Cumulative Family Risk Predicts Increases in Adjustment Difficulties across Early Adolescence

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Abstract:

Family is an important socialization context for youth as they move through early adolescence. A significant feature of this complex socialization context is the accumulation of potential family risk factors that may compromise youth adjustment. This study examined cumulative family risk and adolescents' adjustment difficulties in 416 two-parent families using four waves of annual longitudinal data (51 % female youth). Risk factors in four family domains were examined: socioeconomic, parents' psychological realm, marital, and parenting. Cumulative family risk experienced while in 6th grade was associated concurrently with daughters' higher internalizing problems and with increased internalizing problems during early adolescence. Cumulative family risk was associated concurrently with sons' higher externalizing problems and with daughters' increased externalizing problems over time. Cumulative family risk was associated concurrently with lower grades and with declining grades over time for both daughters and sons. The number of risk domains also was associated with youths' adjustment difficulties during early adolescence, providing evidence that risk in two-parent families involves more than ineffective parenting. These findings suggest a critical need to provide strong support for families in reducing a variety of stressors across multiple family domains as their children traverse early adolescence.

Keywords: Academic achievement | Adolescence | Externalizing | Family risk | Family stress Internalizing | Problem behavior

Article:

Introduction

Early adolescence is an important developmental period that is characterized, in part, by transformational shifts in biobehavioral qualities, school arrangements, family relationships, and

relationships with age-mates (Steinberg et al. *2006*). These transformational shifts present opportunities for enhanced development, but also present challenges that invoke vulnerabilities (Spear *2009*; Veronneau and Dishion *2011*). Developmental vulnerabilities during this period include increases in socioemotional and academic problems that may result from experiencing a variety of multiple risk factors. This study focuses on changes in three important markers of youths' development during early adolescence: internalizing problems, externalizing problems, and academic difficulties.

One of the theoretical perspectives that is useful for explaining variability in youths' adjustment difficulties focuses on cumulative risk. Risk is defined as a condition within youths' socialization *environment* that increases the probability of current or future problems in psychosocial development (Jessor *1998*). The cumulative risk hypothesis proposes that the accumulation of environmental risk factors places youths' development in jeopardy. Cumulative risk has been associated with adolescents' mental health problems (Copeland et al. *2009*), behavior problems (Van der Laan et al. *2010*), and lower grades (Sameroff et al.*1998*). As such, the use of a cumulative risk theoretical perspective grounds this study in a useful and important frame from which to examine the transition into adolescence.

Although one of the defining characteristics of this developmental period is youths' expanding social world, family functioning as youth transition into adolescence continues to influence youths' adjustment (Clarke-Stewart and Dunn *2006*; Connell and Dishion *2008*; Matjasko et al. *2007*). Potentially deleterious familial influences are rooted in several salient domains, including inadequate socioeconomic resources, parents' compromised psychological well-being, problematic marital functioning, and ineffective parenting (Fergusson and Horwood *2003*). A major purpose of this study was to examine the association between the accumulation of risk factors across these four family domains as youth transition through early adolescence.

Theoretically, there is variability in terms of advantages and risks within any given family structure, including two-parent families. Family functioning in some two-parent families includes frequent distress and disruptive family processes that do not serve children well, thereby justifying the application of risk paradigms to families that are not traditionally thought of as high-risk families (Cowan et al. *1996*). Empirically, cumulative family risk has had as great an impact on youths' adjustment in two-parent families as in one-parent families (Sameroff et al. *1998*). As such, it is important to move beyond paradigmatic emphases on risk inherent in one-parent families by acknowledging that risk also is inherent in two-parent families.

Although recent research has found that cumulative risk is associated with a variety of adolescent adjustment difficulties (Gerard and Buehler *2004*), important gaps in the research literature remain. These include the confounding of individual vulnerabilities with environmental risk factors, inadequate explication of and an uneven number of risk factors included across various family domains, a limited understanding of how cumulative risk is associated with youths' academic achievement, and an over reliance on cross-sectional research designs. We addressed

these gaps by examining the association between cumulative family risk and youths' adjustment across early adolescence. This was done with a community-based sample of 416 two-parent families and four waves of annual data spanning from 6th through 9th grades.

Theoretical and Empirical Foundation

Theory

This study was guided by a cumulative risk perspective. Developmental vulnerabilities are invoked by cumulative risk because the larger number and variety of demands exceed youths' social, cognitive, and psychological resources, creating distress and compromising normative development (Call and Mortimer*2001*; Evans *2003*; Simmons et al. *1987*). For example, experiencing an accumulation of adverse life events (e.g., "negative change in parents' financial situation," p. 1654) has been associated with adolescent difficulties, including emotional distress and conduct problems (Flouri and Kallis *2007*). As such, cumulative risk may be associated with compromised development during adolescence by increasing socioemotional and academic problems (Call and Mortimer *2001*; Jones et al. *2002*).

The stressor sensitivity hypothesis also informed this research. We hypothesize a positive association between cumulative family risk and youths' adjustment difficulties during early adolescence based on research with human and nonhuman juveniles that has shown increased sensitivity to stressors as compared with adults (Bingham et al. *2011*; Cole *2006*; Spear *2009*). This increased sensitivity to stress coupled with the centrality of family functioning for youths' adjustment justifies our developmental focus on early adolescence.

Cumulative Family Risk

Cumulative family risk seems to be associated with youths' internalizing problems, externalizing problems, and academic achievement. Analyzing data from Add Health, Parra et al. found that family risk factors were associated with youths' depressive symptoms and conduct problems, controlling for individual, peer, school, and neighborhood risk factors (Parra et al. *2006*). Smokowski et al. assessed cumulative family risk through age 12 and found prospective, inverse associations with high school graduation and the number of juvenile court filings during adolescence (Smokowski et al. *2004*). The current study builds on this work by examining cumulative family risk in four specific domains and by examining *changes* in youths' internalizing, externalizing, and academic difficulties.

Family Socioeconomic Risk Factors

Some cumulative risk researchers have placed socioeconomic (SES) factors outside the family context (Copeland et al. *2009*; Deater-Deckard et al. *1998*); we conceptualize socioeconomic features, however, as one of the salient domains *within* the family context. In two-parent families, risk factors within the socioeconomic domain include characteristics of both mothers

and fathers. The four SES risks assessed in this study were mothers' lower educational attainment, fathers' lower educational attainment, lower levels of household income, and perceived economic pressure. These are four important aspects of a family's socioeconomic functioning, and if inadequate, may compromise youths' adjustment (Conger and Conger*2002*; Fergusson and Horwood *2003*).

Socioeconomic risk factors are important to include in a cumulative family risk index. Inadequate financial resources have been linked with both child problem behavior (Grant et al. *2003*) and lower academic performance (Hanson et al. *1997*). We build on these studies by including both lower parental educational attainment and inadequate income in the cumulative family risk index.

Parents' Psychological Distress

Mothers' and fathers' depressive symptoms and reduced life satisfaction were included in this domain because depressive mood and dissatisfaction interfere with effective marital relations, parenting, and children's well-being (Downey and Coyne *1990*; Proulx et al. *2007*). There is strong evidence linking parental depression and an increased risk for depression in offspring, particularly during adolescence (Hammen et al.*2003*; Jones et al. *2002*; Weissman et al. *1997*). Parents' psychological well-being also has been associated with youths' externalizing problems (Copeland et al., *2009*; Weissman *1987*) and academic difficulties (Petterson and Albers *2001*), though examined less often than emotional distress. Although mothers' and fathers' well-being have rarely been studied within the same analysis, one of the vulnerabilities within two-parent families is that two parents' mental health affect family functioning and child well-being (Phares and Compas *1992*).

Marital Risk Factors

One of the advantages of limiting this investigation to cumulative family risk in two-parent families is that risk factors stemming from the marital relationship can be included in the cumulative risk index. The four risk factors included in this domain were marital hostility, divorce proneness, triangulation of youth into parents' problems, and child-related disagreements. These elements of marital functioning have placed youth at risk for behavior problems and emotional distress (Amato and Hohmann-Mariott *2007*; Bradford et al. *2004*; Davies et al. *2002*). As with other family risk factors, less research has focused on youths' academic functioning; there is some evidence, however, of a positive association between parents' marital distress and youths' academic difficulties (Ghazarian and Buehler *2010*).

Ineffective Parenting

Parenting is central to the study of cumulative family risk and early adolescents' adjustment. This includes parenting by both mothers and fathers in two-parent families, and youth who experience ineffective parenting by both parents may be particularly vulnerable to adjustment

problems during early adolescence (Buehler et al. *2006*). The four risk factors included in this family domain were mothers' harshness and inconsistency (referred to subsequently as harshness), fathers' harshness, mothers' lower support, and fathers' lower support. These aspects of parenting are critical during adolescence because parental harshness negatively affects youths' interpersonal behavior with age-mates outside the family (Engels et al. *2001*; Granic and Pattterson *2006*), and lower levels of support by parents negatively affect self-definition and feelings of self-worth during a developmental period when identity development is central (Ohannessian et al. *1998*; Ruiz et al. *2002*).

Distinguishing Individual Vulnerability from Cumulative Family Risk

One of the problems in the current literature on cumulative risk and youths' adjustment is that individual vulnerabilities and family stressors have been combined into a single risk index (Atzaba-Poria et al. *2004*; Liaw and Brooks-Gunn *1994*; van der Laan et al. *2010*). This has created conceptual confounding because individual vulnerabilities such as a difficult temperament and low IQ have been aggregated with environmental risk factors. We address this limitation in the literature by limiting the cumulative family risk index to stressors within the four family domains and by not including youth individual risk factors.

Current Study

We tested the central hypothesis that cumulative family risk at the beginning of adolescence is associated positively with youths' current adjustment difficulties and increased difficulties during early adolescence. The foundation for this hypothesis is rooted in theory and research that suggest accumulated family stressors during early adolescence may compromise youths' development. Three important adjustment markers were examined separately (internalizing problems, externalizing problems, academic difficulties), with baseline controls for the alternative markers to help control for selection and comorbidity. Longitudinal investigations of this family risk hypothesis have been rare and the current study addresses this important gap.

In addition, we conducted several sets of sensitivity analyses. First, we examined the moderating role of youth gender given some researchers have suggested stronger associations may exist for daughters than for sons (Zahn-Waxler et al. *2008*). Second, we replicated the analyses using the number of family risk domains (0–4) as the primary predictor instead of the 16-item cumulative family risk index given some researchers have suggested that the central family risk domain is inadequate parenting (Buehler and Gerard *2002*; Conger et al. *1994*). If family risk is isolated to inadequate parenting, then the association between the number of family risk domains and youths' adjustment difficulties is likely to be nonsignificant. Third, we conducted follow-up analyses with specific family risk domains to identify salient stressors within the aggregated cumulative risk index. These supplemental analyses helped explain and understand the deleterious effects of cumulative family risk.

Method

Research Design

This study utilized data from a four-wave longitudinal study of 416 two-parent families. The study began when youth were in the 6th grade and data were collected annually. Each year the focal youth, mother, and father completed questionnaires and a home visit that included semi-structured discussions that were videotaped and coded later by trained raters. Most constructs were measured using multiple informants or methods to facilitate adequate construct coverage and to minimize shared method bias (Cui and Conger *2008*).

Sampling Procedures and Characteristics

Data were taken from a larger cross-sectional study of the effects of family life on the transition from childhood into adolescence. For the larger study, 6th grade youth in 13 middle schools in a large county in the southeastern United States were invited to participate during the 2001–2002 school year. Teacher participation rate was 96 %. Youth received a letter during homeroom inviting their participation. Two additional invitations were mailed directly to parents. This resulted in a sample of 2,346 6th grade youth, aged 10–14 (M = 11.90, SD = .46). There were 1,217 daughters (51.9 %) and 1,129 sons (48.1 %). About 82 % of the youth were European American. This sample of youth was representative of families in the county on race, parents' marital status, and family poverty status (Benson et al. *2008*).

Families for the present study of two-parent families were recruited from the larger sample using two criteria: parents were married or long-term cohabitants and no stepchildren were in or out of the home. Married or long-term cohabitants were examined because one of the aims of the larger study was to examine effects of marital conflict, and because two-parent families were the modal family structure for youth in the county from which the sample was procured. Stepfamilies were not included, in part, because funds were inadequate to collect needed data on nonresidential parent–child relations.

All eligible families were invited to join the two-parent study that included four yearly home visits in which the mother, father, and adolescent completed questionnaires and participated in several discussion activities. Of the 1,131 eligible families, 416 (37 %) participated in Wave 1 (W1). Primary reasons for nonparticipation were time constraints, the requirement of all three family members' participation, and one of the family members not wanting to be videotaped. This response rate was similar to that in studies that have included 3 or 4 family members (e.g., National Survey of Families and Households-34 %; Updegraff et al. *2004*—37 %).

Given one-third of eligible families participated in W1, it is critical to assess potential selection bias. Eligible participating and nonparticipating two-parent families were compared on over 100 variables from the family life survey completed by youth in the cross-sectional study. There were only two differences. Using data reported by teachers, eligible participating youth had better general adjustment during class (M = 5.17, SD = 1.26) and higher grades (M = 3.37, SD = .76) than did nonparticipating youth (M = 4.78, SD = 1.37; M = 3.15,SD = .92, respectively). There

were no differences on any of the 100+ youth-reported variables. Thus, there was little evidence of selection bias in the two-parent sample.

At W1 when youth were in the 6th grade, they ranged in age from 11 to 14 (M = 11.90, SD = .42). There were 211 daughters (51 %). In terms of race, 91 % of the families were European American and 3 % were African American. This 3 % was lower than the percentage of married African American couples with their own children younger than 18 in the county (5 %) and in the United States (7.8 %) (U.S. Census, 2000, Table PCT27 of SF4). The average level of parents' education in this sample was an associate's degree (2 years of college). Parents' educational attainment was similar to that of European American adults in the county who were older than 24 (county mean category was some college, no degree; U.S. Census, 2000, Table P148A of SF4). The median level of 2001 household income for families in this study was about $70,000, which was higher than the median income for married-couple families in the county ($64,689 inflation-adjusted dollars through 2001, U.S. Census, 2000, Table PCT40 of SF3).

Data Collection Procedures

Youth completed a questionnaire during school. One of the youth's teachers also completed a questionnaire that focused on the child's behavior (6th–8th grades only). Teachers received $5 for each completed questionnaire. Family members were each mailed a questionnaire and asked to complete it independently. The completed questionnaires were sealed in individual envelopes and collected during a home visit. Participants also completed a questionnaire in private during the home visit that contained the most sensitive information.

Family members participated in several interaction tasks during the home visit. Coded data from two tasks were used in the present study. The first task was a problem-solving discussion. This task involved the mother, father, and youth and focused on trying to solve issues of contention selected by family members. At the beginning of the home visit, each family independently completed the 28-item Issues Checklist, including a space for self-nominated and rated topics (Conger et al. *1992*). The home visitors selected several areas of disagreements from family members' reports, beginning first with issues identified by all three family members. During the 20-min discussion task, family members were asked to elaborate a given issue and to suggest possible solutions. The second task lasted for 20 min, included only the wife and husband, and focused on the marital relationship, conflict strategies, and coparenting.

The semi-structured interactions were videotaped. Trained coders rated the interaction using the Iowa Family Interaction Rating Scales (IFIRS; Melby and Conger *2001*). After over 250 h of training, coders passed an extensive written exam (90 % correct criterion) and a viewing exam (criterion level 80 % match with ratings by experienced, good coders). Each family member's behavior was coded during each task. Within each family, different trained coders rated the

interaction from the tasks to minimize coder carryover effects. Twenty percent of the tasks were rated independently by a second coder to assess interrater reliability.

As part of the longitudinal design, assessments (questionnaires and observations) were conducted again a year later (W2), 2 years later (W3), and 3 years later (W4). Data collection procedures were identical for each wave. The retention rate was 77 %. Families were paid $100 for their participation in W1, $120 for W2, $135 for W3, and $150 for W4. Attrition analyses using MANOVA were conducted using the W1 data and there were no differences between the retained and attrited families on any of the study variables. Thus, there was little evidence of attrition bias (contact corresponding author for detailed statistical tables).

Measurement of Adolescents' Adjustment Difficulties

Adolescent Internalizing Problems

Internalizing problems were measured using the Youth Self-Report (Achenbach *1991*). This measure consisted of statements that might describe the youth during the previous six months. Each of the 31 items had a 3-point response format, 0 = *not true*, 1 = *somewhat or sometimes* true, and 2 = *very true or often true*. A sample item was "am unhappy, sad, or depressed." Items were summed and a higher score indicated greater internalizing problems. Cronbach's alpha across waves ranged from .87 to .90.

Adolescent Externalizing Problems

Externalizing problems also were measured using the Youth Self-Report (30 items; Achenbach *1991*). A sample item was "I lie or cheat." Items were summed and higher scores indicated greater externalizing problems (αs = .84–.90).

Adolescent Grades

Academic difficulties were measured by lower grades. Grades were measured using youth reports to the question: "What grades do you receive in school?" The response format ranged from 1 (*mostly As*) to 9 (*mostly Fs*). Youth reports of grades functioned better in the analytic models than did teachers' reports of grades, although the correlations between the two measures were high each year (i.e., .77, .67, .85, .87).

Measurement of Cumulative Family Risk

We represented each family risk domain with an equal number of risk variables so that the cumulative family risk score would not be weighted more heavily by a higher number of risk variables in one domain than in another. All of the measures of family risk were administered at W1 given this represented risk during the transition into adolescence.

Socioeconomic Risks

Four risks were assessed: mothers' and fathers' lower educational attainment, lower household income, and perceived economic pressure (Conger and Conger *2002*).

Parents' Educational Attainment

Parents were asked to report their highest level of school completed using an ordinal set of 15 possible responses that ranged from no schooling completed to a doctoral degree. *Mothers' and fathers' educational attainment* were each separate risk factors (Table 1). Each parent also was asked to report their household income for the previous year using 41 Census categories. The response format ranged from 1 (under $2,500) to 41 ($100,000 or more). Mothers' and fathers' reports of *household income* were averaged to minimize reporting bias. Scores were reversed, with higher values indicating lower household income.

Table 1 Family risk factors in cumulative family risk index

Risk variable	**Data source**	**Number of items**	**Risk status criterion**
Maternal education	Parent reported	1	≤High school degree
Paternal education	Parent reported	1	≤High school degree
Lower household income	Parent reported	2	≤25th percentile
Economic pressure	Parent reported	18	≥75th percentile
Mothers' depressive symptoms	Self-report	20	≥16 (clinical cut)
Fathers' depressive symptoms	Self-report	20	≥16 (clinical cut)
Maternal life dissatisfaction	Self-report	7	≥75th percentile
Paternal life dissatisfaction	Self-report	7	≥75th percentile
Overt hostility	Self-report; spouse report; observer ratings	84	Either spouse ≥75th percentile
Divorce proneness	Self-report	8	Either spouse report considering separation
Triangulation	Spouse and youth report	33	≥75th percentile
Child-related disagreements	Self-report	14	≥75th percentile
Maternal harshness	Parent report; observer ratings	17	≥75th percentile
Paternal harshness	Parent report; observer ratings	17	≥75th percentile
Lower maternal support	Parent report; observer ratings	12	≥75th percentile
Lower paternal support	Parent report; observer ratings	12	≥75th percentile

Economic Pressure

Economic pressure was measured using a 9-item questionnaire measure completed by mothers and fathers (Conger et al. *1999*). A sample item was "Our income never seems to catch up with our expenses," and responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). Husbands' (α = .92) and wives' (α = .92) scores were averaged to obtain one score of economic pressure for each family. A higher value indicated greater reported economic pressure.

Parents' Psychological Risks

Four risk factors were assessed: mothers' and fathers' depressive symptoms and reduced life satisfaction.

Parents' Depressive Symptoms

Parents completed the Center for Epidemiological Studies on Depression (CES-D; Radloff *1977*), a 20-item measure of depressive symptoms that has been validated for community samples. Respondents were asked to think about their feelings and behavior for the past week. A sample item was "I was bothered by things that usually don't bother me," and responses ranged from 1 (*rarely or none of the time* (*less than 1 day*)) to 4 (*most or all of the time* (*5–7 days*)). Items were summed for mothers (α = .87) and fathers (α = .83).

Parents' Life Dissatisfaction

Life dissatisfaction was measured using seven items from the Job Diagnostic Survey (Hackman and Oldham *1975*). A sample item was "In general, I am satisfied with the way I am spending my time these days," and responses ranged from 1 (*never*) to 5 (*always*). Items were reverse scored and averaged separately for mothers (α = .87) and fathers (α = .83).

Marital Risks

The four risk factors included were marital hostility, divorce proneness, triangulation, and child-related disagreements.

Marital Hostility

Marital hostility included one composite variable for wife's expressed hostility toward husband and one composite variable for husband's expressed hostility toward wife. Each composite variable was created using the spouses' self-reports of their own behavior, their partners' reports of their behavior, and observer ratings of each person's behavior toward the other during the two observational tasks. The questionnaire measure was an 18-item measure of interparental hostility (Buehler et al. *2006*). A sample item was "I tell my spouse to shut up." The response format ranged from 1 (*never*) to 5 (*always*) (α = .89–.92). Three IFIRS observer ratings of one spouses' behavior toward the other were averaged from the two discussion tasks: hostility, angry coercion, and antisocial (α = .77–.87). The average percent agreement across raters was .79 and the

average ICC for this composite measure was .51. The various marital hostility measures were standardized and averaged into a composite variable.

Divorce Proneness

Divorce proneness was assessed by having spouses respond independently to four items that examined thoughts and attitudes relating to marital difficulties and possible separation or divorce (Booth et al. *1983*). A sample item was "Have you thought your marital relationship might be in trouble?." The 4-point response format ranged from 1 (*not in the last year*) to 4 (*yes, within the last 3 months*). Higher scores represented greater divorce proneness (wives' $\alpha = .89$, husbands' $\alpha = .80$). Wife and husband scores were averaged.

Triangulation

Triangulation of children into parents' conflicts was measured with parents' self-reports and spouse reports of each other's behavior using a 13-item triangulation questionnaire scale (Buehler and Welsh *2009*). The 5-point response format ranged from 1 (*never)* to 5 (*always*), and a sample item was "How often does your spouse … involve this child in disagreements between you and your spouse." Cronbach's alphas of the individual measures were above .89. Youth also completed a seven-item measure (Buehler et al. *2006*). A sample item was "How often do you feel caught in the middle when your parents fight?," and the response scale ranged from 1 (*never*) to 4 (*very often*). Items were averaged and a higher score indicated greater triangulation ($\alpha = .79$). Summary scores were standardized and averaged across all informants; a higher score indicated greater triangulation.

Child-Related Disagreement Between Spouses

Child-related disagreements was measured using husbands' and wives' responses to the seven child-related items from the coparenting scale (Ahrons *1983*). A sample item was "child's discipline." The 7-point frequency response format ranged from 1 (*never*) to 7 (*every day*). Cronbach's alpha was .84 for wives and .85 for husbands. Summary scores were averaged across spouses and a higher score indicated greater disagreement.

Parenting Risks

The four risk factors included were mothers' harshness, fathers' harshness, mothers' lower support, and fathers' lower support.

Parents' Harshness Toward Child

Parental harshness included critical and aggressive behavior, as well as inconsistent discipline. A composite variable was created using parents' self-reports of their own harsh behavior, parents' self-reports of inconsistent discipline, and observer ratings of each parents' behavior toward the youth during the family problem-solving task. For self-reported harshness, parents each

completed the 7-item hostility subscale from the Iowa Youth and Families assessment protocol (Conger et al. *1994*). Asking about behaviors during the previous month, a sample item was "criticize him/her or his/her ideas," and the response format ranged from 1 (*always*) to 7 (*never*). Items were reverse scored and averaged so that a higher score indicated greater harshness (mothers' $\alpha = .88$; fathers' $\alpha = .85$). Parents' also completed eight questionnaire items from two parenting inventories (Buehler et al. *2006*). A sample item was "I'm a person who lets my child do something 1 day and the next day my child get into trouble for doing the same thing." The response format ranged from 1 (*not like me*) to 3 (*a lot like me*), and higher scores reflected greater inconsistency (mothers' $\alpha = .77$; fathers' $\alpha = .75$). For observed harshness, the IFIRS hostility and antisocial ratings of each parent's behavior toward the youth during the discussion of family problems were averaged within parent. Correlations between these two ratings across parents were above .90, and interrater reliability estimates were above .70. Separately for mothers and fathers, summary subscales were standardized and averaged, with higher scores indicating greater expressed harshness toward youth.

Parents' Support Toward Child

Parental support included warmth and acceptance. Parents completed the 10-item acceptance subscale of the parent version of the Children's Report of Parental Behavior Inventory (Schaefer *1965*; Schludermann and Schludermann *1970*). A sample item was "I'm a person who enjoys doing things with this child." The response format ranged from 1 (*not like me*) to 3 (*a lot like me*), and scores were reversed so that higher values reflected lower support (mothers' $\alpha = .76$; fathers' $\alpha = .83$). In terms of observed support, two IFIRS ratings of each parents' behavior toward the youth were averaged within parent: warmth and prosocial. Correlations between these two ratings were above .60 and interrater reliability was above .75. For each parent, the measures of support were reverse scored, standardized, and averaged to create a variable in which higher values indicated lower support toward youth.

Creation of Cumulative Family Risk Index

Several steps were followed when constructing the cumulative family risk index. A cumulative risk index typically is created by summing selected individual risk factors that each have been scored as a dichotomy (Evans et al. *2007*; Sameroff et al. *1998*). Typically, a 0 indicates the absence of the given risk factor and a 1 indicates the presence of the given risk factors. As such, a first decision was the selection of a general rule regarding how to dichotomize continuously-measured risk factors. We chose to use clinical cutting values if available (i.e., depressive symptoms measured by the CESD), theoretically-meaningful values when relevant (i.e., any reported evidence of a marriage being over for divorce proneness), and a quartile split for remaining continuous risk factors (Table 1).

Analytic Methodology

We estimated an unconditional growth trajectory (i.e., no predictors other than time) for each adolescent maladjustment variable using four waves of annual data (6th–9th grade). The trajectory was calculated using structural equation modeling (SEM), AMOS 7 (Bollen and Curran *2006*). For each trajectory, the covariance between W2 and W3 error variances was estimated to control for shared method variance (Bollen and Curran *2006*).

The primary hypothesis regarding cumulative family risk and adolescent adjustment difficulties also was tested using SEM. In separate models, the risk predictor was included as a manifest predictor along with the W1 control for the alternate adolescent markers. The adequacy of each model was evaluated using the Chi-square statistic and two fit indices. A nonsignificant Chi-square indicated a good model fit. Because of the relatively large sample size, however, a significant Chi-square was expected and two additional fit indices were examined (Byrne *2001*). The CFI ranges from 0 to 1.00 with a cutoff of .95 or higher indicating a well-fitting model and .90 indicating an adequate fit (Byrne *2001*; Hu and Bentler *1999*). Root mean square error of approximation (RMSEA) values below .05 indicate good model fit and values between .06 and .08 indicate an adequate fit (Browne and Cudeck *1993*; Byrne *2001*).

The moderating effects of youths' gender were examined using multiple-group SEM. This was done by first estimating a model in which all of the parameters were constrained to be equal across the subsamples of sons and daughters. A second model was then estimated in which the structural parameter from risk to the problem behavior intercept and slope were allowed to vary across the two groups.

Results

Adolescent Adjustment Difficulties During Early Adolescence

Internalizing Problems

On average, youth-reported internalizing problems decreased across time. The observed means from W1 to W4 were 10.96 (*SD* = 7.50), 9.48 (*SD* = 8.33), 8.32 (*SD* = 7.63), and 7.92 (*SD* = 7.46). The latent intercept was set at 6th grade (W1). The estimated mean of the intercept was 10.92 ($p < .001$) and there was significant variance around this mean (Variance = 31.25, $p < .001$). The estimated mean of change over time for the total sample was −1.39 ($p < .001$), and there was significant variance around this average linear, declining slope (Variance = 1.94, $p < .01$). The latent intercept and slope were not significantly correlated and the CFI was .95.

Externalizing Problems

On average, youth-reported externalizing problems also decreased across time. The observed means from W1 to W4 were 9.47 (*SD* = 5.98), 8.78 (*SD* = 6.96), 8.66 (*SD* = 7.35), and 8.57 (*SD* = 7.40). The estimated mean of the intercept was 9.39 ($p < .001$) and there was significant

variance around this mean (Variance = 22.49, $p < .001$). The estimated mean of change over time was −.49 ($p < .01$), and there was significant variance around this average linear, declining slope (Variance = 2.59, $p < .001$). The latent intercept and slope were not correlated and the CFI was .90.

Grades

On average, youth-reported grades declined over time. Using the 1-9 rating scale with 1 indicating mostly As and 9 meaning mostly Fs, the observed means from W1 to W4 were 2.10 (*SD* = 1.23), 2.27 (*SD* = 1.42), 2.29 (*SD* = 1.50), and 2.44 (*SD* = 1.44). The estimated mean of the intercept was 2.23 ($p < .001$) and there was significant variance around this mean (Variance = 1.27, $p < .001$). The estimated mean of change over time was .08 ($p < .01$), and there was significant variance around this average linear, increasing slope (Variance = .05, $p < .001$). The latent intercept and slope were not correlated and the CFI was .98.

Cumulative Family Risk and Adolescents' Adjustment Difficulties

The descriptive statistics for the cumulative family risk index are shown in Table 2. Cumulative family risk ranged from 0 to 13 in this sample. The mean number of family risk factors was 3.71 (*SD* = 2.92). This frequency distribution is similar to patterns found in other studies of cumulative risk (e.g., mean of 1.41 on an index to 10, Appleyard et al. *2005*; mean of 1.67 on an index to 9, Evans et al. *2007*).

Table 2 Descriptive statistics for cumulative family risk index

Number of family risks	***n***	**%**	**Number of family risks**	***n***	**%**
0	58	13.9	7	35	8.4
1	59	14.2	8	12	2.9
2	49	11.8	9	7	1.7
3	51	12.3	10	5	1.2
4	49	11.8	11	4	1.0
5	39	9.4	12	7	1.7
6	39	9.4	13	2	.5
Mean 3.71					
SD 2.92					

Cumulative Family Risk and Youths' Internalizing Problems

In preliminary analyses that did not control for externalizing problems and lower grades, cumulative family risk was associated positively with youths' internalizing problems during 6th grade (intercept; $\beta = .33$,$p < .001$), but not with changes in internalizing problems across time (slope; $\beta = .05$, *ns*). The functional form of cumulative family risk was linear given the coefficient for risk squared was nonsignificant ($p = .069$). Controlling for comorbidity with

externalizing problems and lower grades changed the longitudinal results (Fig. 1). As hypothesized, W1 cumulative family risk was associated with increased internalizing problem behaviors across three years (slope; β = .15, p = .05). The model fit the data well (χ^2 = 11.45, df = 10,p = .32; CFI = .99; RMSEA = .019).

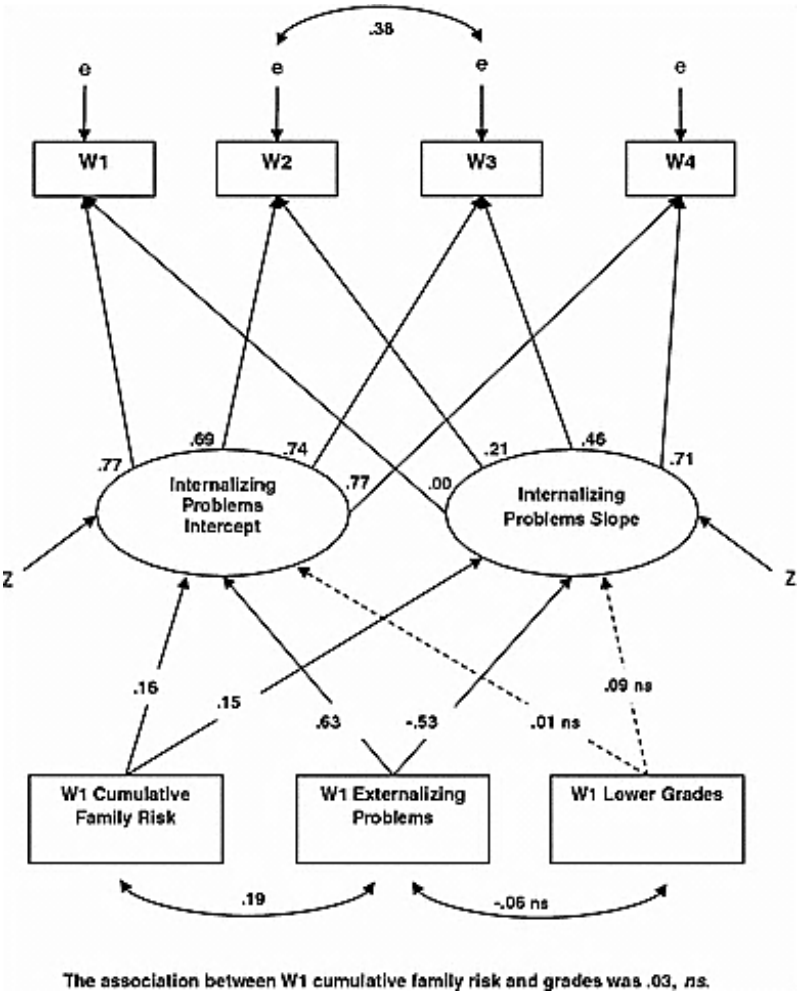

Fig. 1 W1 cumulative family risk and adolescent internalizing problems

This model displayed in Fig. 1 differed for sons and daughters ($\Delta\chi^2$ = 14.36, df = 2, p = .001). Cumulative family risk was associated positively with youths' internalizing problems in 6th grade and with increases in internalizing problems for daughters (intercept b = .46, β = .23, p < .001; slope b = .14, β = .23, p < .001) but not for sons (intercept b = .17, β = .09, *ns*; slope b = .04, β = .06, *ns*). This, there was support for the hypothesis that cumulative family risk is associated with increases in youths' internalizing problems during early adolescence, but only for daughters and only when controlling for externalizing problems and grades.

Cumulative Family Risk and Youths' Externalizing Problems

In preliminary analyses that did not control for internalizing problems and lower grades, cumulative family risk was associated positively with youths' externalizing problems during 6th grade ($\beta = .26$, $p < .001$), but not with changes in externalizing problems across time (slope; $\beta = .14$, $p = .09$). The functional form of family risk was linear. Controlling for comorbidity with internalizing problems and lower grades changed the longitudinal results (Fig. 2). As hypothesized, W1 cumulative family risk was associated with increased externalizing problem behaviors during early adolescence (slope; $\beta = .19$, $p < .01$). The model fit was good ($\chi^2 = 21.36$, $df = 8$; CFI = .98; RMSEA = .052).

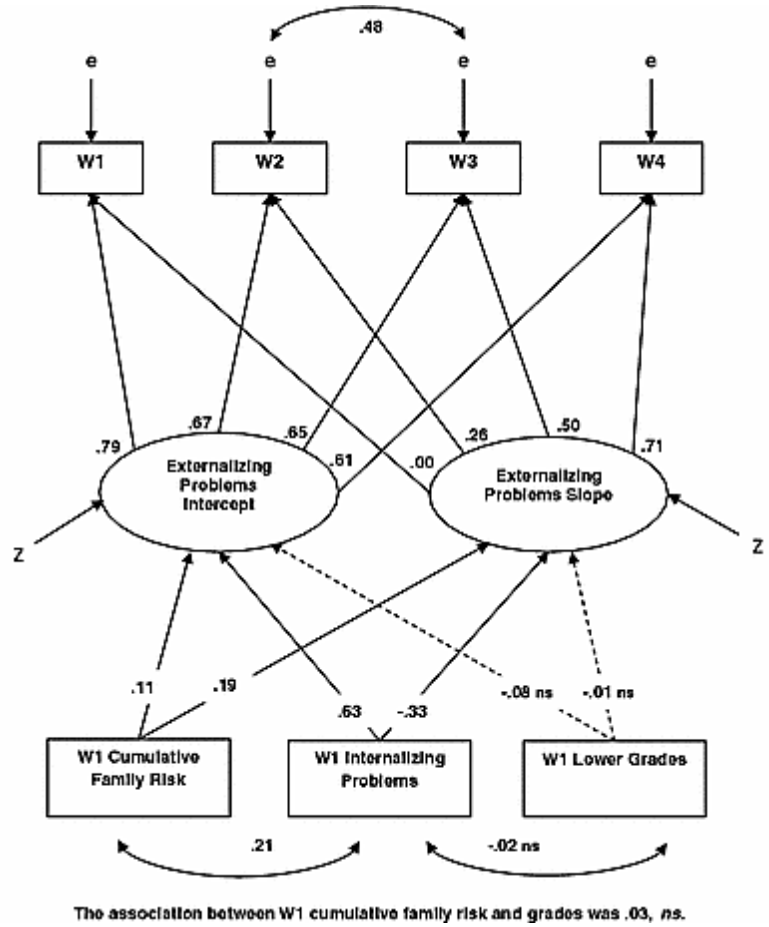

Fig. 2 W1 cumulative family risk and adolescent externalizing problems

This model, however, differed for sons and daughters ($\Delta\chi^2 = 12.76$, $df = 2$, $p = .001$). Contrary to the gender differences for 6th grade internalizing problems, the association between W1 cumulative family risk and 6th grade externalizing problems was significant for sons but not for daughters (sons: $b = .34$, $\beta = .21$, $p < .01$; daughters: $b = .003$, $\beta = .002$, $p = .97$). The association between W1 cumulative family risk and increases in youths' externalizing problems over time was significant for daughters but not for sons (daughters: $b = .19$, $\beta = .30$, $p < .001$; sons: $b = .05$, $\beta = .08$, $p = .34$). Thus, there was support for the hypothesis that cumulative family risk is

associated with increases in externalizing problems during early adolescence, but only for daughters and only when controlling for internalizing problems and grades.

Cumulative Family Risk and Youths' Lower Grades

In preliminary analyses that did not control for internalizing and externalizing problems, cumulative family risk was associated positively with youths' lower grades during 6th grade ($\beta = .31$, $p < .001$) and with declining grades across time (slope; $\beta = .23$, $p < .01$). (Higher scores on this measure indicated lower grades.) The functional form of risk was linear. Controlling for comorbidity with internalizing and externalizing problems, these patterns replicated (Fig. 3). W1 cumulative family risk was associated with lower grades in 6th grade (intercept; $\beta = .25$, $p < .001$) and declining grades during early adolescence (slope; $\beta = .24$, $p < .01$). The model fit was good ($\chi^2 = 16.04$, $df = 10$; CFI = .99; RMSEA = .038).

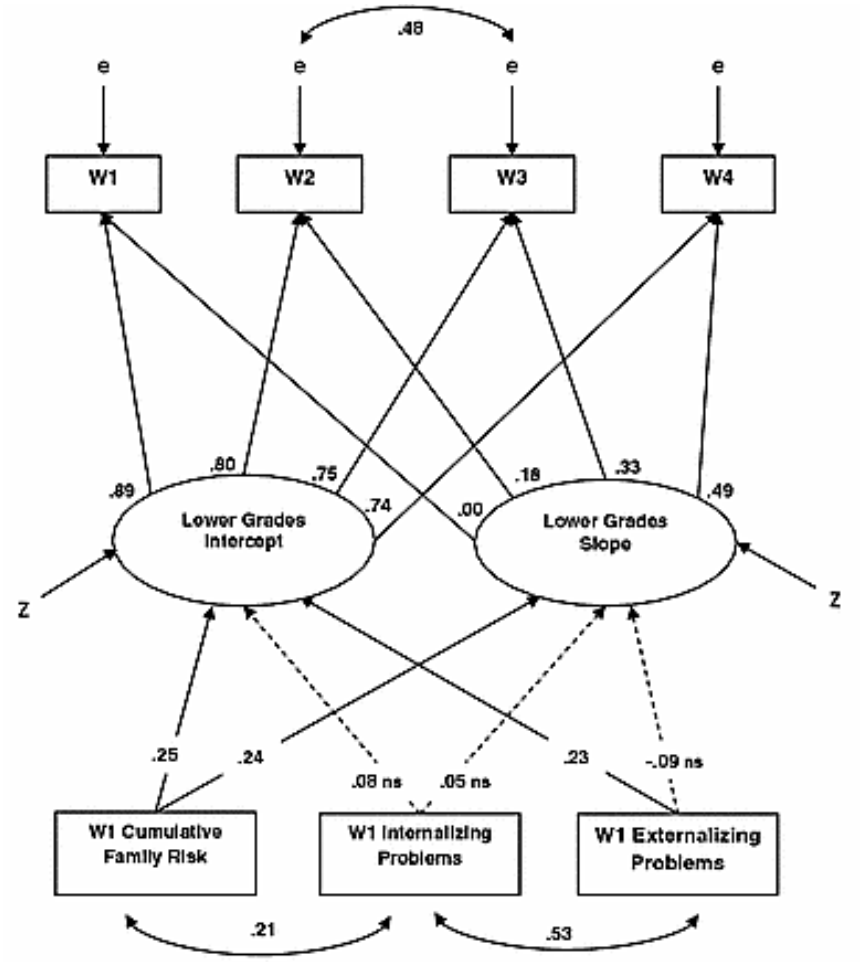

Fig. 3 W1 cumulative family risk and adolescent lower grades

Contrary to the results for adolescents' internalizing and externalizing problems, this model did not differ for sons and daughters ($\Delta\chi^2 = 4.68$, $df = 2$, $p = .096$). Thus, there was support for the hypothesis that cumulative family risk is associated with declining grades during early adolescence, and this finding characterized both sons and daughters.

Supplemental Analyses: Number of Family Risk Domains and Individual Risk Factors

Number of Family Risk Domains

In addition to sensitivity analyses that addressed the moderating effects of youth gender (reported above), we also conducted supplementary analyses with the number of family risk domains as the predictor (0–4 domains) rather than cumulative family risks (0–16 possible risk factors). This analysis was done to ensure that the effects of cumulative family risk are broader than just inadequate parenting. This has been an issue in the family risk literature because parenting is the most proximal family socialization domain (Conger et al.*1994*).

The number of family risk domains ranged from 0 to 4 in this sample. The mean number of domains was 2.04 (*SD* = 2.00). The percent of families in each group was: 0 risk domains—13.9 %, 1 risk domain—22.1 %, 2 risk domains—22.1 %, 3 risk domains—29.3 %, and 4 risk domains—12.5 %. Thus, almost 13 % of the youth experienced at least one risk factor in each family domain.

The SEM analyses using the number of family risk domains variable replicated those of the cumulative family risk (statistical details available from corresponding author). Controlling for the alternative adjustment markers, the number of family risk domains was associated with internalizing problems in 6th grade and with increases in internalizing problems through 9th grade for daughters. The number of family risk domains was associated with externalizing problems in 6th grades for sons only and increases in externalizing problems for daughters only. The number of family risk domains was associated with lower grades in 6th grade and with declining grades through 9th grade for both sons and daughters.

Individual Risk Factors

Given one of the limitations of a cumulative risk perspective is that the unique role of individual risk factors is masked (Deater-Deckard et al. *1998*), we conducted a series of supplemental analyses to better understand the finding that cumulative family risk is associated with increases in adolescent adjustment difficulties during early adolescence. These analyses were conducted using the four specific family domain scores as predictors of each adolescent outcome, and if significant, followed by the estimation of a model with the four individual risk factors comprising the particular family domain. Alternative markers of adolescent adjustment difficulties were included as covariates. A summary of these analyses is presented in Table 3 and the statistical details of the various models can be obtained from the corresponding author.

Table 3 Summary of supplemental analyses using individual family risk domains

Family domain predictors	Internalizing problems intercept	Internalizing problems slope	Externalizing problems intercept	Externalizing problems slope	Lower grades intercept	Lower grades slope
Socioeconomic risk	.13	ns	ns	ns	.30	ns
Parents' psychological risk	ns	ns	ns	ns	ns	ns
Marital risk	.19	ns	ns	ns	ns	ns
Parenting risk	ns	.23	.11	.17	.19	ns

ns means statistically nonsignificant at $p < .05$

Youths' concurrent internalizing problems (i.e., 6th grade) were associated uniquely with higher socioeconomic and marital risk. Increases in internalizing problems over time were associated uniquely with parenting risk. Follow-up analyses of the longitudinal finding indicated that this parenting risk was due specifically to mothers' harshness and father's lower warmth during 6th grade. Youths' concurrent and increased externalizing problems were associated uniquely with higher parenting risk. Follow-up analyses of the longitudinal finding indicated that this parenting risk was due specifically to mothers' harshness and lower warmth during 6th grade. Youths' lower grades in 6th grade were associated uniquely with higher socioeconomic and parenting risk. Although cumulative family risk was associated with declining grades, none of the four family risk domains were uniquely significant. This means that risk accumulation is the key feature predicting declining grades rather than risk in any specific family risk domain.

Discussion

This study examined the association between cumulative family risk in two-parent families during the transition into adolescence and youths' adjustment problems during the first half of adolescence. The cumulative risk perspective represents a broad approach that recognizes the tendency of risk factors to cluster together and assumes that the number of risk factors carries more gravity than the experience of any one particular risk factor. One of the inconsistencies in the cumulative risk literature, however, has resulted from the conceptual confounding of environmental risk and individual vulnerabilities (van der Laan et al. *2010*). The present study addressed this problem by not including youth vulnerabilities such as lower IQ in the cumulative family risk index. Another limitation in the cumulative risk literature has been inadequate attention to specific risk within the family domain, a central environmental socialization context for youth during the transition into early adolescence (Gerard and Buehler *2004*). The present study addressed this limitation by examining risk factors in four family domains: socioeconomic, parents' psychological realm, marital, and parenting. The inclusion of four risk factors in each family domain alleviated previous problems in the literature that resulted from unequal domain

weighting by using varying numbers of risk factors across domains (Deater-Deckard et al. *1998*). As such, the findings make a major contribution to the literature on environmental risk and early adolescents' adjustment by (1) examining four risk domains within the family context, (2) creating a cumulative family risk index that is balanced in terms of number of risk factors within and across domains so as not to inadvertently weight one domain over another, (3) focusing on several central markers of adjustment difficulties during early adolescence with controls for comorbidity, (4) examining changes in youths' adjustment difficulties across four waves of annual data, (e) and by conducting supplementary analyses that examine the moderating role of youth gender, as well as the unique effects of particular family domains.

We hypothesized that cumulative family risk is associated with increased adjustment difficulties over time—increased internalizing and externalizing problems, as well as lower grades. We also conducted supplementary analyses focused on the number of family risk domains (0–4domains), testing the supposition that family risk in two-parent families involves more than ineffective parenting. Cumulative family risk was associated with youth adjustment difficulties in this sample of two-parent families. Importantly, these associations were examined using data from multiple methods and informants and included controls for additional markers of adjustment problems.

Cumulative Family Risk and Concurrent Adolescent Adjustment Difficulties

Controlling for externalizing problems and grades, cumulative family risk was associated with youths' internalizing problems during 6th grade, but only for daughters. Controlling for internalizing problems and grades, cumulative family risk was associated with youths' externalizing problems during 6th grade, but only for sons. This specialized gender pattern has been hypothesized in previous theoretical work on family risk (Call and Mortimer *2001*), but has not been found to our knowledge. There has been some suggestion that the gendered pattern may exist, but each study found significant associations for both groups, albeit smaller effect sizes for one gender than the other (internalizing: Gerard and Buehler *2004*; externalizing: Atzaba-Poria et al. *2004*).

Although this pattern of gendered findings has not been found in previous research on cumulative family risk, one plausible explanation for this finding of concurrent gender specificity is that we controlled for the alternate markers of adolescent adjustment difficulties. This type of control is essential for examining hypotheses regarding differential prediction to outcomes because adjustment difficulties can co-occur (McMahon et al. *2003*). Given this is a new finding in the cumulative family risk research, future research will need to examine possible reasons for gendered patterns. We believe that the theorizing around the moderating roles of negative peer influence and emotional dysregulation with regards to externalizing problems and the roles of self-derogation and reduced efficacy with regards to internalizing problems holds promise (Call & Mortimer).

The finding that cumulative family risk is associated with concurrent academic difficulties is novel, because research has been sparse and has not controlled for youths' behavior problems and emotional distress. This finding is consistent with previous work that has focused on academic achievement alone by suggesting that difficulties in families are associated with children struggling in school (Forehand et al. *1998*; Gutman et al. *2002*). Current knowledge is extended by (1) documenting this important association between family and school difficulties for youth living in two-parent families, which often are considered by school systems as privileged, (2) by documenting this association for an age homogenous group of youth who have just transitioned into middle school, and (3) by indicating this association characterizes both daughters and sons. This is a critical finding, therefore, because attention needs to focus on providing support for youth living in two-parent families as they begin secondary school. The findings also highlight the salience of Eccles et al.'s (*1993*) contention that the adequacy of the fit between children's developmental needs during early adolescence and their near environments is a central issue of concern. Specifically, youth are vulnerable to academic difficulties when the fit is compromised because of multiple stressors within the family environment.

Cumulative Family Risk and Changes in Adolescents' Behavior Problems

To our knowledge, this is the first study of cumulative family risk and changes in youths' behavior problems during early adolescence. In this sample of two-parent families, controlling for externalizing problems and grades, cumulative family risk during 6th grade was associated with daughters' increased internalizing problems during the first half of adolescence. Internalizing problems included depressive symptoms, anxiety, withdrawal from social interaction, and somatic complaints. This increase in internalizing problems is particularly challenging for youth, because it comes during a developmental period increasingly focused on social relationships outside of the family. This broadening social world brings new sources of fulfillment and challenges and is best engaged with the resources and comfort that well-functioning families provide (Costa et al. *2005*). Given some evidence which suggests that daughters in particular rely on family as a source of comfort during early adolescence (Zahn-Waxler et al. *2008*), cumulative family risk creates important vulnerabilities for girls during this developmental period.

Controlling for internalizing problems and grades, cumulative family risk during 6th grade was associated with increased externalizing problems during the first half of adolescence, but only for daughters. Externalizing problems included aggression and delinquency. Contrary to the concurrent gendered patterns found in the study, the finding that cumulative family risk is associated with increased conduct problems for daughters but not for sons is consistent with Zahn-Waxler et al.'s (*2008*) conclusions regarding family stress and girls' vulnerabilities during early adolescence. Call and Mortimer (*2001*) also theorized that family is a source of comfort for daughters in particular. Not having this family resource for respite seems to be particularly deleterious for female youth. The findings from this study suggest that one of the manifestations

of this discomfort created by higher levels of family risk and stress is increased acting out toward others. The identification of process mechanisms that explain this increased aggression and delinquency will require future research but there is some suggestion that peer social preferences and difficulties in emotional regulation might be important mediators and moderators (Prinstein and La Greca *2004*; Sontag et al. *2008*).

The finding that cumulative family risk at 6th grades is associated with declining grades through the first half of adolescence is novel. This pattern characterized both sons and daughters. This is an important finding because it documents the saliency of variability in family functioning in two-parent families, and because it highlights that these children are at risk for detrimental academic trajectories when risks mount via inadequate family resources, parent's psychological distress, marital difficulties, and problematic parenting. Supports are needed for children to cope with these familial stressors in order to minimize the impacts of family stressors on their academic functioning (Smokowski et al. *2004*).

Supplementary Analyses Focused on Understanding Cumulative Family Risk

Supplementary analyses focused on the number of family risk domains and the unique effects of particular domains. Focusing on family, peer, school, and neighborhood risk, Gerard and Buehler (*2004*) found that the number of environmental risk domains is associated positively with behavior problems during adolescence. In the current study, we examined this proposition focusing on four domains *within* the family: inadequate socioeconomic resources, parents' psychological distress, problematic marital functioning, and ineffective parenting. This focus on number of family risk domains was grounded in the possibility that only ineffective parenting is uniquely associated with youths' problem behaviors during early adolescence because of its proximal nature with child development (Conger et al. *1993, 1994*). The findings from this study, however, suggested that risk for adolescents' socioemotional and academic adjustment in two-parent families goes beyond the experience of ineffective parenting. Risk in other areas of family life that focused on resource adequacy, marital relations, and parents' mental health also placed youth at risk for adjustment difficulties, particularly academic problems.

Supplementary analyses also focused on the relative impact of the four family risk domains. In these analyses, parenting risks were associated uniquely with youths' socioemotional problems. Increased internalizing problems through 9th grade were associated with mothers' harshness and fathers' lower support during 6th grade. Increased externalizing problems were associated with mothers' harshness and lower warmth/support during 6th grade. As such, both mothers' and fathers' inadequate parenting placed youth at risk for increased socioemotional problems during early adolescence. Importantly, we found that declining grades were not limited to risks in a particular family domain. Rather, declining grades were predicted by cumulative family risk that spread across multiple family domains.

Limitations

In addition to the noted strengths of this study, several limitations must be considered when drawing inferences from these findings. First, this study of two-parent families did not include stepfamilies for noted reasons. Future studies need to include stepfamilies and examine moderating effects of stepfamily structure on the association between cumulative family risk in two-parent families and youths' adjustment difficulties. Second, this study was limited by a relatively small number of ethnic minority families, limiting the opportunity to conduct moderating analyses that would increase the generalizability of the findings. Some studies have suggested that European American youth are more reactive to cumulative risk than are African American youth (Deater-Deckard et al. *1998*; Gerard and Buehler *2004*). This increased vulnerability for European American youth also has been suggested within the context of specific family stressors such as marital distress (McLoyd et al. *2001*). We were unable to examine these propositions in the current study because of the small number of African American families. These various familial risk patterns also need to be examined in Hispanic families in future research. Finally, this study was limited by it use of broad-band conceptualization of youths' problems behaviors rather than the use of narrow-band conceptualizations. As such, heterotypic comorbidity was controlled in many analyses but homotypic comorbidity was not addressed. Thus, the findings from this study do not illuminate potentially important distinctions among adolescents' depressive symptoms, withdrawal, aggression, and delinquency that might emerge during early adolescence.

Conclusions

This investigation provides an important assessment of the adjustment difficulties youth experience when they are exposed to multiple stressors in the family environment at a critical juncture in their psychological, social, and academic development. Cumulative family risk creates vulnerabilities for youth in two-parent families across the developmental period of early adolescence. We believe these data have implications for policy and for intervention with high-risk families and their children. These include recognition of the heterogeneity in the family ecology of two-parent families, particularly with respect to policy initiatives that favor marriage over other types of family living arrangements, and policies that are geared toward strengthening vulnerable families. From an intervention standpoint, this includes attempts to reduce the number of family risk factors in an effort to stabilize the lives of youth as they negotiate salient developmental demands of adolescence. Targeting the number of domains or problematic areas in the family system is another point of intervention as early adolescents are not only sensitive to the absolute number of risk factors but also the degree to which risk permeates several areas of family life.

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