

## **Risk and Protective Factors Associated With Disordered Eating During Early Adolescence**

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*Risk and protective factors associated with disordered eating were examined among 363 girls ( $\bar{X}$  age = 12.9 years) in middle-level school. The variables included self-report ratings of competence and of the importance of physical appearance and social acceptance by peers, self-oriented and socially prescribed perfectionism, negative events, and parental support. In a multivariate regression analysis, low competence in physical appearance, high importance of social acceptance, high self-oriented perfectionism, and low paternal support were correlated significantly with reports of high levels of disordered eating. The negative influence of low physical appearance competence on disordered eating was attenuated for those girls who placed low, as compared with high, levels of importance on physical appearance. Paternal support was found to have a protective function in regard to disordered eating for those girls who experienced high, as compared with low, levels of school-related negative events. Implications for school-based prevention strategies are discussed.*

In an attempt to improve on existing eating disorder prevention programs, researchers have highlighted the need to identify risk and protective factors

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that are associated with disordered eating during specific periods of development (Muir, Wertheim, & Paxton, 1999; O'Dea & Maloney, 2000; Smolak, Levine, & Schermer, 1998b). With respect to eating disorders, risk factors are those influences that increase the likelihood that disordered eating will occur. Protective factors are those influences that decrease the probability of disordered eating by improving resistance and resilience. Early adolescence has been identified as a vulnerable time for girls to develop disordered eating or eating disorders because of the normative challenges associated with that period of development (e.g., physical changes associated with puberty, increased desire for peer acceptance, onset of dating) (Attie & Brooks-Gunn, 1989, 1992; Levine & Smolak, 1992; Levine, Smolak, Moodey, Shuman, & Hessen, 1994; Smolak, Levine, & Striegel-Moore, 1996). However, studies have indicated that many children exposed to multiple risks do not have problems and that might be due to the presence of protective factors (Durlak, 1998; Rutter, 1990; Werner, 1989). Risk and protective variables encompass personal and environmental factors. Developmental theorists suggest that the experience of going through early adolescence is influenced by a person's individual characteristics and resources available to him or her during this period (Cicchetti & Schneider-Rosen, 1986; Ebata, Petersen, & Conger, 1990; Rutter, 1990; Sameroff & Seifer, 1990). In fact, they suggest that an adolescent's ability to organize experience, particularly at critical transitions such as early adolescence, most likely could predict subsequent adaptive or maladaptive functioning.

In the present study, attempts were made to (a) select individual and contextual variables that have been drawn from the developmental literature that would match the experiences of young adolescent girls more closely than would variables reported previously in the adult literature on eating disorders and (b) examine interactions in relation to disordered eating to help identify protective factors. Specific attention was given to the individual characteristic of self-esteem and perfectionism and to contextual variables of stress and parental support.

Research has supported a link between low global self-esteem in 11- and 12-year-old girls and eating disorder symptoms 5 years later (Button, Sonuga-Barke, Davies, & Thompson, 1996). For the present study, the Harter model was used to provide more specific information about the ways in which self-esteem during early adolescence relates to disordered eating (Harter, 1990). The model is based on the concept that global self-esteem is related to competence in domains in which success is important. According to Harter, strategies to help girls lower the importance they place on areas in which they feel less competent can be an effective way to enhance girls' self-esteem. Self-ratings of importance across domains of self-esteem can pro-

vide additional information that might prove useful in the prevention of disordered eating. Given their previously reported link to disordered eating, two domains of self-esteem were selected for study, namely, physical appearance and social acceptance by peers (Flett, Hewitt, Boucher, Davidson, & Munro, 1992). In the present study, interactions were explored to determine whether importance might modify the association between low competence ratings in those two domains and high levels of disordered eating.

Perfectionism has been identified for adolescents who present with eating disorder symptoms (Levine & Smolak, 1992; Steiger, Leung, Puentes-Neuman, & Gottheil, 1992). For the present study, specific types of perfectionism were examined to help better understand the association between perfectionism and disordered eating. The multidimensional nature of perfectionism, as viewed by Hewitt and Flett (1991) and Hewitt, Flett, Turnbull-Donovan, and Mikail (1991), includes both personal and social components of trait levels of perfectionism. Information about which type of perfectionism relates to disordered eating can help to identify areas for intervention. Self-oriented perfectionism is the joint tendency to expect perfection from oneself and the motivation to attain perfectionistic standards (Hewitt & Flett, 1991; Flett et al., 1992). Socially prescribed perfectionism is the perception that other people, namely parents, demand perfection from the self.

Researchers have suggested that girls' ability to face the challenges of early adolescence is likely to be dependent on the nature of their parent/child relationships (Graber & Brooks-Gunn, 1996). To extend the research that has revealed a link between normative stressors of early adolescence and disordered eating (Attie & Brooks-Gunn, 1989, 1992; Levine & Smolak, 1992; Levine et al., 1994; Smolak et al., 1996), interactions between stress and parental support were examined in the present study. The question of whether parental support would modify the association between life negative events and disordered eating was explored. Negative events in the realm of peers (e.g., change in number of friends), family (e.g., family move, arguments with parents), and school (e.g., arguments with principal or teachers, getting in trouble, being suspended from school) were selected because they have been identified as specific areas of concern with young adolescents (Compas, Davis, Forsythe, & Wagner, 1987).

Two types of parenting characteristics were examined: *conditional support* and *level of involvement*. Conditional support refers to support that is perceived as conditional on meeting high parental expectations or is withdrawn if, and when, the individual fails to meet those standards. That can be contrasted with unconditional positive regard from parents (Harter & Marold, 1994; Marold, 1987). Involvement was defined as the degree to which parents were interested in, knowledgeable about, and spending time

relating to their children concerning activities and experiences, such as schoolwork (Grolnick, Ryan, & Deci, 1991). To extend findings from the existing literature on eating disorders, which has focused mostly on maternal support (Hill, Weaver, & Blundell, 1990; Hodes, Jones, & Davies, 1995; Jaffe & Singer, 1989; Ogden & Steward, 2000; Stein, Woolley, Cooper, & Fairburn, 1994; Van Wezel-Meijler & Wit, 1989; Warren, 1968), maternal and paternal support both were examined in relation to girls' disordered eating. A small body of research has revealed that support from fathers might help to promote positive self-esteem and healthy eating attitudes among young adolescent girls (Swarr & Richards, 1996; Turner, Irwin, Tschann, & Millstein, 1994).

Identification of variables that are predictive of disordered eating, such as the ones described previously, might facilitate the development of tailored prevention programs that could begin prior to early adolescence and extend through adolescence. After successful identification of such factors, highly specific strategies then could be developed with the goal to reduce risk factors while enhancing protective factors. The first objective for the study was to examine whether low levels of competence in physical appearance and social acceptance by peers, high self-oriented and socially prescribed perfectionism, high negative events, and low parental support would be associated with disordered eating. The second objective for the study was to explore whether the association between competence for physical appearance and disordered eating and between competence for social acceptance and disordered eating were modified by the level of importance that girls placed on those domains and whether the association between negative events and disordered eating was modified by parental support.

## METHOD

### Participants

Participants were 363 girls ( $\bar{X}$  age = 12.9 years,  $SD = 0.62$ ) in Grade 7 ( $n = 200$ ) and Grade 8 ( $n = 163$ ) from two Canadian suburban middle-level schools. There were 385 students eligible to participate in the study, however, 7 students had parents who declined consent, 14 students were absent on the day that the questionnaires were administered, and 2 students' questionnaires were excluded from the data prior to analysis because of their limited knowledge of the English language. Parent education levels, as reported by the students, were reported as greater than 12 years of schooling but less than 16 years. All of the seven categories of the Hollingshead (1975) socioeconomic

scale were represented, however, the majority of participants came from households represented by Category III (administrative personnel, owners of small businesses, and minor professionals) and Category IV (clerical and sales workers and technicians): 19.4% and 25.6%, respectively. The majority of the participants were Canadian born (84.3%), reported English as their first language (84.8%), and were living with two parents (84.6%). Approximately 74% of the participants were Caucasian and the remaining participants were South Asian, African Canadian, or East Asian. There were no significant differences between the study participants and nonparticipants on age, ethnicity, socioeconomic status, parental level of education, or number of siblings in the home.

Additional information was collected to describe the profile of the participants. Parental reports of the girls' height and weight were collected. A mean body mass index (BMI) score and percentile value was calculated for all of the participants and it revealed that they were all within 10% of body weight for their age (Hammer, Kraemer, Wilson, Ritter, & Dornbusch, 1991). Participants were asked to describe how they felt about their body shape, using the following response format: I feel: 0 = *too fat*, 1 = *just right*, or 2 = *too thin*. Nearly one-half (40.6%) of the participants reported that they felt too fat, whereas 7.2% felt too thin, and 52.2% felt just right. Finally, using a response format of 1 = *no* and 2 = *yes*, 61.5% of the participants answered *yes* to the question "Are you currently trying to lose weight?"

### **Procedure**

A research proposal was submitted to a local school board to establish contact with girls. Participants were drawn from two middle schools, Grade 7 through 8, in middle-class suburban neighborhoods. In the schools, no subsidized lunch meals were required. Parents were sent a letter that explained the purpose of the study and requested their written permission for their daughter to participate in the study. Parents and girls were informed that the purpose of the research was to learn more about the attitudes and feelings about eating habits of girls during early adolescence. Active parental consent and verbal assent from the girls were obtained for all participants. The measures were organized into a booklet and were counterbalanced to control for an ordering effect and fatigue. Written instructions appeared at the beginning of each questionnaire. The surveys were group administered, one class at a time, by the first author over the period of two administrative sessions held during regularly scheduled classroom periods. Verbal instructions were given at the beginning of each data collection period to ensure that participants were familiar with the response format of each questionnaire.

The first author was available throughout the entire data collection period to answer any questions the participants had about the survey or the study. After completion of the study, participants were given a formal presentation on eating disorders and were debriefed about the study. At that time, parents were sent a letter that outlined the signs and symptoms of someone who might suffer from an eating disorder. They were given another opportunity to contact the researchers to inquire about the study.

## Measures

### Dependent Variable

*Disordered eating.* The children's version of the Eating Attitudes Test was used as the dependent variable in the present study (ChEAT) (Maloney, McGuire, & Daniels, 1988; Maloney, McGuire, Daniels, & Specker, 1989). Like the Eating Attitude Test (EAT-26) (Garner & Garfinkel, 1982), this is a 26-item self-report questionnaire with a 6-point scale, which measures attitudes and behaviors associated with eating disorders. Examples of the items include "I am scared about being overweight," "I think about food a lot of the time," "I feel very guilty after eating," "I have been dieting," and "I think a lot about wanting to be thinner." The response format is 3 = *always*, 2 = *usually*, 1 = *often*, 0 = *sometimes*, 0 = *rarely*, 0 = *never*. The range of possible scores is 0 through 78. In the present study, the total score for the ChEAT was used as a measure of eating problems. The internal consistency reliability was Cronbach's alpha = .82. High scores can be indicative of more problematic eating behaviors.

### Independent Variables

*Competence.* The Harter (1985, 1986) Self-Perception Profile for Children, a revision of the Perceived Competence Scale for Children (Harter, 1982), was used to measure perceived competence. The 36-item scale is entitled "What I Am Like Scale" and includes six items in each of five domains (i.e., physical appearance, peer social acceptance, athletic competence, scholastic competence, behavioral conduct), two of which were selected for the present study. The participant first judges which of two polar statements best describe him or her and then indicates whether that description is "Really true for me" or "Sort of true for me" (e.g., "Some kids wish their physical appearance (how they look) was different" But "Other kids like their physical

appearance the way it is” or “Some kids find it hard to make friends” But “For other kids it’s pretty easy to make friends”). Those responses are converted to a 4-point scale. The possible range of scores is 1 through 4. A mean score was used for each subscale, with high scores indicating high perceived competence. For the purpose of the present study, internal consistency reliabilities were computed for all five subscales. The Cronbach’s alpha coefficients ranged from .81 through .89.

*Importance.* A 10-item scale titled “How Important Are These Things to How You Feel About Yourself As a Person?” for the domains of physical appearance and social acceptance by peers (Harter, 1985, 1986) was administered to the participants. The response format is identical to that of the self-perception scale described previously. An example of an item about the importance of physical appearance is as follows: “Some kids think it’s important to be good looking” But “Other kids don’t think that’s very important at all.” The items are scored on a 4-point scale. The possible range is 1 through 4. A mean score was used for the subscale, with higher scores indicating greater levels of importance.

*Perfectionism.* The Child and Adolescent Perfectionism scale (CAPS) (Flett et al., 1992) was used to measure perfectionism. The 20-item multidimensional scale assesses self-oriented perfectionism (i.e., high self-standards) and socially prescribed perfectionism (i.e., the perception that others demand perfection) using a 5-item response format of 1 = *false-not at all true of me*, 2 = *mostly false*, 3 = *neither true nor false*, 4 = *mostly true*, and 5 = *very true of me*. The CAPS is a children’s version of the Multidimensional Perfectionism Scale, which was developed by the same group of researchers (Hewitt et al., 1991). Examples of the items from the self-oriented perfectionism scale are “I try to be perfect in everything I do” and “I get mad at myself when I make a mistake.” Examples of the items from the socially prescribed perfectionism scale are “Other people always expect me to be perfect,” “People around me expect me to be great at everything,” and “I am always expected to do better than others.” For the present study, the Cronbach’s alpha coefficients were .88 for self-oriented and .82 for socially prescribed perfectionism. A sum score was used for both subscales with high scores indicating greater levels of perfectionism. The possible range of scores was 10 through 50 for each of the subscales.

*Negative events.* The Adolescent Perceived Events Scale (APES) (Compas et al., 1987) was used to assess the stressfulness of life events and daily hassles in the contexts of family, school, and peers. Participants were

asked to rate events that had happened to them in the previous 4 months, using a 9-point scale ranging from  $-4 = \textit{extremely bad}$ ,  $-3 = \textit{very bad}$ ,  $-2 = \textit{somewhat bad}$ ,  $-1 = \textit{slightly bad}$ ,  $0 = \textit{neither good nor bad}$ ,  $+1 = \textit{slightly good}$ ,  $+2 = \textit{somewhat good}$ ,  $+3 = \textit{very good}$ ,  $+4 = \textit{extremely good}$ . Examples of events are “fight with or problems with a friend”; “getting in trouble or being suspended from school”; “getting bad grades or progress reports”; “problems or arguments with parents, siblings, or family members”; and “living with only one parent.” The measure yields three scores: a negative, a positive, and a total impact score. It has been demonstrated that negative impact scores are related more consistently to psychopathology than are positive impact and total impact scores (Compas & Phares, 1986). Accordingly, negative impact scores were used as the measure of stressors in this study. The negative impact score is the sum of ratings for all items appraised as having had a negative impact (i.e., a score of less than 0). High absolute negative impact scores are indicative of a high level of experienced stressors. Cronbach’s alpha scores for the family, school, and peer negative events subscales were .74, .70, and .72, respectively. The possible range of scores for family events was 0 through 15, for school events the range was 0 through 10, and for peer events the range was 0 through 10.

*Conditional support.* The 10-item Conditional Support Scale for Parents was used to assess conditional support (Harter & Marold, 1994; Marold, 1987). The items tap the extent to which support from the mother and from the father is conditional on their children meeting high parental expectations. The item format is similar to that used by Harter in the Perceived Competence Scale, which has been described previously. Examples of items are “Some kids have mothers who only seem to care about their children when they do what mothers expect” But “Other kids have mothers who care about their children even when they don’t do what their mothers expect.” Internal consistency coefficients were computed for the mother and the father subscales. The Cronbach’s alpha coefficients were .86 and .84, respectively. Mean scores were used, with high scores indicating high conditional support. The possible range of scores was 1 through 4.

*Parental involvement.* The Children’s Perceptions of Parents Scale (CPPS) (Grolnick et al., 1991) was used to measure involvement or noninvolvement (e.g., the degree to which parents are interested in, knowledgeable about, and spending time relating to their children concerning activities and experiences such as schoolwork). The 21-item scale has two subscales: maternal involvement (11 items) and paternal involvement (10 items). For the purpose of the present study, internal reliability coefficients were computed for both

subscales. The Cronbach's alpha coefficients were .77 for both subscales. The item format is similar to that used by Harter in the Perceived Competence Scale that has been described previously. Examples of items are "Some mothers always have enough time to talk to their children" But "Other mothers don't always have enough time to talk to their children" and "Some fathers don't have enough time to talk about their children's problems" But "Other fathers always have time to talk about their children's problems." A mean score was used for both subscales, with high scores indicating high levels of involvement. The possible range of scores was 1 through 4.

*Composite support score.* Pearson correlation coefficients performed on the independent variables revealed a significant inverse relation between parental involvement and conditional support for each of the mother and the father subscales ( $r = -.53$  and  $r = -.50$ , respectively,  $p < .001$ ). Parental involvement and conditional support were collapsed into a new variable called composite support score. The direction of the conditional support scale was reversed to make it consistent with the direction of the involvement scale. Low scores on the composite support variables reflected negative support from the mother and from the father (e.g., low involvement and high conditionality). High scores on the composite support variables reflected positive support from mother and from father (high involvement and low conditionality). The possible range of scores was 1 through 4.

### **Statistical Analysis**

A hierarchical multiple regression analysis was performed to determine the association and interactions among the independent variables and the dependent variable (disordered eating). The following 11 main effects were entered in the first step: competence and importance ratings for physical appearance and for social acceptance by peers, self-oriented and socially prescribed perfectionism, support from mother and from father, and negative events related to peers, family, and school. The following 8 interactions were entered in the second step: competence by importance for physical appearance and for social acceptance by peers (2 interactions) and negative events related to peer, family, and school by mother and by father, respectively (6 interactions). When interaction effects were tested, all variables were centered (i.e., put in mean-deviation form) before computing products to reduce the potential for multicollinearity. The significant interactions from the regression equations were plotted, and post hoc probing was conducted to test if the slopes were equal to 0 and to test pairwise comparisons of the slopes (Aiken & West, 1991).

**TABLE 1: Means, Standard Deviations, and Ranges for the Uncentered Variables**

<i>Variable</i>	$\bar{X}$	SD	<i>Range (inclusive)</i>
Dependent variable			
Disordered eating	11.0	8.6	1-46
Independent variables			
Physical appearance			
Competence ratings	2.38	0.8	1-4
Importance ratings	2.62	0.7	1-4
Social acceptance by peers			
Competence ratings	2.99	0.7	1-4
Importance ratings	2.77	0.7	1-4
Perfectionism			
Self-oriented	30.4	7.3	10-50
Socially prescribed	23.9	8.5	10-48
Support			
Mother	3.32	0.5	1-4
Father	3.09	0.6	1-4
Negative events			
Peer	1.60	1.6	0-8
School	0.99	1.2	0-6
Family	1.85	1.9	0-10

## RESULTS

### Correlates of Disordered Eating

Means, standard deviations, and ranges of the variables are presented in Table 1. The results of the regression analysis are presented in Table 2. The total model accounted for 37% of the variance in disordered eating.

Among the main effects, ratings of competence for physical appearance ( $p < .001$ ), ratings of importance for social acceptance by peers ( $p < .05$ ), self-oriented perfectionism ( $p < .01$ ), and support from father ( $p < .02$ ) emerged as significant correlates of disordered eating in the overall regression analysis. The main effects accounted for 29% of the total variance in disordered eating. Low ratings of competence for physical appearance, high ratings of importance for social acceptance by peers, high self-oriented perfectionism, and low paternal support were associated with high levels of disordered eating. The main effects for importance of physical appearance, competence for social acceptance by peers, socially prescribed perfectionism, and support from mother were not found to be significant statistically.

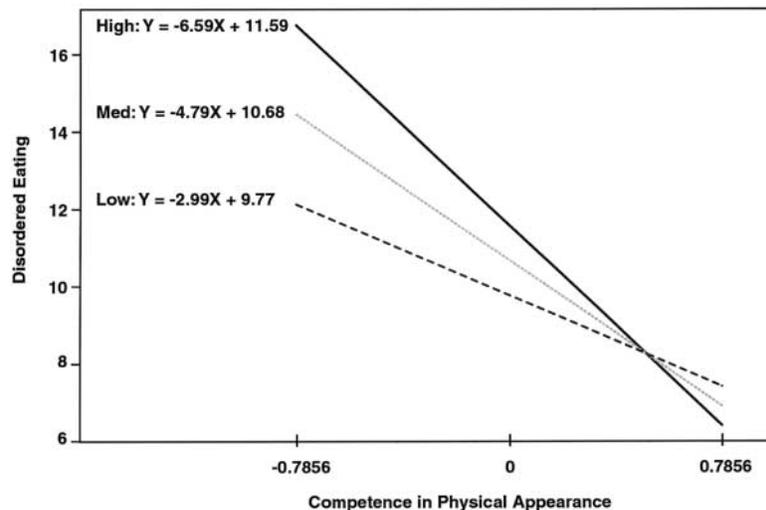
**TABLE 2: Hierarchical Multiple Regression Predicting Disordered Eating From Individual and Contextual Variables (n = 315)**

Main Effect	$\beta$	T	SSPr
Step 1			
Physical appearance			
Competence	-.39	-6.96***	.11
Importance	-.01	-0.21	.00
Social acceptance by peers			
Competence	.06	1.16	.00
Importance	.12	2.00*	.01
Perfectionism			
Self-oriented	.18	2.90**	.02
Socially prescribed	-.01	-0.13	.00
Support			
Mother	-.02	-0.33	.00
Father	-.13	-2.36*	.01
Negative life events			
Family	.05	0.77	.00
Peer	-.06	-1.07	.00
School	.06	1.05	.00
$R^2 = .29, F_{inc}(11, 315) = 11.33***$			
Step 2			
Physical appearance			
Competence $\times$ Importance	-.16	-3.33***	.02
Social acceptance			
Competence $\times$ Importance	.14	2.97**	.02
Support From Mother $\times$ Family	-.05	-0.74	.00
Support From Mother $\times$ School	-.07	-1.10	.00
Support From Mother $\times$ Peer	-.04	-0.61	.00
Support From Father $\times$ Family	-.10	-1.40	.00
Support From Father $\times$ School	-.12	-2.03*	.01
Support From Father $\times$ Peer	.14	1.93*	.01
$R^2 = .37, R^2 \text{ change} = .08, F_{inc}(11, 315) = 9.20***$			

NOTE: SSPr = squared semipartial correlations.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

The addition of the eight two-way interaction terms for the competence and importance variables and for the negative events and parental support variables resulted in a significant increment in  $R^2$  when correlated with disordered eating (see Table 2). Among the interaction effects, the Competence Rating  $\times$  Importance Rating effects for Physical Appearance ( $p < .001$ ) and for Social Acceptance by Peers ( $p < .02$ ) and the Support From Father  $\times$  Negative Events effects for school ( $p < .05$ ) and for peers ( $p < .05$ ) emerged as significant correlates of disordered eating.

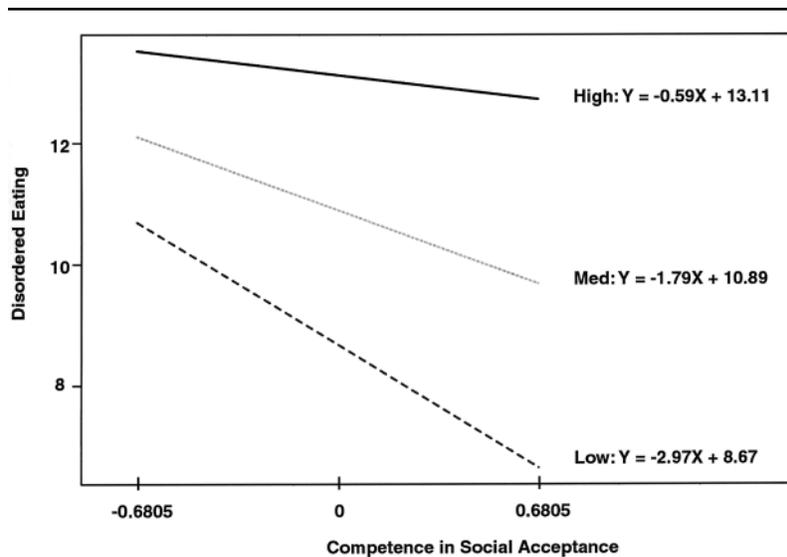


**Figure 1: The interaction between ratings of competence and importance in physical appearance and disordered eating.**

NOTE: Low, medium, and high refer to levels of the variable that are 1 standard deviation below the sample mean, equal to the sample mean, and 1 standard deviation above the sample mean, respectively.

The significance of the coefficient of the interaction term (Competence Rating  $\times$  Importance Rating Effects for Physical Appearance) in the overall analysis indicated that the regression of disordered eating scores on competence for physical appearance scores varied across the range of importance of physical appearance scores. Post hoc probing of that interaction revealed that there was a significant difference between the regression slopes representing low or high levels of importance ( $p < .001$ ). As shown in Figure 1, low competence for physical appearance was related more strongly to disordered eating among girls who reported high levels of importance for physical appearance than among girls who reported low levels of importance in that domain.

The significance of the coefficient of the interaction term (Competence Rating  $\times$  Importance Rating for Social Acceptance by Peers) in the overall analysis indicated that the regression of disordered eating scores on competence for social acceptance scores varied across the range of importance of social acceptance scores. The post hoc probing of that interaction revealed no significant difference between the regression slopes representing low or high levels of importance ( $p = .058$ ). However, a trend was found whereby low competence for social acceptance for peers was related more strongly to dis-



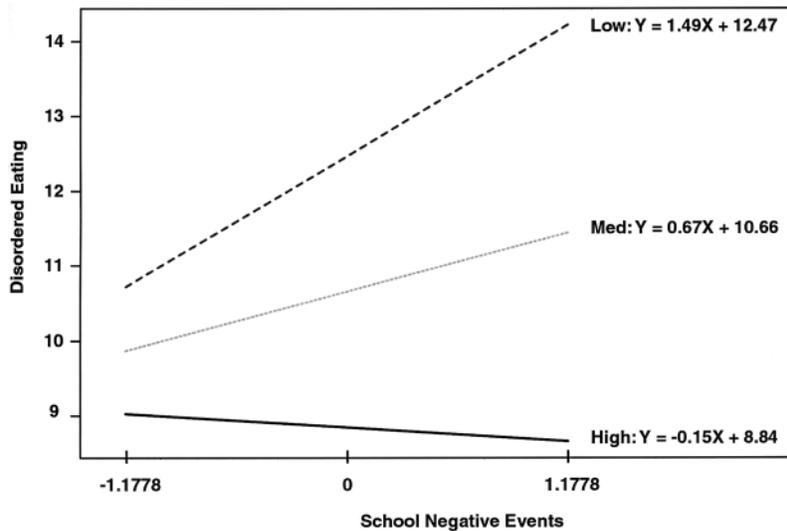
**Figure 2: The interaction between ratings of competence and importance in social acceptance by peers and disordered eating.**

NOTE: Low, medium, and high refer to levels of the variable that are 1 standard deviation below the sample mean, equal to the sample mean, and 1 standard deviation above the sample mean, respectively.

ordered eating among girls with high ratings of importance than among girls who reported low levels of importance in that domain (see Figure 2).

The significance of the interaction term (Support From Father  $\times$  School Negative Events) indicated that the regression of disordered eating scores on school-related negative events varied across the range of paternal support scores. As shown in Figure 3, the post hoc probing of that interaction revealed that the reported number of school-related negative events was related more strongly to disordered eating among girls who reported low levels of support from father than among girls who reported high levels of paternal support ( $p < .05$ ). As described previously, the Support From Father  $\times$  Negative Peer Events interaction was found to be significant in the overall analysis. However, the post hoc probing of that interaction revealed that the regression slopes representing low or high levels of paternal support did not differ significantly from each other ( $p = .095$ ).

The interactions between support from father and family negative events were not found to be significant statistically in the overall analysis, nor were any of the interactions involving support from mother and negative events related to peer, family, and school.



**Figure 3: The interaction between school-related negative events, support from father, and disordered eating.**

NOTE: Low, medium, and high refer to levels of the variable that are 1 standard deviation below the sample mean, equal to the sample mean, and 1 standard deviation above the sample mean, respectively.

## DISCUSSION

In the present study, an attempt was made to further understanding about which individual characteristics, negative events, and parental relationships contribute to disordered eating and to explore various interactions between those variables and identify potential protective factors. High self-oriented perfectionism, low competence ratings for physical appearance, high self-ratings of importance of social acceptance by peers, and low paternal support were found to be associated with disordered eating. The variables of socially prescribed perfectionism, importance of physical appearance, competence in social acceptance by peers, and maternal support were not correlated significantly with disordered eating.

Interactions were explored between ratings of competence and importance for physical appearance and social acceptance by peers to determine if the level of importance girls placed on those two domains might modify the associations between competence and disordered eating. The Competence  $\times$  Importance interactions for physical appearance and for social acceptance by peers were correlated significantly with disordered eating. The first interac-

tion revealed that under conditions of low competence for physical appearance, low, as compared with high, levels of importance of physical appearance appeared to lower the risk of disordered eating. The post hoc probing of the Competence  $\times$  Importance interaction for social acceptance by peers revealed that the regression slopes representing low or high levels of importance did not differ significantly from each other.

Next, interactions between negative events (family, peers, and school) and support from mother and from father, respectively, were explored to determine whether the association between negative events and disordered eating might be modified by the level of perceived parental support. The Support From Father  $\times$  Negative School Events and the Support From Father  $\times$  Negative Peer Events interactions were correlated significantly with disordered eating. The first significant interaction effect revealed that under conditions of high levels of school-related stress, high, as compared to low, levels of paternal support appeared to lower the risk of disordered eating. The post hoc probing of the second interaction revealed that the regression slopes representing low or high levels of support from father did not differ significantly from each other.

The Support From Father  $\times$  Family Negative Events interaction was not found to be significant in the overall analysis. Similarly, there were no significant interaction effects found in the overall analysis between support from mother and negative events related to peers, family, or school, respectively.

The positive association found between perfectionism and disordered eating supported findings in previous research conducted with adolescent girls (Steiger et al., 1992). However, in the present study, a specific type of perfectionism (self-oriented perfectionism) was correlated with disordered eating. The second type of perfectionism (socially prescribed perfectionism) was not correlated with disordered eating.

The interactive association found between the ratings of competence and importance for the domain of physical appearance extends the work of Flett et al. (1992), who reported solely on the link between low competence in physical appearance and disordered eating of high school girls. As such, strategies to help girls lower the importance they place on physical appearance might help to prevent disordered eating.

The finding that paternal support appeared to modify the association between school-related negative events and disordered eating extends the findings of existing research, which has reported solely on the positive association between stress and eating disorder symptoms (Cattanach & Rodin, 1988; Striegel-Moore, Silberstein, Frensch, & Rodin, 1989). That finding indicates that the quality of the father/daughter relationship, namely the degree of involvement and of the conditionality of support on the part of the

father, might have an additive influence on girls' eating behavior for those facing stressful circumstances. It would appear that high levels of involvement and unconditional support from fathers is the most optimal to help reduce the negative impact of stress. Previous research has indicated that paternal support might help to prevent the lowering of self-esteem (Turner et al., 1994) and the worsening of eating attitudes (Swarr & Richards, 1996) among young adolescent girls. The positive association found between paternal support and disordered eating in the present study underscores the need to study the differing roles of mother and of father support on children's mental health outcomes. Most of the literature on eating disorders has focused on the mother/daughter relationship (Hill et al., 1990; Hodes et al., 1995; Jaffe & Singer, 1989; Ogden & Steward, 2000; Stein et al., 1994; Van Wezel-Meijler & Wit, 1989; Warren, 1968). Studies in which the influence of parent support variables and disordered eating are examined might obtain a limited perspective if they fail to examine the father/daughter relationship.

In the absence of longitudinal data, it is impossible to be certain about the direction of the associations detected in this study. Longitudinal work has been initiated to better understand whether disordered eating reported by young adolescent girls leads directly to the development of eating disorders in adulthood (Leon, Keel, Klump, & Fulkerson, 1997). Further longitudinal research is warranted also to explore whether girls who develop eating problems are less skilled in coping with life negative events that occur during early adolescence or whether preexisting eating problems might influence the ways in which social support is conceptualized. Finally, more research is required to delineate through which means aspects of support serve as protective functions against disordered eating. For example, does paternal support indirectly influence disordered eating through its effects on enhancing self-esteem?

The cross-sectional design of the current study was, therefore, a major limitation of the study. In addition, the findings of the present study were based solely on the girls' perception of their environment. Multiple sources of measurement, such as parent, peer, and teacher ratings, might provide a broader perspective than the current study provides. Albeit, researchers have to take into consideration that constructs such as self-esteem, body image, and disordered eating might not be observable readily to teachers, parents, or peers (Kazdin, 1990). For example, studies have revealed that girls', as compared with their mothers', perceptions of their family environments were associated more strongly with the girls' eating disorder symptoms (Sherwood, Crowther, & Kuhnert, 1993). Finally, it is unclear also whether similar findings would be revealed in studies conducted with samples from differing ethnic or social-class backgrounds.

Despite those limitations, the findings from the present study indicate that efforts to help young adolescent girls lower the importance they place on physical appearance, or to value other areas of competence besides appearance, might be useful for programs that are designed to prevent disordered eating. That suggested strategy is consistent with the health promotion goal of raising competency as opposed to focusing on pathology, which appears to be a new trend in the prevention of eating disorders (Huon, 1996). The findings from the present study indicate that programs that detect self-oriented perfectionism in young adolescent girls and help those at risk to lower the unrealistically high standards that they impose on themselves also might prove to be useful for preventing disordered eating.

Finally, the findings of the present study support recent studies that highlight the need to involve parents in comprehensive eating disorder prevention programs (Graber & Brooks-Gunn, 1996; Smolak, Levine, & Schermer, 1999). Smolak et al. (1999) suggested that parental behavior, such as direct comments about child's weight and modeling of weight concerns through their own behavior, should be a target in prevention programs. The findings from the present study indicate that the quality of the parent/child relationship and its influence on the ways in which girls manage stress might be an additional focus of such prevention programs. Parental programs, which teach child-rearing methods that communicate warmth and acceptance, have been shown to be associated with desirable outcomes such as less drug use among youth (Spoth, Redmond, Hockday, & Yoo, 1996; Spoth, Redmond, & Shin, 1998) and other indices of physical and emotional health (Durlak, 1998). Multilevel eating disorder prevention programs that are implemented with girls and their parents before girls begin to experience the normative stressors of early adolescence that typically trigger the onset of disordered eating might be more effective than are existing eating disorder prevention strategies (Carter, Stewart, Dunn, & Fairburn, 1997; Killen et al., 1993; Mann et al., 1997; Moreno & Thelen, 1993; Paxton, 1993; Shisslak, Crago, & Neal, 1990; Smolak, Levine, & Schermer, 1998a).

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