

# Psychological Distress as a Mediator of the Relation Between Perceived Maternal Parenting and Normative Maladaptive Eating Among Adolescent Girls

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Burgeoning research on the adolescent (e.g., middle-school) years suggests that this is a particularly vulnerable period for the development of maladaptive eating patterns. Prior research has established a link between perceptions of maternal parenting practices and adolescent onset of problematic eating behaviors. The authors hypothesized that adolescents' internalized psychological distress accounts for this relation, and they tested this hypothesis via a longitudinal, mediational study of 73 adolescent girls followed from 6th to 8th grade. Results of structural equation modeling using latent variables supported the hypothesis, identifying a time-ordered process that emphasizes the significance of the mother-adolescent relationship and the importance of targeting counseling interventions at improving parenting practices and helping adolescents to regulate negative affect as a means of preventing the development of maladaptive eating.

*Keywords:* parenting, adolescence, psychological distress, eating disorder, middle school

The prevalence of eating disorders is on the rise, and problematic eating- and body-related behaviors and attitudes are increasing particularly rapidly among adolescents (Eisele, Hertsgaard, & Light, 1986; U.S. Department of Health and Human Services, 2000). In attempting to identify potential risk factors, researchers generally work within a broad "biopsychosocial" framework (Polivy & Herman, 2002, p. 191), with familial factors receiving much attention. In fact, parenting style long has been cited as a particularly important influence in the development of eating disturbances among adolescents (e.g., Bowen, 1978; Bruch, 1985; Minuchin, Rosman, & Baker, 1978).

Empirical studies support theorized associations between dimensions of parenting and symptoms of maladaptive eating in both clinical and nonclinical samples. In particular, parents of adolescents with eating disorders have difficulty promoting healthy individuation within their families, often failing to balance consistent acceptance with appropriate autonomy promotion (Minuchin et al., 1978). For example, in a nonclinical sample of 5th- through 8th-grade girls, adolescents' perceptions of greater acceptance and emotional support from mothers and fathers predicted lower levels

of dieting both concurrently and over 1 year (Bastiani Archibald, Graber, & Brooks-Gunn, 1999). Among girls in 7th and 10th grade, greater perceived maternal acceptance (e.g., warmth, empathy, and child-centeredness) was associated with lower levels of body dissatisfaction (Barker & Galambos, 2003). Furthermore, a recent longitudinal study revealed that among girls aged 12–16, deficits in emotional support provided by mothers and fathers combined (e.g., low parental companionship, intimacy, and affection) predicted increases in body dissatisfaction over a 3-year period (Bearman, Presnell, Martinez, & Stice, 2006). Similar patterns have been revealed within clinical samples. For instance, in a sample including both young women receiving inpatient eating disorder treatment and first-year college women, those who described their parents as warm, supportive, and autonomy-promoting also described themselves as less preoccupied with weight and less frequently engaged in bulimic behaviors (Kenny & Hart, 1992). In addition, women struggling with eating disorders retrospectively reported significantly less care offered by their mothers and less independence given to them within the family environment (Mallinckrodt, McCreary, & Robertson, 1995).

Although it is evident that associations exist between parenting and maladaptive eating, it is essential to examine the processes that may underlie such relations. Developmental psychopathology and attachment theory each suggest some likely processes, with both emphasizing the role of negative affectivity. Developmental psychopathologists generally posit that deficiencies in parenting lead to poor adolescent adjustment by interfering with the adolescent's ability to appropriately regulate behaviors and emotions (e.g., Cummings, Davies, & Campbell, 2000). From an attachment perspective, general parental insensitivity may lead to affective dysregulation in the adolescent (Mikulincer, Shaver, & Pereg, 2003). In turn, maladaptive eating (e.g., restriction, purging) may be a form of coping with internalized distress or may reflect radical

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This research was supported by National Institute of Child Health and Human Development Grant 5R03HD41955-2 and by grants from both the College of Arts and Letters and the Graduate School of the University of Notre Dame awarded to Dawn M. Gondoli. We gratefully acknowledge our colleague, Scott E. Maxwell, for his thoughtful contributions to this project.

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compensatory behaviors (for a review, see Stice, 2002; see also Connors, 1996). Additionally, internalized distress may lead to a preference for, and selective attention to, negative information about the self, which can result in clinically significant body dissatisfaction (for a review, see Stice, 2002; see also Bearman et al., 2006, and Stice, Burton, & Shaw, 2004).

Given such theorizing about connections between parenting, internalized distress, and maladaptive eating, it is possible that the relation between parenting and eating problems is indirect and in fact mediated by internalized distress (Stice, 2002). Therefore, in the present study, we examined the longitudinal relations among maternal positive parenting, internalized psychological distress (in particular, depression and anxiety), and normative maladaptive eating in a sample of adolescent girls as they completed 6th through 8th grades. Because positive parenting has been variously defined in the literature, it is important to describe our conceptualization of this construct. Research indicates that positive parenting during adolescence should encourage individuated parent-adolescent relationships that maintain healthy attachment and provide guidance while promoting the adolescent's growth toward independent adulthood (Allen & Land, 1999; Holmbeck, Paikoff, & Brooks-Gunn, 1995; Silverberg, Tennenbaum, & Jacob, 1992; Steinberg, 1990). Thus, *positive parenting* in the present study was operationalized as the adolescent girl's perceptions of parenting practices that foster her psychological autonomy vis à vis the parent, reflect a reasonably democratic stance that invites "give and take" over issues and includes rational explanations for parental directives, and demonstrate continued involvement and care. We next review research that demonstrates empirical links between dimensions of positive parenting, internalized psychological distress, and maladaptive eating.

### Positive Parenting and Psychological Distress

Research indicates that maternal positive parenting that is in tune with adolescents' capacities and needs is associated with emotional well-being in adolescents and may prevent the development of internalized psychological distress (for reviews, see Baumrind, 1991; Holmbeck et al., 1995; Maccoby & Martin, 1983; Silverberg et al., 1992; Steinberg, 1990; Steinberg & Silk, 2002). For example, mothers who encourage their children's psychological autonomy have children who are less likely to be described by teachers as having internalizing behaviors, such as depression and anxiety, in grade school (Cowan & Pape Cowan, 2002). Furthermore, adolescents aged 14–18 who described their mothers and fathers as less psychologically controlling (e.g., less intrusive and overprotective) and more autonomy-granting reported fewer symptoms of depression than did their peers (Gray & Steinberg, 1999). Similarly, adolescents in junior high and high school (ages 12–19) who reported lower levels of maternal psychological autonomy promotion also reported higher levels of anxiety (Hale, Engels, & Meeus, 2006).

In addition to the role of autonomy promotion in encouraging healthy adolescent outcomes, democratic parenting (e.g., reasonable involvement of the child in family decision making and the provision of rational explanations for parental directives) as well as parental knowledge of child whereabouts, activities, and friendships have been negatively associated with adolescents' internalized psychological distress. For instance, adolescents tend to have

fewer emotional and behavioral problems when their mothers demonstrate democratic parenting behaviors (Steinberg & Silk, 2002). Adolescents report fewer symptoms of depression and anxiety if they perceive their mothers to be involved and knowledgeable about their lives (Buehler, Benson, & Gerard, 2006; Lamborn, Mounts, Steinberg, & Dornbusch, 1991). Additionally, a prospective study revealed that adolescents aged 12–15 who reported that their mothers generally knew their whereabouts and activities self-reported fewer depressive and anxious symptoms 1 year later (Reitz, Dekovic, & Meijer, 2006).

### Psychological Distress and Maladaptive Eating

Research has established that there is a relation between psychological distress and maladaptive eating behaviors (e.g., Johnson & Wardle, 2005; McCabe & Vincent, 2003; Sinton & Birch, 2005). Whether the population studied is children, adolescents, or adults, in general, symptoms of internalized psychological distress, such as depression and anxiety, are linked to eating- and body-related problems known to put individuals at risk for developing diagnosable eating disorders. As an example, in a group of 11- to 17-year-old adolescent girls, symptoms of depression and anxiety were concomitant with maladaptive eating (McCabe & Vincent, 2003).

This correlation is well established; however, much of the research demonstrating this link has been cross-sectional. Many fewer studies have tested this relation prospectively or experimentally in order to establish evidence of a time-ordered process. A recent meta-analytic review of these types of studies indicates that negative affect, including depression and anxiety, indeed appears to be a potential risk factor for the development of eating disturbances (Stice, 2002). For instance, girls' depression at age 7 was a significant predictor of dieting behavior at age 9 (Sinton & Birch, 2005). Additionally, depressive symptoms in girls as young as 8 were predictive of an increasing risk for the development of eating disorders from early adolescence through at least early womanhood (Kovacs, Obrosky, & Sherrill, 2003). Another recent study revealed that prior negative affectivity predicted increases in body dissatisfaction over a 3-year period among girls and boys aged 12–16 (Bearman et al., 2006). A prospective study of girls aged 11–15 indicated that although bulimic pathology predicted onset of depression, depression also predicted onset of bulimic pathology (Stice et al., 2004). Although more research linking prior psychological distress to subsequent symptoms of maladaptive eating is needed, it appears likely that distress may be a proximal predictor of eating problems.

Consistent with an emphasis on multifactor, process-oriented models of eating disorders (Connors, 1996; Polivy & Herman, 2002), scholars have begun to examine whether associations between parenting and symptoms of maladaptive eating are indirect, that is, mediated by internalized psychological distress. In a high school sample, girls' perceptions of both low maternal care (e.g., acceptance and nurturance) and maternal overprotection (e.g., restrictive control and intrusion) were associated with disturbed eating attitudes; however, these relations were mediated by internalized shame and self-beliefs that one is defective (Turner, Rose, & Cooper, 2005). Depression and anxiety as indicators of internalized psychological distress also have been examined for their potentially mediating role between parenting practices and mal-

adaptive eating. Among adolescent girls (ages 12–18) drawn both from eating disorder treatment facilities and schools, perceptions of mothers as high in rejection and low in warmth were associated with the presence of a diagnosable eating disorder among the girls; however, this relation was mediated by internalized psychological distress (in this case, either depression or anxiety; Rojo-Moreno, Livanos-Aldana, Conesa-Burguet, & Cava, 2006).

### The Present Study

In summary, a number of recent studies have indicated that adolescent girls' perceptions of parenting are associated with maladaptive eating and that these relations may be mediated by internalized psychological distress. However, these studies tend to be cross-sectional in nature (e.g., Rojo-Moreno et al., 2006; Turner et al., 2005). We know of no study that has examined a time-ordered process wherein the potentially mediating role of psychological distress between maternal positive parenting practices and adolescent girls' onset of disturbed eating behaviors is assessed. The purpose of the present study was to test the hypothesis that there would be a negative relation between prior perceived maternal positive parenting in 6th grade and subsequent normative maladaptive eating in 8th grade. We expected this relation to be indirect and mediated by internalized psychological distress in 7th grade such that positive parenting would be negatively associated with internalized psychological distress and that distress would be positively associated with maladaptive eating. These data were collected as part of a larger project investigating parenting and child outcomes during an important period: the transition to adolescence. A major aim of that project was to examine perceived parenting and dimensions of well-being among adolescents. The goal of the present analysis was to link perceived positive parenting to the emergence of adolescent internalizing problems and symptoms of maladaptive eating.

### Method

#### Participants and Procedure

For the purposes of this study, which examined adolescent girls' perceptions, the data of interest were collected from 73 girls while they progressed through 6th, 7th, and 8th grades. Initial contact letters were distributed by primary schools in a medium-sized midwestern city. The letter briefly described the study and instructed mothers of fourth graders to call the research office if interested in participating in the study. Mothers were told that this was a study of maternal and child adjustment during the transition to adolescence and that we would ask questions about child development, maternal and child well-being, parenting, and family relations. Eating disorders, dieting, and body dissatisfaction were not specifically mentioned as foci of the study. To ensure that mothers had the same degree of experience with parenting during the adolescent transition, mother-child dyads were eligible if the fourth grader was the oldest child in the family (i.e., all families were making this transition for the first time in their ontogeny). In addition, dyads were eligible if the mother was currently married to the fourth grader's father and had never been divorced. Studies have repeatedly demonstrated that disrupted parenting is common during marital transitions (Forgatch, Patterson, & Skinner, 1988;

Hetherington, 1989). Because our aim was not to compare stably married families with those undergoing marital transition, nor did we intend to examine phases of adjustment following marital transition, we examined adjustment among dyads in which mothers remained married during the study period.

In the first year of the study when the children were in 4th grade, 94 mother-girl dyads participated. However, due to attrition over the course of the study (e.g., relocation and refusal to continue participation) as well as life changes requiring exclusion of data (e.g., marital separation or divorce), a final total of 73 dyads' data were available for analysis. According to analysis of variance and chi-square procedures, the 73 participating mother-adolescent girl dyads did not differ significantly on any demographic variables during the first year of the study (e.g., ethnicity, years of marriage, number of children in the family, years of maternal education, or family income) from the 21 dyads that discontinued participation or whose data were excluded from analysis (all  $ps > .05$ ). The lack of significant differences found here should be interpreted with caution due to our limited sample sizes.

At the 6th-grade assessment, the girls were between the ages of 11 and 13 years ( $M = 11.59$ ,  $SD = .52$ ). Most girls identified themselves as European American (91.8%); fewer identified themselves as African American (1.4%), Latina (2.7%), Native American (2.7%), or "other" (1.4%). At the 6th-grade assessment, girls' parents had been married an average of 15.5 years, and there was an average of 2.5 children in the families. The families tended to be educated and upper-middle class. Mothers had completed, on average, 3 years of education after receiving their high school diploma, and 77% worked full or part time outside the home. The annual household income per family ranged from \$20,400 to \$450,000 ( $M = \$99,396$ ,  $SD = \$75,585$ ), with just over 5% earning \$38,000 or less, over 35% earning from \$40,000 to \$68,000, about 27% earning from \$70,000 to \$95,000, just over 20% earning from \$100,000 to \$165,000, and 11% earning between \$200,000 and \$450,000.

Once annually, mothers and their adolescents visited a university research laboratory for approximately 2 hr. Each mother read and signed an informed consent form while, in a separate room, her child was provided an assent form that was read aloud. The assent form told the child that her mother had given permission for the child to participate but that if the child did not want to answer certain questions or wanted to stop participating altogether, then that would be fine. The form also told the child that her name would not be on the packet, that only the researchers and no one else, not even her mother, would see her answers, and that her packet would be kept in a locked cabinet in the laboratory. During each visit, mothers and adolescents separately completed self-report questionnaires; however, as discussed below, the data of the present study derive exclusively from the adolescents' self-reports. In compensation for their participation, the dyads were paid \$30 in the first year of the study, and this rate increased by \$10 each year such that in the fifth year of the study (e.g., when the adolescent was in 8th grade), each dyad received \$70.

#### Design and Measures

The study included a 3-year longitudinal design in which self-report questionnaire data were used. This design permitted testing of a time-ordered mediating model in which three latent variables'

causal order could be tested: adolescents girls' perceptions of their mothers' parenting practices measured in 6th grade were hypothesized to predict the extent of the adolescents' internalized psychological distress in 7th grade, which, in turn, was hypothesized to predict the severity of their maladaptive eating as assessed in 8th grade.

### Maternal Positive Parenting Practices

Adolescents' perceptions of parenting may have more influence on their adjustment than their parents' actual behaviors (e.g., Laird, Pettit, Bates, & Dodge, 2003) and are likely to be the focus of counseling interventions. Therefore, we obtained adolescent girls' perceptions of their mothers' parenting behaviors. Consistent with conceptual definitions of positive parenting during adolescence (e.g., Allen & Land, 1999; Holmbeck et al., 1995; Silverberg et al., 1992; Steinberg, 1990), our positive parenting construct was indicated by measures of psychological autonomy promotion, use of a democratic parenting style, and extent of maternal involvement in daily activities.

**Psychological autonomy promotion.** Maternal psychological autonomy promotion was assessed with the eight-item Psychological Control Scale Youth Self-Report (PCS-YSR; Barber, 1996). The PCS-YSR assesses the extent of parental use of behaviors that control an adolescent by being manipulative of thoughts, feelings, and attachments to parents, that is, which control the adolescent psychologically and covertly via parental behaviors such as guilt induction, anxiety induction, and the withdrawal of love (Barber, 2002). Such parental behaviors are thought to intrude upon and impair the adolescent's sense of self and appropriate individuation from parents and have been referred to in the literature also as *binding*, *constraining*, *invalidating*, and *overprotecting* (for a review, see Barber, 2002). Responses to items such as, "My mom brings up my past mistakes when she criticizes me" and "If I hurt my mom's feelings, she stops talking to me until I please her again" are given on a 5-point scale ranging from 0 (*never*) to 4 (*always*). In the present study, items were reverse scored such that higher scores indicate higher levels of psychological autonomy promotion. The construct validity of the PCS-YSR among adolescents is evidenced by its expected relations with the Acceptance subscale of the Child Report of Parental Behavior Inventory (CRPBI; Schaefer, 1965), which assesses parental acceptance versus rejection of the adolescent ( $r = .24$ ; see Krishnakumar, Buehler, & Barber, 2003), the Parental Knowledge Scale (Sturge-Apple, Gondoli, Bonds, & Salem, 2003), which assesses maternal awareness of adolescents' activities and acquaintances ( $r = .30$ ), and the Conflict Behavior Questionnaire (Robin & Foster, 1989), which assesses negative parent-adolescent conflict behavior ( $r = -.57$ ; for both, see Sturge-Apple et al., 2003). Internal consistency (Cronbach's alpha) has been estimated at .81 in a sample of fifth graders (Barber, 1996), and in the present study, it was estimated at .79 in 6th grade.

**Democratic parenting.** The 18-item Democracy Scale (Sturge-Apple et al., 2003) assesses the extent to which adolescents perceive their mothers as using a democratic parenting style, that is, the extent to which they are seen as providing rational explanations to encourage compliance, demonstrating flexibility in parenting, and soliciting the adolescent's participation in family decision making (Sturge-Apple et al., 2003). Respondents indicate

on a 5-point scale ranging from 0 (*never*) to 4 (*always*) how often their mothers engage in various democratic parenting behaviors: For example, "My mom asks for my ideas when making family plans" and "When I ask why I can't do certain things, my mom explains her reasons." Higher scores indicate perceptions of more frequent use of democratic parenting. The construct validity of the Democracy Scale among adolescents has been demonstrated through its significant relations in the expected direction with the PCS-YSR ( $r = .34$ ) and with the Parental Knowledge Scale (Sturge-Apple et al., 2003), which assesses maternal awareness of adolescents' activities and acquaintances ( $r = .27$ ; for both, see Sturge-Apple et al., 2003). Internal consistency (Cronbach's alpha) was estimated at .86 in a sample of fifth graders (Sturge-Apple et al., 2003); in the present study, Cronbach's alpha was estimated at .90 in 6th grade.

**Involvement.** Maternal involvement and engagement with the adolescent was measured with the Parental Knowledge Scale (Sturge-Apple et al., 2003). This nine-item scale assesses awareness of the adolescent's daily activities and acquaintances (e.g., "My mom knows who my friends are"). Participants respond to each item using a 5-point scale ranging from 0 (*never*) to 4 (*always*), and higher scores indicate greater awareness. The construct validity of this scale in adolescent samples has been demonstrated through its relation to parenting measures assessing acceptance and involvement: for example, the Acceptance subscale of the CRPBI ( $r = .41$ ; see Buehler et al., 2006) and the Acceptance-Involvement Scale (Lamborn et al., 1991), which assesses both parental acceptance and involvement ( $r = .38$ ; see Fletcher, Steinberg, & Williams-Wheeler, 2004). Cronbach's alpha has been reported at .77 in a sample of fifth graders (Sturge-Apple et al., 2003); in the present study, it was estimated at .75 in 6th grade.

### Internalized Psychological Distress

Because adolescents tend to be the best reporters of their own internal states (e.g., Achenbach, 1991), adolescents girls' internalized psychological distress was assessed using self-report measures of depressive symptoms and anxiety.

**Depressive symptoms.** Depressive symptoms were measured with the Children's Depression Inventory (CDI; Kovacs, 1985). Items assess depressive symptoms as manifested in feelings of sadness and self-blame, loss of appetite and problems of sleep, quality of interpersonal relationships, and adjustment to school. For each item, respondents select one of three sentences (scaled from 0 to 2), listed in order of increasing severity, that best describes them: for example, "I am sad once in a while," "I am sad many times," and "I am sad all the time." Higher scores indicate greater depressive symptoms. In evidence of its construct validity in adolescent samples, CDI scores are significantly correlated with subscales of the Differential Emotions scale (Izard, Dougherty, Bloxom, & Kotsch, 1974), which assess sadness, self-directed hostility, shame, anger, contempt, and shyness ( $r_s = .35-.82$ ) (see Blumberg & Izard, 1985), and also the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1978) ( $r = .56$ ), the State-Trait Anxiety Inventory for Children (Spielberger, 1973) ( $r_s = .36-.52$ ; for both, see Wolfe et al., 1987), and the Children's Loneliness Questionnaire (Asher, Hymel, & Renshaw, 1984) ( $r = .54$ ; see Cole, 1990). Its criterion-related validity is evidenced by

its significant correlation with clinicians' ratings of children's depression ( $r = .66$ ; see Blumberg & Izard, 1986). At the request of the institution's human subjects review board to remove an item that assesses suicidal tendency, the original 27-item CDI was reduced to 26 for this study. In the present study, internal consistency (Cronbach's alpha) of the 26 items was estimated at .85 in 7th grade.

**Anxiety.** General anxiety was assessed with the 28-item Anxiety subscale of the Revised Children's Manifest Anxiety Scale (RCMAS; Reynolds & Richmond, 1978). Using a 3-point scale ranging from 1 (*no*) to 2 (*sort of*) to 3 (*yes*), respondents indicate the extent to which each of 28 statements describes them (e.g., "I worry about what is going to happen"). Higher scores indicate greater anxiety. Among a sample of adolescents, convergent validity evidence is provided through the measure's positive correlation with the State-Trait Anxiety Inventory for Children (Spielberger, 1973) ( $r_s = .35-.58$ ; see Wolfe et al., 1987), and construct validity is evidenced by its positive relations with the Internalizing subscale of the Child Behavior Checklist (Achenbach, 1991) ( $r = .25$ ; see Wolfe et al., 1987). Internal consistency of the measure in the present study (Cronbach's alpha) was estimated at .90 in 7th grade.

### *Normative Maladaptive Eating*

Adolescent girls' normative maladaptive eating patterns were assessed using measures of body dissatisfaction, drive for thinness, and engagement in dieting behaviors.

**Body dissatisfaction.** The nine-item Body Dissatisfaction subscale of the Eating Disorder Inventory (EDI; Garner, Olmsted, & Polivy, 1983) was used to assess "the belief that specific parts of the body associated with shape change or increased 'fatness' are too large (e.g., hips, thighs, buttocks)" (p. 18). An example item is, "I think that my hips are too large." Respondents indicate the frequency of their endorsement of each statement using a continuous 6-point scale ranging from 0 (*never*) to 5 (*always*), with higher scores indicating greater body dissatisfaction. Garner et al. (1983) originally recommended scoring items as 0, 0, 0, 1, 2, 3; however, this method restricts the range of responses. Therefore, to allow for a full range of responses, particularly in an adolescent, nonreferred community sample, we coded responses on a continuous 6-point scale (see Tylka & Subich, 2004). The criterion-related validity of the Body Dissatisfaction subscale has been demonstrated by its relation to clinicians' assessments of the relevance of body dissatisfaction characteristics for individual patients ( $r = .44$ ; Garner et al.). Evidence of the construct validity of the subscale among older adolescents derives from its strong correlations in the expected direction with the Drive for Thinness subscale of the EDI ( $r_s = .63-.67$ ; see Espelage et al., 2003; Shroff & Thompson, 2006) and more moderate correlations with the Bulimia subscale of the EDI ( $r = .39$ ), the Appearance Conversations with Friends measure (Jones, Vigfusdottir, & Lee, 2004), which assesses how often adolescents discuss body expectations and appearance enhancements with their friends ( $r = .32$ ), and the Physical Appearance Comparison Scale (Thompson, Heinberg, & Tantleff, 1991), which assesses the tendency to compare one's appearance with others' ( $r = .48$ ; for all, see Shroff & Thompson, 2006). The Body Dissatisfaction subscale has demonstrated evidence of its internal consistency with 11- to 18-year-old adolescent

girls ( $\alpha = .91$ ; Shore & Porter, 1990). Internal consistency of the subscale in the present study (Cronbach's alpha) was estimated at .93 in 8th grade.

**Drive for thinness.** The seven-item Drive for Thinness subscale of the EDI (Garner et al., 1983) was used to assess "excessive concern with dieting, preoccupation with weight, and the entrenchment in an extreme pursuit of thinness" (p. 17). Participants indicate their responses to such items as "If I gain a pound, I worry that I will keep on gaining," using a continuous 6-point scale ranging from 0 (*never*) to 5 (*always*). Higher scores indicate a greater drive for thinness. The criterion-related validity of the Drive for Thinness subscale is evidenced in its relation to clinicians' assessments of the relevance of drive-for-thinness characteristics in individual patients ( $r = .53$ ; Garner et al., 1983). The construct validity of the subscale for older adolescents is supported by its expected relations with the Bulimia subscale of the EDI ( $r = .36$ ; see Shroff & Thompson, 2006), the Appearance Conversations with Friends measure (Jones et al., 2004;  $r = .50$ ), the Physical Appearance Comparison Scale (Thompson et al., 1991;  $r = .55$ ), and the Perceived Friend Preoccupation with Weight and Dieting Scale (Schutz, Paxton, & Wertheim, 1999), which assesses preoccupation with and importance of weight and dieting among friends ( $r = .52$ ; for all, see Shroff & Thompson, 2006). Internal consistency of the subscale was estimated at .81 for females in a sample of 11- to 18-year-olds (Shore & Porter, 1990); in this study, Cronbach's alpha was .92 in 8th grade.

**Dieting behaviors.** A seven-item self-report measure of dieting behaviors, the Dieting Behaviors Scale, was developed for this study to assess caloric restriction and elimination behaviors used by adolescents. In previous studies, dieting behavior in children and adolescents most frequently has been assessed by a single question (e.g., "How often are you dieting?"; French, Story, Downes, Resnick, & Blum, 1995; Gralen, Levine, Smolak, & Murnen, 1990). However, this question is open to multiple interpretations and does not ask the respondent to reflect on specific dieting behaviors. The multi-item Dieting Behaviors Scale queries for frequency of engagement by the participant in specific behaviors. Items are intended to be sensitive to adolescents' cultural worlds, with an emphasis in the scale development process on the fact that children do not have the same access to caloric restriction and elimination choices as adults.

**Dieting behaviors** were defined as overt, socially acceptable, everyday means of restricting and eliminating caloric intake in which adolescents might engage. Participants indicate their responses to such items as "How often have you skipped meals to lose weight?" and "How often have you exercised more to lose weight?" on a 6-point scale ranging from 0 (*never*) to 5 (*always*). Higher scores indicate greater engagement in dieting behaviors.

In a test development sample of adolescent girls followed from 6th to 8th grade ( $N = 15$ ), evidence of the scale's construct validity was indicated by significant relations in expected directions with subscales of the EDI—in particular, Drive for Thinness ( $r = .85$ ), Bulimia ( $r = .73$ ), and Feelings of Ineffectiveness ( $r = .57$ )—and with an adolescent measure of self-perceived attractiveness (Harter, 1985;  $r = -.73$ ). It was also positively related to a lesser extent, as expected, with symptoms of depression as assessed by the CDI ( $r = .52$ ). Test-retest reliability over 1 year showed moderate stability from 6th to 7th grade ( $r = .65$ ) and greater stability from 7th to 8th grade ( $r = .84$ ). Internal consistency

(Cronbach's alpha) was estimated at .85 and .89 (6th-grade and 8th-grade measurements, respectively). Cronbach's alpha in the present study was estimated at .92 in 8th grade.

### Results

Descriptive statistics for all the measured variables are presented in Table 1. Intercorrelations among the measured variables are provided in Table 2. Moderate to strong intercorrelations between the proposed indicators provide support for the formation of latent constructs from multiple indicators for positive parenting practices ( $r_s = .37-.48$ ), internalized psychological distress ( $r = .77$ ), and normative maladaptive eating ( $r_s = .77-.84$ ). In addition, correlations among indicators of different latent constructs were moderate and often significant ( $r_s = -.18$  to  $-.42$ ;  $r_s = .29$  to  $.34$ ), thereby lending preliminary support for the proposed mediational paths.

### Model Testing Procedures

The Mplus 4.0 program was used to estimate relations among the study variables, derive model fit, and test the significance of the indirect effect (Muthén & Muthén, 2006). The significance of the standardized path coefficients was determined by comparing the  $t$  ratio with a critical  $t(.05)$  of 1.96. Model fit was assessed with the chi-square statistic, the comparative fit index (CFI), the root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR). These fit indices have been suggested as a good combination for assessing the fit of models with relatively small sample sizes (Fan, Thompson, & Wang, 1999; Hu & Bentler, 1999; Yadama & Pandey, 1995). Models that provide a good fit to the data have nonsignificant ( $p > .05$ ) chi-square values, CFIs greater than .95, RMSEAs less than .06, and SRMRs less than .08. The significance of the indirect

effect between positive parenting practices, internalized psychological distress, and normative maladaptive eating was calculated using the Delta method of assessing indirect effects (Sobel, 1982). Thus, the overall fit of the models was determined on the basis of the significance of standardized path coefficients, the chi-square statistic, the fit indices, and the significance of the indirect effect.

As a first step, a measurement model was constructed and tested. The measurement model consisted only of paths between latent variables and their corresponding manifest indicators, with no specified structural relations except correlations between the latent variables. This model produced significant factor loadings for all manifest variables on their respective latent constructs and provided a good fit to the data,  $\chi^2(17, N = 73) = 7.10, p = .98$ , CFI = 1.00, RMSEA < .001, SRMR = .038.

Model testing continued with examination of the direct relation between the predictor variable (perceived maternal positive parenting practices) and the criterion variable (normative maladaptive eating) (see Baron & Kenny, 1986). If the direct relation was significant, then a full model was tested that included the direct path between the two constructs as well as the indirect paths to and from the mediator (internalized psychological distress). Next, a complete mediation model was examined in which the direct path between the predictor and criterion variables was eliminated. Finally, a separate model that included the autoregressive pathway controlling for prior levels of maladaptive eating patterns was examined.

First, a model examining the direct relation between perceived maternal positive parenting practices in 6th grade and normative maladaptive eating in 8th grade was tested (see Figure 1). This model produced a good fit to the data,  $\chi^2(8, N = 73) = 2.07, p = .98$ , CFI = 1.00, RMSEA < .001, SRMR = .025, with a significant, negative path coefficient between the predictor and criterion variables ( $\beta = -.32$ ). The significance of this path suggested that there was a negative, direct effect between positive parenting practices and normative maladaptive eating, such that as mothers' positive parenting practices in 6th grade decreased, adolescent girls' reports of maladaptive eating patterns in 8th grade increased.

Because the direct relation between perceived positive parenting practices in 6th grade and normative maladaptive eating in 8th grade was significant, a full model was tested that included the direct path between the two constructs as well as the indirect paths to and from the mediator, internalized psychological distress in 7th grade (see Figure 2). The full model provided a good fit to the data,  $\chi^2(17, N = 73) = 7.10, p = .98$ , CFI = 1.00, RMSEA < .001, SRMR = .038, and indicated that the direct effect between the predictor and criterion variables was reduced to a value that was no longer significant ( $\beta = -.096$ ). All other path coefficients were significant and in the expected directions. Given these results, a mediation model was next examined.

The mediation model eliminated the direct path between perceived positive parenting practices in 6th grade and normative maladaptive eating in 8th grade (see Figure 3). This model yielded a good fit to the data,  $\chi^2(18, N = 73) = 7.38, p = .99$ , CFI = 1.00, RMSEA < .001, SRMR = .044, and suggested that lower levels of maternal positive parenting practices during 6th grade were associated with higher levels of adolescent girls' internalized psychological distress in 7th grade, which, in turn, were associated with higher levels of adolescent girls' maladaptive eating patterns in 8th grade. Results also indicated that the indirect effect between

Table 1  
Descriptive Statistics for the Measured Variables

Variable	<i>M</i>	<i>SD</i>	Possible range	Actual range
Sixth grade				
Psychological autonomy promotion	27.15	3.89	0–32	15–32
Democratic parenting	50.30	9.60	0–72	28–69
Involvement	32.14	3.31	0–36	20–36
Seventh grade				
Depressive symptoms	4.01	4.64	0–52	0–22
Anxiety	39.26	8.29	28–84	28–66
Eighth grade				
Body dissatisfaction	14.67	10.48	0–45	0–36
Drive for thinness	9.93	8.24	0–35	0–34
Dieting behavior	8.58	8.52	0–35	0–30

*Note.* Psychological autonomy promotion was measured by the Psychological Control Scale Youth Self-Report; Democratic parenting was measured by the Democracy Scale; Involvement was measured by the Parental Knowledge Scale; Depressive symptoms were measured by the Children's Depression Inventory; Anxiety was measured by the Revised Children's Manifest Anxiety Scale; Body dissatisfaction was measured by the Body Dissatisfaction subscale of the Eating Disorder Inventory; Drive for thinness was measured with the Drive for Thinness subscale of the Eating Disorder Inventory; Dieting behaviors were measured with the Dieting Behaviors Scale.

Table 2  
Correlations Among the Measured Variables

Variable	1	2	3	4	5	6	7	8
1. Autonomy promotion–6th grade	—	.48***	.48***	-.42***	-.41***	-.21	-.20	-.19
2. Democratic parenting–6th grade		—	.37**	-.22	-.18	-.24*	-.21	-.23*
3. Involvement–6th grade			—	-.40***	-.39**	-.22	-.18	-.15
4. Depressive symptoms–7th grade				—	.77***	.34**	.34**	.29*
5. Anxiety–7th grade					—	.34**	.36**	.30*
6. Body dissatisfaction–8th grade						—	.83***	.77***
7. Drive for thinness–8th grade							—	.84***
8. Dieting behaviors–8th grade								—

Note. Psychological autonomy promotion was measured by the Psychological Control Scale Youth Self-Report; Democratic parenting was measured by the Democracy Scale; Involvement was measured by the Parental Knowledge Scale; Depressive symptoms were measured by the Children’s Depression Inventory; Anxiety was measured by the Revised Children’s Manifest Anxiety Scale; Body dissatisfaction was measured by the Body Dissatisfaction subscale of the Eating Disorder Inventory; Drive for thinness was measured with the Drive for Thinness subscale of the Eating Disorder Inventory; Dieting behaviors were measured with the Dieting Behaviors Scale.

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

maternal positive parenting practices in 6th grade, internalized psychological distress in 7th grade, and normative maladaptive eating in 8th grade was statistically significant (indirect effect =  $-.25, t = -2.60$ ). In addition, in order to fully establish mediation, the chi-square value of the mediation model was compared with the chi-square of the full model. Because the chi-square value of the mediation model was not statistically different from the chi-square of the full model,  $\chi^2(1, N = 73) = .28$ , the direct path included in the full model was not significantly different from zero and therefore can be concluded to be an unnecessary path. Taken together, these results indicated that the relation between maternal positive parenting practices and adolescent normative maladaptive eating was indeed mediated by internalized psychological distress.

Model Including Autoregressive Pathway

To provide an additional test of relations over time, we examined a model that included the autoregressive path between normative maladaptive eating in 6th and 8th grades (see Cole & Maxwell, 2003). We found that the significant path coefficient between internalized psychological distress and normative maladaptive eating obtained in our static mediation model became nonsignificant in the context of the autoregressive model. This appeared to be the result of the high stability of maladaptive eating patterns between 6th and 8th grades ( $\beta = .83$ ). This high degree of stability between constructs over time is similar to those values

found in other longitudinal studies of child maladjustment (e.g., Cummings, Schermerhorn, Davies, Goeke-Morey, & Cummings, 2006; Harold, Shelton, Goeke-Morey, & Cummings, 2004). In fact, previously significant direct and indirect effects between variables were no longer significant once the stability of the dependent construct, child maladjustment (e.g., child internalizing behaviors), was considered (Harold et al., 2004). Likewise, in the present study, once the autoregressive path was included, there was little rank-order change in maladaptive eating patterns remaining to be accounted for by the mediator, internalizing symptoms.

Discussion

In the present study, we examined the influence of perceived maternal parenting practices on normative disturbed eating using a mediational and longitudinal approach in which symptoms of internalized psychological distress were investigated as mediators of the parenting–maladaptive eating link. Results indicated that perceived maternal positive parenting practices as assessed in 6th grade, which promote the adolescent girl’s autonomous, individuating development, were negatively related to the emergence of internalized psychological distress in 7th grade and negatively related to the emergence of normative maladaptive eating problems in 8th grade. Furthermore, results of structural equation modeling revealed that the parenting practices–maladaptive eating link was fully mediated by psychological distress. Specifically,

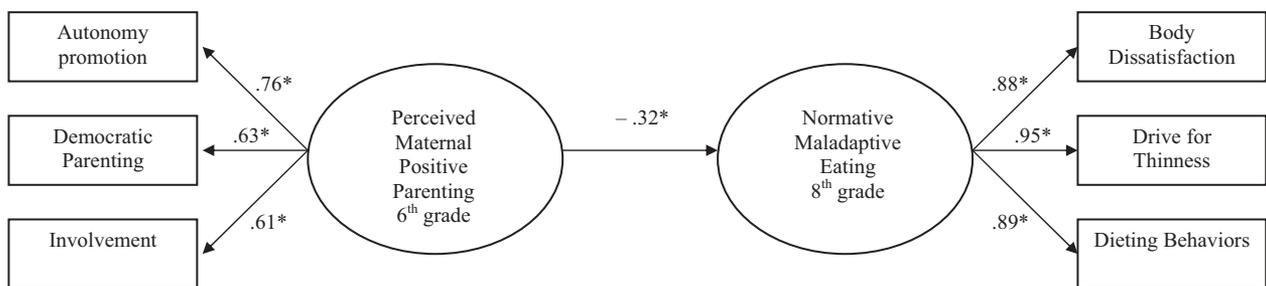


Figure 1. Direct effects model of perceived maternal positive parenting and normative maladaptive eating.  
\*  $p < .05$ .

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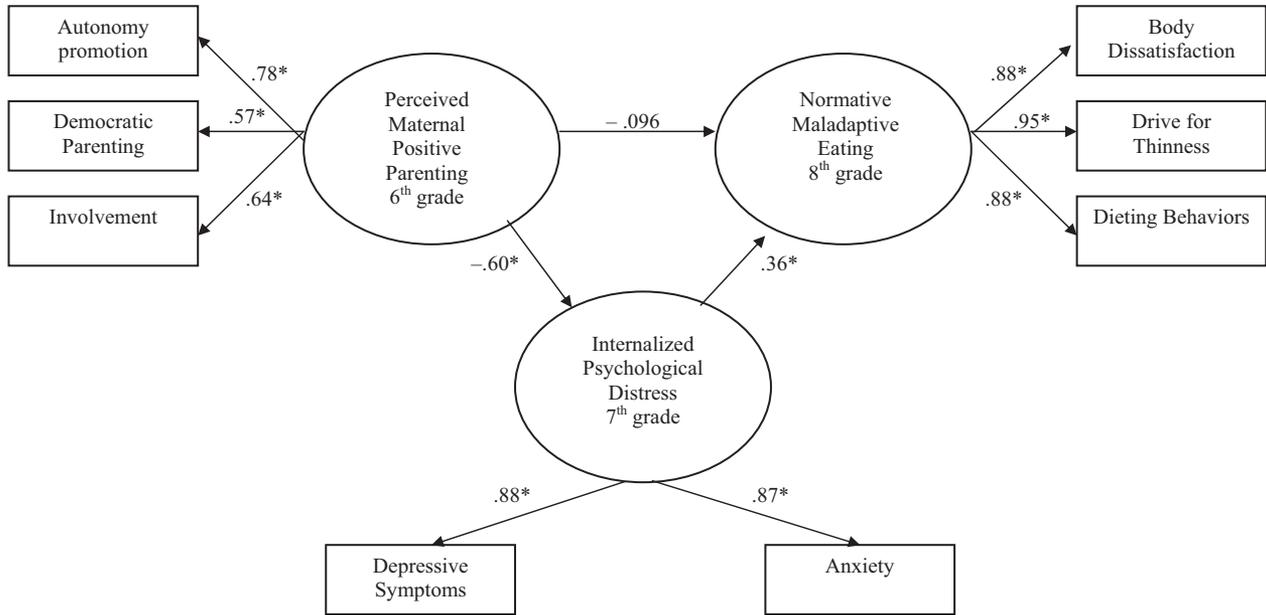


Figure 2. Full model of perceived maternal positive parenting, internalized psychological distress, and normative maladaptive eating. \*  $p < .05$ .

parenting practices have their effects on the development of eating disturbances through adolescents' internalizing responses. However, based on model testing including an autoregressive path, adolescent girls' normative maladaptive eating patterns remained stable over time. Thus, we cannot conclude that girls' perceptions

of their mothers' positive parenting and their own internalized distress accounted for *change* in maladaptive eating.

Before discussing the results of this study further, some limitations require consideration. First, the sample was almost homogenous with regard to its European American constitution. There-

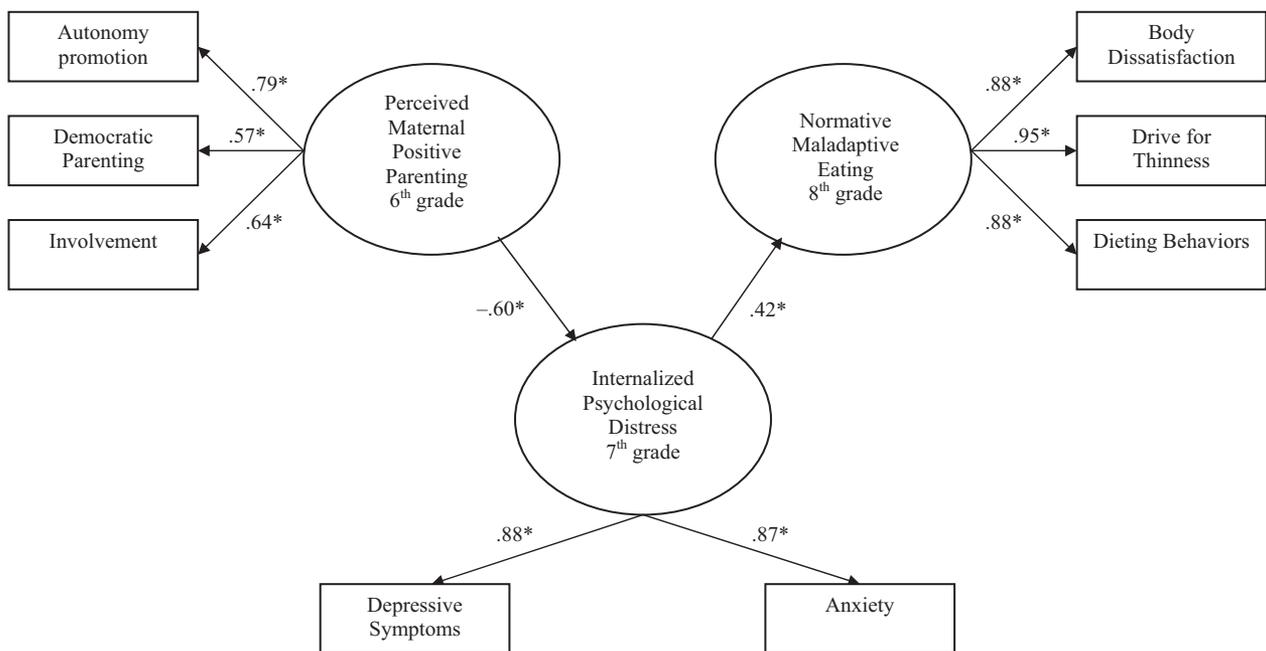


Figure 3. Mediation model of perceived maternal positive parenting, internalized psychological distress, and normative maladaptive eating. \*  $p < .05$ .

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fore, to the extent that this model has not been tested on members of other ethnic groups, caution should be taken when considering generalization of these findings beyond European Americans. Second, there were two possible limitations with our measurement of parenting. It is possible that mothers who had the most self-doubts about their parenting did not allow their children to participate in the study or were more likely to drop out. Also, adolescents' perceptions of their fathers' parenting practices were not available, and so inferences based on this study's results should be restricted to understanding maternal influences. The preponderance of prior research on parental predictors of maladaptive eating similarly has assessed exclusively maternal attitudes and behaviors. However, there is empirical evidence of fathers' influence on the emergence of eating disturbances. For example, among middle-school girls whose parents were separated or divorced, fathers' pressure on them for thinness predicted frequency of engagement in weight-control behaviors such as skipping meals, using laxatives, and purging (Shisslak et al., 1998). Paternal influences on their daughters' maladaptive eating require a great deal more empirical attention, and future research should attempt to assess the influence of fathers as well as mothers during adolescence.

Third, the consensus among eating disorder researchers is that risk for the development of eating disorders is multifactorial (see, e.g., Polivy & Herman, 2002, and Striegel-Moore & Cachelin, 2001), including at least familial, biological, social, and psychological factors. Any single study, however, is unlikely to simultaneously and comprehensively assess the influence of the numerous factors that have been theorized to put individuals at risk, and the present study was similarly limited in scope. The present study tested the validity of only one of many potential eating disorder risk paths. Future studies should use longitudinal approaches whenever possible but expand tests to identify other potential pathways of risk, including variables such as internalization of the thin ideal (Stice, 2002; Stice & Bearman, 2001; Tylka & Subich, 2004), ruminative coping (Nolen-Hoeksema & Girgus, 1994; Polivy & Herman, 2002), sociocultural pressure to be thin (Polivy & Herman, 2002; Stice, 2002), peer support (Bearman et al., 2006; Polivy & Herman, 2002), and substance use (Stice et al., 2004).

It is important to acknowledge that we focused on one particular mediating model and that there may be plausible alternative time orderings of these constructs that could be investigated. For instance, one prior study indicated that girls' maladaptive eating may predict relationship difficulties in the parent-adolescent dyad (Bastiani Archibald, Linver, Graber, & Brooks-Gunn, 2002). Reciprocal relations have also been found between negative affectivity and bulimic pathology (Stice et al., 2004), suggesting that negative affectivity and other indicators of maladaptive eating such as those measured here (e.g., restriction, body image disturbances) may demonstrate similar interrelationships over time. The purpose of the present study, however, was to test one particular theoretically and empirically motivated model that ultimately fit our data well. In addition, our analyses were limited by a relatively small sample size. Such a small sample size restricts the power necessary to examine complex models such as cross-lagged path analyses including autoregressive pathways. Despite this, we remained able to answer the call to examine prospective associations between parenting and maladaptive eating as well as between prior internalizing and eating problems (e.g., Stice, 2002). As noted by

Stice, these particular relations are in need of greater focus in the literature.

With regard to implications for theory, developmental psychopathologists note the importance of examining the processes through which poor parenting influences child maladjustment over time (e.g., Cummings et al., 2000). This study is, to our knowledge, the first to longitudinally test the mediational relation theorized by Connors (1996) regarding parenting practices, subsequent difficulties with regard to affect, and maladaptive eating. The findings of this study are consistent with that theorizing. Working from an attachment framework, Connors theorized that parenting that is not sensitively attuned to children's needs and capabilities promotes difficulties in the self-regulation of affect (see also Mikulincer et al., 2003). In turn, dysregulated affect is presumed to be a risk factor for eating problems.

Prior research lends support to the notion that dysfunctional patterns of family relationships play a role in the etiology of eating pathologies. In particular, there is empirical evidence for the relation between mothers' parenting practices and the emergence of maladaptive eating patterns, including body dissatisfaction and dieting behaviors, in their adolescent children (e.g., Barker & Galambos, 2003; Bastiani Archibald et al., 1999; Bearman et al., 2006; Rojo-Moreno et al., 2006; Turner et al., 2005). In the present study, the negative path between positive parenting and adolescents' normative maladaptive eating provides further support for this relation. Adolescent girls who reported their mothers were relatively less promoting of their psychological autonomy, relatively undemocratic in parenting style, and had relatively less knowledge of their daily activities and social interactions were more likely later to engage in eating behaviors that are problematic.

In addition, previous studies support the notion that parenting practices are associated with adolescent internalizing symptoms (e.g., Buehler et al., 2006; Gray & Steinberg, 1999; Hale et al., 2006; Lamborn et al., 1991; Reitz et al., 2006; Steinberg & Silk, 2002). The results of this study provide longitudinal support for the effects of positive parenting on internalized psychological distress. Adolescent girls' perceptions of lower levels of maternal positive parenting predicted subsequent self-reports of higher levels of depression and anxiety. More important, however, when considering internalizing behaviors of the adolescent, the path between positive parenting and normative maladaptive eating patterns became nonsignificant. This suggests that adolescent girls' feelings of depression and anxiety can account for the relation between maternal parenting practices and dieting patterns.

With regard to practical implications, the results of this study suggest that, first, more attention to parenting and its effects on the developing adolescent are a potentially important target point in the prevention of maladaptive eating patterns and, second, that interventions with adolescents might be productively targeted at affective regulation. Girls may benefit from education about coping strategies. In particular, they could learn about the potential deleterious effects of ruminative, self-focused coping (Nolen-Hoeksema & Girgus, 1994; Polivy & Herman, 2002). School counselors might also be particularly attuned to internalizing symptoms in the middle-schoolers whom they counsel and with whom they conduct interventions, aware that symptoms of depression and anxiety left unattended may be precursive of eating problems. When they observe internalizing problems and inquire

as to the family environment, they might, in some cases, attempt to make referrals of the family to longer term therapy in the community. And when parents and children arrive in family counseling, counselors should be attuned to signs of potentially unhelpful parenting practices and work with parents and children to derive new interaction patterns.

Parenting behaviors that are oriented toward becoming more appropriate to the developmental needs of children and adolescents can be taught (Borkowski, Ramey, & Stile, 2002; Brody et al., 2006; Cowan & Pape Cowan, 2002; Cowan, Powell, & Pape Cowan, 1998; Flory, 2004; Patterson, DeGarmo, & Forgatch, 2004). However, even when parents are willing to modify their parenting behaviors, the effects of long-standing parenting practices may have set in motion within the child a tendency toward internalizing negative affective states. Whereas parents may, with time, exhibit more positive parenting practices, their children may continue to show signs of internalized distress. Clinicians should therefore be attuned to having promoted, or entered, the parenting cycle at a point at which the parents' behavior presently reflects reasonably age-appropriate practices, but the adolescent child expresses apparently ingrained patterns of responding that are problematic. In such cases, we would suggest that clinicians may want to focus on working with the adolescent to help her gain greater mastery over her affective regulation.

To our knowledge, the present study is the first to empirically evaluate the theorized longitudinal, mediational chain positioning parenting practices as predictive of internalizing symptoms and, in turn, internalizing symptoms as predictive of maladaptive eating. The empirical support, found here, of this etiologic chain contributes to the literature by providing both researchers and clinicians with a specific model for intervening against the possible development of eating disorders in girls. In particular, the mother-adolescent relationship is an important predictor of maladaptive eating. Perceived maternal positive parenting behaviors during young adolescence, including psychological autonomy promotion, democratic parenting, and involvement, strongly predict body dissatisfaction, drive for thinness, and dieting behaviors by the time girls are departing middle school. And perhaps most important, the adolescent girl's means of managing her affective responses requires concentrated empirical and practical attention because it accounts for the strong relation between parenting and maladaptive eating patterns.

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## Appendix

### Alternative Model With Body Dissatisfaction Considered Separately

Many empirical studies have treated body dissatisfaction as a separate entity from eating disorder symptomatology and actual dieting behaviors, but mostly these studies have used samples of women and found the variables to be at least moderately correlated (e.g., Stice, Nemeroff, & Shaw, 1996; Tylka & Subich, 2004). For example, in a sample of college women, Stice et al. (1996) found a correlation of .50 between body dissatisfaction and bulimic dieting behaviors. Also in a sample of college women, Tylka and Subich found correlations between body dissatisfaction and eating disorder symptomatology variables in the .50 range. In addition, empirical studies that have treated body dissatisfaction as a separate identity from drive for thinness also show substantial correlations between these two variables (e.g., Shroff & Thompson, 2006). For instance, among girls in high school, Shroff and Thompson

reported a correlation between body dissatisfaction and drive for thinness of .67.

All of these studies show correlations that are slightly lower than the correlations we found in the present study when focusing on adolescent girls. Thus, there may be less overlap in adult samples as many women experience discontent about their bodies, yet few have actual maladaptive eating patterns. Among younger samples, there may be less differentiation, just as younger samples may show more overlap or greater comorbidity than adults with other disorders. Perhaps our study is the first to examine the way in which body dissatisfaction acts as an indicator of overall maladaptive eating patterns among adolescent girls. It may therefore add to the literature to present an analysis in which body dissatisfaction is empirically allowed to contribute to a global construct of maladaptive eating patterns.

(Appendix follows)

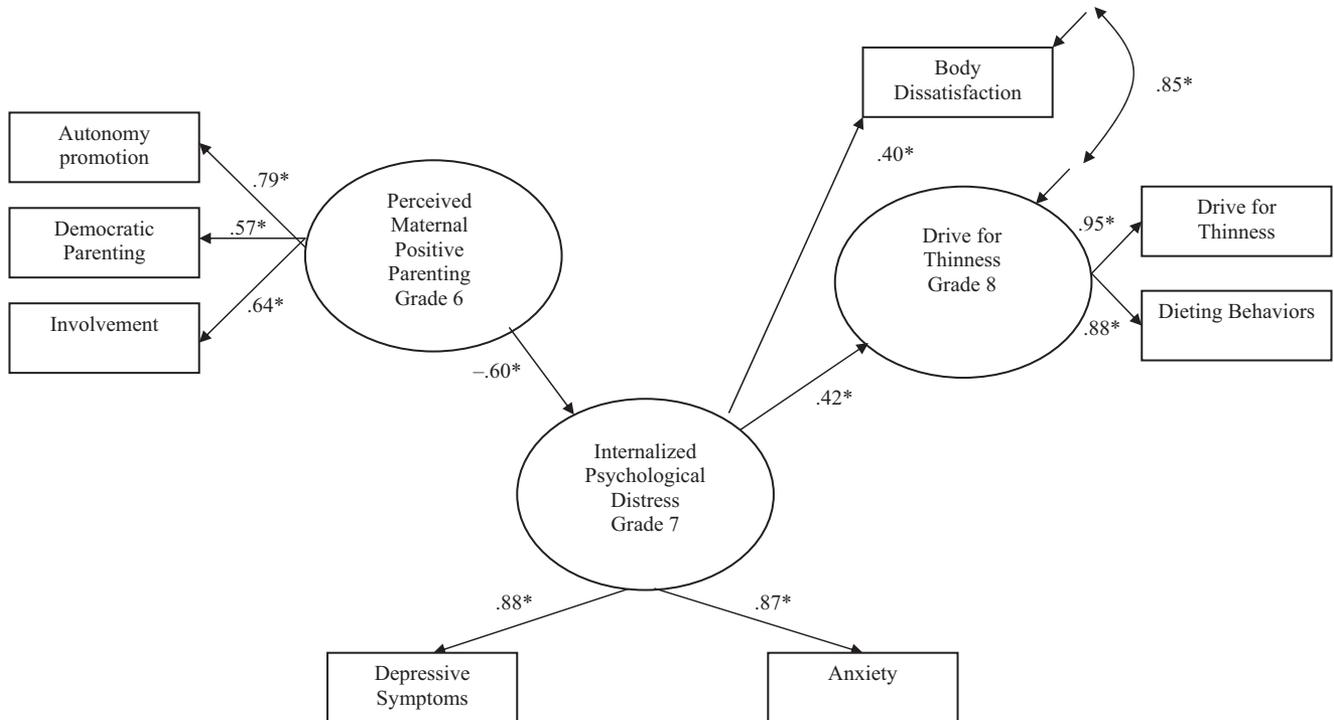


Figure A1. Mediation model of perceived maternal positive parenting, internalized psychological distress, and body dissatisfaction and drive for thinness. \*  $p < .05$ .

Because of the high correlations between body dissatisfaction, drive for thinness, and dieting behaviors (ranging from .77 to .84), the high factor loadings for each manifest indicator on the larger latent construct (ranging from .88 to .95), and the fact that the measurement model combining the three indicators on one construct fits well, we have concluded that body dissatisfaction is an important and empirically justifiable component of our latent “normative maladaptive eating” construct. Briefly, all indications in our data suggest that it is appropriate to combine the three indicators. However, we have performed additional analyses treating body dissatisfaction and maladaptive eating as separate variables. Results from such analyses suggest that the direct effects, full, and mediation models work in ways identical to the models we present in our article.

First, the direct effects model indicated that there were significant, negative direct effects between perceived maternal positive parenting practices in 6th grade and both body dissatisfaction ( $\beta =$

$-.33$ ) and drive for thinness ( $\beta = -.31$ ) among adolescent girls in 8th grade. Second, the full model indicated that the previously significant direct effects were reduced to values that were no longer significant ( $\beta = -.14$  and  $\beta = -.080$ , respectively) when girls’ internalized psychological distress in 7th grade was added to the model. All other path coefficients were significant and in the expected directions. Third, as depicted in Figure A1, the mediation model suggested that lower levels of maternal positive parenting practices during 6th grade were associated with higher levels of internalized psychological distress in 7th grade, which, in turn, were associated with higher levels of both body dissatisfaction and drive for thinness among girls in 8th grade.

Received August 23, 2006  
 Revision received July 11, 2007  
 Accepted July 14, 2007 ■