) and weight and appearance esteem (.07 & .08, respectively), though lower than in friendship pairs, are relatively similar. These findings highlight that at the level of the friendship pair, dieting behavior and specific feelings about one's weight, (rather than bulimia and appearance esteem), seem to be important shared characteristics, while the amounts of variability associated with the clique level is almost equal for dieting and bulimia and weight and appearance esteem.

Also, though the ICCs are much higher in the friendship pairs than in the cliques (i.e., almost double), the pattern of results is quite similar. That is, best friend pairs and cliques showed similar ICCs in eating behavior outcomes, *in addition to* their perceptions and feelings about their bodies (e.g., weight & appearance esteem) and themselves (e.g., self esteem). These findings are surprising since one would expect higher intra-class correlations for behaviors than for values and attitudes, particularly about the self (e.g., Kandel, 1978; Tolson & Urberg, 1993). However, results from this

study underscore that not only do peers play an important role in the development of eating behavior (particularly dieting), they also play an important role in feelings about one's body and one's self.

Further, although dieting and bulimia showed statistically significant between-clique variability, the intra-class correlations were not as high as expected (<.10). These findings imply that although peer pressure about weight and appearance is a salient feature among cliques (25% of between-group variance), some clique members may be better able to resist these pressures. This is clarified later in the examination of personal characteristics that place girls in high pressure cliques at greater risk for the development of problematic eating. Further, during adolescence, eating behavior, in addition to weight and appearance norms (e.g., peer attributions), may not be as important a group phenomena as smoking (Ennett & Bauman, 1993), drug and alcohol use (Ennett & Bauman, 1991; Bauman & Ennett, 1996; Baily & Hubard, 1991), and sexual behavior, since these are shared activities exclusive to the peer group (and usually against parental wishes). Eating behavior is shared with both peers and with family members (e.g., mealtimes, family holidays, outings with friends), and may be more strongly influenced by one source or the other, or by a variety of sources combined.

Of all the variables assessed in this study, the strongest between-clique variability was found for perceptions of social reinforcement and peer modeling (25% of between-group variance). This finding was expected given that peer pressure is a group-level phenomenon (and therefore the items focused on group-level phenomena), and norms regarding weight and appearance are likely to be transmitted through the clique

environment. Relatively high between-clique variability was also found for age of first date, popularity, social rejection, and opposite-sex relational esteem (though not as strong as in friendship pairs). For best friend pairs, the highest between-pair intra-class correlations were found for average popularity, social rejection, and age of first date, (accounting for almost ½ of the variability between friendship pairs), followed by peer modeling (ICC = .35) and social reinforcement (ICC = .27). Thus, the strongest associations for best friends are in their social relations (i.e., acceptance, rejection, relations with opposite sex peers), with perceptions of peer pressure falling closely behind. Also, give the slightly higher ICC for peer modeling than for social reinforcement, imitation of friend behaviors may be more important for transmitting norms in best friend pairs than reinforcement of socially accepted behaviors. Findings highlight that social status and peer pressure about weight and appearance are more salient than eating behaviors in both best friend pairs and cliques.

The ICCs for rejection by peers was quite high for both friendship pairs (ICC = .37) and for cliques (ICC = .21). Thus, perhaps girls who are nominated as rejected by the larger peer group are able to develop close friendships and are part of social cliques, which may serve as a protective factor against the negative peer relations (e.g., teasing) that they experience. Surprisingly, lower and non-significant ICCs were found for self and peer-reported weight, body-shape, and appearance-related teasing at the level of the clique. Thus, teasing about weight and appearance (rather than social rejection) appears to be experienced as an individual phenomenon rather than a clique level phenomenon. This may be attributed to the fact that one or two girls in each clique are teased about their

weight and their looks rather than a particular clique as a whole. However, unlike cliques, in friendship pairs, stronger pair-level associations were found for severe body-shape teasing (ICCs = .02 versus .21, respectively). Thus, it is possible that girls who are going through similar maturational changes (ICC = .18 for age of menarche in best friend pairs), and are teased because of these changes (or lack thereof), befriend one another.

In general, results highlight the need to examine peer relations at both the level of the best friend pair and the level of the clique. Although best friend pairs are generally nested within cliques (i.e., sub-clique within a clique), this reflects the natural structure of the social network. Most of the ICCs were significantly stronger in the friendship pairs than in cliques, with similarities and differences emerging. This does not imply that cliques are less important than friendship pairs, rather cliques and best friends may play different roles in adolescent social development. The statistical procedure used to determine the amount of variability ascribed to clique, pair, and individual levels in this study (i.e., intra-class correlations using HLM) is a significant improvement over studies which have used simple product-moment correlations, since the hierarchical nature of the data is taken into account (e.g., girls nested within pairs/cliques). To our knowledge, no other study has examined the data in this way. Also, our method for identifying cliques (CSM procedure) is more accurate than methods used in other studies, which are generally based on peer nominations of their own social groups.

Group Characteristics Associated with Peer Pressure, Eating Behaviors, and Body Esteem

In relation to peer pressure about weight and appearance, girls in nuclear status cliques perceived higher levels of social reinforcement and peer modeling than girls in

secondary and peripheral cliques, (accounting for 9% and 12% of between-group variance, respectively), after controlling for BMI, age, and individual status. Thus, clique status is an important factor for both perceived social reinforcement and peer modeling, with girls in higher status cliques reporting greater pressure to be thin. This finding confirms the notion that thinness and beauty (and pressure to meet these standards) are important norms for adolescent girls, and are linked with clique centrality or popularity within the social network. The relation between binge eating and prestige has also been demonstrated in college sororities (Crandall, 1988).

Number of group members was not an important predictor of individual perceptions of social reinforcement and peer modeling. It was expected that girls in smaller cliques would have greater opportunity to develop closer relationships, and therefore, would experience greater pressure to be thin in order to maintain these relationships. Nonetheless, perhaps it is not the *size* of the clique, rather the cohesion of clique members, the intimacy of clique member relationships, and the number years that the clique members have been together that is of greater importance. Recent studies have indicated that group cohesion may be a strong factor in the transmission of group norms (Carron & Brawley, 2000). Also, in a college sample, Crandall (1988) found that the size of the relation between binge eating and peer binge eating increased as the friendships became more cohesive. The association between group cohesion/intimacy and perceptions of peer pressure merits further investigation in an adolescent population. Also, given that only 9%-12% of the variance in perceived peer pressure was explained by group status, other group level factors that may account for differences in individual perceptions of peer

pressure about weight and appearance should be explored. Possibilities include size of school, school climate (e.g., schools that emphasize fashion shows vs. science fairs and athletic abilities), teacher involvement, socioeconomic status, and clique involvement in dating.

Clique status was not an important predictor of eating behaviors and body esteem, after controlling for BMI, age, and individual status. Rather, for dieting, 96% of the between-clique variance was accounted for by average clique peer pressure (both social reinforcement and peer modeling), and average age of menarche. Similarly, the majority of between-clique variance in bulimia (83%) and body esteem (75%) was accounted for by average clique social reinforcement. This indicates that differences in eating behaviors and body esteem can be explained primarily by clique pressure to be thin. Thus, the importance of pressure by peers at the level of the clique in influencing eating behaviors and body esteem cannot be overlooked. Findings suggest that girls in high-pressure cliques (both high reinforcement and modeling for dieting, and reinforcement for bulimia/body esteem) are at greater risk for the development of problematic eating behaviors and poor body esteem than girls in low-pressure cliques.

Also, early maturation of clique members was an important factor contributing to dieting behavior (but not bulimia, body esteem, or perceptions of peer pressure). Thus, although cliques of early maturating girls may not necessarily report more pressure to meet the thin ideal, they are more likely to diet. Research has shown that early maturation (but not puberty in general) often leads to greater body dissatisfaction when a gap between the ideal and reality is encountered (Alsaker, 1995a). Since early maturing

cliques are likely to deviate from the norm (i.e., due to weight gain associated with puberty), they may turn to dieting in order to fit in with the larger social network.

At this point, we can conclude with confidence that cliques play an important role in shaping adolescent girls' eating behaviors and attitudes. However, the mechanisms through which these processes occur must be examined more thoroughly. Longitudinal research is crucial in examining peer group processes, particularly experiences of peer pressure. For example, it would be interesting to examine changes in entry/dismissal from cliques based on violation of group norms and the development of group norms (re; eating behavior and attitudes) over time. Group structure and processes can be examined at different points over the academic year in several grades, or a cohort of girls can be followed from entry into high school until graduation.

Which Girls are Most Vulnerable for the Development of Eating Problems when in a High Pressure Group?

After examining group characteristics associated with individual perceptions of peer pressure and eating behaviors, we explored factors which could increase the risk for the development of problematic eating behaviors for girls in high pressure cliques. For dieting, low body esteem, high appearance preoccupation, and high body-shape teasing were important risk factors in cliques with high perceived social reinforcement and peer modeling. Also, low general self esteem was an important risk factor for dieting in high reinforcement cliques. For bulimia, in high pressure cliques (i.e., social reinforcement and modeling), girls with lower general self esteem, lower body esteem, higher peer nominations of overweight teasing, and girls who report being upset by body-shape

teasing reported more bulimic behavior. In addition, social reinforcement moderated the effect of severe weight-related teasing on bulimic behavior.

Thus, for both dieting and bulimia, girls who feel good about themselves and their bodies may be better able to resist pressure from peers to meet the thin ideal. It is notable that body-shape teasing, in particular, is a salient risk factor for dieting and bulimia in high-pressure cliques. This finding highlights the necessity of delineating independent types of teasing behavior, and emphasizes the salience of teasing about one's body-shape during this developmental period. Results from this study also indicate that girls who experience two types of teasing (body-shape and weight) are at greater risk for more severe eating pathology (i.e., bulimia) when in high pressure cliques. To our knowledge, this study is the first to distinguish between body-shape, appearance, and weight-related teasing, which has proven to be important during adolescence.

Results from this study suggest that there are specific characteristics that place girls in high pressure cliques at risk for the development of problematic eating behaviors, with slightly different patterns emerging for dieting and bulimia. For example, appearance preoccupation was an important risk factor for only dieting, while weight-related teasing (both peer and self-report) was an important risk factor for only bulimia. The development of a model examining other relevant personality factors (e.g., perfectionism), in addition to general psychopathology (e.g., depression), as mediators of the relationship between peer pressure and eating behaviors would provide additional insight into this process. Further, the relationship between substance use (cigarettes, alcohol & drugs) and weight control behaviors has been illustrated in middle school girls (Shisslak et al., 1998)

and in adolescent girls (Holderness, Brooks-Gunn, & Warren, 1994). Thus, it would be important to further examine the relationship between risky eating behaviors and other health risk behaviors (e.g., smoking, drug use, sexual promiscuity) in order to determine if girls with certain personality characteristics (i.e., in high pressure groups) are at general risk for a variety of unhealthy behaviors. This would help to determine if intervention should be aimed at general risk taking behaviors or specific to body and weight related issues.

Relational Model of Eating Behaviors and Body Esteem

At the level of the individual, an exploration of relational variables associated with eating behaviors and body esteem was conducted. For dieting, girls with higher BMIs and early maturing girls, were more likely to diet. This finding is consistent with previous literature linking weight and advanced pubertal maturation to problematic eating behaviors (Kaltiala-Heino, Rissanan, Rimpela, & Rantanen,1999; Alsaker, 1995b). Early maturing girls and girls who are overweight tend to be dissatisfied with their bodies, and therefore, are more likely to diet. After controlling for bio-maturational variables, results indicated that girls involved in closer friendships were more likely to diet, though this effect was quite small (1% of variance). These results are consistent with other findings from the current study indicating that girls who are involved in best friendships share associations in their dieting behavior. Girls with close friendships may share information about dieting, they may encourage each other in their weight loss efforts, or they may diet in unison to conform to peer norms. Findings from this study also indicate that dieting occurs in both popular and unpopular girls, and in both socially isolated/rejected and socially included/

accepted girls, indicating that dieting has become more normative over the last few decades, occurring not only among the elite. In addition, self-reported weight, body-shape and appearance-related teasing were important predictors of dieting (13% of additional variance). Thus, *self-perceptions* of being teasing by peers seems to be a more important contributor to dieting behavior than *peer-perceptions* of social rejection, teasing, and popularity.

Results also indicate that girls who see themselves through the eyes of their peers, believe in the value of weight and appearance for popularity and dating, and have higher opposite-sex relational esteem, report higher levels of dieting behavior. It is interesting that opposite-sex, rather than same-sex relational esteem, was a significant predictor of dieting behavior. This is consistent with research which has identified links between dieting, dating, sexual activity, and mixed-sex social activities (Cauffman & Steinberg, 1996). Both social reinforcement and peer modeling contributed to dieting behavior, after controlling for all other social factors. This finding emphasizes the important role of peer pressure in influencing dieting behavior during adolescence.

For bulimia, both age and age of menarche, but not BMI, were significantly related to bulimic behavior. Older girls were more likely to report bulimic behavior than younger girls, and early maturing girls were more likely to report bulimic behavior than later maturing girls. Again, these findings were expected given that bulimic behavior tends to increase in later adolescence, and early maturing girls are more likely to develop eating problems than later maturing girls. Also, research has shown that the weight of bulimic girls tends to vary (Yates, 1989), and thus BMI was not expected to be a significant

predictor. Peer nominated teasing about being overweight showed unique, but small, prediction (2%). In addition, self-reported teasing contributed above and beyond peer teasing (11% of additional variance), with severe weight, body-shape, and appearance related teasing associated with higher reports of bulimia. Thus, unlike dieting, for bulimia, both self-perceptions of teasing, in addition to peer reports of overweight teasing, are important predictors. Similar to dieting, girls with higher external selves and higher peer attributions about the importance of weight and appearance for popularity and dating reported higher levels of bulimic behavior. Further, peer pressure was a significant predictor of bulimia, with unique variance for social reinforcement, but not peer modeling, (3% of additional variance).

For body esteem, girls with higher BMIs reported lower body esteem (13% of variance). Age of menarche was not related to body esteem, indicating that although early maturation may have a significant effect on eating behaviors (both dieting and bulimia), pubertal development in general, regardless of timing, is important for the development of body image. Similar findings were reported by Stormer and Thompson (1996) in a college-aged retrospective study. In addition, girls who were nominated by peers as leaders reported higher body-esteem (1% of variance), and girls who were teased about being underweight reported lower body esteem (1% of variance). Thus, perhaps girls who are considered to be leaders by their peers feel confident about themselves in general and about their bodies. Also, being teased about being underweight could have a negative effect on adolescent girls' body esteem, especially when their peers' bodies are beginning to develop. During data collection, many of the girls indicated that they were quite upset

about being too thin, and wanted to know if teasing about weight included being "too thin."

Similar to bulimia and dieting, self-reported teasing (severe teasing about weight, body-shape, and appearance) was a strong predictor of body esteem, explaining an additional 21% of the variance. The effect of teasing on body esteem was much stronger than for dieting and bulimia (21% versus 11% & 13% of the variance, respectively). Thus, perhaps teasing influences eating behaviors both directly, and indirectly, via body esteem. In a sample of adolescent girls, Thompson et al., (1995) found that body image mediated the effect of teasing on eating disturbance. Thus, in future, path analysis would be helpful to examine the mediating role of teasing on body esteem and peer pressure. In addition, parallel to findings for dieting and bulimia, girls who had higher external selves and higher attributions about the importance of appearance and weight for dating and popularity reported lower body esteem. Again, the effect of these social self variables on body-esteem (27%) was stronger than the effect of these variables on dieting (17%) and bulimia (13%), which may indicate both direct and indirect pathways. Peer pressure significantly predicted body esteem after controlling for all other variables, though the effects were quite small (1%). Girls who reported more peer modeling, indicated lower body esteem.

Of all the social and relational variables assessed in this study, external self and attributions about the importance of weight and shape for popularity and dating were particularly important for both eating behaviors and body esteem. Girls with high external selves rely strongly on the opinions and standards of others (namely friends) in judging the

self. Since these girls depend tremendously on what their peers think of them for their own self-evaluations, it is not surprising that they would conform to peer norms regarding eating behavior and beauty. Peer attributions about the importance of weight and appearance for popularity and dating was also an important predictor. Though popularity was not related to eating behavior or body esteem, results suggest that it is the mere *belief* that being thinner and more attractive will lead to greater popularity and dating that contributes to negative feelings about the body and problematic eating behaviors. Similar findings were reported by Oliver & Thelen (1996) in a sample of 3rd to 5th grade children. They found that peer likability (i.e., the belief that being thin will increase how much peers like them) was the strongest predictor of both body image and eating. In the current sample, overweight girls were not less likely than underweight girls to be involved in close friendships, to be popular, to be leaders, to have high opposite-sex relational esteem, and to date members of the opposite sex. Thus, even though popularity and dating are not linked to thinness or attractiveness, nor to eating behaviors, these girls have internalized these norms and accepted them as true.

It is also important to highlight that self-reported teasing was a significant predictor of body esteem and eating behaviors. Regardless of whether these girls were nominated by their peers as being teased, perceptions of being teased about body and appearance (and not general teasing), and the impact of the teasing on well-being, is important. For example, findings indicated that only body-shape, weight, and appearance related teasing that was upsetting predicted bulimia and body esteem. For dieting, body-shape and weight teasing that was upsetting, and both upsetting and non-upsetting

appearance teasing, were important. These findings highlight the need to assess not only presence of teasing, but also the affect associated with this teasing. Further, in this study, being teased about being underweight was just as harmful for some girls as being teased about being overweight, especially for body esteem. Girls who are late maturers or those who have higher metabolisms are very often the targets of weight-related teasing. One girl in this study commented, "I look and feel underweight. It makes me feel depressed, since I am not happy with the way I look and when people tell me that I'm disgusting and I look so skinny." Thus, it is important to differentiate teasing about being overweight and underweight in developmental research when girls' bodies are in the process of transforming.

Though many of the peer relations variables were significant predictors of eating behaviors and body esteem, they were poor at correctly classifying eating disordered from non-eating disordered individuals. This was not surprising given that the prediction of eating disorders relies on a more complex pattern of biological, psychological, developmental, and social factors (Steiger & Seguin, 1999). Nonetheless, in future, application of path analysis techniques would be useful in outlining the direct and indirect pathways from relational factors to problematic eating behaviors. From our exploratory analysis, it appears that the most important relational variables to include in the model are involvement in a close friendship, involvement and quality of relations with members of the opposite sex, weight and body specific teasing, peer pressure, externalized self-perceptions, and peer attributions. A more complete model should also include parental variables (e.g., maladaptive family attitudes toward eating/weight), more specific peer

relations variables (e.g., social anxiety, friendship quality), in addition to other characteristics of the self that could place girls at higher risk for conforming to peer pressure. These include both psychopathology (e.g., depression, anxiety) and personal characteristics (e.g., perfectionism, lack of interoceptive awareness, poor coping skills, identity problems). In a recent study, Pike (1995) found increased power for predicting bulimic symptomatology when family and friendship systems were examined in conjunction with personality variables. Also, a positive relationship between difficulty expressing conflict with peers and bulimic symptoms was found, suggesting that friendship quality or more specific social skills may be important contributors to eating pathology.

Limitations of the Study

Although this study highlights the association between peer relations, body esteem, and eating behaviors, there are several methodological limitations which should be addressed. First, the primary measure used in this study (Peer Pressure and Eating Scale) is in an early stage of development. Though it is an improvement over previous measures, items should be modified based on findings from this study in order to increase reliability. It would be important to add more items related to bulimia, rather than weight and appearance. Also, exercise items should be modified to include reasons for exercising (i.e., for weight loss versus to stay fit), rather than exercise in general. Also, this measure did not distinguish between pressure exerted by best friends versus the clique as a whole. Second, although we attempted to control for preexisting group and pair similarities, there may have been additional items which covary with eating behavior and body esteem which were not included in this study (e.g., depression, participation in social activities). Third,

using this measure, group processes were assessed at the level of the individual rather than at the level of the group. Though this was interesting for preliminary exploration, it is necessary to obtain more direct measures of group processes, perhaps using observational methods (in the lunchroom), experience sampling methods, or teacher ratings of specific cliques. Using these techniques, objective measures of group level variables could be assessed including ratings/observation of pressures used in specific cliques, quantity and quality of clique verbalizations about weight and appearance, clique status, and clique involvement in school activities.

Also, in order to meet assumptions of independence for the statistical analyses used in this study, many girls who were multi-group members were placed in one group based on criteria determined by the authors of this study. This may not be an accurate reflection of the social network. Also, some of the girls who were assigned to cliques were non-participants in the study, and therefore, we are lacking information from all group members.

Finally, in some of the schools it was very difficult for girls to complete the negative class play items, particularly items concerning weight, appearance, and social rejection. Although research has shown that these types of measures do not have any harmful effects or consequences (Bell-Dolan, Foster, & Sikora, 1989; Hayvren & Hymel, 1984), some girls were very uncomfortable with these items. Some of the girls reported that they felt that it was socially unacceptable to say negative things about their peers. Also, given the nature of the questions in this study, it would have been useful to include a measure of social desirability.

Future Directions

The cross-sectional design used in this study did not allow us to differentiate the effects of socialization and selection. Although we chose schools where girls had been together for most of their elementary school years, and we collected the data at the end of the school year, it was still impossible to assess peer influence (or group processes) in the true sense of the word. Also, the assessment of peer pressure about weight and appearance was based on self-perceptions, which may not be as accurate as objective behavioral measures. In future, longitudinal methodologies could be used to examine peer pressure more systematically. For example, eating behaviors and attitudes, perceptions of peer pressure, in addition to clique membership, clique cohesion/intimacy and clique status, could be assessed at the beginning of the school year, in the middle of the school year, and at the end of the school year in several grades. Both changes in clique composition (controlling for cohesion), and changes in eating behaviors and attitudes could be assessed at each point. At the same time, it would also be interesting to examine other adolescent health risk behaviors (e.g., alcohol, cigarette & drug use, sexual promiscuity) in order to explore mechanisms associated with eating specific pressures versus pressures to engage in more general risk taking behaviors. A cohort approach could also be taken, where a sample of high school girls is followed over several years, from entry into high school until graduation. Using this technique, eating behaviors and attitudes and clique stability could be assessed over time.

The differential effects of direct and indirect / subtle pressures on eating behaviors and attitudes also merits further investigation. Alsaker (1995b) reports that indirect

pressures (e.g., modeling) are the most powerful means for transmitting group norms during adolescence. For example, one girl in our study commented: "Some people make me sick. They weigh under 100 pounds and are way too thin and tall, and they think that they are fat. We sit at lunch and discuss it, all the time. I am not fat or skinny, I think that I am normal. But they make me feel that I am fat, even though inside I know that I am not." Another girl commented: " My best friend is always worrying about her weight, and although she always says "You're so thin," her stressing makes me stressed." Thus, simply having a best friend who diets, or being part of a high dieting clique can have a tremendous impact on the way girls feel about their own bodies. Similar results were found by Wertheim, et al. (1997) in an interview study where indirect social influences (i.e., social comparison, joint dieting, avoidance of social disapproval) were more commonly reported than direct pressures to diet from peers. Given these findings, in addition to the differential effects of social reinforcement and peer modeling in best friend pairs and cliques, and on dieting and bulimia, measures which discriminate direct and indirect pressures should be refined for future research.

Though it is relatively easy to question girls about direct influences, indirect, or subtle influences are difficult to assess. We attempted to examine this phenomenon by decomposing variability between and within clique members/best friend pairs in their eating behaviors and attitudes (ICCs), and by asking girls about the eating attitudes and behaviors of their friends. Although these methods are improvements over previous methodologies, they are nonetheless incomplete. Qualitative approaches may be useful data-gathering tools for the development of rich descriptors of indirect processes. For

example, Wertheim et al. (1997) used an interview format (open and closed-ended questions) to gather information about both direct and indirect peer influences on eating behaviors (e.g., Have you ever been on a diet?) In future, cliques identified as being at high risk could have an open discussion about their eating habits and the pressures they experience to conform to eating specific behaviors and norms. Observation of clique behavior (e.g., during lunch) and teacher ratings of behavior may also be important data-gathering tools for the examination of indirect effects. Finally, an experience sampling procedure could be used, where teens record their eating experiences (with both family and peers). Conversations about food and weight, mealtime experiences, and weight related teasing could be recorded, indicating whom they were with at the time and their feelings about these experiences.

It would also be useful for future research to examine more systematically the positive influences peers have on eating behaviors and attitudes, rather than only the negative (e.g., Berndt & Keefe, 1995). For example, once girls are sensitized to the role of the media and peers in influencing ideas of beauty, they can use their clique pressure tactics (especially high status cliques) in social action projects to combat these pressures. For example, they can fight against clothing companies that make only small-sized clothing, or they can sensitize supermarkets to the negative effects of magazines on female development. In this way, their pressure tactics can be used in a more positive way. Also, once girls learn about the negative effects of dieting and about healthy eating habits, they can support each other in their health efforts rather than their weight loss efforts. Peers can encourage one another to develop interests other than weight and appearance, perhaps

in certain athletic activities. Thus, peers can have a very positive influence on one another if the pressure is shifted to positive activities.

In the current study we explored teasing by same-sex peers. It is very likely that teasing by opposite-sex peers and by family members also has a significant effect on body esteem and eating behaviors. In a retrospective study, Rieves & Cash (1996) found that though peers in general (62%) and friends (47%) make up the largest category of teasers, family members also engage in teasing behavior (mother, 30%; father 24%). It would be useful for future research to examine teasing and weight-related expectations from both boys and family members. Also, it would be interesting to compare the effects of teasing and peer pressure in same and mixed-sex schools, and in schools with uniforms versus schools without uniforms.

Finally, size of school and school climate may also be important mediators of peer pressure and would be important variables to include in future research. One girl in our study commented, "I feel the environment at my school encourages a healthy outlook on life. We are strong, always helping each other out, and our school encourages healthy, active lives. My mental and physical state is largely due to my school and its attitudes." Thus, differences in school climates (i.e., those that promote fashion shows and those that are athletically oriented) may have a significant impact on body esteem and importance of thinness. Another girl commented, "Long school hours add to the general unhealthy lifestyles of kids these days. We are generally too sedentary." She may be right. Also, given the importance of clique status and individual status in influencing eating behaviors and peer pressure, schools which begin to emphasize other areas of importance for

prestige (i.e., intelligence, athletics), may be able to modify the associations between the thinness and status. With the help of both teachers and students, teasing and dieting could become unacceptable within the school system.

Implications for Intervention

Given the effects of individual and group-level variables on eating behaviors and body esteem, findings from this study highlight the need for intervention at different levels. Using a "high-risk" approach (i.e., secondary prevention), girls or cliques identified as being at risk for the development of problematic eating behaviors could be targeted for intervention. Based on findings from the current study, girls with low self esteem, low body esteem, high appearance preoccupation, high external selves, and those who are teased about their bodies and their weight (individual-level), especially girls in high pressure, prestigious cliques (group-level) are at the highest risk for problematic eating behaviors. Individual psychotherapy or group therapy could be implemented with targeted girls or cliques. Nonetheless, although a high-risk approach may help to prevent specific individuals from developing problematic eating behaviors, it is unlikely to change the prevalence of eating disorders within the population at large.

Primary prevention for eating disorders is also an important area of intervention that has increased in recent years. Primary prevention is usually implemented at the level of the general student population within the school system (rather than targeting high risk individuals or groups). School-based primary prevention for eating disorders has focused on nutrition, healthy eating, body image and body-shape concerns, and evaluation of media messages (e.g., Smolak, Levine, & Schermer, 1998). In the short-term, these

programs have had minimal success in changing eating behaviors and body esteem (though they do increase knowledge).

Findings from the current study suggest that it would be useful for eating disorder prevention to focus on teasing behavior, particularly about body-shape, weight and appearance. Over the past decade, research about teasing and bullying in the schools, and means to deal with the bullying, has increased significantly (Olweus, 1991; 1993). This research surge occurred as a result of three student suicides resulting from teasing in Norway. School intervention programs dealing with teasing and bullying in the schools have been quite successful. Olweus (1991) found that two years after his intervention program began, bullying decreased by approximately 50% using a variety of measures. At this point, most bullying intervention programs focus on general teasing. Results from the current study indicate that girls who are disturbed by weight specific-teasing, rather than general teasing or social rejection, are likely to have low body esteem and to engage in problematic eating behaviors. Thus, primary prevention, especially during early adolescence, dealing with the negative effects of weight, body and appearance-related teasing, would be particularly helpful for increasing body esteem and reducing problematic eating behaviors.

Findings also suggest that more comprehensive prevention programs which include the negative effects of teasing behavior, peer messages about dieting and body-shape, ways to combat teasing behavior, methods to enhance self esteem and bolster body esteem, and education about the negative effects of dieting would be useful. Also, at the group level, intervention could focus on severing the ties between group prestige and

pressure to uphold the thin ideal. Smolak et al. (1998) suggest that primary prevention programs should be implemented in elementary school before partial or full eating disorders develop, while secondary prevention approaches would be more useful in middle and high school populations. Also, Wertheim et al. (1997) suggest that using peer facilitators (rather than counselors or teachers) may be a useful method for prevention. This seems reasonable in light of findings from this study which highlight the importance of peers (and peer pressure) during adolescence.

At a higher organizational level, intervention could be implemented at the level of the school, by changing school policy, and the level of the community, through public health reform (e.g., population approach). For example, schools could implement a zero-tolerance policy for teasing, school fashion shows could be prohibited, and prevention could be included as part of the school curriculum. At the level of the community, convenience stores could remove magazines depicting unrealistic models from their shelves, magazines could use more realistic models in their ads, or a bill board free zone could be set up in high school areas. Though intervention at these levels may not prevent specific girls who are at risk from developing eating disorders, they may begin to change societal attitudes about weight and appearance, and in turn, make dieting less normative.

Conclusions

Peers and peer relations have a tremendous impact on the way girls feel about themselves and their bodies. One 8th grade girl in our study commented, "I think that the aspect of my life that most affects how I think about my weight and appearance is the general comments that I get from friends (girls and boys, but more boys). When they like

something, I am happy and try to make the best of it. When they dislike something, I do my best to change it or get rid of it. What others think or say about me is the deciding factor in what I think about myself." Findings from this study highlight that peer pressure takes many forms, affecting adolescent girls of all ages. Peers exert influence through both direct means, such as positive or negative verbal feedback and comments (i.e., teasing, direct reinforcement, direct teaching), and through modeling (vicarious reinforcement). These techniques are powerful mechanisms for transmitting what is acceptable and unacceptable behavior in both social networks and best friend pairs.

Results from the current study highlight the high prevalence of problematic eating behaviors (especially dieting), and low body esteem in adolescent girls, and the importance of peers in contributing to these behaviors and attitudes. In general, girls who are overweight, are early developers, are teased about their weight, appearance and body-shape, see themselves through the eyes of their peers, have internalized the belief that thinness and attractiveness will lead to increased popularity and dating, and those who experience pressure from peers to be thin, seem to be at the greatest risk for the development of eating problems. These findings have implications for our society at large. They point to the strong need to change the beliefs and attitudes of young girls and adolescents about the importance of thinness, and the link between thinness and success. This may occur with the implementation of national prevention programs combating these false beliefs. In this way, girls may begin to value themselves for attributes other than their looks and their weight, leading to much more "successful" lives.

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APPENDIX A

Letters to principals and parents and consent forms

March 14, 1997

Dear Principal,

As a follow-up to our recent phone conversation, we are writing to ask you for permission to conduct our research project in your school, and to provide you with information regarding our project. You will also find following a letter to parents and consent forms.

Adolescence is an important developmental period for the emergence of body dissatisfaction, dieting and eating problems. Young adolescent girls are growing up in a social and cultural environment that glorifies thinness, and they are being exposed to unhealthy messages about the importance of thinness, dieting, and attractiveness. Adolescent concern about weight and dieting has captured the attention of both clinicians and researchers due to the possibility that early weight preoccupation could lead to the development of later eating disorders.

Although the influence of both the media and family members on the development of eating problems have been investigated, few studies, if any, have examined the influence of peers. Since peer relations and peer pressure become increasingly salient during adolescence, one would expect peers to have an important influence on the development of eating behaviors and body satisfaction in adolescent girls. Also, given that girls rely strongly on social experiences to define their sense of self, and that thinness and appearance have been linked with social acceptance, adolescent girls may become increasingly compliant with peer expectations regarding appearance and weight in order to gain social approval or popularity.

With support from the Social Sciences and Humanities Research Council of Canada and from the Fonds pour la Formation des Chercheurs et L'aide a la Recherche of Quebec, we are conducting an investigation of social factors influencing the development of eating behaviors and body dissatisfaction in adolescent girls. More specifically, we are hoping to gain a better understanding of the role that peers play in the development of eating behaviors and attitudes. This investigation is being conducted by Melissa Lieberman, a Ph.D candidate at Concordia University, under the supervision of Dr. Donna White, a psychologist and researcher in the field.

The present project requires the participation of as many girls as possible in grades 7 through 10. During the first session, students will be given a brief explanation of the study and what participation involves. Students under the age of fourteen will be given a letter and a consent form to take home to their parents. Students over fourteen years of age will sign their own consent forms. Only students with consent will be eligible to participate.

This project will involve students' completion of several questionnaires concerning eating behaviors, self and body esteem, and peer pressure. Many of these questionnaires are commonly used for research in this area. Students will also be asked to list their best

friends, and to nominate students in their grade who generally hang around together. Most students find this quite enjoyable. Height and weight will be measured in a private area of the classroom. All answers will remain confidential, and students will have the option to withdraw from the project if they so desire.

These questionnaires will be completed during two sessions of approximately 45 minutes each. The scheduling of these sessions will be arranged at the schools' and the teachers' convenience in order to minimize disruption of school time. I would be happy to meet with the teachers to explain the project in more detail. Also, upon completion of the project, several sessions aimed at improving body image could be provided to the students by our research team. Students will also be given the name and phone number of Dr. Donna White, a professional psychologist, should they have any of their own concerns regarding weight and appearance.

We would greatly appreciate your involvement in our project, and hope that the above meets with your approval. If you have any further questions or need any further information, please to not hesitate to call us.

Thank-you,

Melissa Lieberman, M.A.
Project Coordinator
(848-2256)

Donna White, Ph.D
Project Director
(848-7542)

March 1997

Dear Parents,

We are writing to ask permission for your child to participate, at school, in a project which was approved by your child's school principal and teachers.

We are currently conducting an investigation of social factors which may influence eating behaviors and body dissatisfaction in adolescent girls. More specifically, we are hoping to gain a better understanding of the role that peers play in the development of eating behaviors and attitudes. This work is important because early eating problems and poor body satisfaction could contribute to the development of later eating disorders. This investigation is being conducted by Melissa Lieberman, a Ph.D candidate at Concordia University, under the supervision of Dr. Donna White, a psychologist and researcher in the field. This project is being supported by the Social Sciences and Research Council of Canada and the Fonds pour la Formation des Chercheurs et L'aide a la Recherche of Quebec.

This project involves the participation of adolescents, ages 12-15. During class time, participants will be given a brief explanation of the study and what participation involves. The adolescents will be asked to complete a series of questionnaires concerning eating behavior, self and body esteem, and peer pressure. Students will also be asked to list their best friends in the grade. In order for our research to be meaningful, it is important that the majority of the class participate in this task. The questionnaire packet will take approximately 2 class periods (45 minutes each) to complete. Since there are no right or wrong answers, students usually find answering the questions interesting. Height and weight measures will be taken for each participant.

All information obtained from individuals in this study will remain strictly confidential to the research team. **Please indicate on this form whether your child will participate in this study by providing your signature on the appropriate line.** To encourage your child to return the form, all students who return their forms (*whether you consent or not*), will be eligible for a raffle of gift certificates for Cineplex Odeon movie passes. We would like to know your decision even if you **do not** agree to your child's participation. It should be noted that participation is completely voluntary and the participant can terminate at any time.

We need as many participants as possible in order to complete this study. Thus your consent would be greatly appreciated. If you have any questions concerning this study, please do not hesitate to contact us.

We would like to take this opportunity to thank you in advance for your time and interest in our investigation.

Melissa Lieberman, M.A.
Project Co-ordinator (848-2256)

Donna R. White, Ph.D
Project Director (848-7542)

CONSENT FORM

By signing this consent form, I understand that my child will be involved in a study regarding the influence of peers on the development of eating behaviors and body satisfaction. I know that participation is completely voluntary. No one other than the researchers will have access to the information my child will provide.

Please complete the following:

Adolescent's Name: (please print) _____

School: _____

Grade: _____

Check where applicable:

_____ I **agree** to my child's participation in this project.

OR

_____ I do **not** agree to the above.

_____ _____

Parent's Name (Please print) Parent's Signature

Address:

_____

_____

_____

Please indicate whether or not you are interested in a summary of the results of the study:

YES___ NO___

(If *yes*, make sure you have included your address above!)

Please return this form to your teacher or the school secretary as soon as possible!

Consent Form to Participate in Research

I agree to participate in this study which will examine the ways in which girls develop ideas about eating and the how they feel about their bodies. I understand that this program of research is being conducted by Melissa Lieberman, a Ph.D candidate, under the supervision of Dr. Donna White, a psychologist at the Centre for Research in Human Development at Concordia University. I understand that I will be asked to fill out several questionnaires, which will take approximately 2 class periods. I understand that my weight and height will be measured in a private area of the classroom following the first session.

Furthermore, I understand that my participation in the study is totally anonymous, and that the answers I provide are strictly confidential. I also understand that I am free to discontinue participating at any point in the study without giving any notice and without any negative consequences. I understand that I am participating in this research solely to advance knowledge in the area of social factors influencing the development of eating behaviors, and that the study has no further motive with which I have not been told about. I also understand that the overall results of this study may be published.

I have read the above conditions and I understand this agreement, and therefore I freely consent and agree to participate in this study.

Print Name:_____ Age:___

Signature:_____

In the future, we may also like to examine how parents may influence the development of eating attitudes and behaviors in their daughters. We would appreciate you providing your parents' names, phone numbers and addresses so that we may contact them to request their participation.

Mother's Name:_____
Phone Number:_____
Full Address: _____
_____

Father's Name:_____
Phone Number:_____
Full Address: _____
_____

APPENDIX B

Verbatim instructions to participants

Peer Influence on Eating Attitudes and Behaviors
Verbatim Instructions to Participants

SOCIOMETRIC ASSESSMENT:

Introductory Phase:

Hi. My name is _____, and these are my assistants _____ and _____.
We are here from Concordia University.

In grades 9 & 10:
Some of you may not have been here during the assembly. Read names of those students who you did not receive consent forms from.
-tell them a little about study, what we are looking at, what study involves, 2 questionnaire sessions and weight and height measurement in private. Tell them how this important research is and that most girls enjoy it (see shpil). Strongly encourage them to participate. The more subjects we have, the more meaningful the research is.
-I have extra consent forms here if you wish to participate.
-distribute consents, let them fill them out, add their subject numbers to extra questionnaires

For grade 7 & 8:
Next, name the non-participants, if any. Ask them to raise their hands and tell them; "we know that you are not participating so please take out some work or something to read quietly at your desk, OR please follow _____ to the library."

As you may remember, we are interested in learning about what girls your age think and feel about their bodies and about eating, and how your friends may influence these feelings.
-today you will fill out a packet of questionnaires, and then you will got out in threes and wait (location) with your shoes off so we can take your weight and height measurements. Like the questionnaires, the weight measurements are confidential/anonymous so we are going to ask you to stand backwards.

Before we get started, there are some very important things to tell you. The first thing is, this is not a test. There are no right or wrong answers. What we want to know is your opinions and feelings.
The second thing is, since we are asking for your opinion, we will keep it private. This means that I will not show your answers to anyone. And because I am going to keep it private, you can feel free to be honest about what you really think.
Also, because it is private, it is important for you **not to look at what other students are writing** down and not to let others know what you have written down.
-tell them they can use paper to cover answers, move so they are not next to each other

The last thing I want to tell you is that there is no talking while you are filling out the questionnaires. Because I have important things to tell you, you need to listen carefully. If

you are talking, you can't hear my instructions and you won't know what to do. So if you have any questions, just raise your hands and _____ or _____will come over to help you.
Okay, those are the three things I wanted to tell you; This is not a test, this is private and no talking, just listening.

Assessment Phase:
Now we're ready to start. _____ & _____ are going to pass out the questionnaires. **Please do not begin until I've had a chance to explain more about them.**

(Leader will call out the students names and when student identifies herself, the appropriate questionnaire will handed to the participant.)

Does everyone have a pencil/pen ready? (Helpers: Distribute if needed)
If you are all ready, let's begin. No more talking, everyone should be quiet. I will answer all questions after I'm finished explaining (If hands up at this point, ask them to wait because you are probably going to answer their questions anyway).

(Leader: show them the grade list)
On the first page, you will see a list of the names of the girls in your grade at school. I want you to look for your own name on the list and draw a circle around it. (Wait until everyone is ready). All done? If your name is not on the list, please raise your hand now.
(If a child's name is missing, ask everyone to write it at the bottom of the first page. Write it on the blackboard as well.)

Turn to the second page (Show them second page). First, fill in the top part, your grade, school and age. Now let me explain the next few pages and then you can begin.

We to know about your friendships. Who are **your** best friends in your grade? So, when I tell you to start, I want you to write down the names of your best friends from your grade. Put your very best friend's name on line 1, put your second best friend on line 2, third best on line 3 and so on. You can name as many or as few friends as you want. Just make sure to write down the first name and the first letter of the last name for each best friend you list, and remember to pick friends from the grade list on page 1.

Before you start, turn to the next page (only do this in older grades, for younger grades do each part separately).
What I'd like you to do for this part is to write down the names of the girls in your grade who "hang around" together. Again, I want you to write the first name and the first letter of the last name for each girl in the group, using the grade list on page 1. You have enough space to write down the names of six groups or "cliques" of girls, but just fill in as many groups as there are girls in your grade who hang around together. The groups may be different sizes. Also, if you are in one of these groups, don't forget to write down your own name.

Now look at the next page,
For this part, you are to write down the names of the girls in your grade who do **not** hang around with a particular group. Again, write down the first name and the first letter of the last name for each girl you name using the grade list on page 1. You can write as many or as few names as you want. If **you** do not hang around with a particular group, please include your own name here.

Do you have any questions before we start?
Possible questions:
Q: What if my best friend is not in this grade/school? A: Try to write down your best friends from your own grade, but if your very best friend is in a different grade or school, you can write their name on the first line (with their grade or school in brackets), and then pick your other best friends from the grade list.
Q: What if I don't have any friends in this grade or school? A: Try to write down the names of girls in your grade who you "hang around" with the most or who you spend the most time with.
Q: What if I can't put them in any order, they are ALL my best friends? A: It doesn't matter who exactly is number 1, 2 or 3, you can really put them in any order you want. Try to put them in order of who you feel closest to or who you share the most secrets with.
Q: What if ___ is in more than one group or clique? Try to put them in the group who they hang around with the most. If they hang around equally in two groups, you can write their names down in both groups.
Q: What if there are more than 6 groups of girls in the grade? A: If there are more than 6 groups, you write the rest of the groups on the bottom of the page.

Okay. Now you can start. Remember, no talking and if you have a question raise your hands and we will come to your desk.

Revised Class Play Instructions:
Now turn to the next page where it says instructions for class play. This section is different so everyone needs to listen carefully.
What we want you do is to pretend that you are the director of a play starring the students in your grade/class.

Who can tell me what a director does? (Allow students to raise their hands and answer the question).
Right. The director of a play has many things to do, but the most important job is to choose the right people to act in the play. So for this part, your job is to choose the students who seem to fit each role in real life.
Let's try one together. Who in your class would you choose to play the role of a fast runner athlete? (Wait for a response) Good.

There are a few important rules that you should know before we start.
First, you can only choose one person from your grade/class for each part, although the same

person can be chosen for more than one role. For example you can choose one person to be a fast runner and the same person to be a good student, but you cannot choose 2 people to be good students. If you think that 2 people would be equally good for the same part, choose the **one** person who you feel would play the part the best.

The second rule is that you cannot choose yourself for any of the parts.

Okay, now we can begin. Turn to the next page. The roles are listed across the top of the page, with a column of names under each role. First, find your own name in the first column and cross it out. Do not circle it, put an X or a line through it. Now cross out your name in all the columns on the first page.
(If they feel that crossing out their name ruins the anonymity, you can tell them they don't have to but they should remember not to choose themselves).

Now lets try the first one together. Circle the name of the person in your class/grade who could play the part of a Good Leader. Remember to choose only one name from the column directly underneath "good leader."

Now you can continue to do the rest on your own. Remember to cross out your own name on each page. If you need help, please raise your hand and we will come to your desk.

Potential questions:
Q: What if I can't find anyone in the class who could play this part? A: Just try your hardest to think of someone who can play the role, but if you are really stuck, you can leave it blank.

Q: What if I would be the best one for this part? A: If you want, you can put a star beside your own name if you feel that you would be the best person, but try to find someone else in your class/grade who could also play the part.

Is everyone done? Okay let's move on to the next one.

PEER EATING INFLUENCE SCALE:

This questionnaire is very important so please pay attention. I am going to read the instructions from the top of the page out loud. Please follow along.

This scale measures both your attitudes and behaviors and your friends' attitudes and behaviors about food, appearance and dieting. When answering the questions, try to think about the friends who you feel closest to, or the friends who have the greatest effect on your behavior and ideas.

Remember there are no right or wrong answers so you can be honest about the way you feel. You are to read each question carefully and then circle the number which best applies to you.

There are six possible answers for each question:

False, Mostly False, More False than True, More True than False, Mostly True and True
Remember, false means that it is **never ever** true for you and True means that it is **always** true for you (100% true).

There may be very subtle differences between some of the items, so please read each question carefully.

Let's look at the examples together. The first one says "getting good grades is important to me." Please circle your answer now. The second one says "It is important for my friends to get good grades." Circle your answer. So you see from this example that you have to pay close attention because the same ideas may repeat, but one could be about you and the other about your friends.

Okay. Please do the rest on your own. Raise your hands if you have any questions and one of us will come to your desk.

That's it. Thank you very much. We will see you on _____to finish the rest of the questionnaires.

Weight and Height procedure**********

Helpers:
Walk around the classroom and make sure that the children are checking one item only. Try to catch any mistakes you see so they can be corrected on the spot.
The questionnaires may upset some children. If you notice that a child is upset ask her if something is wrong. Ask gently. Ask they if they want to talk about some of these things in private after they finish.

Second Phase:

Hello. Do you remember us? We are from the Eating Habit project at Concordia University. My name is _____, and my assistants today are _____ and _____.

This time we are going to do something different, but before we start, I want to remind you of a few important things we told you last time.

1. There are no right or wrong answers. This is not a test, we just want your feelings and opinions.
2. Since we are asking for your opinions, we will keep everything that you tell us private. This way you can feel free to be honest about what you really think. Also, because it is private, it is important for you to be careful not to look at what other kids are writing down
3. We would like you to work quietly. If you have any questions, raise your hand and one of us will come to your desk.

Now we are ready to begin. You can work on most of these questionnaires on your own, but let's go over the instructions for the first one together to refresh your memories.

Instructions for the SDQ:

This is a chance to look at yourself. This is not a test. There are no right or wrong answers. Be sure that your answers show how you feel about yourself.
YOU ARE TO READ EACH SENTENCE TO YOURSELVES, and mark your answer on the sheet. There are six possible answers for each question:
False, Mostly False, More False than True, More True than False, Mostly True and True
Remember, false means that it is never ever true for you and True means that it is always true for you.

Look at the examples in the middle of the page. The first 2 have already been completed by a student named Kaylie. The first sentence says, I like to read magazines. Kaylie chose true because she always likes to read magazines, whenever she has the chance. The second sentence says, in general I keep my room tidy. Kaylie chose More false than true because her room is usually messy, but sometimes she cleans it up and it is neat.
You try the next one. It says, I like to watch TV.
Please turn the page and continue quietly on your own. Again, raise your hand if you need help and we will come to you.
The rest of the questionnaires are quite straightforward. Please remember to read the instructions for each questionnaire carefully. The last questionnaire is a general information form. At the end, there are a few lines for you to write down any comments or questions you have about the study. We would really appreciate your feedback. Okay. You may continue with the questionnaire package. Again, if you have any questions, raise your hand and one of us will come to you.

De-briefing:

The purpose of this study was to look at how girls your age feel about their bodies and their weight, to look at eating behaviors and attitudes in girls your age and to determine the role of peers in influencing some of your feelings in these areas.

This research will help us to discover factors that may influence the development of eating problems in adolescent girls, so we can design effective intervention and prevention programs.

Information:

-as many of you probably know, there is a lot of pressure for girls in our society to be thin, from friends, parents, and the media
-this effects girls no matter how much they weigh, whether they are underweight, average weight and overweight, they still feel pressure to be thin
-as you may also know, during puberty girls tend to gain some weight, and it is important for you to remember that weight gain is a normal part of development
-also, like height, genetics play an important role in determining weight and there is usually a genetically defined range that the body stays within
-It is also during adolescence that many girls begin to think about dieting.
-watching what you eat can be healthy if is done properly, however, fad diets (taking pills, skipping meals, and excessive dieting) are very unhealthy
-in the end, most girls end up gaining even more weight and some girls may end up developing an eating problem
-So if you feel that you are eating when you are upset or depressed, or if you are dieting excessively, it could become dangerous, could lead to health problems, increased depression, more weight gain, and in some cases to other kinds of eating problems
-so if you are going to try to lose weight, it would be important to do it in a reasonable and healthy way.

-some of the questionnaires you filled out may have been difficult for many of you, especially when you had to pick people in your class to play certain parts in the play. This is normal, it was probably hard to pick girls in you class who are teased or left out. But it is important to remember that teasing or being left out or ignored does happen to a lot of girls your age, and there are ways you can get help. If you feel bad about some of these things or if these things happen to you, we'd be happy to speak with you or give you the name of someone to speak with. Also, if you want to talk about weight issues or dieting we are also available to speak to. I am writing down a number on the board. If anyone here would like to talk about any of the issues or any other concerns please feel free to call the number on the board. Ask for either Melissa or Michelle.

Questions about the study?
Comments?

APPENDIX C
Sociometric and Clique Nomination Measures

School:_____

Grade: 7__ 8__ 9__ 10__

Age: ___

Teacher's Name:_____

1. Name your best friends in your grade. Please name girls only. (See grade list on page 1).

BEGIN WITH YOUR *VERY BEST* FRIEND

(First name and first letter of last name)

1. _____
2. _____
3. _____
4. _____
5. _____

_____

_____

_____

2. Name the girls in your grade who "hang around" together a lot.

Fill in as many groups as there are girls in your grade who hang around together. You do not have to fill in names for all six groups.

Please include **your own name** if you belong in one of these groups!!

(First name and first letter of last name)

GROUP 1:	GROUP 2:	GROUP 3:
1. _____	1. _____	1. _____
2. _____	2. _____	2. _____
3. _____	3. _____	3. _____
4. _____	4. _____	4. _____
5. _____	5. _____	5. _____
6. _____	6. _____	6. _____
7. _____	7. _____	7. _____
_____	_____	_____
_____	_____	_____
_____	_____	_____

(First name and first letter of last name)

GROUP 4:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
_____
_____
_____

GROUP 5:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
_____
_____
_____

GROUP 6:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
_____
_____
_____

3. Name the girls in your grade who **do not** hang around with a particular group. If ***you*** do not hang around with a particular group, please include yourself here.

(First name and first letter of last name)

1. _____

2. _____

3. _____

4. _____

5. _____

_____

_____

_____

Table C1

Frequency of Friendship Cliques of Different Member Size

Clique Size	No. of Cliques	% cliques	No. of girls	% of girls
2	5	4%	10	1%
3	12	10%	36	4%
4	11	9%	44	5%
5	13	11%	65	8%
6	24	20%	144	17%
7	12	10%	84	10%
8	13	11%	104	12%
9	6	5%	54	6%
10	5	4%	50	6%
11	3	3%	33	4%
12	6	5%	72	8%
13	6	5%	78	9%
14	1	<1%	14	2%
15	2	2%	30	4%
16	0	0%	0	0%
17	1	<1%	17	2%
18	0	0%	0	0%
19	1	<1%	19	2%

Note. n = 854

APPENDIX D
General Information and Self-Reported Teasing

General Information:

Please *circle* the answer which best applies to you:

1) Please indicate your current dieting status:

a) I am on a diet whereby I am eating considerably less in order to lose weight

b) I am on a diet whereby I am eating less in order to maintain a recent weight loss

c) I am not currently on a diet, but I try to watch what I eat

d) I am not currently on a weight control diet

2) Please indicate your dieting history:

a) I have never dieted to lose weight

b) I have attempted to lose weight through dieting about once or twice in my life

c) In the past year, I have attempted to lose weight more than twice

d) I am chronically dieting to lose weight

3) I think I am:	**(circle)** underweight	normal weight	overweight
4) My parents think I am:	**(circle)** underweight	normal weight	overweight
5) My friends think I am:	**(circle)** underweight	normal weight	overweight

6) Please indicate your weight status history:

From **birth to 5** I was:	**(circle)** underweight	normal weight	overweight
From **age 5 to 9** I was:	**(circle)** underweight	normal weight	overweight
From **age 9 to 12** I was:	**(circle)** underweight	normal weight	overweight
Since age 12 I have been:	**(circle)** underweight	normal weight	overweight

7) Have you ever been teased by others about your weight or size?

Yes__ No__

If **YES**, how did it make you feel? (Please circle **one** answer)

Really upset me Somewhat upset me Upset me a little Didn't upset me

8) Have you ever been teased by others about your body-shape (e.g., large/small breasts, big hips, too short/tall)?

Yes__ No__

If **YES,** how did it make you feel? (Please circle **one** answer)

Really upset me Somewhat upset me Upset me a little Didn't upset me

9) Have you ever been teased by others about the way you look?

Yes__ No__

If **YES,** how did it make you feel? (Please circle **one** answer)

Really upset me Somewhat upset me Upset me a little Didn't upset me

10) Have you ever been teased by others about things other than your body or appearance?

Yes__ No__

If **YES,** what?_____

How did it make you feel? (Please circle **one** answer)

Really upset me Somewhat upset me Upset me a little Didn't upset me

11) Have you started "going out" with boys (i.e., dating) yet?

Yes__ No__

If **YES,** how old were you when you first started?

Please check **one** answer:

__Under 10 years __10-10 ½ years __10 ½ -11 years __11-11 ½ years
__11 ½ -12 years __12-12 ½ years __12 ½ -13 years __13-13 ½ years
__13 ½ -14 years __Over 14 years

12) Have you had your period yet?

Yes__ No__

If **YES,** how old were you when you first had it?

Please check **one** answer:

__Under 10 years __10-10 ½ years __10 ½ -11 years __11-11 ½ years
__11 ½ -12 years __12-12 ½ years __12 ½ -13 years __13-13 ½ years
__13 ½ -14 years __Over 14 years

13) Mother's highest level of education:

_____ Less than grade 7
_____ Secondary I or II
_____ Secondary III or IV
_____ High School Diploma
_____ College, CGEP, or specialized school
_____ University: Bachelor Degree (B.A.)
_____ University: Master's Degree or Higher

Father's highest level of education:

_____ Less than grade 7
_____ Secondary I or II
_____ Secondary III or IV
_____ High School Diploma
_____ College, CGEP, or specialized school
_____ University: Bachelor Degree (B.A.)
_____ University: Master's Degree or Higher

14) My parents are:

_____ Married
_____ Separated/Divorced
_____ Other

Please feel free to write down any additional comments or questions you may have about the questionnaires or the study in general:

_____

_____

_____

APPENDIX E

Children's Eating Attitudes Test

INSTRUCTIONS:

This questionnaire measures your attitudes, feelings and behaviours about food and eating. There are no right or wrong answers. Your answers are completely confidential, so please try to be honest about your feelings.

Please read each question carefully and circle the number which best applies to the statement below.

EXAMPLE:	**Always**	**Very Often**	**Often**	**Sometimes**	**Rarely**	**Never**
I like to eat vegetables	1	2	3	4	5	6

	Always	**Very Often**	**Often**	**Sometimes**	**Rarely**	**Never**
1. I am scared about being overweight	1	2	3	4	5	6
2. I stay away from eating when I am hungry	1	2	3	4	5	6
3. I think about food a lot of the time	1	2	3	4	5	6
4. I have gone on eating binges where I feel that I might not be able to stop	1	2	3	4	5	6
5. I cut my food into small pieces	1	2	3	4	5	6
6. I am aware of the energy (calorie) content of the foods that I eat	1	2	3	4	5	6
7. I try to stay away from foods such as bread, potatoes and rice	1	2	3	4	5	6
8. I feel that others would like me to eat more	1	2	3	4	5	6
9. I vomit after I have eaten	1	2	3	4	5	6
10. I feel very guilty after eating	1	2	3	4	5	6
11. I think a lot about wanting to be thinner	1	2	3	4	5	6
12. I think about burning up energy (calories) when I exercise	1	2	3	4	5	6
13. Other people think I am too thin	1	2	3	4	5	6
14. I think a lot about having fat on my body	1	2	3	4	5	6
15. I take longer than others to eat my meals	1	2	3	4	5	6

16. I stay away from foods with sugar in them 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
17. I eat diet foods 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
18. I think that food controls my life 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
19. I can show self-control around food 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
20. I feel that others pressure me to eat 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
21. I give too much time and thought to food 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
22. I feel uncomfortable after eating sweets 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
23. I have been dieting 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
24. I like my stomach to be empty 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
25. I enjoy trying rich new foods 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
26. I have the urge to vomit after eating 1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6

APPENDIX F

Revised Body Esteem Scale

INSTRUCTIONS: Indicate how often you agree with the following statements: ranging from "never" (0) to "always" (4). Circle the appropriate number beside each statement.

1	I like what I look like in pictures.	0	1	2	3	4
2	Other people consider me good looking.	0	1	2	3	4
3	I'm proud of my body.	0	1	2	3	4
4	I am preoccupied with trying to change my body weight.	0	1	2	3	4
5	I think my appearance would help me get a job.	0	1	2	3	4
6	I like what I see when I look in the mirror.	0	1	2	3	4
7	There are lots of things I'd change about my looks if I could.	0	1	2	3	4
8	I am satisfied with my weight.	0	1	2	3	4
9	I wish I looked better.	0	1	2	3	4
10	I really like what I weigh.	0	1	2	3	4
11	I wish I looked like someone else.	0	1	2	3	4
12	People my own age like my looks.	0	1	2	3	4
13	My looks upset me.	0	1	2	3	4
14	I'm as nice looking as most people.	0	1	2	3	4
15	I'm pretty happy about the way I look.	0	1	2	3	4
16	I feel I weigh the right amount for my height.	0	1	2	3	4
17	I feel ashamed of how I look.	0	1	2	3	4
18	Weighing myself depresses me.	0	1	2	3	4
19	My weight makes me unhappy.	0	1	2	3	4
20	My looks help me to get dates.	0	1	2	3	4
21	I worry about the way I look.	0	1	2	3	4
22	I think I have a good body.	0	1	2	3	4
23	I'm looking as nice as I'd like to.	0	1	2	3	4

APPENDIX G
The Peer Pressure and Eating Scale and Subscales

INSTRUCTIONS:

This scale measures both your own attitudes and behaviours, and your friends' attitudes and behaviours about food, appearance and dieting. When answering the questions, try to think about the friends who you feel **closest** to, or the friends who have the greatest effect on your behaviour and ideas.

- Remember, there are no **RIGHT** or **WRONG** answers so you can be honest about the way you feel!

- Please read each question **carefully** and circle the number which best applies to you!

There may be very **subtle** differences between some of the items, so please read each question carefully!!

EXAMPLE:

	False	**Mostly false**	**More false than true**	**More true than false**	**Mostly true**	**True**
1. Getting good grades is important to **me**	1	2	3	4	5	6
2. It is important for **my friends** to get good grades	1	2	3	4	5	6

	False	Mostly false	More false than true	More true than false	Mostly true	True
1. It is important for me to do well at sports	1	2	3	4	5	6
2. My friends and I rarely talk about weight and dieting	1	2	3	4	5	6
3. If I was better looking, I would be more popular	1	2	3	4	5	6
4. My friends and I talk about our appearance quite often	1	2	3	4	5	6
5. My friends are often on a diet	1	2	3	4	5	6
6. I would feel better about myself if I lost weight	1	2	3	4	5	6
7. Boys would be more attracted to me if I was better looking	1	2	3	4	5	6
8. My friends have shown me ways that I could use to lose weight (e.g., diets, vomiting, laxatives, etc.)	1	2	3	4	5	6
9. My friends think that it is important to exercise	1	2	3	4	5	6
10. I would feel more positive about myself if I was better looking	1	2	3	4	5	6
11. It is important to my friends that I am "good looking"	1	2	3	4	5	6
12. My friends exercise regularly	1	2	3	4	5	6
13. If I was thinner, boys would be more attracted to me	1	2	3	4	5	6
14. My friends think that it is important to do well at sports	1	2	3	4	5	6
15. My friends would like me more if I lost weight	1	2	3	4	5	6
16. My friends often point out the calories and/or fat content of the foods that I eat	1	2	3	4	5	6
17. Physical appearance is important to my friends	1	2	3	4	5	6
18. Boys would ask me out more if I was better looking	1	2	3	4	5	6
19. My friends **do not** watch what they eat carefully	1	2	3	4	5	6
20. My friends encourage me to exercise	1	2	3	4	5	6
21. It is important to **my friends** that I am thin	1	2	3	4	5	6

22.	I would be a more successful person if I were thinner	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
23.	"Looks" are not important to me	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
24.	My friends are satisfied with their weight	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
25.	My friends put pressure on me to lose weight	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
26.	I feel that my friends expect me to be thin	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
27.	My friends have told me that I should exercise more often	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
28.	My friends would like me more if I was better looking	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
29.	"Looks" are not important to my friends	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
30.	If I was thinner, boys would ask me out more	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
31.	Physical appearance is important to me	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
32.	It is important to my friends that **they** are thin	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
33.	My friends encourage me to diet	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
34.	I would be more popular if I lost weight	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
35.	If I was better looking, I would be a more successful person	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6
36.	It is important to me that I am thin	1 . . . . . 2 . . . . . 3 . . . . . 4 . . . . . 5 6

Peer Pressure and Eating Scale

Peer Modeling:

1. It is important to my friends that they are thin
2. My friends are satisfied with their weight (R)
3. My friends are often on a diet
4. Physical appearance is important to my friends
5. "Looks" are not important to my friends (R)
6. My friends exercise regularly
7. My friends think its important to exercise
8. My friends **do not** watch what they eat carefully (R)

Social Reinforcement:

1. It is important to my friends that I am thin
2. My friends put pressure on me to lose weight
3. My friends often point out the fat and/or calorie content of the foods that I eat
4. My friends encourage me to diet
5. My friends have shown my ways I could use to lose weight
6. My friends have told me that I should exercise more often
7. It is important to my friends that I am good looking
8. My friends and I rarely talk about weight and dieting (R)
9. My friends and I talk about our appearance quite often
10. My friends encourage me to exercise
11. I feel my friends expect me to be thin

Peer Attributions:

1. If I was thinner, boys would be more attracted to me
2. If I was thinner, boys would ask me out more
3. Boys would ask me out more if I was better looking
4. Boys would be more attracted to me if I was better looking

5. I would be more popular if I lost weight
6. If I was better looking, I would be more popular
7. My friends would like me more if I lost weight
8. My friends would like me more if I was better looking

Filler Items:

1. I would be a more successful person if I was thinner
2. If I was better looking, I would be a more successful person
3. I would feel more positive about myself if I were better looking
4. I would feel better about myself if I lost weight
5. It is important to me to do well at sports
6. My friends think that it is important to do well at sports
7. It is important to me that I am thin
8. Physical appearance is important to me
9. "Looks" are not important to me

Correlations:

	Peer Modeling	Attributions
Social Reinforcement	.51**	.48**
Peer Modeling		.26**

** $p<.001$

APPENDIX H

Peer Nominations

CLASS PLAY

INSTRUCTIONS:

Pretend that you are the director of a play starring the students in your grade. Your job is to choose the students in your grade who could play each part or role the best. Try to pick the students who seem to fit each part in real life.

The roles in the play are listed across the top of the page. Underneath each role are the **name** for you to choose from.

For each role, first cross out your own name, and then circle the name of the person who you feel would best fit that role.

IMPORTANT RULES:

1. You can only choose one person for each role, although the same person can be chosen for more than one role!
2. You cannot choose yourself for any of the roles!

NOW TURN THE PAGE

Please circle the name of the person in your grade who:

Is a good leader	People make fun of	"Hangs out" alone rather than with others	Is teased because of the way they look	Has good ideas for things to do	Gets called names by others	Is overly concerned with their appearance	Someone you can trust	People talk behind their back	Has many friends
Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.
Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C
Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.
Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.
Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.
Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.
Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.
Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.
Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.
Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.
Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.
Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.
Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.
Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.
Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.
Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.
Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.
Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.
Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.
Adriana V.P.	Adriana V.P	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.
Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.
Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.

Please circle the name of the person in your grade who:

Feelings get hurt easily	Everyone listens to	Is really good looking	Has trouble making friends	Is usually sad	Feels that looks are really important	Has a good sense of humour	Is teased about being overweight	Can't get others to listen	Helps other people when they need it
Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.
Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C
Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.
Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.
Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.
Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.
Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.
Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.
Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.
Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.
Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.
Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.
Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.
Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.
Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.
Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.
Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.
Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.
Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.
Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.
Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.
Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.

Please circle the name of the person in your grade who:

Is very shy	Is polite	Is often chosen last for sports	Makes new friends easily	Is ignored by others	Everyone likes to be with	Is often left out	People do mean things to	Is usually happy	Is teased about being too thin	Can get things going
Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.	Martha B.
Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C	Rachel C
Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.	Caroline F.
Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.	Diana F.
Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.	Andrea H.
Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.	Joanna H.
Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.	Sharon H.
Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.	Stephanie J.
Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.	Nidhi K.
Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.	Marie K.
Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.	Ka Ki L.
Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.	Alysia M.
Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.	Aimie M.
Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.	Andréanne M.
Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.	Shivani O.
Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.	Vanessa P.
Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.	Jennifer P.
Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.	Cristina R.
Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.	Ildiko T.
Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.	Adriana V.P.
Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.	Benedikta K.
Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.	Julia G.

APPENDIX I

Self Description Questionnaire-II

Self-Description Questionnaire - II
SDQ-R

This is a chance to look at yourself. It is not a test. There are no right answers, and everyone will have different answers. Be sure your answers show how you feel about yourself.

Please read each sentence and choose the answer that is best for you. There are six possible answers for each question: "True," "False" and four answers in between. Make a mark on the line under the answer you choose.

Examples:

(Two already completed by a student, Kaylie)

	False	Mostly False	More false than true	More true than false	Mostly true	True
1. I like to read magazines.	____	____	____	____	____	X
2. In general, I keep my room tidy.	____	____	X	____	____	____
3. I like to watch T.V.	____	____	____	____	____	____

You should have only ONE answer for each sentence. Please do not leave out any of the sentences, even if you are not sure where to mark an X.

		False	Mostly False	More false than true	More true than false	Mostly true	True
1.	Overall, I have a lot to be proud of.	___	___	___	___	___	___
2.	I enjoy things like sports, gym and dance.	___	___	___	___	___	___
3.	My parents are usually unhappy or disappointed with what I do.	___	___	___	___	___	___
4.	People come to me for help in most school subjects.	___	___	___	___	___	___
5.	It is difficult for me to make friends with members of my own sex.	___	___	___	___	___	___
6.	People of the opposite sex whom I like don't like me.	___	___	___	___	___	___
7.	I am lazy when it comes to things like sports and hard physical exercise.	___	___	___	___	___	___
8.	Overall, I am no good.	___	___	___	___	___	___
9.	I get along well with my parents.	___	___	___	___	___	___
10.	I'm too stupid at school to get into a good university.	___	___	___	___	___	___
11.	I make friends easily with boys.	___	___	___	___	___	___
12.	I make friends easily with girls.	___	___	___	___	___	___
13.	Most things I do, I do well.	___	___	___	___	___	___
14.	I'm good at things like sports, gym and dance.	___	___	___	___	___	___
15.	It is difficult for me to talk to my parents.	___	___	___	___	___	___
16.	If I work really hard, I could be one of the best students in my school year.	___	___	___	___	___	___

	False	Mostly False	More false than true	More true than false	Mostly true	True
17. Not many people of my own sex like me.	___	___	___	___	___	___
18. I am not very popular with members of the opposite sex.	___	___	___	___	___	___
19. Nothing I ever do seems to turn out right.	___	___	___	___	___	___
20. I am awkward at things like sports, gym and dance.	___	___	___	___	___	___
21. My parents treat me fairly.	___	___	___	___	___	___
22. I get bad marks in most school subjects.	___	___	___	___	___	___
23. I am popular with boys.	___	___	___	___	___	___
24. I am popular with girls.	___	___	___	___	___	___
25. Overall, most things I do turn out well.	___	___	___	___	___	___
26. I am better than most of my friends at things like sports, gym and dance.	___	___	___	___	___	___
27. I have lots of arguments with my parents.	___	___	___	___	___	___
28. I learn things quickly in most school subjects.	___	___	___	___	___	___
29. I do not get along very well with boys.	___	___	___	___	___	___
30. I do not get along very well with girls.	___	___	___	___	___	___
31. I don't have much to be proud of.	___	___	___	___	___	___
32. I try to get out of sports and physical education classes whenever I can.	___	___	___	___	___	___

	False	Mostly False	More false than true	More true than false	Mostly true	True
33. My parents understand me.	___	___	___	___	___	___
34. I am stupid at most school subjects.	___	___	___	___	___	___
35. I have good friends who are members of my own sex.	___	___	___	___	___	___
36. I have lots of friends of the opposite sex.	___	___	___	___	___	___
37. I can do things as well as most people.	___	___	___	___	___	___
38. I can run a long way without stopping.	___	___	___	___	___	___
39. I do not like my parents very much.	___	___	___	___	___	___
40. I do well in tests in most school subjects.	___	___	___	___	___	___
41. Most boys try to avoid me.	___	___	___	___	___	___
42. Most girls try to avoid me.	___	___	___	___	___	___
43. I feel that my life is not very useful.	___	___	___	___	___	___
44. I hate things like sports, gym and dance.	___	___	___	___	___	___
45. My parents really love me a lot.	___	___	___	___	___	___
46. I have trouble with most school subjects.	___	___	___	___	___	___
47. I make friends easily with members of my own sex.	___	___	___	___	___	___
48. I get a lot of attention from members of the opposite sex.	___	___	___	___	___	___
49. Overall, I am a failure.	___	___	___	___	___	___
50. I'm good at most school subjects.	___	___	___	___	___	___

	False	Mostly False	More false than true	More true than false	Mostly true	True
51. I have few friends of the same sex as myself.	___	___	___	___	___	___
52. If I really try, I can do almost anything I want to do.	___	___	___	___	___	___
53. Most school subjects are just too hard for me.	___	___	___	___	___	___
54. I enjoy spending time with my friends of the same sex.	___	___	___	___	___	___

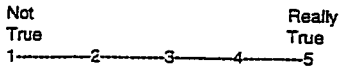
APPENDIX J

Silencing the Self Scale

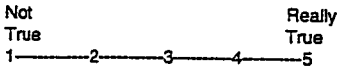
Opinions Questionnaire

We would like to know how you feel about different things. We would like you to tell us how much you agree or disagree with the following statements. After each statement, circle the answer that best describes the way you feel about it.

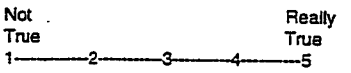
1. I don't tell my friends how I feel about some things when I know it will cause a conflict between us.



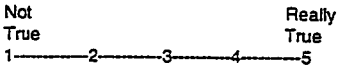
2. Sometimes I feel like a different person when I am with my friends.



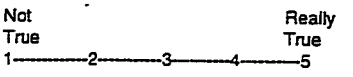
3. I tend to judge myself by how I think my friends see me.



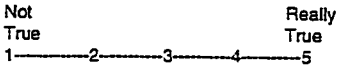
4. I feel dissatisfied because I am not able to do all the things students are supposed to be able to do these days.



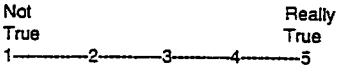
5. I feel I have to act in a certain way to please my friends.



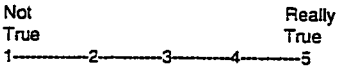
6. I avoid getting into arguments with my friends.



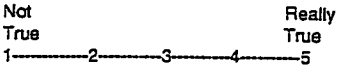
7. I tell my friends how I feel even though it might lead to a conflict between us.



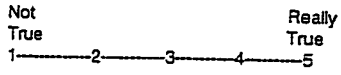
8. When my friends' opinions conflict with mine, I think it is better to agree with my friends than to lose the friendship.



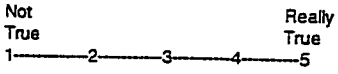
9. My friends don't really know the "true" me.



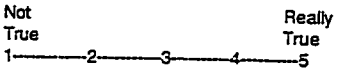
10. When my friends think one way about something and I think another way, I can always tell my friends what I am thinking.



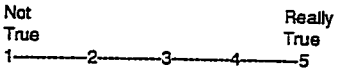
11. My friends appreciate me for who I am.



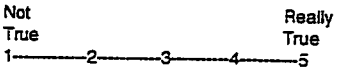
12. When I make decisions, my friends' thoughts and opinions influence me more than my own thoughts and opinions.



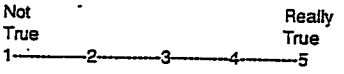
13. I feel that my friends don't really know who I am.



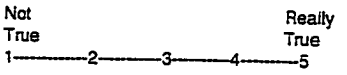
14. When my friends do something that really makes me angry I let them know how angry I am.



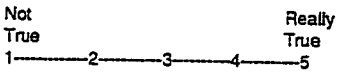
15. I often feel responsible for my friends' feelings.



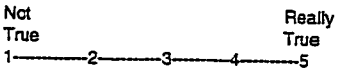
16. I find it hard to know what I think and feel because I spend a lot of time thinking about how my friends are feeling.



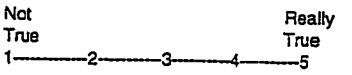
17. I try to hide my feelings when I think they will cause trouble between me and my friends.



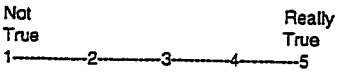
18. I never seem to measure up to the standards I set for myself.



19. Sometimes I don't really act like my true self when I am with my friends.



20. I only tell my friends how I am feeling about something if I know that they are feeling the same way too.



APPENDIX K

Means and standard deviation tables for school differences, age differences and weight group differences

Table K1

Means, Standard Deviations, and Significance Levels as a Function of School

School	1 (n = 68) Mean (SD)	2 (n = 118) Mean (SD)	3 (n = 333) Mean (SD)	4 (n = 357) Mean (SD)
GENERAL				
Age of First Date***	7.00 (2.29)	4.95 (2.66)	6.62 (2.54)	6.64 (2.44)
Age of First Period***	6.39 (1.89)	6.55 (1.81)	5.68 (2.32)	6.20 (1.80)
BMI	20.5 (2.60)	20.7 (3.35)	21.4 (3.36)	21.4 (3.30)
SDQ-II				
Same-Sex Esteem	5.04 (0.78)	4.94 (0.83)	5.17 (0.65)	5.14 (0.79)
Opposite-Sex Esteem	3.80 (1.23)	4.23 (1.06)	4.30 (1.09)	4.26 (1.07)
Physical Ability Esteem***	4.49 (1.05)	4.54 (0.99)	4.65 (0.92)	4.90 (0.92)
General Self Esteem	4.73 (1.03)	4.76 (0.82)	4.95 (0.78)	5.04 (0.87)
SILENCING THE SELF				
Silent Self	2.74 (0.67)	2.63 (0.74)	2.65 (0.69)	2.57 (0.78)
Divided Self	2.35 (0.89)	1.89 (0.76)	2.06 (0.88)	1.98 (0.91)
External Self	2.51 (0.72)	2.32 (0.72)	2.35 (0.73)	2.23 (0.75)
CHEAT				
Dieting***	2.75 (1.17)	2.98 (1.09)	2.59 (0.99)	2.55 (0.99)
Bulimia	2.05 (0.74)	1.90 (0.76)	1.88 (0.76)	1.79 (0.72)
Oral Control	2.44 (0.71)	2.46 (0.76)	2.47 (0.70)	2.45 (0.73)

BES				
Weight Esteem	2.10 (1.18)	1.97 (1.08)	2.13 (1.08)	2.32 (1.11)
Appearance Esteem	1.95 (0.99)	1.91 (0.88)	2.09 (0.86)	2.22 (0.90)
PRESENCE OF SELF REPORTED TEASING				
Weight Related	0.37 (0.49)	0.34 (0.48)	0.44 (0.50)	0.42 (0.49)
Body-shape Related	0.57 (0.50)	0.57 (0.50)	0.59 (0.49)	0.57 (0.50)
Appearance Related	0.39 (0.49)	0.41 (0.49)	0.41 (0.49)	0.44 (0.50)
General Teasing	0.51 (0.50)	0.44 (0.50)	0.36 (0.48)	0.36 (0.48)
PEER PRESSURE AND EATING SCALE				
Social Reinforcement ***	2.18 (0.64)	2.24 (0.59)	1.96 (0.59)	1.99 (0.64)
Peer Modeling***	3.83 (0.84)	3.94 (0.77)	3.46 (0.73)	3.47 (0.74)
Peer Attributions	2.91 (1.25)	2.91 (1.12)	2.68 (1.16)	2.59 (1.20)

***$p<.005$

Table K2

Means, Standard Deviations and Significance Levels as a Function of Age Group

	Younger (n = 420) (Grades 7 & 8)		Older (n = 456) (Grades 9 & 10)	
Variable & Measure	Mean	(SD)	Mean	(SD)
GENERAL				
Age of First Date***	5.27	(2.16)	6.93	(2.60)
Age of First Period***	5.67	(1.88)	6.36	(2.07)
BMI	20.6	(3.10)	21.6	(3.39)
SDQ-II				
Same-Sex Relational Esteem	5.16	(0.77)	5.09	(0.73)
Opposite-Sex Relational Esteem	4.22	(1.08)	4.26	(1.11)
Physical Ability Esteem***	4.88	(0.89)	5.02	(0.81)
General Self Esteem	5.02	(0.81)	4.88	(0.88)
SILENCING THE SELF				
Silent Self***	2.71	(0.73)	2.54	(0.73)
Divided Self	2.01	(0.88)	2.04	(0.89)
External Self	2.26	(0.75)	2.35	(0.75)

CHEAT				
Dieting	2.60	(0.98)	2.67	(1.07)
Bulimia***	1.74	(0.64)	1.96	(0.82)
Oral Control	2.51	(0.70)	2.41	(0.74)
BES				
Weight Esteem	2.28	(1.13)	2.09	(1.07)
Appearance Esteem	2.16	(0.93)	2.07	(0.87)
PRESENCE OF SELF REPORTED TEASING				
Weight Related	0.38	(0.49)	0.45	(0.50)
Body-shape Related	0.54	(0.50)	0.62	(0.49)
Appearance Related	0.39	(0.49)	0.45	(0.50)
General Teasing	0.36	(0.48)	0.41	(0.49)
PEER PRESSURE AND EATING SCALE				
Social Reinforcement	1.99	(0.63)	2.07	(0.61)
Peer Modeling	3.60	(0.77)	3.51	(0.77)
Peer Attributions	2.71	(1.23)	2.68	(1.13)

***$p<.005$

Table K3

Means, Standard Deviations and Significance Levels as a Function of Weight Group

Weight Group	Average Mean (SD) (n = 628)	Underweight Mean (SD) (n = 124)	Overweight Mean (SD) (n = 124)
GENERAL			
Age of First Date	6.30 (2.55)	6.05 (2.68)	6.41 (2.57)
Age of First Period***	5.95 (2.02)	7.29 (1.72)	5.64 (1.99)
SDQ-II			
Same-Sex Esteem	5.13 (0.75)	5.15 (0.71)	5.07 (0.76)
Opposite-Sex Esteem	4.29 (1.10)	4.18 (1.02)	4.04 (1.12)
Physical Ability Esteem	4.77 (0.93)	4.70 (1.01)	4.51 (0.98)
General Self Esteem	4.92 (0.84)	4.99 (0.90)	5.00 (0.87)
SILENCING THE SELF			
Silent Self	2.62 (0.75)	2.66 (0.68)	2.60 (0.72)
Divided Self	2.00 (0.89)	2.10 (0.84)	2.08 (0.90)
External Self	2.31 (0.75)	2.26 (0.72)	2.34 (0.77)

CHEAT			
Dieting***	2.67 (1.02)	2.00 (0.83)	3.11 (0.92)
Bulimia	1.86 (0.74)	1.72 (0.55)	1.97 (0.91)
Oral Control***	2.45 (0.73)	2.79 (0.73)	2.17 (0.50)
BES			
Weight Esteem***	2.21 (1.05)	2.90 (0.89)	1.32 (0.97)
Appearance Esteem***	2.13 (0.89)	2.29 (0.89)	1.80 (0.90)
PRESENCE OF SELF-REPORTED TEASING			
Weight Related***	0.35 (0.48)	0.44 (0.50)	0.72 (0.45)
Body-shape Related	0.57 (0.50)	0.58 (0.49)	0.61 (0.49)
Appearance Related	0.39 (0.49)	0.45 (0.50)	0.55 (0.50)
General Teasing	0.37 (0.48)	0.45 (0.50)	0.36 (0.48)
PEER VARIABLES			
Friendship Closeness	1.67 (0.53)	1.64 (0.53)	1.63 (0.52)
Average Popularity	.10 (0.94)	-.06 (0.97)	-.09 (0.96)
Leadership	-0.05 (1.00)	-0.03 (0.97)	-0.21 (0.84)
Overweight Tease***	-0.20 (0.47)	-0.29 (0.08)	1.24 (1.93)
Underweight Tease***	-0.14 (0.66)	1.06 (1.82)	-0.29 (0.27)

Social Rejection***	-0.07 (0.77)	-0.05 (0.73)	0.42 (1.20)
Appearance Preoccupation	0.02 (1.01)	0.07 (1.14)	-0.18 (0.57)
Good Looking***	0.05 (1.05)	0.05 (0.99)	-0.30 (0.43)
PEER PRESSURE AND EATING SCALE			
Social Reinforcement	2.03 (0.60)	1.91 (0.58)	2.14 (0.72)
Peer Modeling	3.56 (0.77)	3.56 (0.75)	3.54 (0.79)
Peer Attributions***	2.66 (1.16)	2.15 (0.93)	3.38 (1.21)

***$p<.005$

APPENDIX L

Comparison of ICCs for friendship pairs and cliques

Table L

Comparison of Clique and Pair Intra-class Correlations

Variable	Friendship Pairs	Cliques
General Information		
Body Mass Index	0.24	0.06
Average Age of Menarche	0.18	0.12
Age of first date	0.40	0.21
Peer Pressure and Eating Scale		
Social Reinforcement	0.27	0.24
Peer Modeling	0.35	0.26
Peer Attributions	0.11	0.08
Self esteem		
Same Sex Relations Esteem	0.18	0.11
Opposite-sex Relations Esteem	0.21	0.13
Physical Ability Esteem	0.24	0.11
General Self Esteem	0.22	0.10
Silencing the Self		
External Self	0.10	0.05
Divided Self	0.10	0.06
Silent Self	0.07	0.04
Body Esteem		
Weight Esteem	0.20	0.07
Appearance Esteem	0.13	0.08

Variable	Friendship Pairs	Cliques
Children's Eating Attitudes Test		
Dieting	0.22	0.08
Bulimia and Food Preoccupation	0.10	0.06
Oral Control	0.01	0.02
Eating Disorder Group	0.07	0.05
Peer Nominations		
Average Popularity	0.49	0.13
Peer Nominated Leadership	0.13	0.09
Peer Nominated Rejection	0.37	0.21
Peer Nominated Appearance Preoccupation	0.14	0.07
Peer Nominated Good Looking	0.19	0.04
Peer Nominated Overweight Tease	0.03	0
Peer Nominated Underweight Tease	0.02	0
Self Reported Teasing		
Self-reported severe weight tease	0.01	0.02
Less severe weight-related teasing	0.04	0.01
Self-reported severe body-shape teasing	0.21	0.02
Less severe body-shape teasing	0.03	0
Self-reported severe appearance teasing	0.12	0.03
Less severe appearance-related teasing	0.08	0
Self-reported severe general teasing	0.01	0.04
Less severe general teasing	0.02	0.02

APPENDIX M

Tables of results for HLM models including random intercept and significant fixed effects

Table M1

Results of Final Model for Self Esteem (Level-1) and Randomly Varying Slope for Social Reinforcement against Dieting & Bulimia

Dieting as Outcome

Random Effect		Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept						
Social Reinforcement	μ_{0j}	0.07	0.27		179.71	.000
	r_{ij}	0.74	0.86			

Fixed Effects	Parameter	Coefficient	SE	t-ratio	p-value
Intercept	γ_{00}	2.62	0.04	61.10	.000
BMI	γ_{10}	0.10	0.01	10.37	.000
Physical Abilities	γ_{20}	0.08	0.04	2.15	.03
Social Reinforcement	γ_{21}	0.19	0.10	1.79	.07
General Self	γ_{30}	-0.41	0.04	-9.47	.000
Social Reinforcement	γ_{31}	-0.24	0.12	-2.04	.04

Bulimia as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Social Reinforcement	μ_{0j}	0.02	0.16	146.16	.05
	r_{ij}	0.45	0.67		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	1.84	0.03	60.84	.00
BMI	γ_{10}	0.02	0.01	2.63	.01
General Self	γ_{30}	-0.30	0.03	-9.52	.00
Social Reinforcement	γ_{31}	-0.19	0.08	-2.38	.02

Table M2

Results of Final Model for Self Esteem (Level-1) and Randomly Varying Slope for Peer Modeling against Dieting & Bulimia

Dieting as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.08	0.28	183.04	.000
	r_{ij}	0.74	0.86		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.62	0.04	61.10	.00
BMI	γ_{10}	0.10	0.01	10.37	.00
Physical Abilities	γ_{00}	0.09	0.04	2.40	.02
Peer Modeling	γ_{21}	0.09	0.08	1.20	.23
General Self	γ_{30}	-0.42	0.04	-9.96	.00
Peer Modeling	γ_{31}	-0.15	0.09	-1.82	.07

Bulimia as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.03	0.16	150.02	.03
	r_{ij}	0.45	0.67		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	1.85	0.03	61.0	.00
BMI	γ_{10}	0.02	0.01	2.66	.01
General Self	γ_{30}	-0.31	0.03	-10.2	.00
Peer Modeling	γ_{21}	-0.12	0.06	-1.97	.05

Table M3

Results of Final Model for Silencing the Self (Level-1), and Randomly Varying Slope for Social Reinforcement against Dieting & Bulimia

Dieting as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Social Reinforcement	μ_{0j}	0.06	0.25	165.23	.000
	r_{ij}	0.74	0.86		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.63	0.04	63.65	.000
BMI	γ_{10}	0.09	0.01	9.83	.000
Divided Self	γ_{20}	0.03	0.05	0.66	.51
Social Reinforcement	γ_{21}	-0.17	0.14	-1.24	.21
External Self	γ_{30}	0.46	0.06	8.13	.000
Social Reinforcement	γ_{31}	0.12	0.14	0.86	.39

Bulimia as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Social Reinforcement	μ_{0j}	0.00	0.04	157.14	.01
	r_{ij}	0.49	0.70		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	1.86	0.03	70.30	.000
BMI	γ_{10}	0.01	0.01	1.76	.08
Divided Self	γ_{20}	0.14	0.04	3.69	.000
Social Reinforcement	γ_{21}	0.08	0.11	0.74	.46
External Self	γ_{30}	0.28	0.05	5.92	.000
Social Reinforcement	γ_{31}	0.15	0.13	1.23	.22
Silent Self	γ_{40}	-0.09	0.04	-2.01	.05
Social Reinforcement	γ_{41}	-0.01	0.12	-0.07	.95

Table M4

Results of Final Model for Silencing the Self (Level-1) and Randomly Varying Slope for Peer Modeling against Dieting & Bulimia

Dieting as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.06	0.25	165.34	.01
	r_{ij}	0.74	0.86		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.63	0.04	64.66	.000
BMI	γ_{10}	0.09	0.01	9.94	.000
Divided Self	γ_{20}	0.03	0.05	0.57	.57
Peer Modeling	γ_{21}	-0.21	0.10	-2.10	.04
External Self	γ_{30}	0.46	0.05	8.52	.000
Peer Modeling	γ_{31}	0.10	0.12	.87	.38

Bulimia as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.01	0.08	161.80	.01
	r_{ij}	0.48	0.69		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	1.86	0.03	68.59	.000
BMI	γ_{10}	0.01	0.01	1.79	.07
Divided Self	γ_{20}	0.14	0.04	3.74	.000
Peer Modeling	γ_{21}	0.04	0.08	0.54	.59
External Self	γ_{30}	0.30	0.05	6.53	.000
Peer Modeling	γ_{31}	0.03	0.10	0.27	.79
Silent Self	γ_{40}	-0.09	0.04	-2.02	.04
Peer Modeling	γ_{41}	-0.09	0.09	-0.93	.35

Table M5

Results of Final Model for Body Esteem (Level-1) and Randomly Varying Slope for Social Reinforcement against Dieting & Bulimia

Dieting as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Social Reinforcement	μ_{0j}	0.01	0.09	117.73	>.005
	r_{ij}	0.47	0.69		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.64	0.03	92.89	.000
BMI	γ_{10}	0.02	0.01	3.14	.002
Body Esteem	γ_{20}	-0.82	0.03	-24.59	.000
Social Reinforcement	γ_{21}	-0.30	0.09	-3.45	.001

Bulimia as Outcome

Random Effect		Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept						
Social Reinforcement	μ_{0j}	0.00	0.06		138.42	.11
	r_{ij}	0.39	0.63			

Fixed Effects	Parameter	Coefficient	SE	t-ratio	p-value
Intercept	γ_{00}	1.85	0.03	73.51	.000
BMI	γ_{10}	-0.02	0.01	-2.89	.004
Body Esteem	γ_{20}	-0.47	0.03	-15.45	.000
Social Reinforcement	γ_{21}	-0.29	0.08	-3.65	.000

Table M6

Results of Final Model for Body Esteem (Level-1) and Randomly Varying Slope for Peer Modeling against Dieting & Bulimia

Dieting as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.01	0.09	119.84	.46
	r_{ij}	0.47	0.69		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.65	0.03	94.2	.000
BMI	γ_{10}	0.02	0.01	3.12	.002
Body Esteem	γ_{20}	-0.83	0.03	-25.1	.000
Peer Modeling	γ_{21}	-0.18	0.06	-2.96	.004

Bulimia as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.02	0.13	141.57	.08
	r_{ij}	0.38	0.62		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	1.85	0.03	68.7	.000
BMI	γ_{10}	-0.02	0.01	-2.86	.005
Body Esteem	γ_{20}	-0.47	0.03	-15.7	.000
Peer Modeling	γ_{21}	-0.22	0.06	-3.80	.000

Table M7

Results for Final Model for Peer Nominations (Level-1) and Randomly Varying Slope for Social Reinforcement against Dieting & Bulimia

Dieting as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Social Reinforcement	μ_{0j}	0.08	0.29	176.09	.000
	r_{ij}	0.91	0.95		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.61	0.05	57.16	.000
BMI	γ_{10}	0.10	0.01	11.21	.000
Appearance Preoccup.	γ_{20}	0.18	0.04	4.52	.000
Social Reinforcement	γ_{21}	0.21	0.10	1.99	.05

Bulimia as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Social Reinforcement	μ_{0j}	0.05	0.22	159.69	.001
	r_{ij}	0.51	0.71		

Fixed Effects	Parameter	Coefficient	SE	t-ratio	p-value
Intercept	γ_{00}	1.86	0.04	50.86	.000
BMI	γ_{10}	0.01	0.01	1.28	.20
Overweight Tease	γ_{20}	0.06	0.03	1.64	.10
Social Reinforcement	γ_{21}	0.35	0.09	3.73	.000

Table M8

Results for Final Model for Peer Nominations (Level-1) and Randomly Varying Slope for Peer Modeling against Dieting & Bulimia

Dieting as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.10	0.32	210.27	.000
	r_{ij}	0.76	0.87		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.61	0.05	57.2	.000
BMI	γ_{10}	0.10	0.01	11.2	.000
Appearance Preoccup.	γ_{20}	0.19	0.04	5.32	.000
Peer Modeling	γ_{21}	0.16	0.08	2.03	.04

Bulimia as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.05	0.22	155.78	.01
	r_{ij}	0.51	0.72		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	1.86	0.04	50.38	.000
BMI	γ_{10}	0.01	0.01	1.15	.25
Overweight Tease	γ_{20}	0.07	0.04	2.09	.04
Peer Modeling	γ_{21}	0.20	0.07	3.01	.003

Table M9

Results for Final Model for Self-Reported Teasing (Level-1) and Randomly Varying Slope for Social Reinforcement against Dieting & Bulimia

Dieting as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Social Reinforcement	μ_{0j}	0.04	0.19	134.22	.07
	r_{ij}	0.70	0.84		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.48	0.06	43.55	.000
BMI	γ_{10}	0.07	0.01	7.44	.000
Weight Upset	γ_{20}	0.38	0.09	4.20	.000
Social Reinforcement	γ_{21}	0.22	0.22	0.99	.32
Weight Not Upset	γ_{30}	-0.17	0.09	-1.84	.07
Social Reinforcement	γ_{31}	-0.18	0.26	-0.70	.49
Body Upset	γ_{40}	0.20	0.09	2.24	.05
Social Reinforcement	γ_{41}	0.91	0.23	3.93	.000
Body not Upset	γ_{50}	-0.11	0.08	-1.37	.17
Social Reinforcement	γ_{51}	0.53	0.21	2.55	.01
Appearance Upset	γ_{60}	0.11	0.09	1.30	.19
Social Reinforcement	γ_{61}	0.09	0.23	0.42	.68

Appearance not Upset	γ_{70}	-0.21	0.09	-2.21	.03
Social Reinforcement	γ_{71}	-0.17	0.27	-0.62	.53

Bulimia as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Social Reinforcement	μ_{0j}	0.03	0.16	143.52	.05
	r_{ij}	0.43	0.65		

Fixed Effects	Parameter	Coefficient	SE	t-ratio	p-value
Intercept	γ_{00}	1.66	0.04	36.82	.00
BMI	γ_{10}	0.01	0.01	1.07	.29
Weight Upset	γ_{20}	0.20	0.07	2.75	.006
Social Reinforcement	γ_{21}	0.42	0.18	2.40	.02
Weight Not Upset	γ_{30}	-0.07	0.07	-0.95	.34
Social Reinforcement	γ_{31}	-0.04	0.20	-0.19	.85
Body Upset	γ_{40}	0.17	0.07	2.48	.05
Social Reinforcement	γ_{41}	0.81	0.18	4.33	.00
Body not Upset	γ_{50}	0.01	0.06	0.21	.83
Social Reinforcement	γ_{51}	0.23	0.16	1.40	.16
Appearance Upset	γ_{60}	0.22	0.07	3.24	.01
Social Reinforcement	γ_{61}	-0.29	0.18	-1.67	.10
Appearance not Upset	γ_{70}	0.03	0.07	0.46	.64
Social Reinforcement	γ_{71}	-0.14	0.21	-0.65	.51

Table M10

Results of Final Model for Self-Reported Teasing (Level-1) and Randomly Varying Slope for Peer Modeling against Dieting & Bulimia

Dieting as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.00	0.05	130.24	.10
	r_{ij}	0.75	0.86		
Fixed Effects	**Parameter**	**Coefficient**	**SE**	**t-ratio**	**p-value**
Intercept	γ_{00}	2.48	0.05	45.33	.000
BMI	γ_{10}	0.07	0.01	7.32	.000
Weight Upset	γ_{20}	0.39	0.09	4.25	.000
Peer Modeling	γ_{21}	0.11	0.18	0.62	.54
Weight Not Upset	γ_{30}	-0.17	0.10	-1.81	.07
Peer Modeling	γ_{31}	-0.37	0.25	-1.45	.15
Body Upset	γ_{40}	0.25	0.09	2.75	.006
Peer Modeling	γ_{41}	0.66	0.17	3.81	.000
Body not Upset	γ_{50}	-0.10	0.08	-1.21	.23
Peer Modeling	γ_{51}	0.48	0.16	2.99	.003
Appearance Upset	γ_{60}	0.15	0.09	1.79	.07
Peer Modeling	γ_{61}	0.14	0.17	0.79	.43

Appearance not Upset	γ_{70}	-0.19	0.10	-2.03	.042
Peer Modeling	γ_{71}	0.02	0.24	0.10	.92

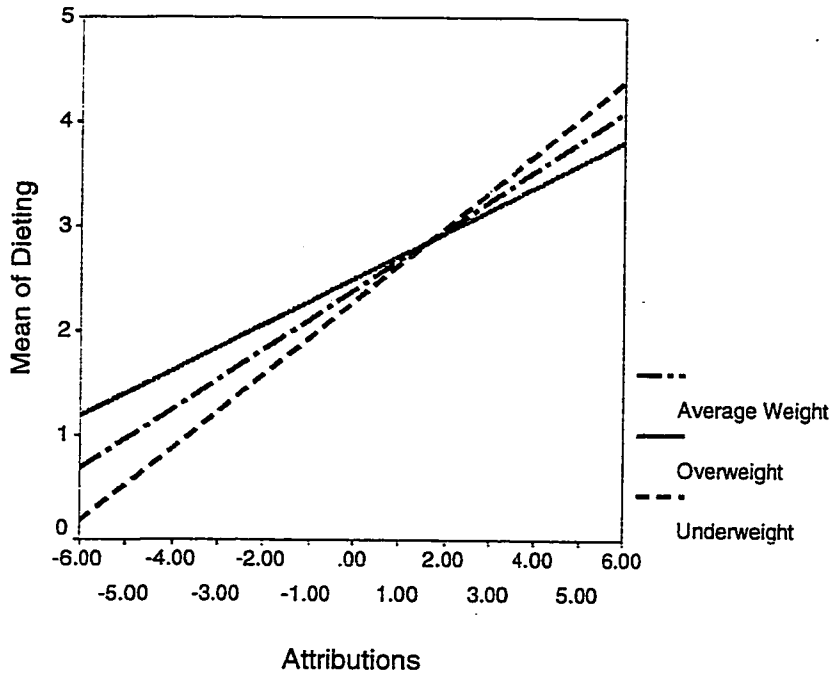
Bulimia as Outcome

Random Effect	Parameter Estimate	Variance (μ)	SD	Chi-square	p-value
Intercept					
Peer Modeling	μ_{0j}	0.04	0.19	155.36	.01
	r_{ij}	0.43	0.66		

Fixed Effects	Parameter	Coefficient	SE	t-ratio	p-value
Intercept	γ_{00}	1.66	0.05	35.51	.000
BMI	γ_{10}	0.01	0.01	1.06	.29
Weight Upset	γ_{20}	0.22	0.07	3.13	.002
Peer Modeling	γ_{21}	0.20	0.14	1.40	.16
Weight Not Upset	γ_{30}	-0.07	0.07	-0.92	.36
Peer Modeling	γ_{31}	0.11	0.20	0.56	.57
Body Upset	γ_{40}	0.20	0.07	2.92	.004
Peer Modeling	γ_{41}	0.41	0.14	2.98	.003
Body not Upset	γ_{50}	0.02	0.06	0.24	.80
Peer Modeling	γ_{51}	-0.01	0.13	-0.08	.93
Appearance Upset	γ_{60}	0.22	0.07	3.26	.001
Peer Modeling	γ_{61}	-0.05	0.14	-0.35	.73
Appearance not Upset	γ_{70}	0.03	0.07	0.34	.73
Peer Modeling	γ_{71}	-0.29	0.19	-1.55	.12

APPENDIX N

Regression Analysis Interaction Effects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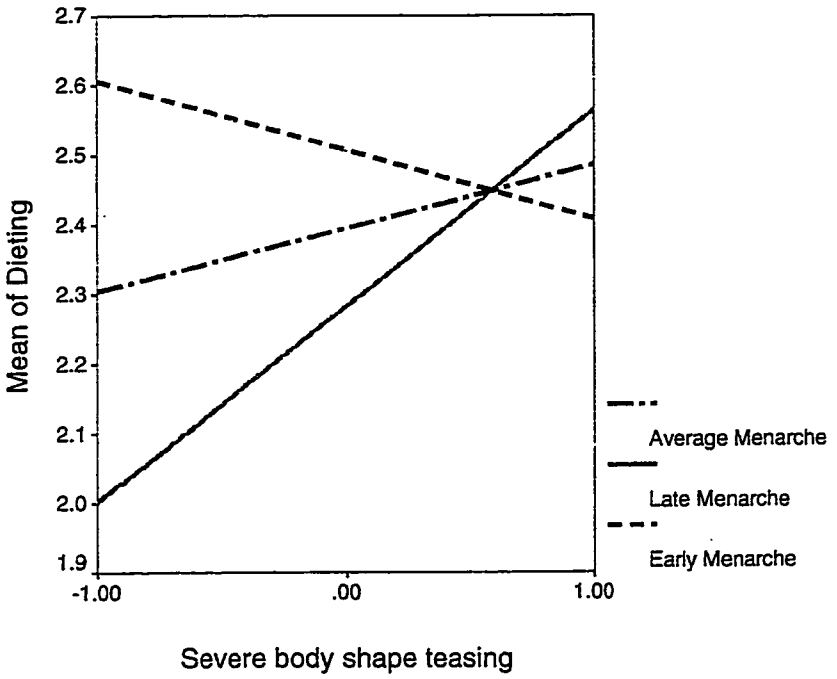
5.00
Attributions
Average Weight
Overweight
Underweight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2.2
2.1
2.0
1.9
Mean of Dieting
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1.00
Severe body shape teasing
Average Menarche
Late Menarche
Early Menarche