

# Family Functioning and Eating Attitudes and Behaviors in At-Risk Early Adolescent Girls: The Mediating Role of Intra-Personal Competencies

BRITTA DAVIS DINSMORE AND ELIZABETH A. STORMSHAK  
*University of Oregon*

The relation between perceived family functioning, intra-personal competence, and eating attitudes and behaviors was examined in a sample of at-risk, ethnically diverse, early adolescents. Both family functioning and intra-personal competencies were related to eating attitudes and behavior. However, adolescent intra-personal competence, defined as self-control, negative, and positive coping, mediated the relationship between family functioning and eating attitudes and behaviors. Results suggest that by early adolescence, important aspects of family environment have consolidated into individual differences in competence and/or personality. Results are discussed within a developmental framework emphasizing the influence of the family on adolescent psychosocial development. The implications of these data for prevention and intervention with at-risk adolescent girls are also discussed.

## INTRODUCTION

Maladaptive eating attitudes and behavior represent an important public health concern and may be increasing in prevalence (Herzog, 1982; Pyle, Halvorsen, Neuman, & Mitchell, 1986). Eating problems are associated with a number of medical and mental health problems in adolescence, including depression and suicidality (Agras, 1987; Hatsukami, Mitchell, Eckert, & Pyle, 1986; Zweben, 1987). Among adolescents and young adult women, prevalence rates for eating disorders range from 1–3% (Fairbairn & Beglin, 1990; Johnson-Sabine, Wood, Patton, Mann, & Wakeling, 1988; King, 1989). Additionally, researchers estimate that as many as 20% of young adult women exhibit subclinical levels of symptoms (Schwartz, Thompson, & Johnson, 1985).

Few studies have examined attitudes and behaviors associated with the development of eating problems in early adolescence. However, the small amount of available research does, in fact, suggest that this may be a high-risk period for the onset of negative attitudes and behaviors toward eating. An assessment of 3rd–6th graders found that 45% of the subjects wished to be thinner, 37% had already tried to lose weight, and 7% scored within the clinical range on the Ch-EAT, a children's measure of attitudes and behaviors associated with eating disorders (Maloney, McGuire, Daniels, & Specker, 1989). In this study, 16% of the girls sampled endorsed the belief that peers would like them better if they were thinner, a belief that was associated with higher scores on the

measure of disordered eating attitudes and behaviors. In a similar survey of girls between the ages of 7 and 11, 50% of the subjects reported wishing to be thinner, 30% had previously attempted to lose weight, and 16% scored within the clinical range on the Ch-EAT (Mukai & McCloskey, 1996).

Although the prevalence of disordered eating that is severe enough to meet formal diagnostic criteria may be relatively low among early adolescents, a developmental perspective suggests that milder forms of eating disturbances, such as weight concern, may represent precursors to more severely disordered eating. Community-based, prospective research of early adolescents has found that problematic patterns of eating predicted later onset of eating disorder symptoms and depression over a two year period (Graber, Brooks-Gunn, Paikoff, & Warren, 1994; Attie & Brooks-Gunn, 1989). Another prospective study demonstrated subclinical levels of weight and body image preoccupation at Time 1 to be significantly associated with symptomatic classification for disordered eating at Time 2 (Killen et al., 1994). Further studies assessing variables associated with a range of eating disturbances in early adolescence would represent a critical step toward identifying young girls who are at-risk of developing eating disorders, as well as other mental health problems, in adolescence and young adulthood.

Research investigating attitudes and behaviors associated with disordered eating in adolescents suggests that these symptoms often co-occur within a broader constellation of other health-risk and problem behaviors. In one assessment of adolescents, frequent dieting (10+ times in the past year) and purging behavior were independently associated with delinquent behaviors, initiation of sexual activity, and suicide risk (French, Story, Downes, Resnick, & Blum, 1995). Research suggests that when eating disorders occur concomitantly with other health risk behaviors, such as substance abuse and delinquency, the risk is greater than would be expected by either disorder alone (Fairbairn & Cooper, 1984; Hatsukami et al., 1986; Zweben, 1987). For example, psychiatrically hospitalized adolescent girls with bulimia who also abused substances were found to be significantly more delinquent, aggressive, and externalizing than their non-substance abusing, eating-disordered counterparts (Singer, Nutter, White, & Song, 1993). Early adolescent girls with attitudes and behaviors associated with eating disorders who also demonstrate other problem behaviors represent an important population for further study. Of particular importance is understanding the variables involved in the etiology of disordered eating.

Positive relationships with parents appear to protect young adolescents from the development of eating problems (Swarr & Richards, 1996). In particular, several family variables have been associated with the development of eating disorders, including degree of cohesion and adaptability in the family structure. When mothers and daughters are asked to rate family cohesion, disagreements on cohesion are associated with dieting behavior in daughters (Paikoff, Carlton-Ford, & Brooks-Gunn, 1993). Additionally, studies comparing the perceptions of bulimic anorexics with the perceptions of restricting anorexics and control group women demonstrate significant differences in perceived family environment along these dimensions. Bulimic anorexics perceive their families to be more conflictual, less cohesive, and less structured than do restricting anorexics and non-eating disordered women (Strober, 1981; Strober, Salkin, Burroughs,

& Morrell, 1982). Observational studies of eating disordered families also suggest that these families differ in their interactional patterns from control group families and that different eating disorder subtypes may be characterized by unique family interactional patterns (Kog & Vandereycken, 1989). Although families of normal weight bulimics and anorexics appear to share a difficulty in maintaining appropriate interpersonal boundaries and resolving conflicts successfully, the ways in which these problems are manifested seem to be very different for the families of the different eating disorder subtypes. Families of anorexics tend to display an extremely high degree of emotional involvement, with family members demonstrating weak interpersonal boundaries between one another. These families tend to be inflexible in the way they interact and tend to avoid conflict at all costs. Conversely, families of normal weight bulimics tend to lack emotional involvement, with family members demonstrating strong interpersonal boundaries between one another. These families tend to be chaotic and disorganized and tend to have frequent negative interactions with one another (Kog & Vandereycken, 1989).

Clearly, family functioning is an important correlate of problematic eating behavior. However, the mechanism by which family variables such as cohesion and adaptability impact eating problems remains unclear. One way that family functioning may be linked to eating problems is through its role in promoting the development of self-control and coping. Deficits in both coping and self-control may contribute substantially to the precipitation and/or maintenance of maladaptive eating patterns. Under conditions of difficult family circumstances, in combination with strong social pressures regarding appearance, individuals who lack appropriate coping skills or self-control may become vulnerable to developing problematic eating behavior (Lacey, Coker, & Birtchnell, 1986).

Self-control has been defined as those processes by which, in the relative absence of external supports, an individual alters his or her response to a given situation (Kanfer, 1971, 1977) in the interest of promoting long-term goals and positive relations with others (Feldman & Weinberger, 1994). A substantial body of empirical literature demonstrates control deficits in women with eating problems (Kaye, Bastiani, & Moss, 1995; Bruch, 1978; Selvini-Palazzoli, 1974). Furthermore, relative to matched control group women, eating disordered women more frequently engage in behaviors associated with behavioral low self-control, such as suicide attempts and shoplifting (Weiss & Ebert, 1983).

Coping has been defined as "a wide range of cognitive and behavioral strategies that have both problem-solving and emotional-regulating functions" (Folkman & Lazarus, 1988). Significant deficits in coping have been demonstrated in eating disordered women (Cattanaach & Rodin, 1988), with some researchers suggesting that an inadequate repertoire of coping responses is responsible (Hawkins & Clement, 1984), and others suggesting that an inability to select the most effective strategies is the problem (Katzman & Wolchik, 1984; Shatford & Evans, 1986). In a comparison of the use and effectiveness of coping strategies between bulimic and control group women, Katzman and Wolchik (1984) found significant differences between the two groups. While bulimic women reported using a greater number of coping strategies than controls, they concurrently indicated that the strategies they used were less efficacious in managing stress.

Some research suggests that these intra-personal competencies, such as self-regulation (Brody et al., 1994), coping (Ohannessian, Lerner, Lerner, & von Eye, 1994; Compas, 1987), and emotional regulation (Barbarin, 1993; Katz & Gottman, 1991; Rutter, 1985) mediate the relationship between family environment and adolescent developmental outcomes. There is very little research which has examined mediating effects of the child's intra-personal competencies on the relation between family environment and eating problems. However, in one assessment of the relative contribution of family and personality variables to disordered eating, family variables were found to predict broad emotional and interpersonal difficulties, such as neuroticism, rather than eating disorders per se (Brookings & Wilson, 1994). If self-control and coping are found to mediate the influence of family functioning in the development of disordered eating symptoms in early adolescents, important prevention and treatment implications will follow. Self-control and adaptive coping are both components in many skill-based interventions and, thus, may represent pragmatic targets for intervention with adolescent girls at risk for developing eating disorders.

### *The Present Study*

The purpose of this study is to investigate the possible mediating role of adolescent intra-personal competencies, measured by self-control and coping, on the relationship between family functioning and eating disorder symptoms in early adolescents at risk for a variety of health risks and problem behaviors. This model suggests two causal paths explaining variance in eating disorder symptoms: the direct impact of family functioning and the impact of proposed mediating variables, adolescent self-control, and coping. Family functioning is also expected to relate to adolescent intra-personal competence. When the variance explained by adolescent intra-personal competence is accounted for, the relationship between family functioning and eating attitudes and behaviors is expected to become non-significant.

## METHOD

This study was part of a larger prevention trial conducted by Dishion and Kavanagh (2003). The purpose of this larger project, called Project Alliance, was to examine the potential for supporting parents in high-risk neighborhoods to prevent the early onset of problem behaviors in adolescents, including tobacco use, alcohol use, delinquency, and school discipline contacts (Dishion, 1994). The current study utilizes data obtained from the pre-intervention assessment battery.

### *Participants*

Participants for this study were 94 adolescent girls, selected by gender and risk status (for a variety of problem behaviors), from the larger cohort of the Project Alliance study ( $N = 676$ ). Participants were recruited from the sixth grade homerooms of three urban middle schools in the Northwest. Self-report, teacher report, and school record

data were collected for all of the students in the original pool whose parents consented to participation ( $N = 676$ ). Based on these data, 55% of the sample most at risk in each gender for adolescent problem behavior were identified ( $n = 378$ ; 185 girls and 193 boys). Risk identification was based on a teacher-rated index developed and normed by Dishion and Kavanagh (in press). For those students whose parents gave consent for further participation in the study, additional self-report questionnaires were administered ( $n = 234$ ; 124 girls and 110 boys); the parents of these students were also given self-report questionnaires. Note that this final sample is a self-selected sample of at-risk children and families. The participants for this study included the adolescent girls and their parents within this subsample who completed and returned the questionnaire packets ( $n = 94$ ). The sample ranged in age from 11 to 13 years old ( $m = 12.37$ ). Within the sample, 47% of the adolescents were African American ( $n = 44$ ), 42% were European American ( $n = 39$ ), 3% were Native American, 2% were Hispanic or Latino, and 1% was Asian American; an additional 5% were of mixed ethnicity.

### Measures

*Family functioning.* Family adaptability and family cohesion were measured with the *Family Adaptability and Cohesion Scales-III* (FACES-III; Olson, Portner, & Lavee, 1985). Both children's and parents' reports were obtained. The FACES-III was developed to measure the two central dimensions of family functioning proposed by Olson and colleagues' (Olson, Sprenkle, & Russell, 1979) Circumplex Model of Family Systems: cohesion and adaptability. Cohesion represents the degree of emotional involvement between family members. The continuum on the Cohesion Scale ranges from disengaged, to separate, to connected, to enmeshed. Adaptability represents the extent to which the family system is flexible in responding to situational and developmental stressors. For this dimension, the continuum ranges from chaotic, to flexible, to structured, to rigid.

The FACES-III is a self-report measure consisting of 20 items to be completed by each family member using a 5-point Likert response scale ranging from 1 "Almost Never" to 5 "Almost Always." Scores at the extremes of the two continuums are thought to suggest dysfunction, while scores in the middle range are thought to suggest healthy functioning. For the purpose of this study, each dimension will be examined independently to assess its relationship to the other variables in the study.

Test-retest reliability coefficients have been reported as .83 for the Cohesion Scale and .80 for the Adaptability Scale, based on a 4–5 week testing interval. Internal consistency coefficients of .89 and .71 for the Cohesion and Adaptability Scales, respectively, were obtained using a sample of 183 high school and university students (Perosa & Perosa, 1990).

*Self-control.* Self-control was measured with a modified version of the *Children's Perceived Self-control Scale* (CPSCS; Humphrey, 1982). The CPSCS was designed to measure children's perceptions of their ability to demonstrate self-control and maintain goal-directed behavior in the face of conflicting impulses and/or increased emotional arousal. The original instrument consists of 11 items to which children respond dichoto-

mously “usually yes” or “usually no,” in regards to how well the item describes them. The modified version of the measure that was used in this study retained the same 11 items but used a five-point Likert response scale ranging from “Never” to “Always.” The measure is scored such that high scores reflect self-control problems and low scores reflect self-control competence. The Cronbach’s Alpha of this scale for this sample is .73, suggesting acceptable internal reliability.

*Coping.* The *Coping Scale* is a subscale of the *Life Events and Coping Inventory* (LECI; Dise-Lewis, 1988), which was designed to assess the experience of life stress and the use of coping behaviors in early adolescents. The Coping Scale consists of 52 items that reflect different coping strategies. Examples of these strategies include: Aggression (“Throw or break things”), Stress-Recognition (“Talk to my friend”), Distraction (“Take a walk or a bike ride”), Self-Destruction (“Drink alcohol”), and Endurance (“Just hold it in”) (Dise-Lewis, 1988). Each factor had acceptable internal reliability, ranging from .68 to .89.

For the purpose of this study, the positive coping subscales (Stress Recognition Coping and Distraction Coping) were combined into one composite score—“Positive Coping”—and the negative coping subscales (Aggression Coping, Endurance Coping, and Self-Destruction Coping) were combined into one composite score—“Negative Coping”.

*Eating disorder attitudes and behaviors.* Attitudes and behaviors associated with eating disorders were measured with the *Measure of Weight Concern* (Killen et al., 1994b). The Measure of Weight Concern is a five-item, self-report survey developed to assess both attitudinal and behavioral aspects of the preoccupation with thinness and body shape associated with disordered eating. Responses are made along a Likert scale, ranging from 1 to 5, with 5 representing the most symptomatic response.

Validity is demonstrated by the authors’ report that the Measure of Weight Concern is substantially correlated with the Revised Restraint Scale (Herman, Polivy, Pliner, Threlkeld, & Munic, 1978) and the Eating Disorders Inventory (EDI; Garner, Olmsted, & Polivy, 1983). Additionally, in one longitudinal analysis, the Measure of Weight Concern was demonstrated to be superior to the EDI in accounting for the onset of eating disordered symptoms over the three-year study interval (Killen et al., 1994b). The authors report a .79 three-week test-retest reliability for the Measure of Weight Concern. The internal reliability for these five items in this dataset was .76, indicating an acceptable degree of reliability in this scale.

Survey instruments such as the Measure of Weight Concern do not establish the formal diagnosis of an eating disorder, but rather are designed to assess the degree of disturbed eating attitudes and behaviors along a continuum (Maloney et al., 1989). Although it is possible to determine cut-off scores for the purpose of identifying individuals most likely to be in the “clinical range,” scores on such instruments are best viewed as representing disturbed eating attitudes and behaviors as a continuous variable.

## **Procedures**

At the initial stage of data collection, students whose parents had consented to their participation completed self-report questionnaires in their homeroom classrooms ( $N =$

676; 322 girls and 354 boys). Once students in the top 55% risk group were identified, the parents of these students were contacted to recruit additional participation in the study ( $n = 378$ ; 185 girls and 193 boys). For the families who consented to additional participation, appointments were set up for a researcher to come to the home, distribute a questionnaire packet, and answer any questions about the study ( $n = 94$  girls). Questionnaire packets included self-report questionnaires for both the student and his or her parents. Follow-up appointments were scheduled at these home visits for the researcher to return to pick up the completed questionnaire packets. Subjects for this study consisted of those adolescent girls and their parents within this subsample who completed and returned these questionnaire packets.

## RESULTS

### *Preliminary Analyses*

Descriptive statistics were calculated for the self-control, coping, family adaptability and cohesion, and weight concern measures and are shown in Table 1. A multivariate analysis of variance test for ethnic differences between the two largest subject groups (African American and European American) on family adaptability and cohesion, self-control, coping, and weight concern variables was not significant,  $F(11, 64) = 0.94$ , NS. Therefore, adolescents of the varying ethnic groups were combined for all further analyses.

The range of scores obtained on the Measure of Weight Concern was 5–26 ( $m = 11.79$ ). Although the Measure of Weight Concern was not designed as a diagnostic measure with specific cut-off scores, scores above 15 can be considered to represent

TABLE 1

**Descriptive Data for the Coping Subscales, the Family Adaptability and Cohesion Scales-III, the Children's Perceived Self-Control Scale, and the Measure of Weight Concern**

Variable	M	SD	Scale Range(Min)	Scale Range(Max)
<b>Family Variables</b>				
Father Adaptability	25.21	7.31	10	46
Father Cohesion	36.80	6.28	21	48
Mother Adaptability	25.11	4.85	11	36
Mother Cohesion	37.05	5.98	18	46
Daughter Adaptability	24.95	5.22	14	39
Daughter Cohesion	33.47	7.01	17	49
<b>Intra-personal Competencies</b>				
Self-Control Deficits	34.02	7.28	16	52
Positive Coping	122.72	29.34	59	190
Negative Coping	72.12	20.20	37	141
Weight Concern	11.79	5.48	5	26

Note.  $N = 94$  for Daughter variables,  $n = 32$  for Father variables,  $n = 86$  for Mother Variables.

subclinical levels of eating disturbance and scores of 20 or greater suggest symptomatic status. In this sample, 21% ( $n = 28$ ) of the subjects scored in the sub-clinical range or higher; 10% ( $n = 12$ ) of the subjects scored in the symptomatic range (see Table 1).

Of the 94 adolescents in the sample, 86 had mothers who completed the study questionnaires, 39 had fathers who completed the study questionnaires, and 32 had both mothers and fathers who completed the questionnaires. In order to determine the level of agreement between mothers' and fathers' perceptions of family functioning, bivariate correlations were conducted between mothers' and fathers' adaptability and cohesion scores on the FACES-III for the sample ( $n = 32$ ) whose mothers and fathers both returned completed questionnaire packets. The correlation between mothers' perceived family adaptability and fathers' perceived family adaptability was significant,  $r = .63$  ( $p < .01$ ), as was the correlation between mothers' perceived cohesion and fathers' perceived cohesion,  $r = .67$ , ( $p < .01$ ). Thus, mothers and fathers tended to agree with regard to their perceptions of family functioning. Therefore, all further analyses were conducted without fathers' data in order to maintain a large enough number of subjects relative to the number of variables being tested.

Because several of the hypotheses posited curvilinear relationships between the family variables (adaptability and cohesion) and other variables, curve estimates were conducted using SPSS-x to test for quadratic relationships between adaptability and cohesion and other variables in the proposed model. Two pairs of variables demonstrated significant quadratic relationships: mothers' perceived cohesion and weight concern,  $F(1, 83) = 4.66$ ,  $p < .012$ , and mothers' perceived cohesion and negative coping,  $F(1, 83) = 8.34$ ,  $p < .001$ . However, in each instance, a linear relationship was also demonstrated between the same pair of variables and, in each instance, this linear relationship was significant at an even higher level than the quadratic relationship ( $p$ 's = .003 and .000, respectively). Therefore, subsequent tests of the research hypotheses tested for linear, rather than curvilinear effects of the family variables.

*The relation between family functioning and eating attitudes and behavior.* In order to examine the relation among family variables and eating attitudes and behavior, bivariate correlations were conducted. The results are shown in Table 2. The relation between daughter's and mother's perceived family adaptability and cohesion and eating attitudes and behavior was examined. Of the four family variables, mother's perceived cohesion was significantly correlated with weight concern, such that lower levels of mother's perceived family cohesion were associated with greater weight concern among adolescent girls (see Table 2).

*The relation between family functioning and intra-personal competencies.* In order to demonstrate that the relationship between a predictor variable and a criterion variable is mediated by another variable, the original variable must be shown to account for a significant amount of variance in the proposed mediating variable (Baron & Kenny, 1986). In this model, family variables were anticipated to be related to adolescent intra-personal competence, including negative coping, positive coping, and self-control. The relation between family variables and intra-personal competencies were examined using bivariate correlations. Of the four family variables, mothers' perceived cohesion was significantly correlated with self-control problems ( $p < .05$ ), such that high levels of



Table 2

Bivariate Correlations between Scores on the Family Adaptability and Cohesion Scales-III, the Coping Scale Subscales, the Children's Perceived Self-Control Scale, and the Measure of Weight Concern								
	Mother Adapt	Mother Cohes	Daughter Adapt	Daughter Cohes	Negative Coping	Positive Coping	Self-Control Deficits	Weight Concern
Family Variables								
Mother Adapt		.31**	.19+	.07	-.11	.20+	-.05	-.14
Mother Cohes			.08	.41**	-.40**	.10	-.29**	-.32**
Daughter Adapt				.30**	.16	.20+	.17	.01
Daughter Cohes					-.25*	.32**	-.18+	-.04
Intra-personal Competencies								
Negative Coping						.10	.23*	.24*
Positive Coping							-.22*	-.07
Self-Control Deficits								.31**
Dependent Variable								
Weight Concern								

Note. N = 94 for Daughter variables, n = 32 for Father variables, n = 86 for Mother Variables. +  $p < .10$ , \* $p < .05$ , \*\* $p < .01$

maternal perceived family cohesion were associated with lower self-control deficits in daughters (see Table 2). Of the four family variables, mothers' perceptions of family cohesion were significantly negatively correlated with negative coping,  $p < .01$ . Daughters' perceptions of cohesion were also negatively correlated with negative coping, and positively correlated with positive coping. Daughter's and mother's perceptions of adaptability were moderately correlated with positive coping, with more structure in the family related to more positive coping skills (see Table 2).

In summary, it appears that family variables, specifically cohesion, was significantly correlated with the proposed mediating variables, adolescent self-control deficits, and negative coping. Mothers' reports of their families as emotionally underinvolved were significantly correlated with self-control deficits and negative coping endorsement in adolescent daughters. Although daughters' perceptions regarding family closeness were only moderately correlated with self-control deficits, they were associated with both positive and negative coping. Adolescent girls who characterized their families as less emotionally close endorsed a greater use of negative coping strategies than did other girls. In contrast, adolescent girls who characterized their families as more emotionally close endorsed a greater use of positive coping strategies.

*The relation between intra-personal competencies and eating attitudes and behavior.* The next step in testing a mediational model is to determine whether the proposed mediating variable is correlated with the criterion variable. Accordingly, self-control, negative coping, and positive coping were examined as correlates of eating attitudes and behavior. Of the three predictor variables, both self-control deficits and negative coping

were correlated with weight concern, suggesting that both these intra-personal competencies are associated with adolescent girls' eating attitudes and behaviors (see Table 2).

*Self-control and coping as mediators in the relation between family functioning and eating attitudes and behavior.* The final steps in testing a mediational model are: 1) to determine whether the proposed mediating variable explains a significantly greater amount of variance in the criterion variable than that explained by the predictor variable alone, and 2) to determine whether, once the variance explained by the proposed mediating variable is accounted for, the variance explained by the predictor variable is reduced in significance (Baron & Kenney, 1986).

The primary hypothesis of this study is that adolescent intra-personal competencies will explain a significantly greater amount of variance in eating attitudes and behaviors than that explained by family variables alone. This hypothesis further contends that when the variance in eating attitudes and behaviors explained by these adolescent intra-personal competencies is accounted for, the relationship between family variables and eating attitudes and behaviors will no longer be significant. To test this hypothesis, two hierarchical multiple regression analyses were run, each with weight concern as the dependent variable. At the first step of the first analysis (Analysis A), family variables (mothers' perceived family adaptability, mothers' perceived family cohesion, daughters' perceived family adaptability, and daughters' perceived family cohesion) were entered. At the second step of the first analysis, adolescent intra-personal competencies (self-control deficits, negative coping, and positive coping) were entered. The additional variance in weight concern predicted by the adolescent intra-personal competencies (self-control, negative coping, and positive coping) entered at the second step was significant,  $r^2 = .23$ ,  $F(3,78) = 3.65$ ,  $p < .05$ . Of the seven variables entered at step two, self-control deficits and negative coping were demonstrated to be unique predictors of variance in weight concern,  $p < .05$ , such that higher levels of self-control and negative coping were associated with greater weight concern. The results of this analysis are shown in Table 3 in the section labeled "Analysis A." A second hierarchical multiple regression analysis (Analysis B) was conducted in the reverse order of the one just described, with individual variables entered at step one and family variables entered at step two. The addition of family variables at step two accounted for no additional significant variance in weight concern scores,  $r^2 = .23$ ,  $F(4, 78) = 1.65$ , NS. Once the variance in weight concern explained by adolescent intra-personal competence was accounted for, the relationship between family variables and eating attitudes and behaviors became non-significant. Therefore, the proposed model suggesting that the relationship between family adaptability and family cohesion and eating attitudes and behaviors is mediated by adolescent self-control and coping was supported.

*Ethnic differences.* All of the tests of the research hypotheses were replicated within each of the two major ethnic subsets of the sample: Euro American ( $n = 39$ ) and African American ( $n = 44$ ). The same patterns demonstrated in the analyses with the entire sample were observed for each of the two subsets of subjects. It appears that the relation between family functioning, adolescent intra-personal competencies, and weight concern hold for both ethnic groups represented in this study, despite research suggesting some ethnic differences in these behaviors (Crago, Shisslak, & Estes, 1996).

Table 3

**Summary of Hierarchical Multiple Regression Analysis for Predicting Weight Concern Scores from Family Variables and Intra-personal Competencies**

Step/Variable Entered	R	R <sup>2</sup>	Adjust R <sup>2</sup>	Increment in R <sup>2</sup>	F Change	df	Standardized Beta	t-test
Analysis A								
1. Family Variables	.35	.12	.08	.12	2.82*	4, 81		
Mother Adapt							-.05	-.41
Mother Cohes							-.36	-2.97**
Daughter Adapt							.07	.61
Daughter Cohes							.12	1.00
2. Intra-personal Competence	.48	.23	.16	.113	.65*	3, 78		
Self-Control Deficits							.26	2.30*
Negative Coping							.27	2.32*
Positive Coping							-.05	-.50
Analysis B								
1. Intra-personal Competence	.41	.17	.14	.17	5.41**	3, 82		
Self-Control Deficits							.25	2.29*
Negative Coping							.27	2.60*
Positive Coping							.00	.02
2. Family Variables	.48	.23	.16	.07	1.65	4, 78		
Mother Adapt							-.10	-.95
Mother Cohes							-.17	-1.55
Daughter Adapt							-.03	-.26
Daughter Cohes							.16	1.41

Note.  $n = 86$  \* $p < .05$  (two-tailed)\*\* $p < .01$  (two tailed)

## DISCUSSION

As hypothesized, family functioning was correlated with adolescent intra-personal competencies. Not only was mothers' perceived family closeness associated with effective self-control in daughters, but it was also associated with lower levels of negative coping. Adolescents' own perceptions of their families as being emotionally close were also associated with lower levels of negative coping, including substance abuse and aggressive behaviors. In addition, adolescents' perceptions regarding family closeness were associated with the increased use of more positive coping strategies, including seeking social support and the use of self-calming techniques. Although adolescence is often viewed as a time of individuation, adolescents clearly need to know that they are loved, cared for, and that they belong. Previous research suggests that this may be especially true for the development of coping competence in girls, because girls report relying more on social support from their families as a coping strategy than do boys (Shulman, 1993).

Although some aspects of family functioning were demonstrated to be associated with eating attitudes and behaviors in early adolescents, self-control deficits and negative coping were demonstrated to mediate this relationship. Both self-control problems

and increased use of negative coping were associated with higher levels of weight concern. Rehm's (1977) model of self-control suggests that self-control problems are comprised of deficits in self-evaluation, internal monitoring, and self-reinforcement. Problems in the area of self-evaluation may create a propensity for feeling negatively about one's body and for setting unrealistic goals for oneself with regard to body shape and weight. This is likely to lead to extremely stringent dieting practices. Stringent dieting only exacerbates existing problems in internal monitoring, because this behavior externalizes the cues for when and how much to eat. This perpetuates a decreased awareness of internal cues, both physiological and emotional, and makes it difficult to effectively respond to one's needs. Problematic weight concern may be reinforced by such lack of awareness of internal states, particularly for those women who lack coping skills for dealing with difficult feelings. For young women who develop eating disorders, focusing on weight (which is concrete and external) often becomes a substitute for trying to respond to internally-driven needs which may be experienced as far too complex and confusing (Bruch, 1978; Heatherton & Baumeister, 1991).

The findings of this study have important implications for understanding disordered eating from a developmental perspective. Although the role of family functioning in eating disorder propensity is widely accepted, the specific mechanisms through which family functioning increases eating disorder risk have not been established. The finding that adolescent intra-personal competencies mediate the relationship between family functioning and disordered eating suggests that the relative effectiveness of families in facilitating the development of these competencies is critical. By early adolescence, aspects of the family context have consolidated into more stable individual differences with important developmental implications. Previous research supports the finding that contextual factors related to the development of self-regulation are particularly likely to become internalized as stable aspects of personality at a young age (Sroufe, 1996; Loeber, 1982).

It is interesting that negative but not positive coping is associated with problematic eating attitudes and behaviors. Although positive coping may be important for overall adjustment, it appears that the absence of negative coping is more critical than the presence of positive coping in terms of eating disorders propensity. It may be that those components of positive coping that are truly adaptive have yet to be properly delineated. Although not tested in this study, it may also be the case that negative coping moderates the relationship between positive coping and eating disorder propensity, such that positive coping is only associated with reduced eating disorder risk when the use of negative coping behaviors is low.

Although curvilinear relationships between family adaptability and cohesion and other variables in the model were predicted, the initial curve estimates performed using SPSS-x demonstrated strong linear relationships and did not provide support for curvilinear effects. This may be due to the non-normative nature of this sample. The adolescent girls in this sample were identified as at-risk for a variety of problem behaviors and are, therefore, more likely than others to face a multitude of risk factors, including poverty and exposure to violence and substance abuse in their schools, neighborhoods, and/or homes. They may also be more likely to come from single-

parent households. Exposure to such risk factors may mean that family closeness and family structure need to be even stronger in these families than in other families to prevent self-control problems and reliance on negative coping strategies. Alternatively, the non-normative nature of this sample may also have made the detection of curvilinear relationships difficult due to a restriction in range of values on the various measures. Relative to a more normally distributed population, subjects in this sample may have scored within a more limited range on the various measures used, obscuring actual curvilinear effects.

Given the significance of self-control deficits and negative coping in the development of disordered eating, it is critical to determine how best to facilitate self-control and coping competencies in adolescents. Outcome research focused on determining the relative effectiveness of family, individual, and group psychoeducation/therapy represents an important next step in eating disorders prevention. It is important that we know which types of interventions are most effective and if this differs as a function of age and developmental level of the child/adolescent. Finally, as mentioned previously, research utilizing longitudinal designs is needed to clarify the predictive utility of family functioning and individual competencies in the onset of eating disorders.

### ***Limitations***

A limitation of this study is its cross-sectional design. As a result of this design, the direction of causality cannot be determined. It may be the case that problematic eating attitudes and behaviors actually cause problematic family functioning and/or deficits in self-control and coping, rather than the other way around. A longitudinal design would clarify the direction of causality with regard to these relationships, in that it would allow an investigation of variables that predict the development of disordered eating attitudes and behaviors over time.

Additionally, the measures used in this study were all self-report measures, introducing the possibility of inter-reporter bias. However, this danger is attenuated by the fact that both parents and adolescents completed self-report measures about their own perceptions of family functioning. A number of significant relationships were demonstrated between mothers' self-report measures of family functioning and daughters' self-report measures of their own adjustment. In many cases, mothers' reports of their families' functioning were more predictive of daughters' reports of their own adjustment than were daughters' reports of their families' functioning. Further examination of this model using observational measures would give even more credence to the findings of this study.

A final limitation of this study is that the sample is non-normative and findings, therefore, cannot be generalized to the population at large. This sample of ethnically diverse, urban adolescents was selected based on risk status for the development of a number of other problematic behaviors, including delinquency, school failure, and early onset of substance use. Different relationships between the variables in this model may be demonstrated in a more normative sample. Therefore, applications of the findings of this study should be limited to similar populations.

### *Implications for Intervention*

In terms of practice, findings from this study point to important considerations for family-, individual-, and school-based interventions. Interventions aimed at promoting effective self-control and decreased use of negative coping are likely to be most beneficial in reducing risk for disordered eating. The finding that family functioning plays such a critical role in the development of these competencies suggests that family interventions that facilitate increased emotional closeness and healthy levels of consistency and structure may be most helpful. Given the finding that by early adolescence, aspects of family context have consolidated into important individual psychosocial competencies, early risk-identification and prevention efforts seem to be critical. In order to be most effective, family interventions need to occur before individual differences in adolescent self-control and coping have become more stable aspects of personality. Although clearly early intervention with families is the ideal, if that window of opportunity has passed by, the findings of this study suggest the potential utility of individual- and school-based interventions. This is especially important given the difficulty of engaging families in treatment. Although the importance of involving families in treatment cannot be underestimated, individual- and/or school-based interventions may provide some hope for early adolescents whose families choose not to become involved in these efforts. Self-control and coping are intra-personal competencies with potential impact far beyond that of eating disorder risk. Preventive, school-based assessment programs aimed at identifying children with self-control and coping deficits could prove to be a cost-effective way of identifying and treating children at-risk for the development of a multitude of problem behaviors in adolescence.

### NOTES

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*Address correspondence to:* Elizabeth Stormshak, Counseling Psychology Program, 5251 University of Oregon, Eugene, OR 97403. E-mail: bstorm@darkwing.uoregon.edu

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