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Marital Conflict in Early Childhood and Adolescent Disordered Eating: Emotional Insecurity about the Marital Relationship as an Explanatory Mechanism

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Abstract

Disordered eating behaviors, including frequent dieting, unhealthy weight control behaviors (e.g., vomiting and skipping meals for weight loss) and binge eating are prevalent among adolescents. While negative, conflict-ridden family environments have long been implicated as problematic and a contributing factor to the development of disordered eating, few studies have examined the influence of marital conflict exposure in childhood to understand the development of these behaviors in adolescence. The current study investigates the impact of marital conflict, children's emotional insecurity about the marital relationship, and disordered eating behaviors in early adolescence in a prospective, longitudinal study of a community sample of 236 families in Midwest and Northeast regions of the U.S. Full structural mediation analyses utilizing robust latent constructs of marital conflict and emotional insecurity about the marital relationship, support children's emotional insecurity as an explanatory mechanism for the influence of marital conflict on adolescent disordered eating behaviors. Findings are discussed with important implications for the long-term impact of marital conflict and the development of disordered eating in adolescence.

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The authors have nothing to disclose.

1. Introduction

Although estimates for eating disorders are relatively low with 2–3% of adolescents meeting criteria for diagnosis (Merikangas et al., 2010), sub-threshold levels of eating disorders, including frequent dieting, unhealthy weight control behaviors (e.g., vomiting and skipping meals for weight loss) and binge eating are prevalent among adolescents (Ackard & Neumark-Sztainer, 2003). Indeed, a disturbing proportion of adolescents report engaging in unhealthy eating behaviors that are clinically severe but do not meet full DSM-IV diagnostic criteria for an eating disorder. A recent survey of a representative national sample suggests that one in five healthy or underweight adolescents in the U.S. report trying to lose weight (Eaton et al., 2012). Another ethnically-diverse population-based sample reported that 33% of U.S. adolescents presented with body image disturbances, 11% conveyed recurrent purging behaviors (e.g., vomiting, use of laxatives, and excessive exercise), and 7% indicated out of control binge-eating (Ackard, Fulkerson, & Neumark-Sztainer, 2007). Though such sub-clinical disordered eating behaviors appear prevalent, few studies have examined the development of these behaviors in community samples (Swanson, Crow, Le Grange, Swendsen & Merikangas, 2011).

The study of disordered eating may be particularly relevant as it is often associated with other health-compromising behaviors in adolescence, including smoking, alcohol and drug use, and suicide. Moreover, disordered eating is linked to the development of other physical and psychological problems, including anxiety (Granillo, Grogan-Kaylor, Delva, & Castillo, 2011), depressive symptoms (Johnson et al., 2002), and obesity (Field et al., 2003; Stice et al., 2005). Indeed, some youth who engage in disordered eating will worsen over time and eventually develop eating disorders (Patton et al., 1999; Santonastaso et al., 1999). Given the high cost of treatment, significant impairment in functioning, and impact of these conditions on morbidity and mortality, disordered eating is a significant public health concern that merits further research (Agras, 2001). Yet, as with many mental health problems there is a considerable gap between *the need for* and *the availability of* effective treatment (Burns et al., 1995); few adolescents with disordered eating symptoms receive any support specifically for their unhealthy weight control behaviors (Merikangas et al., 2010). Understanding the developmental processes associated with the disordered eating in adolescence is crucial for identifying targets for prevention and early intervention, and can ultimately contribute to the development of effective treatment options yielding both individual and societal benefits (Striegel-Moore, Leslie, Petrill, Garvin, & Rosenheck, 2000).

The current study explores a putative developmental process underlying disordered eating in adolescence. Specifically, we examine the role of early marital conflict exposure to inform how disordered eating manifests. We posit that emotional insecurity about the marital relationship plays a mediating role in the influence of marital conflict on disordered eating in adolescence, such that insecurity is the vehicle through which the impact of conflict on disordered eating is conveyed. We develop our argument for this model in the following sections, describe our sample and procedures before testing the hypothesis via mediation analysis within a structural equation modeling framework.

Family functioning is often implicated in the development of child and adolescent mental health problems (Cummings, Davies, & Campbell, 2000), and eating disorders are not an exception. Negative family relationships have long been a focus of eating disorders theory, research, and practice (Ackard & Neumark-Sztainer, 2001; Hodges, Cochrane, & Brewerton, 1998; Minuchin et al., 1978). Negative, conflict-ridden environments that demonstrate low levels of cohesion and expressiveness are often characteristic of families of youth with disordered eating symptoms (Archibald, Linver, Graber, & Brooks-Gunn, 2002; Benninghoven, Tetsch, Kunzendorf, & Jantscheck, 2007). Conflict in the parent-child relationship has often been implicated (e.g., Bowen, 1978; Bruch, 1985; Minuchin, Rosman, & Baker, 1978) with high control, restrictiveness and rejection associated with greater maladaptive eating behaviors (Berge et al, 2012; Boensch, Raml, Seiwald & Rathner, 1993; Enten & Golan, 2009; Kichler & Crowther, 2001; McKinley, 1999; Ogden & Steward, 2000). Indeed, retrospective, concurrent, and short-term longitudinal examinations in adolescence suggest harmonious parent-child relationships are linked to lower levels of dieting behaviors (Bastiani Archibald, Graber, & Brooks-Gunn, 1999; Salafia, Gondoli, Corning, McEnerny, & Grundy, 2007), and less body dissatisfaction (Barker & Galambos, 2003; Bearman, Presnell, Martinez, & Stice, 2006), and preoccupation with weight and engagement in bulimic behaviors (Kenny & Hart, 1992). However, parent-child relationships and disordered eating has not been supported in longitudinal studies over longer periods of time (e.g., Blodget Salafia & Gondoli, 2010; Ferguson, Munoz, Winegard, Winegard, 2012) and while parenting is critically important for healthy socioemotional development in children (Cummings, Davies, & Campbell, 2000), children are influenced by other conflict in other family relationships (Cox & Paley, 2003).

The marital relationship is critically important for understanding the influence of the family on child development (Cummings & Davies, 2010); children's exposure to destructive marital conflict, characterized by frequent, verbal and physical aggression, hostility, and lack of resolution, increases risk for the development of depressive and anxious symptoms, aggression, delinquency, and conduct problems (Buehler, Lange, & Franck, 2007; El-Sheikh, Buckhalt, Mize, & Acebo, 2006), social difficulties (McCoy, Cummings, & Davies, 2009; McCoy, George, Cummings, & Davies, 2013) and school adjustment problems (George, Koss, McCoy, Cummings, & Davies, 2010). Yet few studies have examined marital conflict in relation to the development of disordered eating behaviors. For example, Latzer, Lavee, and Gal (2009) found higher levels of marital distress in families of adolescents with eating disorders in comparison to a community sample of families. Considering the influence of marital conflict is imperative as the detrimental impact of interparental discord on child adjustment problems is well-established (Cummings & Davies, 2002; Cummings & Davies, 2010).

A growing evidence base focuses on a process-oriented approach that addresses the mechanisms by which marital conflict impacts development rather than simply documenting associations (Cummings, Goeke-Morey, & Papp, 2003; Grych, Harold, & Miles, 2003; Kerig, 2001). Indeed, child and adolescent emotional insecurity about the marital relationship has been shown to mediate the harmful influence of marital conflict on emotional, behavioral, and social development (Cummings, Schermerhorn, Davies, Goeke-Morey, & Cummings, 2006; Davies, Harold, Goeke-Morey, & Cummings, 2002; Harold,

Shelton, Goeke-Morey, & Cummings, 2004) including sleep disturbances, academic achievement, and health-related outcomes (El-Sheikh, Buckhalt, Cummings, & Keller, 2007; El-Sheikh, Buckhalt, Keller, Cummings, & Acebo, 2007) and differences in the functioning of physiological, behavioral and emotional regulatory systems (Koss, George, Bergman, Cummings, & Davies, 2011; Koss, George, Davies, Cicchetti, Cummings & Sturge-Apple, 2013). It is posited that emotional insecurity about the marital relationship is harmful because it undermines children's sense of security about the stability of the family system having short-term and long-term consequences for children's regulation and adjustment over time (Cummings, George, McCoy, & Davies, 2012; Cummings, Schermerhorn, Davies, Goeke-Morey, & Cummings, 2006; Davies, Harold, Goeke-Morey, & Cummings, 2002).

Despite the considerable implications of emotional insecurity about the marital relationship for subsequent difficulties in social, emotional, and behavioral functioning across development (e.g., Cummings & Davies, 2010) there are no prospective longitudinal studies examining the influence on adolescent disordered eating behaviors. The current study fills this needed gap examining marital conflict, emotional insecurity about the marital relationship, and disordered eating across early childhood to adolescence to advance understanding of developmental pathways resulting from children's exposure to marital conflict (Cummings & Davies, 1996) and process-oriented investigations for these relations are notably lacking (Ingoldsby, Shaw, Owens, & Winslow, 1999; Neighbors, Forehand, & Bau, 1997). Consistent with recent research suggesting the long-term consequences of marital conflict (Cummings, George, McCoy, & Davies, 2012), the current study hypothesizes that marital conflict exposure in kindergarten will have lasting effects by contributing to children's emotional insecurity which will in turn be associated with disordered eating behaviors in adolescence.

2. Material and Methods

2.1. Sample

Participants in the current study were families from a multi-site longitudinal project investigating family processes, marital conflict and children's psychological adjustment in a representative community sample of 235 primarily middle-class families located in areas of the Midwest and Northeast, United States. This study is based on data collection from three longitudinal time points when children (106 boys, 129 girls) were in: (a) kindergarten (i.e., T1; $M_{age} = 6.00$; $SD = .45$), (b) second grade (i.e., T2; $M_{age} = 8.02$; $SD = .49$), and (c) seventh grade (i.e., T3; $M_{age} = 12.62$; $SD = .56$). Eighty-nine percent of couples were married and families were representative of the areas they resided (76.5% Caucasian, 16.7% African American, 3.8% Hispanic, 2.1% indicated being of another race). Data collection at T1 began in 2000; the median annual family income range reported was between \$40,000 and \$54,999. Mothers' M_{age} was 35.0 years ($SD = 5.57$) and fathers' M_{age} was 38.6 years old ($SD = 6.09$). Assessments at T3 were collected 7 years after the initial assessment and were completed by 194 (83%) of the families. Thirty-six couples separated or divorced between T1 and T3; two fathers passed away during the study. Families were retained in the sample if willing to participate, regardless of separation, divorce or loss of family member. As reported in detail in other manuscripts reporting results from this study (e.g., Cummings

et al., 2012), comparisons of families that were retained in the study versus those who withdrew from participating did not suggest differences based on demographic variables, including family income, parent education, marital and relationship status, parent relationship with child, and time spent living together.

2.2. Procedure

Participants were recruited through distributing flyers and postcards in the local communities. Flyers were also sent home with children through schools, placed in daycare agencies, and distributed via booths at community events. Eligibility for the study was dependent on a parental couple living together for a minimum of 3 years, parenting a child in kindergarten, and ability to complete assessments in English. Families were scheduled to attend two visits at each time point of data collection; each session was approximately 2.5 hours. Mother, father, and child were invited to attend the first visit of each wave, whereas only mother and child were requested to attend the second visit. At each session, informed consent and assent were obtained and monetary compensation was provided for participation; transportation and childcare were also provided if necessary. All study procedures were approved by the local Institutional Review Boards (IRBs) at the universities.

2.3. Measures

2.3.1. Marital conflict—We measured the multi-dimensional marital conflict construct using the frequency-severity, stonewalling, verbal aggression, physical aggression, and resolution subscales from the Conflict and Problem Solving Scales (CPS; Kerig, 1996). These subscales assessed both the severity and type of marital conflict tactics. *Frequency-severity* of conflict assesses the extent to which minor and major marital disagreements occur, rating frequency in a year on a 6-point ordinal scale ranging from *once a year or less* (scored 1 for minor conflicts and 2 for major conflicts) to *just about every day* (scored 6 for minor conflicts and 12 for major conflicts). Total scores range from 3 to 18. The *stonewalling* subscale assesses passive-aggressive behaviors that stalemate the disagreement, and includes items such as “sulk, refuse to talk, give the ‘silent treatment’,” and “complain, bicker without really getting anywhere.” The *verbal aggression* subscale includes items such as “raise voice, yell, shout,” “name-calling, cursing, insulting,” and “threaten to end the relationship.” The *physical aggression* subscale includes items such as “throw objects, slam doors, break things” and “push, pull, shove, grab partner.” Finally, the *resolution* subscale captures the emotional tone of the aftermath of problem-solving attempts. Husbands and wives completed the subscales at T1 reporting on their own and their partners’ conflict behaviors ranging from 0 = *never* to 3 = *often* and scores were averaged for each subscale. Reliability coefficients in this sample ranged from .76 to .90 (mean reliability = .81) for mothers and .74 to .90 (mean reliability = .82) for fathers; prior research supports validity evidence for the CPS instrument (Kerig, 1996). Proportion of data present for each of these subscales was high, ranging from 223 to 231 of the sample of 235 families at T1.

2.3.2. Child emotional insecurity about the marital relationship—The Security in the Interparental System Scale (SIS; Davies, Forman, Rasi, & Stevens, 2002) was used to assess dimensions of children’s emotional reactivity, regulation of exposure to parent affect

including involvement and avoidance, behavioral dysregulation, and somatic reactions associated with conflict exposure. Sample items for the 27-item measure include “When your parents argue do you feel sad?” “Do you try to do nice things for your mom?” “Do you try to get away from your parents?” “Do you tell them to stop?” and “Does your head hurt?” Children rated each statement based on how true it was for them over the past year using a 3-point scale (1 = *no*, 2 = *sometimes*, 3 = *yes*). Reliability coefficients in this sample ranged from .55 to .91 (mean reliability = .71); validity for the measure has been shown in relation to children’s responses to conflict across different informants, conflict stimuli, and multiple occasions (Davies, Forman, Rasi, & Stevens, 2002). Proportion of data present for each of these subscales was high, ranging from 206 to 207 of the 207 participating families in T2.

2.3.3. Adolescent disordered eating—The Children’s version of the Eating Attitudes Test (ChEAT; Maloney, McGuire, & Daniels, 1988) was used to measure disordered eating at T3. Appropriate for youth in grades 3rd–8th, adolescents reported on their frequency of engaging in behaviors including preoccupation with food (“I think that food controls my life.”), dieting (“I think a lot about wanting to be thinner.”), restricting/purging (“I vomit after I have eaten.”) and oral control (“I feel that others would like me to eat more.”). The 23-item version of the measures was used as it has demonstrated stronger internal reliability and concurrent validity with weight management and body dissatisfaction measures than the 26-item version in previous psychometric research (Smolak & Levine, 1994). Adolescents respond to each item with a Likert scale response with items reflecting severity/frequency of the behavior, such that 3 = *always*, 2 = *usually*, 1 = *often*, and all other responses (i.e., sometimes, rarely, never) = 0. ChEAT scores can range from 0 to 69 on the 23-item version with higher scores indicating engaging in more disordered eating behaviors. A score of 20 is the cutoff for the screening instrument with scores at or above indicative of being at risk for an eating disorder. The scale demonstrated adequate internal reliability for this sample ($\alpha = .78$), and 48% ($n = 78$) reported a score in the at-risk range. Data was present for the 162 adolescents that participated in T3.

2.4. Analytic Approach

2.4.1. Mediation analysis—We investigated the primary research hypothesis by conducting a mediation analysis. Specifically, we posit that the effect of marital conflict on disordered eating will be conveyed through emotional insecurity about marital relations. This full mediation hypothesis contrasts to partial mediation in that we do not expect there to be a significant effect of X on Y after controlling for M. Investigating mediator variables has the potential to refine our understanding of how family process variables impact disordered eating by modeling interceding variables that parse overall relationships into direct and indirect effects. In this way, mediation analysis can elucidate the mechanism through which predictors carry their effect ultimately improving our understanding of the etiology underlying disordered eating and related outcomes. In its simplest form, the mediation model posits that a single predictor variable, X, predicts a single mediator variable, M, which in turn predicts an outcome variable, Y (Baron & Kenny, 1986; Judd & Kenny, 1981; MacKinnon, 2008). Analysis of a single mediator model involves estimating a set of regression equations that break down the overall effect of X on Y into two distinct parts:

$$\hat{Y} = b_0 + c'X + bM \quad (1)$$

$$\hat{M} = b_0 + aX \quad (2)$$

The indirect effect of X on Y through M (i.e., the mediated effect) is defined by the product of the *a* and *b* regression coefficients (i.e., *ab*) from Equations 1 and 2. The direct effect of X on Y, controlling for M, is defined by the *c'* regression coefficient in Equation 1. In our analytic model, *a* defines the regression of emotional insecurity about the marital relationship in 2nd grade on marital conflict as measured in kindergarten, *b* defines the regression of disordered eating in 7th grade on emotional insecurity about the marital relationship as measured in 2nd grade, and *c'* is constrained to be zero as we hypothesize full mediation. Though there are alternative approaches to test statistical mediation, methodological work has shown that the product of coefficients, $\hat{a}\hat{b}$, is the most accurate and flexible estimator of the mediated effect (see MacKinnon, 2008). In line with current methodological recommendations, we conducted significance testing of the mediated effect with bootstrapped confidence intervals based on the empirical sampling distribution of $\hat{a}\hat{b}$ (MacKinnon, Lockwood, Hoffman, West & Sheets, 2002; MacKinnon, Lockwood & Williams, 2004; Preacher & Selig, 2012). Assumptions of the mediation model include those assumptions associated with basic ordinary least squares regression, correct temporal ordering of variables, no reverse causality effects, and no interaction among the predictor and mediator variables.

Because the primary research hypothesis we sought to investigate involved latent variables, we extended the basic single mediator model described above and estimated a structural equation model (*SEM*). SEM permits the evaluation of models in which regressions among continuous latent variables are estimated (e.g., Bollen, 1989; Kline, 2010). We considered a single mediator model that evaluated how the latent construct of emotional insecurity about marital relations in 2nd grade mediated the relationship between the latent construct of marital conflict assessed at kindergarten and subsequent disordered eating in 7th grade.

2.4.2. Structural equation modeling—Before examining the full structural mediation model, we first affirmed the a priori measurement models for the two latent constructs of marital conflict and emotional insecurity about the marital relationship via confirmatory factor analysis (*CFA*). We examined the χ^2 goodness of fit test to determine whether the observed covariance matrices were significantly different from the model-implied covariance matrices. Given the sensitivity of the χ^2 statistic to sample size, we also examined several additional fit indices to provide supplemental model fit information (Chen, Curran, Bollen, Kirby & Paxton, 2008; Hu & Bentler, 1998, 1999). Given the varied performance of different fit indices across varying model specification and parameter values, we considered a combination of absolute and relative indices to provide a broad range of assessment for global model fit (Chen et al., 2008; Curran, Bollen, Paxton, Curran & Chen, 2002; Sivo, Fan, Witta & Willse, 2006). Specifically, we used the 1) standardized root mean

square residual (*SRMR*), an absolute fit index, with a range of 0 to 1 (lower values indicate better fit) that assesses the square root of the difference between residuals in the sample covariance matrix versus the model-implied covariance matrix; 2) root mean square error of approximation (*RMSEA*), another absolute fit measure, with a range of 0 to ∞ (lower values indicate better fit) is a parsimony-rewarding index that assesses fit via a noncentrality parameter; and 3) the comparative fit index (*CFI*), a relative measure, with a range of 0 to 1 (higher values indicate better fit) that assesses the fit of the proposed model against a null baseline model where all variables are uncorrelated. CFA and SEM analyses were conducted with Mplus Version 7 (Muthen & Muthen, 1998–2012), and handled missing data via Full Information Maximum Likelihood (*FIML*) estimation. FIML is a currently recommended method of missing data handling that enables the use of all available data points rather than deleting cases with missing responses (Enders, 2010).

3. Results

3.1. Preliminary Analyses

3.1.1. Descriptive statistics—Means and standard deviations for study variables, as well as, their intercorrelations can be seen in Table 1. Manifest indicators of latent variables are significantly correlated; associations among indicators range from $r = .43$ to $.69$ ($p < .001$) for marital conflict and $r = .22$ to $.52$ ($p < .001$) for emotional insecurity. This is consistent with previous literature, as is the low and insignificant correlations among manifest variables across constructs (Cummings, George, McCoy, & Davies 2012; Kouros, Merrilees, & Cummings, 2011).

3.1.2. CFA—In line with previous conceptualizations of the CPS instrument, we modeled a single latent factor of marital conflict with five indicators, corresponding to scores on each of the five subscales measuring frequency-severity, use of stonewalling behaviors, verbal aggression and physical aggression, and lack of resolution in marital conflict (Kerig, 1996). The measurement model in our sample data was adequate (see Table 2) reflecting current guidelines on how to use these measures to inform fit (Chen et al., 2008; Hu & Bentler, 1999; Sivo et al., 2006). The model χ^2 statistic for the marital conflict CFA was not significant, $\chi^2(5) = 8.644$, *ns*, indicating that the posited factor structure was a statistically good fit to the data. All standardized factor pattern coefficients in the model were significant at $p < .001$, and the value of these factor loadings were high (see Table 3). Subsequent squaring of these estimates yielded R^2 values that indicated the latent variable accounted for over 50% of observed variance in the indicators for all but one item (i.e., MC₄—physical aggression).

With regard to the SIS instrument, we modeled the emotional insecurity about the marital relationship construct as a single factor with five indicators, each corresponding to scores on the subscales of the SIS including emotional reactivity, behavioral dysregulation, involvement and avoidance of conflict, and somatization to marital conflict (Davies, Forman, Rasi, & Stevens, 2002). The fit of the measurement model in our sample data was adequate (see Table 2). The model χ^2 was not significant, $\chi^2(5) = 10.068$, *ns*, a statistically good fit to the data. Supplemental fit indices also fell within recommended ranges (see Table 2). All

standardized factor pattern coefficients for the emotional insecurity about the marital relationship measurement model were statistically significant at $p < .001$ (see Table 3). Most of these factor loadings were moderate to high, and the latent emotional insecurity construct explained between 14.6% and 47.7% of the observed variance in the items. Though not central to the study, it is worth mentioning the low amount of explained variance in the involvement subscale: EI_2 ($R^2 = .146$) indicating it may be worthwhile to consider revising the items of the subscale to represent its relationship more directly and yield a larger R^2 value for the indicator. Hair, Anderson, Tatham and Black (1995) recommend that at least 50% of the variance should be accounted for by the latent factor for which it serves as an indicator.

3.2. Full Structural Mediation Analysis

Global model fit of the developmental process model examining the mediating role of emotional insecurity about the marital relationship in transmitting the influence of marital conflict on disordered eating was good (see Table 2). The model χ^2 statistic was not statistically significant, $\chi^2(43) = 52.348$, ns , and the supplemental fit statistics supported fit of the data to the model-implied covariance matrix. Full mediation was demonstrated, such that the direct effect of marital conflict in kindergarten on disordered eating in 7th grade was constrained to be zero so that the entire influence of marital conflict on disordered eating was carried through the mediating variable of emotional insecurity about the marital relationship (see figure 1). All structural parameter estimates associated with the full mediation model were significant (see Table 3). Specifically, the direct effect of marital conflict on emotional insecurity about the marital relationship was $\beta = 0.175$, $p < .01$. This coefficient indicates that for every one sd unit change in marital conflict at kindergarten there is a corresponding 0.175 sd unit increase in emotional insecurity about the marital relationship in 2nd grade. The direct effect of emotional insecurity about the marital relationship on disordered eating was $\beta = 0.281$, $p < .001$, indicating that for that for every one sd unit change in emotional insecurity at 2nd grade there is a corresponding 0.281 sd unit increase in disordered eating in 7th grade. Finally, the indirect effect of marital conflict on disordered eating through emotional insecurity about the marital relationship was $ab = 0.049$, $p < .05$ with a 95% asymmetric confidence interval of (0.028, 0.664). This estimate indicates that for every one sd unit increase in the mediated effect of marital conflict through emotional insecurity about the marital relationship, there is a corresponding 0.049 sd unit increase in disordered eating.

4. Discussion and Conclusions

The present study builds on the existing literature in understanding the development of disordered eating behaviors in adolescence and contributes to the accumulating evidence supporting children's emotional insecurity about the marital relationship as an explanatory variable for the long term effects of marital conflict on child adjustment difficulties. Extending the existing support for the impact of negative family functioning on unhealthy eating behaviors in adolescence, the current study provides further evidence that children's experience of marital conflict early in childhood may have lasting impacts through the detrimental consequence on emotional insecurity about the marital relationship (Cummings

et al., 2012). Findings from the current study suggest that children's emotional insecurity underlies that impact of marital conflict on disordered eating, providing further support for Emotional Security Theory (EST; Davies & Cummings, 1994). Moreover, this is a fully mediated developmental process, such that the influence of exposure to marital conflict in kindergarten was conveyed through emotional insecurity about the marital relationship in 2nd grade (i.e., we did not find support for a direct effect of marital conflict on disordered eating). Our findings build on the literature citing the impact of negative, conflict-ridden family environments (Ackard & Neumark-Sztainer, 2001; Archibald, Linver, Graber, & Brooks-Gunn, 2002; Benninghoven, Tetsch, Kunzendorf, & Jantscheck, 2007) by considering beyond conflict in the parent-child relationship how conflict in the marital relationships affects developmental mechanisms associated with disordered eating in adolescence. Extending theory and research on the impact of family processes on development (Cox & Paley, 2003; Cummings, Davies, & Campbell, 2000) results suggest the importance of considering children's exposure to marital conflict as a risk factor contributing to the development of sub-clinical eating disorder behaviors in adolescence.

Although few studies have examined discord in marital relations and adolescent disordered eating behaviors, there is a strong foundation for expecting that exposure to marital conflict is of particular importance in the lives of teens (Davies & Windle, 1997; 2001), possibly contributing to the persisting relations between marital conflict, emotional insecurity about the marital relationship, and emotional and behavioral difficulties. Family conflict, including greater marital distress, has been found to occur in families of adolescents with eating disorders (Latzer, Lavee, & Gal, 2009). As adolescence is a developmental period characterized by heightened vulnerability to emotional and behavioral problems due to poor self-regulatory skills, the challenge of successfully resolving numerous stage salient tasks and marked increases in normative stressors (e.g., puberty, school transitions) (Cicchetti & Rogosch, 2002) paired with a history of living with distressed parents may further accentuate the risks associated with marital conflict (Gest, Reed, & Masten, 1999; Windle & Davies, 1999). Thus, long term investigations of the impacts of marital conflict and emotional insecurity about the marital relationship in childhood and the continued impacts on adolescent development is critically important.

Current findings support the significance of children's early experiential histories with marital conflict and their later functioning which has previously been supported in both shortterm (Grych, Harold & Miles, 2003; Harold, Fincham, Osborne & Conger, 1997) and long-term spans of development (Cummings, George, McCoy, & Davies, 2012), linking emotional insecurity about the marital relationship to a variety of social, emotional, behavioral, and health-related domains (e.g., Cummings, et al., 2006; Harold, Shelton, Goeke-Morey, & Cummings, 2004; El-Sheikh, Buckhalt, Cummings, & Keller, 2007). These results support the possibility of early family conflict experiences having lasting impacts on child development, including the development of disordered eating behaviors in adolescence, even in the context of other individual and family circumstances (Cummings et al., 2012). Similarly, theoretical models and research support a cascade effect of early marital conflict exposure, emotional insecurity about the marital relationship, and child regulation difficulties that interact with each other and lead to widespread difficulties in broader domains of functioning such as problems of social competency (Kouros, Cummings,

& Davies, 2010) over time. Additional examination of the chain of events leading emotional insecurity to impact the development of disordered eating behaviors in adolescents is needed.

Our findings supported a fully-mediated model where the direct effect of marital conflict in kindergarten on adolescent disordered eating is mediated through children's emotional insecurity about the marital relationship. Supporting previous research of this indirect chain of events in which marital discord is associated with adolescent adjustment difficulties (Grych et al., 2003; Harold et al., 1997; 2004) our findings empirically support emotional insecurity about the marital relationship as an explanatory mechanism for the effect of marital conflict exposure on the development of disordered eating in adolescence. Moreover, this is empirically and conceptually supported in research furthering EST (e.g., Cummings, Schermerhorn, Davies, Goeke-Morey, & Cummings, 2006; Cummings, George, McCoy, & Davies, 2012) which posits that marital conflict need not directly related to adolescent adjustment difficulties as it ultimately undermines adolescent adjustment by setting in motion child emotional insecurity processes (Emery, Fincham, & Cummings, 1992). There is an emerging consensus that fully mediated effects can exist without a statistically significant relation between the independent and dependent variables (MacKinnon, 2008), and call for attention in mediation analysis of the magnitude and significance of indirect effects (Shrout & Bolger, 2002; Rucker et al, 2011). Furthermore, the issue of causal inference in mediation has been, and continues to be, extensively studied (e.g., Frangakis & Rubin, 2002; Pearl, 2012). Our findings, as with other non-randomized studies, make interpretation of causal relations in the mediation model tentative. However we do not believe that the inability to argue causation precludes the exploration of these family and adolescent associations, nor does it exclude the ability to garner insight into developmental processes.

Although the findings contribute to the literature on the long-term impact of marital conflict on the development of disordered eating in adolescence, interpretation of the results warrants recognition of certain limitations. First, the results do not rule out the possibility of bidirectional effects in the family, such as children's effects on marital conflict (Jenkins, Simpson, Dunn, Rasbash, & O'Connor, 2005; Schermerhorn, Cummings, DeCarlo, & Davies, 2007). Results do not negate the importance of examining other aspects of family functioning, including parenting and family cohesion which have been previously supported in adolescence. Moreover, associations found in this study were based on community samples and findings may not generalize to clinical samples of families of adolescents with eating disorders. Testing other theoretical models, including examination of complex family processes from childhood, would also be a valuable direction for future research in understanding the development of disordered eating behaviors in adolescence.

Despite these limitations, this long-term longitudinal, theory-driven, prospective study advances investigations of pathways between marital conflict, children's emotional insecurity about the marital relationship and disordered eating behaviors across a substantial developmental period. These findings are important for elucidating the mechanism through which family processes impact adolescent development and ultimately advances our understanding of the etiology underlying disordered eating and related outcomes.

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Highlights

We model the influence of children's exposure to marital conflict in kindergarten on disordered eating behaviors in adolescence through a prospective, process-oriented, longitudinal study of a community sample of families.

We examine children's emotional insecurity about the marital relationship as the underlying mechanism among this relationship.

Children exposed to destructive forms of marital conflict in kindergarten are at risk for experiencing higher levels of emotional insecurity about the marital relationship in second grade, and in turn at risk for higher levels of maladaptive eating behaviors in seventh grade.

Marital conflict exposure in early childhood may help explain the development of disordered eating in adolescence.

Figure 1.

Parameter estimates for the primary model. ^aindicates estimate is significant at $p < .001$. ^bindicates estimate is significant at $p < .01$. ^cindicates estimate is significant at $p < .05$. ^{na}indicates indicator was used to set the metric of a latent variable in the measurement model. The mediated effect was $ab = .049$, $p < .05$.

Table 1

Descriptive statistics for study variables

	1	2	3	4	5	6	7	8	9	10	11
<i>T1 Marital Conflict</i>											
1. Frequency/Severity											
2. Stonewalling	.56***										
3. Physical Aggression	.43***	.54***									
4. Verbal Aggression	.69***	.69***	.59***								
5. Resolution	.58***	.63***	.50***	.68***							
<i>T2 Emotional Insecurity</i>											
6. Emotional Reactivity	.07	.19**	.15*	.06	.10						
7. Behavioral Dysreg.	.05	.13	.06	.06	.05	.39***					
8. Avoidance	.01	.07	.10	.08	.13	.42***	.33***				
9. Involvement	-.00	.06	.04	.02	-.04	.24***	.24**	.30***			
10. Somatic Reactivity	.07	.15	.15*	.12	.08	.43***	.52***	.35***	.22***		
<i>T3 Adolescent Adjustment</i>											
11. Disordered Eating	.06	.13	.16*	.06	.06	.16*	.23**	.20*	.18*	.14	
<i>M</i>	8.18	6.5	1.71	12.09	-3.97	10.29	8.93	9.52	14.96	5.36	20.40
<i>SD</i>	2.77	2.23	2.01	3.72	10.75	2.89	2.66	2.74	3.43	1.77	12.05

Note. Ns range from 153 to 227 due to missing data.

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

Table 2

Model Fit Statistics

Model	$\chi^2(df)$	<i>p-value</i>	SRMR	CFI	RMSEA (95% CI)
Marital conflict CFA	8.644(5)	0.124	0.020	0.994	0.056 (0.000, 0.117)
Emotional insecurity CFA	10.068(5)	0.073	0.033	0.973	0.070 (0.000, 0.133)
Full structural mediation model	52.348(43)	0.155	0.046	0.988	0.031 (0.000, 0.056)

Note. SRMR=standardized root mean square residual; CFI=comparative fit index; RMSEA=root mean square error of approximation.

Table 3

Standardized Parameter Estimates for Full Structural Mediation Model

		<i>Estimate</i>	<i>z-value</i>	<i>95% Bias-corrected Bootstrapped CI</i>
<i>Measurement Model</i>				
<i>Construct</i>	<i>Indicator</i>			
Marital Conflict	Frequency/Severity (MC ₁)	0.744	<i>Na</i>	<i>na</i>
	Stonewalling (MC ₂)	0.796	10.126 ^a	(0.710, 1.051)
	Verbal Aggression (MC ₃)	0.888	13.089 ^a	(1.375, 1.863)
	Physical Aggression (MC ₄)	0.651	7.786 ^a	(0.491, 0.812)
	Resolution (MC ₅)	0.783	10.162 ^a	(3.354, 4.969)
Emotional Insecurity	Emotional Reactivity (ES ₁)	0.634	<i>Na</i>	<i>na</i>
	Involvement (ES ₂)	0.381	5.067 ^a	(0.478, 1.041)
	Behavioral dysregulation (ES ₃)	0.668	5.355 ^a	(0.678, 1.381)
	Avoidance (ES ₄)	0.564	6.967 ^a	(0.651, 1.152)
	Somatization (ES ₅)	0.691	5.416 ^a	(0.482, 0.963)
<i>Structural Model</i>				
<i>Direct Effects</i>				
Marital Conflict→Emotional Insecurity		0.175	1.967 ^c	(0.018, 0.330)
Emotional Insecurity→Disordered Eating		0.281	2.814 ^b	(0.730, 3.292)
<i>Indirect Effects</i>				
Marital Conflict→Emotional Insecurity→Disordered Eating		0.049	<i>Na</i>	(0.028, 0.664)

Note.

^a indicates estimate is significant at $p < .001$.

^b indicates estimate is significant at $p < .01$.

^c indicates estimate is significant at $p < .05$.

Test statistics are not provided for those indicators that were used to set the metric of the latent variables in the measurement model.