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Cumulative Environmental Risk and Youth Maladjustment: The Role of Youth Attributes

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Using data from 5,070 youth ages 11 to 18 years old who participated in the National Longitudinal Study of Adolescent Health, concurrent and longitudinal associations among cumulative risk, protective factors, and youth maladjustment were examined. Cumulative risk was associated with concurrent conduct problems and depressed mood. For conduct problems, a compensatory effect was found for scholastic achievement and problem-solving ability. For depressed mood, a compensatory effect was found for scholastic achievement. A protective-reactive effect of self-esteem was found for both forms of maladjustment. Youth gender, grade, and ethnicity moderated these associations. Cumulative risk predicted change over time in depressed mood. Scholastic achievement and self-esteem compensated for this risk. Findings indicate that youth attributes offer limited protection when adolescents experience risk factors across life domains.

Adolescence is a period marked by significant psychosocial transformations that occur amid rapid pubertal growth including identity formation, individuation from parents, and the establishment of intimate friendships. Tension is normative as the individual traverses these changes; however, youth are at risk for adjustment difficulties if developmental change is accompanied by an accumulation of stressors spanning multiple spheres of the adolescent's life (Call & Mortimer, 2001). This finding reinforces the need for ecological risk models that take into account the influence of risk factors from several socialization domains. Yet, youth's differential abilities to tolerate environmental risk also must be considered. This issue is a matter of great import to scholars, as evidenced by a burgeoning literature on resilience—a theoretical perspective that accounts for why some youth develop well in the face of chronic adversity through its focus on protective factors that mitigate risk (Luthar, Cicchetti, & Becker, 2000).

Accordingly, we integrated ecological theory with the resilience perspective to examine the relations among cumulative risk, protective factors, and youth maladjustment. Specifically, we tested Luthar et al.'s (2000) idea of a protective-reactive influence, which suggests that a given protective factor only partially buffers the adverse effect of risk on youth maladjustment. This inquiry was prompted by research indicating that benefits derived from individual attributes are insufficient to compete fully with the gravity of an inhospitable environment (see Sameroff, Bartko, Baldwin, Baldwin, & Siefer, 1998). Conduct problems and depressed mood are considered as outcomes because these indicators of maladjustment foreshadow poor adult functioning (Capaldi & Stoolmiller, 1999).

This study makes three contributions to the literature. First, the use of data from a national sample of adolescents addresses a need for large-scale, ecologically based studies of risk and protection (Sameroff, Gutman, & Peck, 2003). The large sample also permits an assessment of whether protective influences differ as a function of gender, developmental status, and ethnicity. As progress is made in the area of resilience, scholars are beginning to doubt the universality of protective factors (Luthar & Zelazo, 2003; Sameroff et al., 2003). Thus, our inquiry responds to calls for studies that lend insight into whether certain youth benefit more from specific protective factors relative to particular outcomes (Masten & Coatsworth, 1998; Resnick, 2000). Second,

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we build on the work of Call and Mortimer (2001) by determining whether multiple protective factors are needed to ward off the harm of experiencing risk factors across several domains. Third, this study addresses shortcomings of existing studies by examining the impact of cumulative risk and protective factors concurrently and prospectively and by representing risk factors from a broader array of social domains.

Conceptualization of Multiple Risk Factors

Risk is defined as an environmental condition within the youth's socialization context that increases the likelihood of negative developmental outcomes. Risk factors from five domains were examined: family sociodemographic, family process, peer, school, and neighborhood. In addition to ecological theory (Bronfenbrenner, 1989), our selection of risk factors is based on recent studies of multicontext risk and salient variables identified by others using the National Longitudinal Study on Adolescent Health (Add Health), the database used for this study.

Often viewed as distal sources of risk, several aspects of the family demographic, or sociocultural context, are related to adjustment problems including family poverty (Duncan, Brooks-Gunn, & Klebanov, 1994), single-parent status (McLanahan, 1997), low parental education level (Chase-Lansdale, Gordon, Brooks-Gunn, & Klebanov, 1997), and large household size (Deater-Deckard, Dodge, Bates, & Pettit, 1998). Family process risk reflects a lack of cohesion in the marriage, parent–child relationship, and family system. Risk factors include poor marital functioning or coparent relationship quality (Buehler et al., 1997), low parental involvement (Miller, Cowan, Cowan, Hetherington, & Clingempeel, 1993), and detached family relationships (Resnick et al., 1997). Difficulties in the peer context are particularly salient during adolescence, including low support (Cauce, Mason, Gonzales, Hiraga, & Liu, 1996) and peer rejection (Schwartz, McFayden-Ketchum, Dodge, Pettit, & Bates, 1998). The school context also is important, specifically school detachment (Blum, McNeely, & Rinehart, 2002) and perceived prejudice by students (Resnick et al., 1997; Sameroff et al. 2003). Both structural aspects and subjective experiences within the neighborhood context place youth at risk for maladjustment, including poor neighborhood quality (Brooks-Gunn, Duncan, & Aber, 1997), neighborhood problems (Mason, Cauce, Gonzales, Hiraga, & Grove, 1994), and appraisals of neighborhood as dissatisfying and unsafe (Greenberg, Lengua, Coie, & Pinderhughes, 1999).

Approaches to modeling multiple-risk exposure are varied. We used a cumulative risk model because our interest is to determine how protective factors influence development when numerous environmental constraints are imposed. Theoretically, risk is viewed as an accumulation of stressors, and the number of risk factors that youth experience carries more gravity than the experience of any particular risk factor. Cumulative risk indexes have been noted for their potential to capture the natural covariation of risk factors (Luthar, 1993) and for their ability to predict an array of negative developmental outcomes (Beam, Gil-Rivas, Greenberger, & Chen, 2002; Jessor, Van Den Bos, Vanderryn, Costa, & Turbin, 1995). A drawback of the cumulative risk approach is the assumption that each risk factor carries the same weight in adolescents' lives. Thus, we also assessed the influence of individual risk factors so that they could be examined simultaneously without losing their particular salience.

Conceptualization of Protective Factors

Protective factors are individual or environmental safeguards that shield youth from risk agents by fostering positive outcomes or by reducing the likelihood of negative outcomes. The concept of protection, however, has been used inconsistently across studies. Some researchers have reserved the term to describe a conditional relation (i.e., interactive effect) whereby protective factors offer the greatest benefit to high-risk youth and have little effect on youth facing minimal risk (e.g., Rutter, 1987). Other researchers have viewed protective factors as variables that foster positive outcomes independent of youth's risk status (i.e., main effect; e.g., Resnick et al., 1997). To avoid confusion, specific labels have been advanced to denote different patterns of stress resistance (see Luthar et al., 2000; Sameroff et al., 2003). Based on these distinctions, we use the term *compensatory effect* to describe a variable that confers benefits to youth irrespective of their risk status. We use the term *protective effect* to describe a variable that interacts with cumulative risk in a buffering capacity. The term *protective-reactivity* is one variant of this pattern, which we use to describe limited protection under high-risk conditions.

Three types of protective factors have been identified: individual attributes, cohesive family relations, and extended support networks (Masten & Garmezy, 1985). We focus on youth attributes to address the following question: Are individual characteristics sufficient by themselves to circumvent the harm of a resource-depleted environment?

Specifically, we assessed the role of scholastic achievement, problem-solving skills, and self-esteem as risk modifiers. Individually, these respective attributes represent distinct aspects of the adolescent's psychological system (i.e., behavior, cognition, and personality) that interact with social factors to shape development (Jessor et al., 1995). Collectively, the focus on attributes aligns with ecological theory by stressing adolescents' agency in engaging with social systems.

Representing the behavioral component, scholastic achievement reflects youth's engagement and performance in the academic realm. This attribute is linked to low levels of depressed mood and delinquent behavior (Resnick et al., 1997; Southamer-Loeber et al., 1993). In addition to replicating the compensatory effect, we test whether scholastic achievement serves a protective-reactive role contemporaneously or across time. High-risk youth who are academically oriented might avoid conduct problems by channeling their energy to goal-directed activity or be shielded from depression through engagement in gainful activity and hope for the future. Representing the cognitive system, problem-solving skills reflect the mental steps a person follows in response to social problems. According to Spivack, Platt, and Shure (1976), highly developed problem-solving skills differentiate well-adapted youth from those who are overly impulsive or inhibited. Hence, this attribute reflects engagement by youth to cope with stress through circumspection and planning rather than behavioral or emotional reactivity. Although the buffering role of problem-solving ability has been demonstrated (e.g., Dubow & Tisak, 1989), research is limited by a narrow focus on young children and behavioral outcomes. Viewed as part of the personality system, self-esteem refers to one's evaluation of his or her self-worth. A social climate marked by economic disadvantage and indifference by significant others could overwhelm coping reserves and chip away at self-esteem. Youth who maintain high self-regard in spite of self-devaluing circumstances might be shielded from these outcomes by attending selectively to information they use to construct self-understanding (Harter, 1986).

In terms of their relative potential as protective agents, we expected the strongest evidence of buffering effects for problem-solving ability and self-esteem because these assets constitute more direct means for managing social problems than competence in the academic realm. In addition to assessing the influence of these attributes in mitigating multiple-risk exposure, we also assessed their impact in mitigating the impact of cross-domain risk, conceptualized as the number of social domains with risk factors. In line with the idea of protective reactivity, we hypothesized that youth with stressors across several life domains would profit from cumulative protection but not enough to circumvent fully the effect of widespread risk.

Contextual Considerations

Developmental trajectories are likely to differ by youth gender, developmental stage, and ethnicity given subcultural variation in socialization experiences, maturational processes, and social norms (Bronfenbrenner, 1989). In a previous study based on ADD Health data, (Gerard & Buehler, 2004) found that the relation between cumulative risk and depression was stronger for girls than for boys and for White youth than for minority youth. Few age differences were found between early and middle adolescents. We extended this study by testing whether the impact of protective factors is moderated by gender, age, or ethnicity. In terms of gender, different socialization tracks that emphasize individualism for boys and social connection for girls potentially shape how protective factors, particularly self-esteem, are experienced in the context of social adversity. For instance, Block and Robins (1993) found that girls' self-esteem is dependent on their ability to gain the acceptance of significant others, whereas boys' self-esteem is more dependent on their ability to control social anxiety. To the extent that boys' self-regard is less intertwined with the quality of their interpersonal relations, which often is predicated on multiple influences, the buffering effect of self-esteem could be stronger for boys than for girls.

With respect to age, there is reason to believe that the influence of youth attributes is not uniform for early and middle adolescents. Adolescents' problem-solving skills improve with age as a function of cognitive development and increased social experience (Spivack et al., 1976). Likewise, self-esteem becomes increasingly stable from middle childhood to adulthood (Trzesniewski, Donnellan, & Robins, 2003). These psychological gains might give older adolescents an edge in coping with social challenges. In terms of ethnicity, we expected less widespread support for the protective role of youth attributes among minority youth, particularly African American adolescents. Conflicting values between peers and mainstream culture create a burden that could serve as a source of emotional distress for scholastically oriented youth who follow a conventional route to success. Likewise, Luthar's (1991) research on inner-city youth suggests that problem-solving skills

can be a liability for marginalized youth by heightening sensitivity to social inequalities and increasing the risk for depressed mood.

In sum, we tested the following hypotheses: (a) risk factors from five domains will account for unique variation in conduct problems and depressed mood; (b) cumulative risk is associated linearly with both types of adjustment problems, and youth attributes will buffer these relations through a protective-reactive function; (c) youth gender, age, and ethnicity will moderate the relations among risk, youth attributes, and maladjustment; and (d) multiple protective attributes are necessary but not sufficient to counteract cross-domain risk.

Method

Data

This study was conducted using public release data from Waves I and II of the Add Health study. Add Health was designed to assess how various social contexts influence health behaviors of a nationally representative sample of 7th- to 12th-grade youth. The sampling frame included all high schools in the United States that had an 11th grade and at least 30 enrollees. A random sample of 80 high schools was selected proportional to enrollment size and stratified by region, urbanicity, school type, and ethnicity. For each high school, the largest feeder school (typically a middle school) also was recruited when available. The public database represents a randomly selected subset of youth from the larger core sample. The data set includes information on 6,504 adolescents for Wave I, collected between 1994 and 1995, and 4,834 adolescents for Wave II, collected approximately 1 year later. The response rate for the core sample was 78.9% at Wave I and 88.2% at Wave II.

Our analyses focused on 5,070 youth in the 7th to 11th grades at Time 1 (T1) of data collection. The subsample was drawn by eliminating 167 youth who lacked self-report data on grade as well as 993 youth who were in the 12th grade because they lacked information at Time 2 (T2). Given concerns about statistical power in subgroup analyses, 177 Asian American and 47 Native American youth were excluded from the subsample as well as 47 youth who identified themselves as ''other'' and 3 youth missing race information. Thus, our subsample represents the U.S. population of non-Hispanic White, non-Hispanic Black, and Hispanic youth in 7th to 11th grades. Because the Add Health study includes an oversample for African American youth from well-educated families, data were analyzed with population weights to ensure a nationally representative sample. The weighted sample had sufficient variability on gender (50.7% boys, 49.3% girls), T1 grade (21.1% 7th graders, 19.7% 8th graders, 21.3% 9th graders, 19.8% 10th graders, 18.1% 11th graders), and ethnicity (70.6% White, 16.3% Black, 13.1% Hispanic).

For 90% of the subsampled adolescents, a parent (typically a mother) also completed an in-home interview in the 1st year of the study. Approximately 15% of parents had not graduated from high school, 34% had either a high school degree or its equivalent, 11% had vocational training beyond high school, 32% had some college education or a college degree, and 8% had professional training beyond college. Median age of parents was 40 years old. Approximately 71% of parents were married, 6% were single or never married, and 23 % were divorced, separated, or widowed. Thirteen percent of parents received some form of public assistance.

The participant attrition rate between waves of data collection was 13%. The T2 subsample ($n = 4{,}404$) was highly similar to the T1 subsample on both youth and parent characteristics. Youth with complete data and those who were missing either T2 data or parent-report data were compared to locate possible sources of bias. Youth with data from both waves did not differ substantially from those who attrited on parental characteristics nor did they differ on youth outcome measures; however, as a group they had slightly lower scores on the cumulative risk index (M for youth with both waves of data = 3.43; M for youth with T1 data only = 3.67; $t = -1.98$, $p < .05$). Youth whose parents took part in the study were more likely to reside with a parent who was married ($\chi^2 = 19.70$, $p < .001$), more educated ($\chi^2 = 60.26$, $p < .001$), and less likely to receive public assistance ($\chi^2 = 28.91$, $p < .001$), but they were similar to youth without parent-report data on outcome measures and cumulative risk scores. Although bias was minimal, we addressed this issue in our analytic design as a matter of precaution.

Measurement

Youth maladjustment. Conduct problems were measured using youth reports on 14 items assessing the extent to which they engaged in both minor and serious forms of delinquent behavior during the past 12 months. Sample items include: ''How often do you shoplift?'', ''How often do you sell drugs?'', and ''How often do you take part in a group fight?'' Items are measured on a 4-point scale ranging from 0 (*never*) to 3 (*5 or more times*). Respective alphas for the

summed scales at T1 and T2 scales were .83 and .82. Depressed mood was assessed using 19 items based on the Center for Epidemiology Studies Depression Scale for Children (CES–DC), a commonly used index of depression that has documented evidence of reliability and validity (Radloff, 1977) including cross-cultural measurement equivalency (Tally et al., 2000). Items tap symptoms common to depressed mood such as somatic disturbances, interpersonal problems, and negative affect. Youth reported the frequency of symptoms over the past week including the degree to which they had poor appetite, were bothered by things, had hope for the future, and felt lonely in the past week. Items are assessed on a 4-point Likert scale ranging from 0 (*never or rarely*) to 3 (*most or all of the time*). Given possible conceptual overlap between this measure and our measure of self-esteem, items used to assess these constructs were subjected to a factor analysis with maximum-likelihood extraction and oblimin rotation. Two distinct factors emerged reflecting the constructs of interest. However, five items were excluded from the depressed mood scale given low factor loadings or cross-loadings with self-esteem. For the most part, these items included those with a positive valence (e.g., felt hopeful about future). Respective alphas for the summed scales at T1 and T2 scales were .86 and .87.

Youth background variables. Contextual variables included gender, developmental stage, and ethnicity. Boys served as the reference group; thus, they were assigned a value of 0. Developmental stage was represented by grouping 7th and 8th graders and, likewise, 9th through 11th graders. The younger group served as the referent. Ethnic groups included non-Hispanic White, non-Hispanic Black, and Hispanic youth. Dummy codes were created for drawing comparisons between White and Black youth and between White and Hispanic youth.

Family sociodemographic risk. Poverty status was assessed using four parent-report items asking the respondent whether she or he received public assistance, Aid to Families With Dependent Children (AFDC), food stamps, or a housing subsidy (yes–no format). Youth with parents who responded positively to any of these items were deemed at risk. Parental education was assessed with one item asking the parent how far he or she went in school. Response options ranged from 0 (*never went to school*) to 8 (*professional training beyond a 4-year college*). Youth with parents who reported receiving less than 12 years of formal education were considered at risk. Parents' marital status was assessed with a one-item measure. Youth residing with a divorced, separated, or single parent were considered at risk. A measure of household size was constructed using several items that asked youth to identify their relation to every household member. Items were used to obtain the number of children or siblings in the household. In line with other studies, four or more children constituted the cutoff point for risk (e.g., Baldwin et al., 1993).

Family process risk. Parent's relationship quality was assessed using two parent-report items. The first item asked parents to rate their relationship with their current spouse or partner on a scale of 1 (*completely happy*) to 10 (*completely unhappy*). The second item assessed the frequency with which respondents fight with their current spouse or partner on a scale of 1 (*a lot*) to 4 (*not at all*). This item was reverse-coded so that high values reflect more fighting. The two items were standardized and averaged ($r = .43$, $p < .001$). The amount of missing data on this variable is substantial because 10% of parents did not participate in this study and because an additional 25% of responding parents did not have a current spouse or partner. In line with Deater-Deckard et al. (1998), adolescents whose parents did not have a mate at the time of data collection were assigned the lowest value on these two items before aggregation to reflect the absence of relationship problems. The remaining 10% of missing cases were treated using an imputation procedure outlined in Analytic Procedures. As is the case with most other continuous risk indicators used in this study, the quartile of youth with the "worse" scores was assigned a value of 1 to indicate their risk potential (see Table 1).

Family detachment was measured using eight items that reflect the quality of adolescents' family affective ties. Items assess the extent to which youth feel close to, cared for, and loved by each parent as well as the degree to which they feel understood and attended to by family members. The 5-point Likert scale responses were recoded accordingly so that higher values reflect greater perceived detachment. Items were aggregated using the mean value ($\alpha = .83$). Representing a behavioral property of the parent–child relationship, parental involvement refers to the extent to which parents spend time with their children engaged in meaningful social and relational activity. This concept was measured using nine items that assessed parent–adolescent participation in activities during the previous 4 weeks (e.g., shopping, playing a sport together). Youth were assigned a value of 1 for each activity that was marked positively (yes–no format). Higher values reflected more parental involvement. Items were averaged across youth responses for both mothers and fathers ($\alpha = .72$). This approach recognizes the importance of

Table 1
Description of Risk Indicators and Cumulative Risk Index (Time 1 Unweighted n = 5,070)

Risk variable	Mean (*SE*)	Source	Items	Risk status criterion	At-risk youth (%)
Parent's marital status		Parent	1	Single, never-married; divorced; or separated	25.0
Parent's educational status		Parent	1	Never went to school or did not graduate from high school	14.4
Family poverty		Parent	4	Recent receipt of public assistance, AFDC, food stamps, or housing subsidy	13.8
Household size	1.40 (.03)	Youth	1	4 or more siblings	5.8
Parent's relationship quality[a]	0.00 (.02)	Parent	2	$\geq$ 75th percentile	24.8
Family detachment	1.70 (.01)	Youth	8	$\geq$ 75th percentile	27.4
Parental involvement	5.42 (.08)	Youth	18	$\leq$ 25th percentile	30.4
Peer support	1.98 (.01)	Youth	3	$\geq$ 75th percentile	32.6
Trouble with peers	0.92 (.02)	Youth	1	Youth who reported trouble with peers *about once a week* and *almost everyday*	17.3
School detachment	2.11 (.02)	Youth	6	$\geq$ 75th percentile	28.7
Perceived prejudice	2.85 (.05)	Youth	1	Youth who responded *agree* or *strongly agree* that students are prejudiced	39.4
Neighborhood quality	0.81 (.09)	Census	6	$\geq$ 75th percentile	22.9
Neighborhood problems	1.52 (.02)	Parent	2	$\geq$ 75th percentile	28.4
Neighborhood satisfaction	2.23 (.02)	Youth	2	$\geq$ 75th percentile	26.8
Neighborhood safety		Youth	1	Youth who responded *no* to item asking if they feel safe in their neighborhood	10.8

Cumulative risk	3.46 (.10)	0	1	2	3	4	5	6	7	8	9
Distribution (%)		7.9	14.4	18.1	15.5	13.6	10.7	7.9	5.2	3.4	3.3

Note. Youth who met the risk criterion for any risk factor were coded 1; all others were coded 0. The number of risk factors was summed for each youth to create a cumulative risk score. Scores on the index ranged from 0 to 13. Youth with 9 or more risk factors were combined.
[a]Parent's relationship quality is a standardized measure.

each parent's involvement with the child and accurately represents the parental environment of varying family structures. It also remedies the analytic problem caused by missing information for families where no residential father is present (30%). Several Add Health users have used these measures to assess the quality of family relations, producing evidence of construct validity (e.g., Dornbusch, Erickson, Laird, & Wong, 2001; Resnick et al., 1997). The focus on both affective and behavioral aspects of family relationships is in line with Call and Mortimer's (2001) operationalization of the family arena.

Peer context. Perceived peer support was assessed using three items that measure the extent to which youth feel socially accepted, close to people at school, and cared for by friends. The response format for these items ranged from 1 (*strongly agree*) to 3 (*strongly disagree*). Items were aggregated using the mean value ($\alpha = .60$). Higher values reflect less support. Cauce et al. (1996) contended that youth perceptions of social support have high practical value because they appear to be more salient predictors of well-being than are measures of enacted support and network size. A one-item measure was used to assess peer rejection, or the degree to which youth have difficulty getting along with other students. The response format ranged from 1 (*never*) to 5 (*everyday*). Although global in nature, the peer context measures have demonstrated evidence of construct validity and predictive ability (Gerard & Buehler, 2004).

School context. School detachment was measured using six youth-report items that asked respondents to indicate on a 5-point Likert scale the degree to which they have trouble getting along with teachers, feel cared for by teachers, are treated fairly by teachers, feel safe in school, feel happy at school, and feel part of their school. Responses were coded so that higher values reflect greater detachment. Scores were averaged across items ($\alpha = .77$). Perceived student prejudice was assessed with one item that asked youth to indicate the extent to which they agreed that students in school are prejudiced. The 5-point Likert response ranges from 1 (*strongly agree*) to 5 (*strongly disagree*). The item was reverse-coded so that higher scores reflect greater perceived prejudice by students. Other researchers have used these Add Health measures to assess the quality of youth's school experiences, providing evidence of construct validity

(e.g., Johnson, Crosnoe, & Elder, 2001; Resnick et al., 1997).

Neighborhood context. Six items that measure demographic characteristics of youth's neighborhood were used to assess neighborhood quality. Items are constructed measures developed specifically for the public use version of Add Health (see Billy, Wenzlow, & Grady, 1998). Derived from 1990 Census tract data, the measures represent block group characteristics. Risk factors include assigned values for each of the six items that reflect the following neighborhood characteristics: (a) modal race is Black, (b) proportion of Hispanic individuals is high (50%–74%) or very high (75% or more), (c) modal marital status is never married, (d) proportion of persons under poverty line in 1989 is high (greater than 23.9%), (e) modal educational attainment of individual's age 25 or over is ''no high school degree or equivalency,'' and (f) unemployment rate is high (greater than 10.9%). Youth residing in neighborhoods with any of these conditions were assigned a value of 1. Scores for these six items were summed ($\alpha = .74$) so that higher values reflect poorer neighborhood quality.

Neighborhood problems were measured with two parent-report items that assess problems with trash and litter on the streets and problems with drug dealers and users in the neighborhood ($r = .47$, $p = .001$). The 3-point response format ranged from 1 (*no problem at all*) to 3 (*a big problem*). Neighborhood satisfaction was measured using two youth-report items that assess on a 5-point scale how happy the respondent is with his or her neighborhood and how happy he or she would be if the family was to move. Items were coded so that higher values reflect greater unhappiness living in the neighborhood and greater happiness with moving to a new neighborhood. The two items were aggregated using their mean value ($r = .47$, $p < .001$). Neighborhood safety was assessed with a youth-report item that asked respondents to indicate whether they felt safe in their neighborhood (yes–no format).

Cumulative risk. The cumulative risk index was constructed using a three-step process. First, each risk factor was coded dichotomously to indicate the absence (0) or presence (1) of the risk factor. Table 1 summarizes the criterion used to demarcate risk status for each risk variable as well as descriptive information pertaining to each measure. Unless noted otherwise, the criterion for risk status on continuous measures is a score that falls at or above the 75th percentile. This cutoff point is consistent with the strategy used by Sameroff et al. (1998). For nominal variables, classifications consistent with the literature were used to determine risk status. Second, to determine whether each of the 15 binary risk factors was a risk condition, mean comparisons were drawn between youth with the presence of risk and those with an absence of risk on T2 conduct problems and depressed mood. For each risk factor, the high-risk group had a higher mean value on both outcome measures. (Contact first author for statistical results.) Although differences on family poverty and neighborhood quality were not statistically significant for conduct problems, we retained these measures because of their salience to depressed mood. Finally, the number of risk factors was tallied across youth, yielding a cumulative risk score. Scores ranged from 0 to 13. Because of low frequencies, youth with values of 9 or more were combined. The distribution of scores on the index is presented in Table 1. The average number of risk factors was 3.46 with little variation across gender and grade. Broken down by ethnic group, White youth had the fewest number of risk factors ($M = 3.08$), followed by Hispanic youth ($M = 4.15$) and African American youth ($M = 4.52$).

Youth attributes. Youth attributes were assessed with Wave I measures. Scholastic achievement was assessed using four items that reflect respondents' report of their most recent grades in English, math, history, and science. The response format ranged from 1 (*A*) to 4 (*D or lower*). Items were recoded so that high scores reflect greater scholastic ability ($\alpha = .74$, $M = 2.79$). Problem-solving ability was measured using the mean value of four items that assess the degree to which youth research solutions to problems, generate multiple approaches to problem, use rational decision making, and evaluate decision outcomes. The response format ranged from 1 (*strongly agree*) to 5 (*strongly disagree*). High values on this scale reflect greater problem-solving ability ($\alpha = .75$, $M = 3.77$). In terms of content validity, this measure corresponds with Spivack et al.'s (1976) view of the problem-solving skills necessary for optimal development. Self-esteem was measured using four items that assess global feelings of self-worth. In line with Rosenberg's (1989) conceptualization of self-esteem, items assess the extent to which youth feel they possess good qualities, have a lot to be proud of, like self as are, and are doing everything right. The response format ranged from 1 (*strongly agree*) to 5 (*strongly disagree*). High values on the averaged items reflect greater self-esteem ($\alpha = .79$, $M = 4.09$).

Analytic Procedures

All scales and indexes were created in SPSS. The degree of missing data varied across variables of

interest but generally constituted less than 5% of cases. Exceptions included parent-report items, which were missing approximately 10% of values. Missing data were imputed at the scale level using the expectation maximization method in SPSS (EM). EM is a full-information method of imputing missing values that uses an iterative procedure to fit the best values. It is preferable to other procedures for handling missing data because it produces less biased results (Acock, 1997). To control for bias in estimation that might result from missing parent data and youth attrition, two control variables were included in the regression analysis to identify cases with these forms of missing information. Additionally, a control variable was created to identify youth with physical and cognitive limitations and to control for the influence of these conditions on dependent variables. Given the study focus on environmental risk, disabled youth's social experiences might differ from nondisabled youth, particularly in the peer context.

The complex sampling design of Add Health requires the use of statistical software that adjusts for design effects and potential bias in parameter estimates that might result from stratification, clustering, and differential case weighting (Chantala & Tabor, 1999). Data were analyzed in SUDAAN to make these corrections. Unless noted otherwise, multiple hierarchical regression was used to analyze data, which allows one to isolate variance contributed by individual or groups of variables entered in different blocks (Aiken & West, 1991). Entry of the variables proceeded in the following order: control variables, cumulative risk, youth attribute variables, and interaction terms between cumulative risk and each youth attribute. Significant interactions were probed using simple slope analysis following guidelines by Aiken and West (1991).

Results

Cross-Sectional Findings

Zero-order correlations among risk factors, protective factors, and outcome variables are presented in Table 2. All risk and protective factors were associated with outcome measures in the expected direction. To test the hypothesis that risk factors from each social domain account for variation in conduct problems and depressed mood, T1 outcome measures were regressed on each of the 15 risk factors. Using two modeling approaches, we entered risk measures from each ecological domain first and last in a series of regression analyses to estimate (a) initial variance of domain-specific risk factors before entry of risk factors from other domains and (b) unique variance after controlling for risk factors from all other domains (see Table 3). Although covariation influences which risk factor reaches statistical significance at the expense of another, statistically significant sources of risk were found for each conceptualized risk domain across both modeling approaches. Salient risk factors common to both conduct problems and depressed mood stemmed primarily from family process, peer, and school domains.

Cumulative risk and youth maladjustment. Table 4 summarizes findings from analyses undertaken to examine the associations among cumulative risk, youth attribute variables, and outcome measures. Moderating tests for the influence of youth background characteristics on all main effects and interactive effects are not shown in tables; however, significant findings are presented in text. Before summarizing these findings, however, it is noted that we examined the possibility that all risk factors could have come from the same social domain for some adolescents and that youth have a greater likelihood of experiencing risk in a domain that is represented by more risk factors. The number of adolescents with multiple risk factors that were limited to one domain was only 177, or 3.5% of the sample. The summed percentage of adolescents whose multiple-risk exposure was isolated to sociodemographic or neighborhood risk (i.e., domains with the most risk indicators) was nearly the same as youth with multiple risk factors that were limited to one of the other three domains (1.7% vs. 1.8%). Among the 177 youth, 83% had a cumulative risk score of 2, 14% had a score of 3, and 3% had a score of 4. Correlations among cumulative risk, protective factors, and adjustment measures were similar when these 177 youth were removed from the sample. Thus, the basic associations within our tested models that we report in this section are unaffected by representing social domains with an unequal number of risk factors.

As hypothesized, cumulative risk was associated positively and linearly with T1 conduct problems and depressed mood. The unstandardized beta for cumulative risk reflects an average increase of .65 in conduct problems and 1.36 in depressed mood for every unit increment of risk. Cumulative risk accounted for 9% of variance in conduct problems and 17% of variance in depressed mood. Ethnicity moderated the relation between cumulative risk and conduct problems. This association was stronger for White youth ($b = .70$, $p < .001$) than for African American youth ($b = .46$, $p < .001$). For depressed mood, this relationship was stronger for girls

Table 2
Correlations Among Risk Factors, Protective Factors, and Dependent Variables for the Weighted Sample

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Parent's marital status																						
2. Parent's educational status	.09																					
3. Family poverty	.37	.27																				
4. Household size	−.07	.12	.12																			
5. Parent's relationship quality	.05	.01	.07	.03																		
6. Family detachment	.08	−.00	.02	−.03	.14																	
7. Parental involvement	−.29	−.09	−.17	.01	−.07	−.33																
8. Peer support	.08	.05	.06	.01	.05	.38	−.24															
9. Trouble with peers	.08	.05	.07	−.02	.05	.14	−.09	.28														
10. School detachment	.12	.05	.08	−.07	.06	.40	−.23	.52	.32													
11. Perceived prejudice by students	−.04	−.06	−.06	−.03	−.01	.13	.03	.09	.10	.21												
12. Neighborhood quality	.26	.23	.31	.06	.03	−.01	−.14	.06	.03	.06	−.11											
13. Neighborhood problems	.19	.11	.25	.03	.09	.05	−.13	.06	.04	.10	−.04	.37										
14. Neighborhood satisfaction	.15	.05	.11	−.04	.08	.29	−.18	.25	.12	.30	.07	.13	.19									
15. Neighborhood safety	.10	.07	.12	.03	.06	.12	−.10	.15	.11	.20	.01	.22	.24	.33								
16. Scholastic achievement	−.17	−.13	−.15	.01	−.05	−.17	.27	−.18	−.16	−.33	.00	−.14	.12	−.13	−.11							
17. Problem-solving skills	.03	−.01	.03	.01	−.04	−.19	.09	−.21	−.09	−.21	−.02	.09	.02	−.10	−.03	.09						
18. Self-esteem	−.01	−.02	.01	.03	−.04	−.43	.18	−.42	−.12	−.35	−.10	.03	−.01	−.18	−.10	.16	.31					
19. T1 conduct problems	.13	.02	.06	.10	.17	.31	−.13	.17	.20	.33	.08	.07	.07	.13	.09	−.24	−.14	−.20				
20. T1 depressed mood	.11	.12	.13	.04	.16	.42	−.18	.35	.28	.39	.16	.15	.10	.22	.20	−.24	−.11	−.45	.26			
21. T2 conduct problems	.08	.03	.01	.04	.08	.23	−.08	.08	.14	.23	.03	.01	.03	.08	.02	−.15	−.10	−.14	.56	.19		
22. T2 depressed mood	.10	.11	.10	.06	.07	.33	−.17	.28	.18	.29	.07	.11	.08	.16	.13	−.20	−.08	−.34	.19	.59	.22	

Note. Correlations are not adjusted for potential design effects. T1 = Time 1; T2 = Time 2.

Table 3
Regression of Time 1 Conduct Problems and Depressed Mood on Time 1 Domain-Specific Risk (Time 1 Unweighted n = 5,070

	Time 1 conduct problem					Time 1 depressed mood				
Variables by block entry	*B* at entry	$I\Delta R^2$	Last step B	$U\Delta R^2$	Final R^2	*B* at entry	$I\Delta R^2$	Last step B	$U\Delta R^2$	Final R^2
Sociodemographic risk		.02		.01	.19		.02		.01	.32
Parent's marital status	.11***		.08***			.06***		.01		
Parental education	.00		.01			.08***		.06***		
Family poverty	.03		.02			.07***		.04**		
Household size	.06*		.01			.03		.04*		
Family process risk		.10		.05			.16		.05	
Parent's relationship quality	.06*		.01			.00		.00		
Family detachment	.33***		.26***			.39***		.26***		
Parental involvement	− .03		− .03			− .06*		− .01		
Peer risk		.05		.01			.15		.03	
Peer support	.12***		.08***			.28***		.11***		
Trouble with peers	.16***		.10***			.20***		.14***		
School risk		.10		.03			.15		.02	
School detachment	.32***		.22***			.35***		.13***		
Perceived prejudice	.02		.01			.10***		.07***		
Neighborhood risk		.02		.001			.05		.01	
Neighborhood quality	.02		.03			.04*		.02		
Neighborhood problems	.05*		.03			.01		.00		
Neighborhood satisfaction	.11***		.02			.15***		.00		
Neighborhood safety	.05*		.02			.13***		.08***		

Note. Analysis includes a control variable for youth gender, grade level, ethnicity, youth attrition at Time 2, missing parent data at Time 1, and youth with disabilities. *B* at entry represents initial estimates of domain-specific risk factors before entry of risk factors from other domains. Last step B represents estimates from final block of model when all other variables have been entered. $I\Delta R^2$ represents initial explained variance when each set of domain-specific risk factors was entered without other risk domain variables. $U\Delta R^2$ represents unique variance accounted for by domain-specific risk after controlling for risk factors from all other domains. Final R^2 represents total explained variance accounted for by the set of risk factors.
*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

($b = 1.62$, $p < .001$) than for boys ($b = 1.10$, $p < .001$) and for White youth ($b = 1.42$, $p < .001$) in both ethnic comparisons (African American youth $b = 1.18$, $p < .001$; Hispanic youth $b = 1.26$, $p < .01$).

Main effects of youth attributes on conduct problems. Evidence of compensatory effects was detected for each youth attribute when conduct problems were considered (scholastic achievement $b = -.87$, $p < .001$; problem-solving ability $b = -.65$, $p < .001$; self-esteem $b = -.67$, $p < .001$). Youth attributes explained 4% of variance. The main effect for scholastic achievement was moderated by ethnicity. Although significant for each ethnic group, the relation between scholastic achievement and conduct problems was stronger for White youth ($b = -.85$, $p < .001$) than for African American youth ($b = -.46$, $p < .05$). The main effect for problem-solving ability was moderated by grade ($b = -.54$, $p < .05$), indicating that the relation between problem-solving ability and conduct problems was stronger for older youth ($b = -.88$, $p < .001$) than for younger youth ($b = -.42$, $p < .01$).

Interactive effects between risk and youth attributes in predicting conduct problems. The association between cumulative risk and conduct problems was moderated by self-esteem ($b = -.23$, $p < .01$). As hypothesized, positive self-regard served a mild protection function for youth with high levels of risk, providing evidence of a protective-reactive moderating effect (see Figure 1). The buffering effect was evident across most subgroups with the exception of girls and African American youth, supporting our expectation that protective effects would be weaker for these youth. The interaction between cumulative risk and problem-solving ability was not significant in the total sample. Consistent with the main effect of problem solving, however, subgroup analyses revealed a weak but statistically significant protective-reactivity effect of this attribute among older adolescents ($b = -.20$, $p < .05$).

Main effects of youth attributes on depressed mood. Significant main effects of each youth attribute were detected for depressed mood. Collectively, the three attributes accounted for 11% of variance in this

Table 4
Regression of Time 1 and Time 2 Conduct Problems and Depressed Mood on Cumulative Risk and Youth Attributes (Time 1 Unweighted n = 5,070; Time 2 Unweighted n = 4,404)

	Time 1 conduct problems			Time 1 depressed mood			Time 2 conduct problems			Time 2 depressed mood		
Variables by block entry	*B*	*SE*	ΔR^2	*B*	*SE*	ΔR^2	*B*	*SE*	$R^2\Delta$	*B*	*SE*	ΔR^2
Time 1 problem behavior							.48***	.04	.31	.49***	.02	.35
Gender	−1.26***	.16	.02	1.44***	.21	.06	−0.23*	.12	.004	1.13***	.20	.01
Grade level	0.51**	.18		0.33	.21		−0.46***	.13		0.15	.24	
Black vs. White	−0.39	.23		0.92**	.32		−0.26	.16		0.57**	.29	
Hispanic vs. White	0.00	.27		0.85*	.39		0.44*	.23		1.22**	.37	
Cumulative risk	0.65***	.04	.09	1.36***	.05	.17	0.02	.04	.001	0.35***	.05	.02
Scholastic achievement (SA)	−0.87***	.12	.04	−0.92***	.14	.11	−0.15	.11	.02	−0.32*	.15	.02
Cognitive problem solving (CPS)	−0.65***	.14		0.32*	.15		−0.01	.11		0.08	.17	
Self-esteem (SE)	−0.67***	.13		−3.82***	.21		−0.26*	.13		−1.00***	.19	
Cumulative Risk × SA	−0.02	.05	.01	0.10	.06	.01	*ns*			*ns*		
Cumulative Risk × CPS	−0.10	.05		0.12*	.06		*ns*			*ns*		
Cumulative Risk × SE	−0.23**	.06		−0.39***	.08		*ns*			*ns*		
Total R^2			.16			.35			.33			.40
F			137.26			806.03			218.39			957.90

Note. Analysis includes a control variable for youth attrition at Time 2 (cross-sectional analysis only), missing parent data at Time 1, and youth with disabilities. Boys, 7th to 8th graders, and White youth were coded 0; girls, 9th to 11th graders, Black, and Hispanic youth were coded 1. Beta estimates and standard errors (*SE*) of the unstandardized estimates are from final block of the regression model. Standardized regression coefficients are not reported because they are inappropriate with interaction terms (see Aiken & West, 1991).
*$p \leq .05$. **$p \leq .01$. ***$p \leq .001$.

outcome measure. The negative coefficients for scholastic achievement ($b = -.92$, $p < .001$) and self-esteem ($b = -3.82$, $p < .001$) indicate that these attributes are associated with fewer depressive symptoms, therefore compensating for the deleterious influence of cumulative risk. The main effect for scholastic achievement was qualified by grade level, indicating a stronger compensatory effect for younger adolescents (7th- to 8th-grade youth $b = -1.25$, $p < .001$; 9th- to 11th-grade youth $b = -.70$, $p < .01$). The positive coefficient for problem-solving ability ($b = .32$, $p < .05$) indicates that this attribute represented a risk factor for depressed mood, but subgroup analyses revealed that this risk influence was limited to African American youth ($b = .82$, $p < .01$).

Interactive effects between risk and youth attributes in predicting depressed mood. Self-esteem was the only youth attribute that buffered the relation between cumulative risk and depressed mood ($b = -.39$, $p < .001$). As displayed in Figure 1, for every one-unit increase in risk, the average change in depressed mood was 1.26 for youth with low self-esteem. The corresponding figure for youth with high self-esteem was .75. Results support a protective-reactive pattern of risk by demonstrating that this buffering agent is not sufficient to counteract completely the impact of cumulative risk. The buffering effect of self-esteem was stronger for boys ($b = -.42$, $p < .001$) than for girls ($b = -.25$, $p < .05$), and it was not significant for African American youth. A weak interaction between cumulative risk and problem-solving ability was detected in the total sample ($b = .12$, $p < .05$). The interaction indicated that high levels of problem-solving ability heightened the risk for depressed mood among youth with the highest risk scores. However, subgroup analyses revealed that this exacerbating influence was limited to African American youth ($b = .28$, $p < .05$). An exacerbating effect of scholastic achievement also was detected for African American youth ($b = .32$, $p < .05$). These findings support our expectation of differential patterns of protection among ethnic groups.

One-Year Longitudinal Findings

Cumulative risk and youth maladjustment. In this section we present findings from longitudinal analyses undertaken with a covariate for early maladjustment. As indicated in Table 4, the relationship

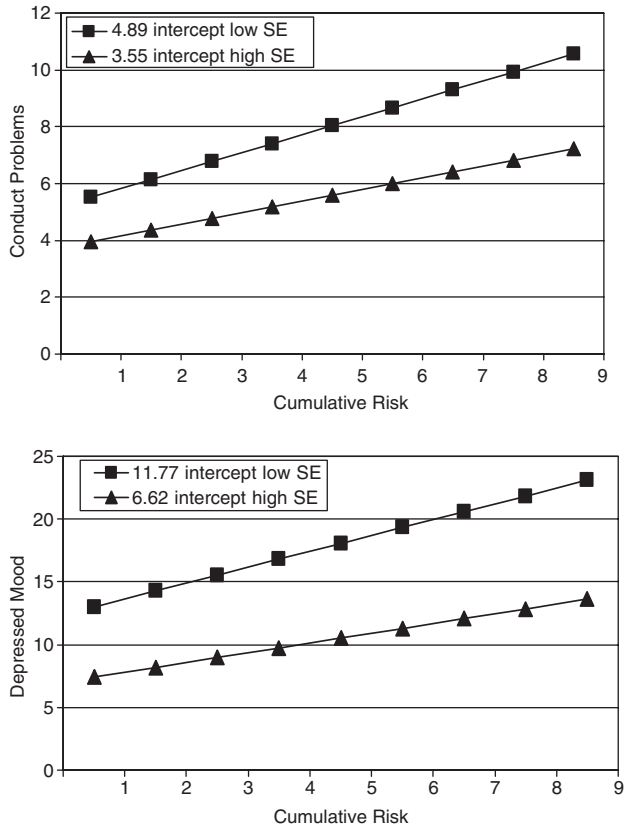

Figure 1. Concurrent association between cumulative risk and maladjustment at low and high levels of self-esteem. SE = self-esteem.

between cumulative risk and T2 conduct problems was not significant. However, the interaction between cumulative risk and ethnicity was significant albeit weakly ($b = .28$, $p < .001$), reflecting stability over time in high-risk White youth's susceptibility to conduct problems (White youth $b = .26$, $p < .05$; African American youth $b = -.07$, *ns*). Cumulative risk predicted subsequent depressed mood, accounting for 2% of variance in this outcome measure ($b = .35$, $p < .001$). Consistent with cross-sectional findings, the relation between cumulative risk and depressed mood was stronger for White youth ($b = .36$, $p < .001$) than for African American youth ($b = .16$, *ns*).

Influence of youth attributes on conduct problems and depressed mood over time. Self-esteem was the only significant predictor of conduct problems when early problem behavior was controlled ($b = -.26$, $p < .05$). Youth background characteristics did not modify this relation. Significant main effects for scholastic achievement ($b = -.32$, $p < .05$) and self-esteem ($b = -1.00$, $p < .001$) were evident for T2 depressed mood. The longitudinal association between youth attributes and depressed mood was not moderated by youth background variables. None of the interaction terms between cumulative risk and youth attributes was significant for the total sample. However, a weak exacerbating influence of scholastic achievement was found for Hispanic youth ($b = .34$, $p < .01$). A similar pattern was evident for African American youth, consistent with cross-sectional findings; however, the interaction was not statistically significant.

Limited protection and cross-domain risk. As a final inquiry, we examined the notion of limited protection in the context of cross-domain risk more directly by plotting the slope representing the relation between the number of risk domains and youth maladjustment separately for youth with 0, 1, 2, and 3 protective factors. Using a three-step process, we first created a risk domain index representing the number of social arenas in which youth experienced at least 1 risk factor. Although the index had adequate variation, we combined youth with values of 4 and 5 because of low frequency counts at the upper end of the index among youth with 2 and 3 protective factors. Mean score on the index was 2.39. Second, we created a cumulative protection index that represented the number of attributes possessed by each youth. Consistent with our demarcation of risk status, a score at or above the 75th percentile was used to represent the presence of protection. Separate indexes were created for conduct problems and depressed mood because salutary effects were detected for all three youth attributes when conduct problems were considered (T1 only), whereas only scholastic achievement and self-esteem were beneficial for depressed mood. Finally, using the least squares means procedure in SUDAAN, mean values for outcome measures were derived for youth scoring at each level of the risk domain index adjusting for control variables, early maladjustment (longitudinal analysis only), and cumulative risk scores because youth with more risk factors are likely to experience risk in more domains. The longitudinal analysis is limited to depression because self-esteem was the only significant youth attribute for conduct problems.

The plotted means, depicted in Figure 2, reflect a significant interaction between cross-domain risk and cumulative protection for T1 conduct problems ($F = 91.97$, $p < .001$), T1 depressed mood ($F = 247.21$, $p < .001$), and T2 depressed mood ($F = 32.47$, $p < .001$). Supporting the idea of protective reactivity, the general pattern of results indicates that youth who possess multiple adjustment-enhancing attributes are afforded greater protection from cross-domain risk than are youth with fewer attributes;

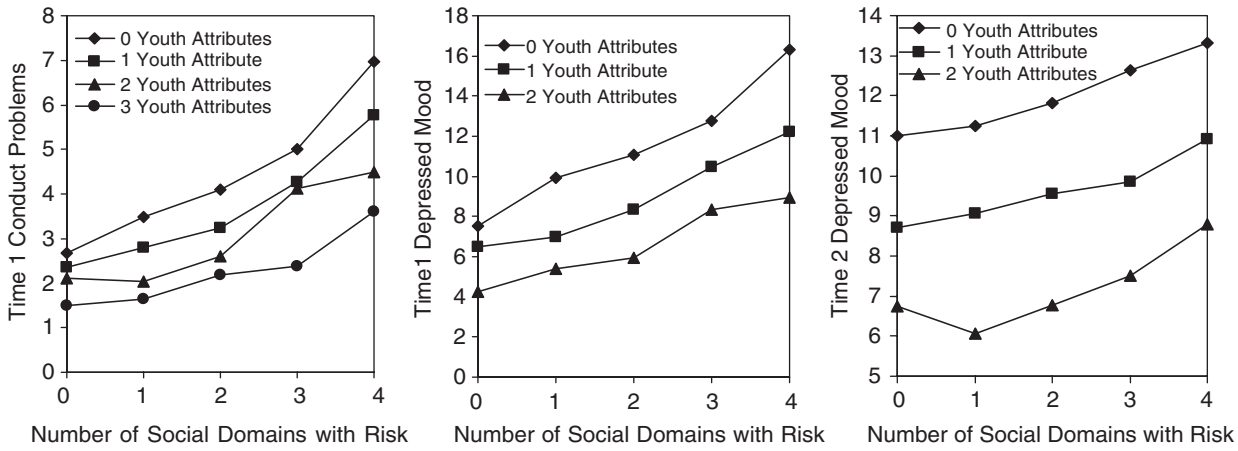

Figure 2. Adjusted mean scores for conduct problems and depressed mood across number of social domains with risk for youth with different levels of protective factors.

however, they are still reactive to an accumulation of risk factors across social domains. The low number of at-risk youth scoring high on more than one attribute precluded an assessment of whether this pattern is variable across youth subgroups, but it also suggests that multiple personal competencies are unlikely to develop when risk is widespread. Findings corroborate results reported by Dubow and Luster (1990), who found that cumulative protection had a positive but limited impact on the behavioral adjustment of children with multiple risk factors in the family context.

Discussion

Results from this study indicate that youth are increasingly challenged as risk factors accumulate. Particularly harmful is an accumulation of stressors that spans across multiple contexts, a finding that is in line with Call and Mortimer (2001). Guided by the belief that adolescents actively shape their socialization experience (Bronfenbrenner, 1989), we identified a set of youth characteristics that are correlated with positive adaptation to assess their influence in reducing the likelihood of adjustment problems. Given the anticipated gravity of cross-domain risk in the lives of adolescents, we expected that youth attributes would play a limited role in mitigating the impact of widespread risk.

Specifically, we hypothesized that scholastic achievement would have a mild buffering function in mitigating the effects of risk. Although the interaction between achievement and cumulative risk was not significant, a general compensatory influence for achievement was detected. However, the influence of this attribute was not uniform across youth subgroups. Replicating cross-sectional findings of Resnick et al. (1997), early adolescents appear to benefit more from scholastic achievement than do middle adolescents when depressed mood is the criterion. Recent evidence from Add Health data indicates that younger students are more attached to and engaged in school than are their older counterparts (Johnson et al., 2001). Academic achievement could serve a more central role in the lives of early adolescents given the narrower boundary of their social environment. Extrinsic and intrinsic rewards are derived from this sanctioned activity that might offset depressive affect such as pride in one's work, hope for the future, and praise from parents and teachers.

A weaker compensatory effect of scholastic achievement on conduct problems was found for African American youth relative to White youth. This could reflect the sense among some minority youth that scholastic activity threatens peer acceptance. Supporting this perspective, Luthar and McMahon (1996) discovered two competing routes by which inner-city youth gain access to peer groups: a conventional path involving prosocial behavior and good grades and a deviant path involving delinquency and low involvement in scholastic activities. Tension created by opposing values of one's peer group and those of larger society also could serve as a source of emotional distress for high-risk, scholastic-minded minority youth if they are subjected frequently to pressure by peers to conform to group standards. This might explain why high scholastic ability heightened the risk for depressed mood among at-risk African American and Hispanic youth in this study.

Problem-solving ability demonstrated a compensatory effect for conduct problems. Youth who are

able to generate workable solutions to problems and anticipate consequences of planned solutions are likely to avoid impulsiveness in the midst of social conflict (Fontaine, Salzer-Burks, & Dodge, 2002). The protective-reactive effect of problem-solving ability among older adolescents confirmed our expectation of age-graded differences in the impact of protective factors. Older adolescents' reasoning abilities are likely to be more refined given a broader array of social experiences and normative advances in cognitive development such as increased anticipatory skills that foster more complex appraisals of stressors and a wider repertoire of potential responses to deal with stressors (Spivack et al., 1976). These gains might give older adolescents more flexibility in coping with a multitude of social stressors.

In contrast to its inhibitory effect on conduct problems, problem-solving ability had relatively little effect on depressed mood. One exception was the exacerbating influence of problem-solving skills on depressed mood among high-risk African American youth. According to Garcia-Coll et al. (1996), consideration of developmental processes for minority youth must take into account aspects of their social experience that are not reflected in the lives of White youth. Mindful of the fact that racism is a pervasive problem, high reasoning ability among African American youth might compete with the reality of membership in a stigmatized group, causing cognitive dissonance and emotional distress. Given their overrepresentation on our sociodemographic indicators of risk, African American youth might be sensitive to their location in society and to larger problems of discrimination—dilemmas that are not easily remedied through reasoning and direct intervention. Advanced cognitive skills also might increase vulnerability to stereotype threat, or fears of adhering to or being evaluated by societal beliefs about one's cultural group (Steele & Aronson, 1995). From a practical standpoint, this finding suggests that although programs designed to enhance adolescents' problem-solving skills might be effective in preventing aggressive behavior, these gains might be offset by heightened susceptibility to depression among marginalized youth.

Although we expected that this global measure of problem-solving skills would be useful to detect enduring patterns of protection when paired with a global risk index, problem-solving ability was not significant in the longitudinal analysis. It is likely that adaptation to chronic stressors that vary in their characteristics requires fine-tuned abilities that are not captured by this measure. Roussi (2002) described adaptive individuals as those with a high degree of discriminative facility, or the ability to appraise accurately the controllability of stressors and to match coping strategies with perceived demands of the stressor. When faced with controllable stressors (e.g., interpersonal problems), individuals with high discrimination rely on problem-focused coping to change the stressor or its consequences. These same individuals are likely to reframe or adjust to uncontrollable stressors (e.g., poverty) through emotion-focused coping.

Among the youth attributes that were considered in this study, self-esteem was the most salient predictor of adjustment problems. The protective effect of this attribute indicates that positive self-regard acts as a safeguard against psychological discomfort resulting from disparaging life circumstances. High self-esteem might allow the individual to separate negative nuances of his or her life from any personal responsibility. Epstein (1973) described the individual with an adaptive view of self as one who not only endorses the belief that he or she is a worthwhile person but also one who is capable of assimilating threatening external events without experiencing excessive negative arousal and disorganization. Pinpointing specific processes by which this assimilation occurs, Harter (1986) has suggested that youth with high self-esteem use advanced mechanisms for dealing with external threats to their self-worth such as discounting, or minimizing the importance of negative events, and beneffectance, or perceiving self as selectively responsible for desired events but not undesired events.

Self-esteem was more influential in warding off depressed mood than conduct problems among high-risk adolescents, reflecting the close link between self-appraisals and mood state. However, gender- and ethnic-differentiated patterns were evident for both outcome measures. The buffering effect of self-esteem was limited to depressed mood for girls, and this effect was weaker than for boys. This finding could be due in part to restricted variance in self-esteem among girls with high cumulative risk scores. High-risk girls were less likely to possess high self-esteem than similarly at-risk boys, an indication of girls' tendency to gauge self-regard in terms of their effectiveness in the interpersonal domain (Block & Robins, 1993). However, to the extent that girls are able to affirm the depth of their personhood in the context of cross-domain risk, the weak buffering effect suggests that girls experience greater protective reactivity to environmental adversity than do boys. Indifference of parents, peers, and teachers might be internalized deeply by girls given their social orientation.

At first glance, the lack of buffering effects for self-esteem across both outcome measures for African American youth seems to suggest that these youth stand to gain little from positive self-evaluations in the midst of social adversity. However, the detection of a significant main effect of self-esteem for this group suggests otherwise. Furthermore, not only was the association between cumulative risk and outcome measures weaker for African American youth compared with White youth, but Black youth's self-esteem was somewhat impervious to the amount of risk in their lives. At each level of the cumulative risk index, the percentage of African American youth with high-self esteem was large and considerably greater than that of White youth. This finding lends credence to claims that African American youth are more likely to attribute social disadvantage to larger problems of racism and discrimination, whereas White youth are more likely to attribute social problems to personal failings (Baldwin et al., 1993).

Although the buffering effect of self-esteem was not stable over time, a main effect of this attribute was evident in the longitudinal analysis. This suggests that positive self-regard provides broader immunity against the development of adjustment problems regardless of adolescents' risk status. Stronger evidence of buffering effects might emerge when this attribute is paired with specific risk contexts. For instance, high self-regard might protect youth from poor interpersonal relationships but could be less influential when paired with sociodemographic risk.

The literature on resilience has diverged from early portrayals of resilient children as invulnerable to harm. Masten and Coatsworth (1998) have argued that all youth are vulnerable to the host of challenges brought on by daily life, and furthermore, efforts to identify ''magic bullets'' for preventing poor developmental outcomes are misguided because an accumulation of risk factors is likely to necessitate an accumulation of protective factors. Our findings support this contention. It is encouraging that the possession of certain qualities makes a positive difference in the lives of adolescents by reducing the likelihood of burdensome behaviors and emotions. Yet, our data suggest that personal assets have limited value on their own to prevent poor youth outcomes when the environment is unsupportive. Thus, diminished returns from individual assets can be expected when adolescents lack comfortable social contexts for retreat.

To its advantage, this study is the only national examination of cumulative risk that simultaneously considers multiple risk contexts, protective factors, and multiple indexes of adolescent adjustment within a longitudinal design. This research design constitutes a more holistic examination than previous studies by considering the broader social context within which adolescents reside, the degree to which cross-domain risk is important for understanding the onset and maintenance of youth adjustment problems, and the extent to which youth are able to marshal personal resources to combat a host of disconfirming experiences. Also, the use of a large national sample assured a sufficient number of minority youth to determine whether ethnic status assumes an important role in risk and protective processes. Although our study demonstrated cross-cutting patterns of stress resistance, evidence of ethnic differences points to the error of assuming that one model of development fits all.

In terms of limitations, the Add Health database contains a restricted array of parent-report measures, forcing us to rely heavily on youth reports of risk and maladjustment. This approach potentially introduces bias in the form of common method variance. Yet, youth-report data have value in the present context. Adolescents' appraisals of their physical environment and social relationships might be more potent predictors of well-being than the actual quality of these social contexts (Beam et al., 2002; Call & Mortimer, 2001). Adolescents also are more cognizant than are outside reporters of the conduct problems they engage in across settings and the negative mood states they experience. Nevertheless, outcome measures based on multiple informants are preferable to eliminate method variance as an explanation for findings.

Although the risk variables constituting the cumulative risk index are similar to those in studies of multiple-risk exposure, several variables that might have enhanced the explanatory power of the index were not considered. The unavailability of items assessing parental mental health, early negative childhood experiences, and harsh child management strategies constitute important omissions. Also, some risk factors were represented by global indicators that might indirectly assess focal constructs and that are limited in terms of reliability (i.e., parent's relationship quality, peer rejection); however, it is noted that the amount of variance accounted for by the index is in line with other studies (Deater-Deckard et al., 1998; Jessor et al., 1995). Likewise, the focus on youth attributes as buffering factors precluded a test of other important protective factors (e.g., extended family, community support networks).

In a related vein, some scholars contend that a sole focus on youth attributes places the onus of responsibility for coping with adversity on the individual and ignores broader policy issues—namely, societal obligation to promote best practices and policy that address the security needs of youth (Masten & Coatsworth, 1998; Sameroff et al., 1998). We agree with this position and note that our results reinforce this viewpoint. Despite the positive influence of youth attributes, they do not compensate fully for adversity across pivotal life domains. Furthermore, our data suggest that the development of these competencies is hindered when youth lack comfortable locations in their life space. Much like our indicators of adjustment, youth attributes are malleable and influenced by environmental factors. Correlational data from this study indicate that family, peer, and school connections play a role in the development of youth attributes, particularly self-esteem. Further research is necessary to determine why some youth acquire these protective assets when social connections are lacking, and others do not. Recent views on the process of resilience can direct such efforts. Noting the ''self-righting'' nature of development, Masten (2001) has contended that resilience arises from basic, human adaptive systems, such as self-regulation, motivation to interact effectively with the environment, and attachment to caring adults, rather than from extraordinary assets. If these protective systems are weak before or as a result of adversity, however, the risk for adjustment problems is high.

Recognizing these limits, this study offers insight into the role of risk and youth attributes in the development of psychosocial problems. Further theoretical development is needed to explain why cumulative risk is experienced more strongly by particular groups of adolescents, and likewise, why certain attributes are beneficial to some youth and harmful to others. Studies also are needed that follow representative samples of adolescents over time to determine how multiple-risk exposure shapes developmental paths as youth prepare for adulthood roles. In addition to mental health outcomes, research should begin to address less commonly examined outcomes including educational paths, employment patterns, and quality of social relationships as well as factors that promote a successful transition to adulthood in spite of early adversity.

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